

**LEADING GROWTH: CEO's COGNITION,
KNOWLEDGE ACQUISITION AND BUSINESS
MODEL INNOVATION IN FACE OF
DYNAMISM**

“A Mixed-Methods Study of Australian SMEs”

Arash Najmaei

Bachelor of Science in Civil Engineering (BSCE)
Master of Business Administration (MBA), Strategic Management
Specialization

Macquarie Graduate School of Management
Macquarie University
Sydney, NSW 2109, Australia

August 2013

*Submitted in partial requirement for the degree of Doctor of Philosophy
In Management Science*

Copyright by
Arash Najmaei

ALL RIGHTS RESERVED

DECLARATION OF ORIGINALITY OF RESEARCH

I certify that the research described in this dissertation has not already been submitted for any other degree.

I certify that to the best of my knowledge all sources used and any help received in the preparation of this dissertation have been acknowledged.

Signature.....

DEDICATIONS

To my family; mother Shahin, father Mohammad and sister Dellaram who have always been there for me, have never doubted my dreams and I have been blessed with their endless moral support. They taught me patience, commitment, courage, caring and thoughtful reflection. They are the true reason why I am here.

And to my love Zahra without whom I would not have been able to complete this work; I owe so much to her. She has been a guiding force and a source of constant love and compassion.

ACKNOWLEDGEMENTS

Completing this doctoral dissertation was a great, wonderful and amazing three-year journey- overwhelming at many times yet very rewarding in the end. I have many people to thank on my journey to writing this thesis. Without the support and help from them, this journey might never have been completed. I am truly indebted to all of them and have been blessed in many ways to have them along the way, to whom I give my deepest and most sincere gratitude.

First of all, I would like to thank my wonderful supervisory team; Dr. Jo Rhodes and Associate Professor Dr. Peter Lok for the countless hours spent guiding me through the intricacies of molding my ideas into a research project. Their influences go far beyond this journey. I consider myself extremely fortunate to have them and am most appreciative of their patience and caring nature. Without their intellectual and moral support I would not have been able to arrive at the end of my doctoral journey.

I am thankful to Professor Francis Buttle from MGSM and Professor Bo Nielsen and Professor Sabina Nielsen from Copenhagen Business School for their immeasurable intellectual support. I also wish to thank Jennifer Martin, Kerry Daniel, Stefanie Jreige and Anne Matheson for their invaluable help and support throughout this journey.

Finally, I must acknowledge all of the participants in MGSM research seminars , Australia and New Zealand Academy of Marketing Conference (ANZMAC, 2011) , Australia and New Zealand Academy of Management Conference (ANZAM, 2012) and European Academy of Management Conference (EURAM 2013) who provided me with their valuable and constructive comments.

Table of Contents

List of Figures	xiv
List of Tables.....	xv
List of Abbreviations.....	xvii
Publications Based On This Research.....	xxi
Peer-Reviewed Journal Articles	xxi
Peer-Reviewed Conference Papers.....	xxii
Edited Book Chapters.....	xxiii
Working Papers	xxiv
Abstract	xxv
-Introduction-.....	- 1 -
1.1 Background and Overview	- 1 -
1.2 Rationale.....	- 3 -
1.3 Knowledge Gaps Within the Existing Literature	- 9 -
1.4 Significance of the Research	- 10 -
1.4.1 Contribution to the Growth Literature	- 10 -
1.4.2 Contribution to the Resource-Based Theories	- 10 -
1.4.3 Contribution to the Strategic Cognition Literature	- 11 -
1.4.4 Contribution to the Business Model Literature.....	- 11 -
1.4.5 Contribution to the Small Business Literature.....	- 12 -
1.4.6 Managerial Contributions	- 13 -
1.5 Research Questions	- 14 -
1.6 Overview of the Research Design and Methods	- 14 -
1.7 Organization and Outline of the Thesis	- 15 -
1.8 Summary of the Chapter.....	- 16 -
Review of the Literature	- 17 -
2.1 Introduction	- 17 -
2.2 Growth of the Firm.....	- 18 -
2.2.1 Definition of growth: Growth versus Performance & Profitability	- 19 -
2.2.2 Dimensions of Growth.....	- 21 -
2.2.3 Absolute Versus Relative Growth	- 22 -
2.2.4 Endogenous Versus Exogenous Theories of Growth	- 23 -
2.2.5 Theory of the Growth of the Firm	- 24 -
2.2.6 Growth of Small Businesses	- 26 -
2.2.7 Strategic Leadership and Strategic Choice View of Small Firm Growth.....	- 33 -
2.3 Emphasis on Business Model Innovation.....	- 35 -
2.3.1 Definition: What Really is a Business Model?	- 35 -

2.3.2	Genesis of Business Model	- 36 -
2.3.3	Business Model and the Theory of Value: Value Creation and Value Capture	- 40 -
2.3.4	Creating and Capturing Value: Design and Resource Perspectives	- 42 -
2.3.5	Business Model Versus Strategy	- 46 -
2.3.6	Business Model and Strategic Positioning of the Firm	- 48 -
2.3.7	Business Model Innovation, Reinvention, Transformation.....	- 49 -
2.3.8	Strategic Emphasis on Business Model Innovation	- 60 -
2.3.9	Business Model Innovation and Growth of the Firm	- 63 -
2.4	Executives' Acquisition of Knowledge	- 64 -
2.4.1	Knowledge As a Resource and Resource-Based Theories of the Firm.....	- 64 -
2.4.2	Defining Knowledge as a Resource	- 66 -
2.4.3	Market and Technological Knowledge	- 73 -
2.4.4	Knowledge Acquisition.....	- 78 -
2.4.5	Executives' Acquisition of Knowledge and Business Model Innovation	- 86 -
2.5	Executives' Cognition and Cognitive Style	- 87 -
2.5.1	Executives' Cognition in Strategic Management of Today's Firms	- 89 -
2.5.2	From Cognition to Cognitive Style	- 90 -
2.5.3	Theories of Cognitive Style.....	- 93 -
2.5.4	Overview of Six Measures of Cognitive Style	- 95 -
2.5.5	Executives' Cognitive Styles in Strategy Versus Entrepreneurship.....	- 98 -
2.5.6	Executives' Cognitive Style and Acquisition of Knowledge	- 102 -
2.6	Perception of Environmental Dynamism	- 103 -
2.6.1	External Environment and Its Characteristics	- 103 -
2.6.2	Environmental Dynamism.....	- 106 -
2.6.3	Executives' Cognition and Perceived Environmental Dynamism	- 107 -
2.7	Summary of the Chapter	- 109 -
	-Research Questions, Conceptual Framework and Hypotheses-	- 111 -
3.1	Introduction	- 111 -
3.2	Developing a Conceptual Framework	- 111 -
3.2.1	Cognitive Style and Growth of the Firm	- 112 -
3.2.2	The Mediating Roles of Executives' Knowledge Acquisition and Emphasis on Business Model Innovation Strategy	- 113 -
3.2.3	The Moderating Role of Environmental Dynamism	- 119 -
3.3	Research Hypotheses.....	- 120 -
3.3.1	Hypotheses 1 and 2: Dynamism, Cognitive Style and Growth of the Firm	- 121 -
3.3.2	Hypotheses 3 and 4: Dynamism, Intuitive Style and the Degree of Knowledge Acquisition.....	- 122 -

3.3.3	Hypotheses 5 and 6: Dynamism, Analytic style and the Degree of Knowledge Acquisition	- 123 -
3.3.4	Hypotheses 7 and 8: Degree of Market and Technological Knowledge Acquisition and Degree of emphasis on Business Model Innovation.....	- 124 -
3.3.5	Hypotheses 9: Degree of Emphasis on Business Model Innovation and Growth of the Firm	- 128 -
3.3.6	Hypotheses 10 and 11: Dynamism, Cognitive Style and the Degree of Emphasis on Business Model Innovation	- 129 -
3.3.7	Hypotheses 12 and 13: Degree of Market and Technological Knowledge Acquisition and Growth of the Firm	- 132 -
3.4	Summary of the Chapter.....	- 136 -
	-Research Design and Methods-.....	- 139 -
4.1	Introduction	- 139 -
4.1.1	Mixed-Methods Rationale and Design	- 139 -
4.1.2	Concurrent Mixed-Methods Design : Definition and Rationale.....	- 140 -
4.2	Design of the Quantitative Phase of the Study	- 144 -
4.2.1	Research Variables and their Measures	- 144 -
4.2.2	Sample	- 150 -
4.2.3	Data Collection and Operationalization of the Survey	- 157 -
4.2.4	Quantitative Ethical Considerations	- 163 -
4.2.5	Biases and Neutralizing Techniques.....	- 163 -
4.2.6	Common-Method Variance (Bias).....	- 163 -
4.2.7	Overview of Statistical Analytic Techniques	- 164 -
4.2.8	Construct Specification.....	- 165 -
4.2.9	Modeling Equivalency and Clarifying a Model's Causal Directions	- 165 -
4.2.10	Methodological Robustness.....	- 166 -
4.3	Design of the Qualitative Phase of the Study	- 166 -
4.3.1	Instrumentation: Design of the Interview Protocol.....	- 166 -
4.3.2	Piloting and Expert Judgment Testing.....	- 169 -
4.3.3	Sampling: Unit, Approach and Process	- 170 -
4.3.4	Data Collection	- 171 -
4.3.5	Overview of Qualitative Data Analysis	- 172 -
4.3.6	Validity and Reliability Concerns in the Qualitative Phase.....	- 174 -
4.3.7	Qualitative Ethical Considerations	- 174 -
4.4	Summary of the Chapter.....	- 174 -
	-Results of Quantitative and Qualitative Data Analysis-.....	- 175 -
5.1	Introduction	- 175 -
5.2	Quantitative Analysis	- 175 -
5.2.1	Results of Pretest Studies.....	- 175 -

5.2.2	Entering Data from the Main Survey	- 177 -
5.2.3	Descriptive Analysis	- 178 -
5.2.4	Screening and Preparing Data for Hypotheses Testing	- 179 -
5.2.5	Analysis of Discriminant and Convergent Validity	- 182 -
5.2.6	Power Analysis.....	- 183 -
5.2.7	Structural Modeling Procedure	- 184 -
5.2.8	Test of Hypotheses	- 191 -
5.2.9	Examining Mediation effects	- 205 -
5.2.10	Interpreting Results of Mediation Analysis.....	- 209 -
5.2.11	Ad Hoc Analyses.....	- 212 -
5.3	Qualitative Analysis.....	- 219 -
5.3.1	Outline of the Procedure	- 219 -
5.3.2	Description of the Data	- 219 -
5.3.3	An Overview of Interviews	- 221 -
5.3.4	Process of Coding and Analysis.....	- 224 -
5.3.5	Findings Related to Research Hypotheses	- 227 -
5.3.6	Results of Unitizing, Categorizing and Classifying (UCC) Approach.....	- 231 -
5.3.7	Additional Findings.....	- 234 -
5.4	Summary of Qualitative and Quantitative Findings.....	- 238 -
5.5	Summary of the Chapter	- 240 -
	-Discussion of Findings-	- 241 -
6.1	Introduction.....	- 241 -
6.2	Synthesis of Qualitative and Quantitative Findings Related to Research Hypotheses ...	- 242 -
6.2.1	Dual Cognitive Style of the CEO and Growth of the Firm	- 246 -
6.2.2	Dual Cognitive Style and Acquisition of Knowledge	- 250 -
6.2.3	Dual Cognitive Style and Emphasis on Business Model Innovation	- 254 -
6.2.4	Acquisition of Knowledge and Growth of the Firm.....	- 258 -
6.2.5	Acquisition of Knowledge and Emphasis on Business Model Innovation	- 263 -
6.2.6	Emphasis on Business Model Innovation and Growth of the Firm.....	- 265 -
6.2.7	Discussing the Intervening Mechanisms	- 267 -
6.3	Discussing Additional Interesting Quantitative Findings	- 275 -
6.4	Discussing Additional Interesting Qualitative Findings	- 285 -
6.4.1	Discussing Modes of Knowledge Acquisition	- 285 -
6.4.2	Discussing Pre- and Post-Ideation Knowledge Acquisition.....	- 289 -
6.4.3	Discussing Heterogeneity in Forms of Business Model Innovation	- 292 -
6.5	Discussing Contextual Relevance of the Findings.....	- 294 -
6.6	Summary of the Chapter	- 296 -
	-Conclusion-.....	- 297 -

7.1	Introduction	- 297 -
7.2	Addressing the Research Questions	- 297 -
7.2.1	Answering Research Question One	- 297 -
7.2.2	Answering Research Question Two	- 298 -
7.3	Theoretical Contributions and their Implications	- 299 -
7.3.1	Contributions to the Growth Literature	- 299 -
7.3.2	Contribution to the Resource-Based View	- 300 -
7.3.3	Contribution to the Strategic Cognition Literature	- 301 -
7.3.4	Contribution to the Business Model Literature.....	- 302 -
7.3.5	Contribution to the Small Business Literature.....	- 303 -
7.3.6	Contributions of Additional Findings.....	- 304 -
7.4	Practical/Managerial Implications.....	- 305 -
7.5	Limitation of the Research	- 308 -
7.6	Suggestions for Further Research.....	- 310 -
7.7	Summary of the Chapter.....	- 313 -
	References	- 315 -
	Appendices	- 423 -
	Extended Review of Literature.....	- 423 -
1.	Summary of the definitions of business model.....	- 423 -
2.	Characteristics of Kirton's Innovators Versus Adaptors	- 426 -
3.	Theory of Administration	- 427 -
4.	Growth modes (organic, acquisitive and hybrid).....	- 427 -
5.	Stage Theory of Growth	- 428 -
6.	Non-linearity and heterogeneity of growth.....	- 429 -
7.	Co-existence of Small and Large Firms	- 430 -
8.	History of Resource-based view and the concept of a firm's Resources.....	- 432 -
9.	Defining Knowledge as a resource: knowledge versus Information	- 435 -
10.	Dimensions of the knowledge-base of the firm	- 436 -
11.	Attributes of Knowledge as a resource In the Organizational Setting.....	- 439 -
12.	Knowledge Acquisition and the organizational Information-Processing Theory.....	- 440 -
13.	Executives' Acquisition of Knowledge and Implicit Learning	- 441 -
14.	Executives' Acquisition of Knowledge and Human Capital Theory.....	- 442 -
15.	Executives' Knowledge acquisition and Environmental Scanning	- 443 -
16.	Measuring Hemispheric Specialization	- 444 -
17.	Review of Prior Research on Key Theories of Cognitive Style	- 444 -
	Research Design.....	- 449 -
18.	Control Variables: Rationale and Operationalization	- 449 -

19.	A Step-Wise Guideline to Implement Online Survey	- 453 -
20.	Attributes of Reflective Versus Formative Constructs.....	- 454 -
21.	Specification of research constructs	- 455 -
22.	Theoretical Roots of the Interview Protocol	- 456 -
23.	Reliability and Validity Issues in the Quantitative Phase	- 458 -
24.	Reliability and Validity Issues in the Qualitative Phase	- 460 -
	Data Collection	- 462 -
25.	Ethics Committee's Approval Letter.....	- 462 -
26.	General Ethical Considerations	- 464 -
27.	Survey Questionnaire	- 466 -
28.	First Page of the Online Survey	- 474 -
29.	Interview Protocol	- 474 -
30.	Survey's Informed Consent Letter	- 476 -
31.	Interviews' Informed Consent Letter	- 477 -
32.	Interviewing Techniques	- 479 -
33.	Methods to Improve Executives' Response Rate to the Survey.....	- 481 -
34.	Method to Minimize Respondents' Psychometric Biases	- 481 -
35.	Addressing Retrospective and Recall Bias.....	- 481 -
	Data Analysis	- 482 -
36.	Identifying and Profiling Non-Respondents.....	- 482 -
37.	Estimating Non-Response and Late-Response Biases	- 483 -
38.	Reverse coding and reliability of REI items after Pilot Testing.....	- 484 -
39.	Rationales for Using Structural Equation Modeling	- 488 -
40.	SEM Operationalization Protocol	- 488 -
41.	Executives' Characteristics	- 490 -
42.	Firms' Characteristics	- 490 -
43.	Results of the test for Multivariate Normality.....	- 491 -
44.	Detecting and Dealing with Multivariate Outliers	- 492 -
45.	Detecting and Dealing with Missing data	- 492 -
46.	Homoscedasticity	- 493 -
47.	Factor Adequacy Test.....	- 494 -
48.	Detecting and Dealing with Multi-Collinearity.....	- 494 -
49.	Examining Uni-dimensionality of Constructs	- 497 -
50.	Analysis of Discriminant and Convergent Validity	- 499 -
51.	Assessing the Duality of the cognitive style measure	- 500 -
52.	Inter-Constructs Correlations Matrix	- 502 -
53.	Plan for addressing equivalent models in SEM.....	- 504 -
54.	Common Method Bias	- 504 -

55.	Results of Herman single factor analysis.....	- 505 -
56.	Results of common latent factor analysis	- 505 -
57.	Coverage of research constructs by interviewees	- 507 -
58.	Codebook.....	- 508 -
59.	Coding and Qualitative Analytic Approach.....	- 509 -
60.	Interviews' Transcripts	- 510 -

List of Figures

Figure 1: A Schematic View of the Logic of the Research	8 -
Figure 2: Organization of the thesis	16 -
Figure 3: A schematic outline of the literature review	18 -
Figure 4: Conceptual Framework of the study	120 -
Figure 5: Research Hypotheses.....	135 -
Figure 6: Standardized and Unstandardized Estimates (Maximum Likelihood Path Analysis)	192 -
Figure 7: Standardized Estimates of Paths in the Multigroup Analysis.....	199 -
Figure 8: Interactions between Dynamism, Intuitive Cognitive Style and Acquisition of Market Knowledge	201 -
Figure 9: Interactions between Dynamism, Intuitive Cognitive Style and Acquisition of Technological Knowledge	202 -
Figure 10: Interactions between Dynamism, Analytic Cognitive Style and Acquisition of Market Knowledge	203 -
Figure 11: Interactions between Dynamism, Analytic Cognitive Style and Acquisition of Technological Knowledge	204 -
Figure 12: Interpreting Types of Mediation.....	207 -
Figure 13: Standardized Significance of Non-mediated Path between Executives' Intuitive, Analytic Cognitive Style and Growth of the Firm	209 -
Figure 14: Standardized Significance of Non-mediated Paths between Executives' Market and Technological Knowledge Acquisition and Growth of the Firm	211 -
Figure 15: Effects of Control Variables	217 -
Figure 16: Pie Chart of the Results of Subcategories in the UCC Method	232 -
Figure 17: Radar Graph of Number of Corroborating Themes by Each Interviewee for Each Hypothesis.....	234 -
Figure 18: Radar Graph of Number of Corroborating Themes by Each Interviewee for Each Emergent Theme.....	238 -
Figure 19: Theoretical Foundation of the Proposed Framework.....	244 -
Figure 20: Empirical Results of the Relationships in the Conceptual Framework of the Study	245 -
Figure 21: Control Variables and their Influences on Research Variables	284 -
Figure 22: Illustrating Knowledge About and From Interactions in the Research Rationale.....	289 -
Figure 23: Illustrating Emergent Themes of Post- and Pre-BMI Ideation Acquisition of Knowledge.....	291 -
Figure 24: Illustrating how Emphasis on BMI Could Lead to Different Innovative Business Models	294 -
Figure 25: First page of the online survey	474 -

List of Tables

Table 1: Definition of research constructs.....	- 8 -
Table 2: Knowledge Acquisition: Stock Versus Flow Views	- 81 -
Table 3: A Summary of Definitions of Cognitive Style	- 91 -
Table 4: Key unitary and dual theories of cognitive style.....	- 95 -
Table 5: Assumptions of key conceptualizations of cognitive style	- 95 -
Table 6: Epstein's Rational-Experiential Indicator (REI).....	- 97 -
Table 7: Summary of Hypotheses.....	- 135 -
Table 8: Methodological Fitness.....	- 141 -
Table 9: Key Issues in the Use of Structural Equation Modeling	- 164 -
Table 10: Interview questions and corresponding research question.....	- 168 -
Table 11: Reliability after Pilot Test	- 176 -
Table 12: Descriptive Statistics of Executives and Firms.....	- 178 -
Table 13: Values of CR, AVE, MSV, and ASV for Convergent and Discriminant Validity	- 183 -
Table 14: Fit Indices of Constructs' Measurement Models.....	- 186 -
Table 15: Fit Indices of Full Measurement Model.....	- 187 -
Table 16: Results of the SCDT of Nested Models	- 189 -
Table 17: Comparing Correlations With Growth In the SCDT.....	- 189 -
Table 18: Results of SCDTs of Alternative Rival Models	- 190 -
Table 19: Results of Non-moderated Maximum Likelihood Path Analysis	- 191 -
Table 20: Chi-square Difference Test for Multigroup Analysis.....	- 194 -
Table 21: Results of Multigroup Path Analysis for Moderation Effects	- 194 -
Table 22: Results of Interaction Analysis for Moderation Effects.....	- 200 -
Table 23: Results of Multigroup Mediation Analysis Using Bootstrapping.....	- 208 -
Table 24: Results of an Additional Multigroup Mediation Analysis	- 212 -
Table 25: Results of an Ad Hoc Cross-Tabulation (Chi-square) Analysis for Late- response Bias	- 213 -
Table 26: Results of an Ad Hoc ANOVA Analysis for Non-response Bias	- 214 -
Table 27: Results of Control Variable Path Analysis.....	- 215 -
Table 28: Results of an Ad Hoc Analysis of Variance across Clusters	- 218 -
Table 29: Results of Final Cluster Analysis.....	- 219 -
Table 30: Description of Firms in the Qualitative Analysis.....	- 220 -
Table 31: Description of Executives who Participated in the Qualitative Analysis	- 220 -
Table 32: Description of Interviews Conducted in the Qualitative Analysis	- 220 -
Table 33: The Weber Coding Protocol	- 225 -
Table 34: Supportive Quotes for Research Hypotheses	- 225 -
Table 35: Description of Thought Units.....	- 231 -
Table 36: Numbers of Supportive Themes for Each Hypothesis by Interviewees -	233
Table 37: Supportive Quotes for the Emergent Theme of Post- and Pre-BMI Ideation Knowledge Acquisition	- 236 -
Table 38: Number of Supportive Themes for Each Emergent Theme by Interviewees	- 237 -
Table 39: Summary of the Results of Quantitative and Qualitative Analysis of Hypotheses.....	- 238 -
Table 40: A Matrix for Knowledge About and From.....	- 286 -
Table 41: A list of the Definitions of business model	- 423 -

Table 42: Kirton's Innovators Versus Adaptors.....	- 426 -
Table 43: Domains of executive behavior in Kirton's Theory	- 447 -
Table 44: A Step-wise guideline to implement online survey	- 453 -
Table 45: Attributes of Reflective Versus Formative Constructs	- 454 -
Table 46: Specification of research constructs.....	- 455 -
Table 47: Theoretical roots of interview protocol.....	- 456 -
Table 48: Reverse coding and reliability of REI	- 484 -
Table 49: SEM Operationalization Protocol	- 489 -
Table 50: Results of non-normality bias test	- 492 -
Table 51: Results of factor adequacy test	- 494 -
Table 52: Results of confirmatory factor analysis	- 495 -
Table 53: Results of total variance extracted in CFA for dimensionality of constructs	- 497 -
Table 54: C.R., AVE, MSV, ASV for Convergent and Discriminant Validity....	- 500 -
Table 55: Results of factor analysis for duality of CS	- 501 -
Table 56: Correlations Matrix.....	- 502 -
Table 57: Plan for addressing equivalent models in SEM	- 504 -
Table 58: Results of Herman single factor analysis.....	- 505 -
Table 59: Results of common latent factor analysis	- 505 -
Table 60: Coverage of research constructs by interviewees	- 507 -
Table 61: Codebook	- 508 -

List of Abbreviations

Abbreviation	Description
ABACUS	Australian Business Assessment of Computer User Security
ABS	Australian Bureau of Statistics
ACS	Analytic Cognitive Style
AGFI	Adjusted Goodness of Fit Index
AMOS	Analysis of Momentum Structures
AMTs	Advanced Manufacturing Technologies
ANOVA	Analysis of Variance
ANZSIC	Australia and New Zealand industrial classification codes
ASA	Asset Stock Accumulation
ASV	Average Shared Squared Variance
AUD	Australian Dollar
AVE	Average Variance Extracted
BM	Business Model
BMI	Business Model Innovation
C.I	Confidence Interval
C.R.	Critical ration
CAQDA	Computer-Assisted Qualitative Data Analysis
CEO	Chief Executive Officer
CEST	Cognitive-Experiential Self-Theory
CF	Coding Frame
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CMB	Common Method Bias
CMIN	Chi-Square
CMINDF	Chi-Square/Degree of Freedom index
CMM	Concurrent Mix Methods
CMV	Common Method Variance
CoSI	Cognitive Style Indicator (Non-Unitary)
CR	Composite reliability
CS	Cognitive Style
CSDT	Chi-Square Difference Test
CSI	Cognitive Style Indicator
DCV	Dynamic Capabilities View

DF	Degree of Freedom
DMC	Dynamic Managerial Capability
DnB	Dun and Bradstreet
DYN	Perceived Dynamism
EBMI	Emphasis on Business Model Innovation
EC	Expected Change Statistic
EFA	Exploratory Factor Analysis
EKB	Explicit Knowledge Base
EM	Expectation-Maximization method
EV	Exchange Value
FIML	Full Information Maximum Likelihood method
GOF	Goodness Of Fit
IAV	Industry Added Value
ICS	Intuitive Cognitive Style
IFI	Incremental Fit Index
IO	Industrial Organization
KB	Knowledge Base
KBV	Knowledge Base View
KIA	Kirton's Innovator-Adaptor Theory
KMO	Kaiser–Meyer–Olkin test
LNTSP	Linear-Nonlinear Thinking Style Profile
MAR	Missing At Random
MBA	Master of Business Administration
MBTI	Myers–Briggs Type Indicator
MCAR	Missing Completely At Random
MGSM	Macquarie Graduate School of Management
MIS	Management Information System
MIs	Modification Indices
MKA	Market Knowledge Acquisition
ML	Maximum Likelihood
MM	Mix Methods
MMs	Measurements Models
Mn	Null Model
MRM	Managerial Rent Model
Ms	Saturated Model
MSV	Maximum Shared Squared Variance
MTMM	Multi-Trait Multi-Method Analysis

NRBV	Natural Resource Base view
NSW	New Sought Wales
OG	Organic Growth
OIPT	Organizational Information Processing Theory
PCA	Principal Component Factor Analysis
PMS	Product-Market Strategy
QSR	Qualitative Software for Research
R&D	Research And Development
RB	Resource Base
RBP	Resource Base Perspective
RBT	Resource Base Theory
RBV	Resource Base View
RCOV	Resources-Capabilities Organization Value framework
REI	Rational-Experiential Indicator
REI	Rational-Experiential Indicator
RMSEA	Root-Mean-Square Error of Approximation
S.D	Standard Deviation
S.E	Standard Error
SAA	Strategic Asset Accumulation
SCDTs	Sequential Chi-Square Difference Tests
SCP	Strategic Cognition perspective
SCP	Strategy-Conduct-Performance
SEM	Structural Equation Modelling
SFM	Strategic Factor Markets
SIC	Standards Industrial Classification
SLP	Strategic Leadership Perspective
SME	Small And Medium Enterprises
SPSS	Statistical Package For Social Sciences
TAFE	Technical And Further Education
TGF	Theory of The Growth of The Firm
TKA	Technological Knowledge Acquisition
TKB	Tacit Knowledge Base
TLI	Tucker-Lewis index
TMT	Top Management Team
TUs	Thought Units
UCC	Unitizing, Categorizing, Classifying
US	United States of America

UV	Use Value
VIF	Variance Inflation Factor
VRIN	Valuable, Rare, Inimitable and Non-substitutable resources

Publications Based On This Research

Peer-Reviewed Journal Articles

- Najmaei, A. Rhodes, J., and Lok, P. (2013) Cognitive Style, Knowledge Acquisition and Growth of small firms: Insights from a Mixed-Methods Study of Australian firms. Under review for Publication in the Journal of Management Studies.
- Najmaei, A. Rhodes, J., and Lok, P. (2013) CEOs' stylistic knowledge acquisition and growth of the firm. Under review for Publication in the International journal of entrepreneurial behavior and research.
- Najmaei, A. (2014), Performance implications of entrepreneurial stylistic fit: Evidence from Australia, Journal of business competition and growth, In press
- Najmaei, A. Rhodes, J., and Lok, P. (2014), Exploring the dynamism of complementarities between market and technological knowledge: insights from Australian strategic leaders. Journal of Strategy and Management, In press
- Najmaei, A. Rhodes, J., and Lok, P. (2013) Cognition, Knowledge and Business Model Innovation: Testing A Moderated-Mediation Model. Under review for Publication in the Australian Journal of Management.
- Najmaei, A. (2012). Logic of Growth: Business Model versus Strategy. Forthcoming in the International Journal of Strategic Information Technology and Applications. DOI: 10.4018/IJSITA, ISSN: 1947-3095,

Peer-Reviewed Conference Papers

- Najmaei, A. Rhodes. J., and Lok, P. (2013), Growth of Australian business model innovators: Examining Multivvel Contingencies, Under Review for The Australian Center for Entrepreneurship Research Exchange Conference.
- Najmaei, A. (2013), A Cognitive Model of Executives' Knowledge Acquisition: Implications for Resource-Based View, Under Review for presentation at the 27th Australia and New Zealand Academy of Management Conference.
- Najmaei, A. (2013) Born-global growth: An Austrian Perspective, presented at the Annual meeting of the Australia and New Zealand International Business Academy (Macquarie university, 18-20 April, 2013).
- Najmaei, A. (2012) An Essay on the Rigor and Relevance Debate in Organizational Mixed-Methods Research, Presented at the Eighth International Conference on Social Science Methodology, University of Sydney, 9-13 July.
- Najmaei, A. (2012), Business Model Innovation and Replication: A Duality in the Growth Path of the Firm , proceedings of the 26th Australia and New Zealand Academy of Management Conference.
- Najmaei, A. (2010), Researching Organizational (Dynamic) Capabilities: An Introduction to Epistemology and Ontology, paper presented at the ASCPRI Social Science Methodology Conference, University of Sydney, Sydney, Australia, November, 2010.
- Najmaei, A. (2010), Dynamic Business Model Innovation: An Analytical Archetype, Proceedings of the International Conference on Management Technology and Applications, Editor(s): A. M. Rawani and Chris Zhang.: DOI:10.3850/978-981-08-6884-0_C032.

Edited Book Chapters

- Najmaei,A. (2013). A Behavioral view of Business Modelling. Forthcoming in T.K.Das. (Ed), Research in Behavioral Strategy. Information Age Publishing.
- Najmaei, A. Rhodes. J and Lok, P. (2013). Practice of Business Modeling: Executives' Cognition, Knowledge and Action. Forthcoming in T.K.Das. (Ed), Practice of Behavioral Strategy. Information Age Publishing.
- Najmaei, A. (2012). Business Model: Strategic Logic of Disruptive Innovation. In K. Rezaul (Ed.), Strategic and Pragmatic E-Business: Implications for Future Business Practices (pp. 100-131). Hershey PA, USA: IGI Global Publishing.
- Najmaei, A. (2012). How and Why Business Model Matters In Acquisition of Knowledge in Small and Entrepreneurial Firms. In Ndubisi, N. and S. Nwankwo (Eds), Enterprise Development in SMEs and Entrepreneurial Firms: Dynamic Processes(pp. 1-21). Hershey PA, USA: IGI Global Publishing.

Working Papers¹

- Najmaei, A. (2012), The Genesis of Business Model: A Socio-Cognitive View on an Elusive Emerging Theme (March 2, 2012). Available at SSRN: <http://ssrn.com/abstract=2291406>
- Najmaei, A. (2011), Anatomy of Business Model (BM): Delineating How Firm's Value System is Formed through BM-Strategy Co-Alignment (April 27, 2011). Available at SSRN: <http://ssrn.com/abstract=1824260>
- Najmaei, A.(2010), Strategic Management of Strategic Innovation (March 1, 2010). Available at SSRN: <http://ssrn.com/abstract=1594430> or <http://dx.doi.org/10.2139/ssrn.1594430>

¹Working papers are available at social science research network data base (SSRN) . Download are available upon request from the author

Abstract

In this dissertation I specified a model proposing that managerial cognitive style could result in knowledge asymmetries which under environmental dynamism lead to a different emphasis placed on business model innovation which could be a determinant of firms' differential growth in an industry. This theory synthesizes insights from different but interrelated bodies of research including Edith Penrose's theory of the growth of the firm, managerial dynamic capabilities and the knowledge-based view, business model of the firm and strategic cognition. I further tested the proposed model using a mixed-methods design based on the data from CEOs of small manufacturing firms in Australia. In the quantitative phase a hybrid survey consisting of postal and online modes was conducted and data from 299 firms was analyzed by employing a two-step structural equation modeling approach. 13 hypotheses and 11 control variables were assessed. In the qualitative phase semi-structured in-depth interviews with 5 CEOs were conducted and analyzed using content and thematic analytic methods with Nvivo. The results of this qualitative phase were used to corroborate and cross-validate the results of the statistical analysis. Furthermore, this exploratory analysis generated a number of additional interesting themes. The results of these analyses supported my key theoretical expectations while offering some new insights into the underlying mechanisms of the growth of the firm.

-CHAPTER ONE-

-Introduction-

1.1 Background and Overview

The question of why some firms grow more than others is at the heart of both strategic management and entrepreneurship literature (Barney and Clark, 2007; Wright and Stigliani, 2012). Strategic leadership theory suggests that the performance outcomes of a firm, such as its growth, are reflections of the behavior of top managers, also known as executives or strategic leaders (Hambrick and Mason, 1984). This issue has been studied from two major perspectives. The first perspective known as the industrial organization (IO) view, suggests that markets can be objectively analyzed and consequently strategic leaders need only to make specific profit-maximizing choices to place their firms in a better competitive position (Porter, 1980, 1985). This view has been widely criticized (Barney and Clark 2007) as it underemphasizes the role of firms' resources and specifically the ability of its executives to make use of these resources. In an attempt to address this criticism the second and more recent approach, known as the resource-based view (RBV) posits that some firms grow more than others because their executives are able to make different use of their resources (Barney and Clark 2007). These differential abilities stem from executives' individual differences, such as their different ways of thinking, values and personalities (Hambrick 2007).

Building on this understanding, today's markets are characterized by rapid changes and continuous technological disruptions (Helfat et al., 2007; Ireland and Hitt, 1999; Teece, 2010). Therefore, it has been argued that in the twenty-first century, achieving growth demands executives to be receptive to novel ideas and to emphasize new ways of doing business by adopting new business models (Hitt et al., 2002; Pohle and Chapman, 2006).

Despite the importance of this logic, prior research offers very little evidence about factors that influence executives' choice of business model innovation (e.g. Schneider and Spieth, 2013; Aspara et al., 2011; George and Bock, 2011). In an attempt to advance this literature, this study proposes and tests a conceptual framework based on insights from a number of different perspectives, including strategic leadership, strategic cognition, the

resource-based view, and strategic choice (i.e. strategic decision-making). This approach enables the study to consider the academic conversations amongst different views and to develop a richer understanding of the way in which a firm grows.

The research framework is grounded in the strategic leadership theory (Finkelstein, Hambrick, and Cannella, 2009), which suggests that the outcomes of a firm (e.g. growth) are reflections of the behavior of their executives. Within this view, the strategic cognition view assumes that executives' behavior is based on their cognition (i.e. the way they process information about the environment and behave accordingly). It is also known that executives have persistent ways of addressing issues, known as their cognitive style (CS; Armstrong, Cools, and Sadler-Smith, 2012; Wang, Waldman, and Zhang, 2012). These stylistic differences result in different strategies (Hodgkinson and Clarke, 2007) that lead to different firm-level outcomes. This study is situated within this logic and examines the role of these stylistic differences in executives' emphasis on adopting new business models and the growth outcomes of their firm.

Furthermore, to examine this phenomenon from a more precise perspective, insights from the resource-based view are incorporated into the framework. The resource-based view suggests that knowledge that executives acquire is a key resource that helps them choose appropriate courses of action towards competitive ends (e.g. growth; Barney and Clark, 2007). In particular, knowledge brings about the capacity to make choices, and hence differences in the acquisition of knowledge may lead to different competitive behavior (Barney et al., 2011). Furthermore, executives' cognition impacts the way they acquire knowledge (Holcomb et al., 2009). Therefore this study posits that executives' cognitive styles influence their knowledge acquisition and this interaction impacts on their tendency towards adopting new business models.

Finally, the interaction between these perspectives is better understood when the rate of change in the business environment (i.e. dynamism) is included into the framework. This is because executives' cognition, knowledge acquisition, and choices are impacted by the way they perceive their environment (Chaston and Sadler-Smith, 2012). Therefore, by incorporating perceptions of environmental dynamism, this study could offer a more nuanced understanding of the proposed causal relationships.

The context of small businesses was chosen to test this framework because strategy literature suggests that in today's competitive landscape, small firms are facing the same problems as large corporations (Meyer, Neck, and Meeks, 2002). The ultimate destination is the same for both – to be innovative, in order to grow. However, despite their importance, particularly in developed countries such as Australia (Terziovski, 2010), existing strategic management literature has tended to underemphasize these firms in favor of large multinationals (Lubatkin et al., 2006; Terziovski, 2010). Therefore, by studying SMEs this study not only advances the literature on firm growth but will also add to the knowledge of SMEs in the strategic management literature.

Hence, it is the intention of this study to develop and empirically test a framework on strategic leaders' cognitive style, their acquisition of knowledge, their emphasis on new business models and the subsequent growth of their firms under different dynamisms. This framework will be examined in the context of Australian SMEs. The result of this study will provide new theoretical insights into the field of strategic management and small business management.

1.2 Rationale

The growth of a firm is one of the most active and expanding fields of research in the management literature (Sadler-Smith, 2004; Makadok, 2011; McKelvie and Wiklund, 2010; Davidsson, Achtenhagen, and Naldi, 2010). Several reasons exist for this. First, growth is regarded as the most commonly used indicator of overall performance (Weinzimmer et al., 1998). It is also commonly regarded as the sign of a firm's success and a precondition of its longevity and survival (Storey, 1994), as it demonstrates a firm's ability to withstand environmental shocks and adapt to changes (Mishina, Pollock, and Porac, 2004). Second, the understanding of a firm's growth is important to theories of entrepreneurship, firms' efficiency, market power, profitability, competitiveness and survival (Nelson, 1991; Shane, 1996). Third, the growth of a firm is central to the overall growth of an economy (Penrose, 1959).

The prevailing doctrine in strategy suggests that executives have direct effects on the growth of their firms because they have a unique ability to change or reinforce existing action patterns within their firms (Boal and Hooijberg, 2000). Therefore, by making different choices, they lead the growth of their firm (Penrose, 1959). These choices are, however, largely influenced by their cognition (i.e. perceiving the environment) and

knowledge about markets and technological underpinning of the business (Penrose, 1959; Helfat et al., 2007; Hambrick, 2007). Therefore, differences in cognition and knowledge lead executives to make different choices that result in different growth outcomes.

Prior studies have attempted to capture these differences using proxies such as demographics (i.e. age, gender, education), tenure, experience (Simsek et al., 2005) or attributes such as social capital (i.e. relationships, ties, and networks with business parties; Sullivan and Marvel, 2011b), entrepreneurial abilities (Davidsson, 1991), need for achievement and locus of control (Miller and Toulouse, 1986; Miller and Dröge, 1986), growth willingness (Davidsson, 1989 a,b), and existing business knowledge and experience (e.g. Kor, 2003). Despite this extensive research, there are still numerous aspects of executives' cognition that have not been sufficiently examined, such as cognitive style (Narayanan, Zane, and Kemmerer, 2011; Kor and Mesko, 2013; Alessandr, Tong, and Reuer, 2012).

Executives' cognitive style is one of the most important aspects of their cognition (Armstrong et al., 2012a,b; Gallen, 2006; Narayanan et al., 2011). According to the cognitive style literature, executives can be analytic or intuitive (Armstrong et al., 2012a). The analytic type is more detail-conscious, intentional, and relatively affect-free and tends to emphasize the status quo, whereas the intuitive type is more holistic, preconscious, and intimately associated with affects who show tendency towards change, innovation and challenging the status quo (Armstrong et al., 2012a: 15).

Two contrasting views have surfaced in this literature. The traditional view that is relatively dominant in the literature suggests that intuition and analysis are two ends of the same attribute, and thus cognitive style is a unitary aspect of executives' behavior (Hayes and Allinson, 1994; Allinson and Hayes, 1996). On the contrary, recent findings suggest that intuition and analysis are independent constructs which essentially originate from two different systems in the minds of executives (i.e. dual-information processing theory; Hodgkinson et al., 2009a, b). This view tends to reject the unitary view and subscribe to a more comprehensive view of cognitive abilities (Armstrong et al., 2012a).

As prior studies have mostly adopted the former view (Armstrong et al., 2012a: 15), strategy research lacks adequate empirical studies based on the latter theory (Chaston and Sadler-Smith, 2012; Narayanan et al., 2011). To contribute to this literature, this study

adopts the dual view of cognitive style and examines how it is associated with the growth of the firm directly and indirectly. This investigation could partially fill the void in the strategic cognitive literature and advance understanding of the intervening mechanism in the growth of the firm.

Furthermore, executives' cognition influences firms' growth through their actions (Narayanan et al., 2011). Knowledge acquisition is a principal action for executives (Spender, 1996a, b; Boal and Hooijberg, 2000; Holcomb et al., 2009). The resource-based view suggests that knowledge is a resource that directly helps executives to choose an appropriate strategy (Barney, 1991). Literature particularly shows that knowledge of markets (i.e. knowledge about customers, competitors, and generally how markets work and change) and technologies (i.e. knowledge about production, processes, methods, and generally the productive behavior of the firm; Grant, 1996; Burgers et al., 2008; Sullivan and Marvel, 2011a) are the most important types of knowledge that executives have to constantly acquire to be able to govern their firm in today's environment (Spender, 1996a; Grant, 1996; Wiklund and Shepherd, 2003).

To acquire knowledge, executives need to perceive their environment and process information (Kraaijenbrink, Spender, and Groen, 2010; Nag and Gioia, 2012). It has been argued that different cognitive styles imply different types of environmental perception and information processing. So, executives' possession of different cognitive styles could lead to different acquisition of knowledge (Conner and Prahalad, 2002; Holcomb et al., 2009). This association has not been empirically examined in the literature (Armstrong et al., 2012a,b; Hodgkinson and Healey, 2011). Therefore, it is the intention of this study to develop richer insights into the link between executives' cognitive style and their acquisition of market and technological knowledge. Through this particular examination, this study gives more credence to the growing importance of the role of cognition in executives' behavior, and particularly their knowledge acquisition, in a resource-based view (Nag and Gioia, 2012; Marvel, 2012; Foss, 2012).

Based on the above discussion, executives armed with market and technology knowledge will gain capacity in finding and assessing new ideas and adopting new business models in order to optimize their firm's growth potential (George and Bock, 2011). Specifically, a firm can only grow if it is successful (Davidsson et al., 2002). To succeed in today's markets a firm needs to constantly develop value differentials in the

mind of its customers better than those of its rivals (Hitt et al., 2002). These value differentials are created based on the business model of the firm (Zott and Amit, 2010). The importance of market and technological knowledge in continuous value creation is reflected in the notion that today's constant market and technological changes intensify competition, increase replicability of existing business models, and result in shortened life spans for business models (Hamel, 2000). Therefore it has been argued that continuous growth depends on emphasizing new business models – a strategic choice known as business model innovation (Hamel and Getz, 2004; Bock et al., 2012).

Despite the importance of this issue the empirical research on the drivers of this choice is incipient in the literature (Zott et al., 2011; Bock et al., 2012). More specifically, most of the strategy research on innovation has so far focused on product and process innovation, not business model innovation (Casadesus-Masanell and Zhu, 2012). Therefore, by studying how executives' degree of market and technological knowledge impacts their emphasis on business model innovation, this study enriches this relatively unexplored side of literature.

Finally, although executives' behavior is a key determinant of firms' growth, it is also impacted by a concomitant consideration of strategies and the external environment (Wiklund, Patzelt, and Shepherd, 2009), and executives' environmental perception is instrumental to their behavior, particularly in today's dynamic landscape. Hodgkinson and Healey (2008) argue that perception of environmental dynamism (rate and magnitude of changes) could significantly influence the role of cognitive styles in executives' behavior. More notably, the function of executives' cognitive style differs in different levels of environmental dynamism (Chaston and Sadler-Smith, 2012). That is, the tendency to rely on intuitive or analytic behavior is influenced by the perception of dynamism (Hodgkinson and Healey, 2008, 2011). Therefore, perception of environmental dynamism was included in the research model as a moderator of executives' behavior, as it is more important to the behavior of executives than to the actual environment (Ashill and Jobber, 2010).

To examine these relationships, the context of Australian small and medium-sized firms (SMEs) in the manufacturing sector was chosen. This context represents a number of issues which make it appropriate and also significant for this study. First, targeting firms which are all Australian-based allows for a more homogenous population and

accordingly strengthens comparability across firms (Abebe, 2008). Second, the manufacturing sector has one of the greatest industry added values (IAV) to the Australian economy (Australian Bureau of Statistics, report on the Australian industry, 2011: 6). It also includes a large number of SMEs (91,400 at the end of the 2008–9 financial year; Australian Bureau of Statistics, business count report, 2010).

In addition, due to rising competition from imports from India and China, in particular, Australian manufacturing SMEs face growth challenges and need to adopt innovative strategies as a way to remain competitive and spur their growth (Terziovski, 2010). This study focuses only on manufacturing SMEs, as including both service and manufacturing firms in the study sample causes methodological challenges in terms of variable operationalization and hinders the degree of effective comparison amongst firms (Abebe, 2008). Moreover, developing and testing new theories in the domain of SMEs is advantageous because these firms have a relatively compact system of activities which make it easier to describe and examine causal inferences (Baker and Pollock, 2007: 298; Simsek and Heavey, 2011). It is also evident from the literature that there is a lack of insight and empirical work regarding how executives adopt business models to optimize performance and growth in the manufacturing industry in Australia's SMEs.

Finally, strategic leaders (executives) have been chosen as a unit of analysis for a number of reasons. First, SMEs' executives are the most knowledgeable informants about their firms (Ling et al., 2008; Mitchell et al., 2011). They also have the greatest power in the firm; thus their behavior, driven by their cognition, determines the key activities of the firm (Narayanan et al., 2011; Davidsson, Achtenhagen, and Naldi, 2010). Specifically, small businesses are more managerial personalized than large firms and are likely to be controlled by a single executive, owner, or founder. Hence, their behavior is generally seen as a direct translation of their executives' particular tendencies, with less impact from other stakeholders such as the board of directors (Majumdar, 2008; Curran and Blackburn, 2001). This makes the executive's cognition an essential endowment of an SME which directly influences the firm's growth (Maritan and Peteraf, 2011). Finally, it has also been well documented that unlike large firms, executives of small businesses are directly involved in both choosing and implementing strategies such as business model innovation (Ling et al., 2008). Thus, this context is assumed to be appropriate for empirically testing the proposed model. Figure 1 schematically shows the

conceptualization used in the research and table 1 summarizes the key constructs of the research; that is, direct and indirect relationships between executive cognitive style and firm growth. The indirect relationship is a linear relationship between executive cognitive style, acquisition of market and technological knowledge, business model innovation, and firm growth.

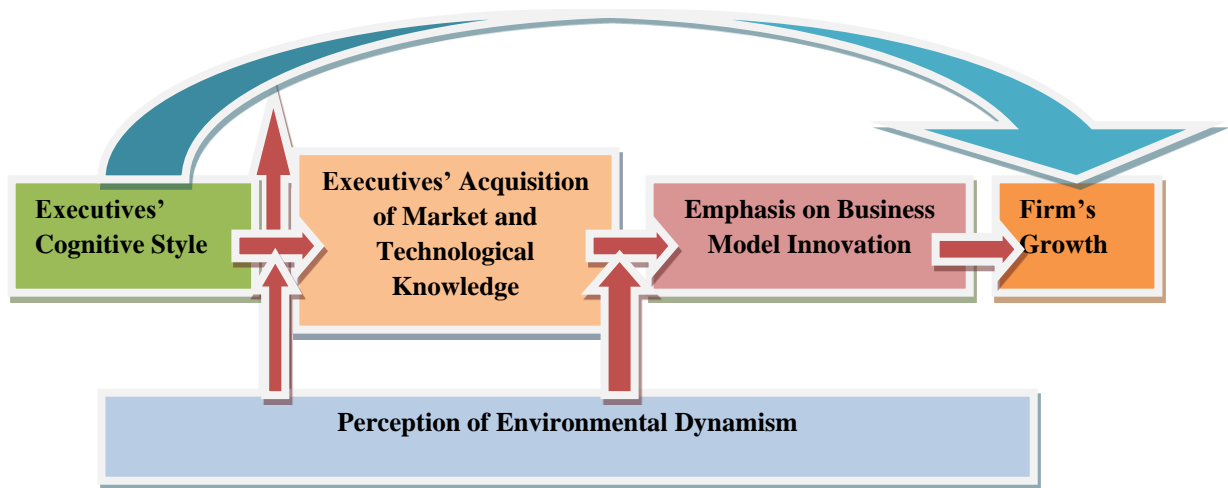


Figure 1: A Schematic View of the Logic of the Research

Table 1: Definition of research constructs

Construct	Definition	Source
Executives' cognitive style	Stylistic way executives have to perceive and interact with the environment and acquire and process information.	Armstrong, Cools and Sadler-Smith, (2012a)
Executives' acquisition of knowledge	Acquisition of knowledge from the external environment related to the operation of the firm.	Zahra and George, (2002)
Degree of Business model innovation	The emphasis that executives place on business model innovation in their firms	Aspara, Hietanen, and Tikkanen, (2010)
Firm's growth	An increase in the outputs of the firm.	Weinzimmer, Nystrom, and Freeman, (1998)
Perceived environmental dynamism	Executives' perception of the rate and magnitude of change in the business environment.	Miller, Ogilvie, and Glick, (2006)

1.3 Knowledge Gaps Within the Existing Literature

This research aims to address a number of gaps in the existing literature. First, although the role of executives in the growth of a firm has been a subject of research for decades (Penrose, 1959), there is still a lack of empirical research about the dual view of executives' cognitive style in the phenomenon of the growth (Chaston and Sadler-Smith, 2012). This can be linked to a broader lack of empirical knowledge about differences between intuitive and analytic aspects of executives' choice-making (Narayanan et al., 2011), particularly from the dual view (Armstrong et al., 2012a) in strategic cognition literature. It is believed that the current research advances this body of knowledge by examining differences between executives' intuitive and analytic styles and their impact on the growth of the firm from the dual view.

Second, research in the RBV (resource-based view) lacks adequate evidence on the role of executives' cognition in resource acquisition (e.g. Maritan and Peteraf, 2011; Wernerfelt, 2011), including knowledge (Friesl, 2011; Kraaijenbrink et al., 2010; Foss et al., 2010). Therefore, by examining how executives' cognitive style impacts on how they acquire knowledge under different environmental dynamisms, this research will contribute to the RBV literature. In addition, executives' knowledge has been argued to be a fundamental driver of growth (Penrose, 1959; Wiklund and Shepherd, 2003), specifically in small businesses (MacPherson and Holt, 2007). However, the existing research on small businesses offers very little evidence about how this knowledge comes into existence (Marvel, 2012) and what role the possession of different types of knowledge plays in the growth of a firm (Sullivan and Marvel, 2011a; Burgers et al., 2008). By examining how executives' acquisition of knowledge will contribute to the growth of the firm, this study furthers the understanding of these issues.

The third knowledge gap resides in the business model literature. Recent studies by George and Bock (2011) and Zott et al. (2011) underline the significance of the business model in the strategy and entrepreneurship literature, and particularly regarding the growth of the firm. This stream of research illustrates that the business model (BM) differs from the strategy, value chain, and profit logic of a firm and thus it offers a new lens through which to look at the strategic activities of the firm. However, this field still needs more empirical research from different perspectives, such as the role of executives in changing business models and their cognitive tendencies with regard to keeping the

current business model or adopting/developing new ones (Aspara et al., 2010, 2011; Chesbrough, 2010; Bock et al., 2012; Desyllas and Sako, 2013). The findings of this research will enrich the business model literature by generating new insights into the antecedents (interactions between cognition and knowledge acquisition of executives) and consequences of business model innovation (i.e. the growth of the firm).

This study will develop and test a framework for understanding the growth of the firm from the perspectives of executives' cognitive style and their acquisition of market and technological knowledge, with an emphasis on business model innovation. Therefore, in addition to the general contributions to the understanding of growth, the significance of the present research can be broken down into a number of contributions to different but related streams of research. This will be explained in the following sections.

1.4 Significance of the Research

The significance of this research is discussed through its contributions to five related bodies of knowledge and practical implications for executives as follows:

1.4.1 Contribution to the Growth Literature

Although firm growth has been the subject of ongoing research (Autio, Sapienza, and Almeida, 2000; Leitch et al., 2010), there is a perceived inadequacy of knowledge about causal links involved in the growth of the firm (Leitch et al., 2010; Achtenhagen et al., 2010). It has also been argued that untangling the complexity of firm growth requires insights from different perspectives (Wiklund et al., 2009). This study enriches the understanding of factors involved in firm growth by proposing and testing a new combination of variables including the role of executives' cognitive style in the growth of the firm directly and indirectly through executives' knowledge acquisition and their emphasis on business model innovation. This research will generate new insights into causal mechanisms that drive firm growth.

1.4.2 Contribution to the Resource-Based Theories

The resource-based theory of the firm (RBV), and its extension, the knowledge-based view (KBV), considers knowledge as a specific resource, which tends to be both the most useful and problematic because it is both intangible and non-rivalrous, meaning that it cannot be effectively bought in the market, and its acquisition and deployment by a party (e.g. an executive) does not prevent others from acquiring and using it for similar or

different purposes (Foss, 2005; Kraaijenbrink et al., 2010). In addition, these theories do not explain how and where resources in the firm, such as knowledge, come into existence (Garbuio et al., 2011; Maritan and Peteraf, 2011; Wernerfelt, 2011).

To address this limitation and extend the boundaries of RBV and KBV, scholars have recently tried to determine how executives' cognition enables them to acquire knowledge (Maritan and Peteraf, 2011; Nag and Gioia, 2012). This study contributes to this field of inquiry by examining the relationships between executives' cognitive style and their acquisition of market and technological knowledge. Therefore, this research enriches the literature on resource (knowledge) acquisition and the emergence of knowledge asymmetries amongst executives and, by implication, amongst firms (Kraaijenbrink, Spender, and Groen, 2010; Marvel, 2012).

1.4.3 Contribution to the Strategic Cognition Literature

The strategic cognition perspective (SCP) explains how firms' strategies and performance outcomes are influenced by the cognitive factors of their strategic leaders (i.e. executives) (Narayanan et al., 2011; Kaplan, 2011). This field of research has received considerable attention from scholars studying issues such as cognitive maps, schema, organizational identity (Narayanan et al., 2011) and the unitary view of executives' cognitive style (Allinson and Hayes, 2012). However, it has recently been argued that the difference between analytic and intuitive cognitive style is still a domain in need of more empirical evidence (Narayanan et al., 2011; Armstrong et al., 2012a; Hodgkinson and Healey, 2011). This concern appears to be even more important in respect of the dual view of cognitive style (Armstrong et al., 2012a). Consequently, this research will contribute by providing new insights into the role of executives' cognitive style in their strategic choice-making and the consequent growth of the firm as a key firm-level outcome.

1.4.4 Contribution to the Business Model Literature

The business model literature is in a formative stage (George and Bock, 2011). The existing body of research about business models mostly consists of conceptual or qualitative case studies of large firms (Zott et al., 2011) with a few exceptions such as Zott and Amit (2007, 2008) and Aspara et al. (2010, 2011a, b). Within this literature, the adoption of new business models, known as business model innovation (BMI), is an emerging theme that has not been studied adequately (Casadesus-Masanell and Zhu,

2012; Schneider and Spieth, 2013; Lambert and Davidson, 2012). Existing studies have mostly examined whether firms have been involved in business model innovation or not (Bock et al., 2012); thus, the notion of the degree of managerial emphasis on business model innovation has been largely ignored (Aspara and Tikkanen, 2013). Accordingly, this research will advance the existing body of knowledge on firms' business model strategies in the following two ways:

First, this study relates the degree of emphasis on business model innovation to executives' market and technological knowledge and their cognitive style under different environmental dynamisms. Thus, it enriches the currently limited knowledge on firms' business model dynamism from the executives' perspectives (George and Bock, 2011; Zott et al., 2011; Teece, 2010). Second, it examines the role of business model strategies in the growth of the firm and accordingly extends and adds to the studies by Aspara et al. (2010) and Zott and Amit (2008) in which different business model strategies have been related to the financial performance of firms. This is consistent with suggestions by Zott et al. (2011), Wiklund et al. (2011) and George and Bock (2011) that there is insufficient empirical knowledge on the role of business models strategies in strategy literature, and hence studying this issue would be significant for future research in both strategy and entrepreneurship.

1.4.5 Contribution to the Small Business Literature

Firm growth continues to be a central issue in the small business literature (Davidsson et al., 2010; Dobbs and Hamilton, 2007). It has been argued that the process of firms' growth differs from small to large and young to established firms (McKelvie and Wiklund, 2010). Literature suggests that SMEs tend to adopt an organic mode of growth (Macpherson and Holt, 2007; Dobbos and Hamilton, 2007) – that is, growth through acquiring new resources and developing internal processes or internal growth (McKelvie et al., 2006), which is driven by acquiring knowledge about markets and technologies that fits current activities of the firm (Sullivan and Marvel, 2011).

The existing literature on small firms' organic growth is limited (Davidsson et al., 2010), particularly from the perspectives of executives' attributes and choice-making (Wright and Stigliani, 2012). Hence, this study aims to advance the body of knowledge in this field through a model that links leadership, entrepreneurship, executives' cognitive

style, their knowledge asymmetries, and differences in business model innovation emphasis under different environmental dynamisms.

Finally, Penrose (1959) theorized that growth is driven by executives' knowledge. This theory was, however, aimed at explaining the growth of large firms. This study contributes to the small business literature by using Penrose's ideas and extending them to cover underemphasized issues regarding how executives' knowledge asymmetries are formed based on their cognitive style and how they matter in driving differential growth outcomes amongst small and medium-sized manufacturing firms. This would also allow this study to enrich the limited literature on the growth of Australian manufacturing SMEs.

1.4.6 Managerial Contributions

In addition to the theoretical contributions, this study will provide a set of practical insights based on the findings. SMEs are increasingly under competitive pressure from both larger firms and other small firms (Leiblein and Madsen, 2009; Lubatkin et al., 2006; Lin and Shih, 2008; Blackburn and Kovalainen, 2009). Resource restrictions and liabilities of smallness can be regarded as two antecedents of this situation (Blackburn and Kovalainen, 2009). These impact executives' choices (Barreto, 2010), such as those regarding business model strategies (George and Bock, 2011; Gregoire et al., 2011), and ultimately the growth potential and abilities of these firms (Davidsson et al., 2010). The findings of this study can be used in at least two ways by executives and other practitioners as inputs to enhanced decision-making regarding these challenges.

First, this study will help executives gain new insights into the association between their cognitive style and their engagement in activities that will enable them to acquire market and technological knowledge as a tool to enhance their choice of the right business model for stimulating growth. Second, developing the right business model based on different market and technological knowledge is a prerequisite of achieving competitive capabilities (Katkalo et al., 2010; Teece, 2010; Phillips, 2011). Thus, managers must be able to understand the strategic importance of business model innovation and the role of updated knowledge in doing so (Burgers et al., 2008; Johnson et al., 2008; Casadesus-Masanell and Ricart, 2011). Existing literature offers very little empirical evidence on these issues (George and Bock, 2011).

To sum up, the findings are expected to equip executives with new knowledge regarding how their cognition and specifically different reliance on intuitive and analytic thinking in the face of environmental dynamism can be used effectively in acquiring marketing and technological knowledge in order to choose the right business model strategy as a key way to enhance growth and competitiveness.

1.5 Research Questions

Based on discussion of gaps within the existing literature, and the rationale of this study, two research questions have been developed for this study:

RQ 1: How does the duality of executives' cognitive styles explain their difference in growth-driving behavior under different environmental dynamisms?

That is, executives' different cognitive styles would have different impacts on the growth of their firm under different environmental dynamisms.

RQ 2: How does the interplay between executives' degree of knowledge acquisition and the emphasis on business model innovation mediate the relationship between their dual cognitive style and the growth of their firm under different environmental dynamisms?

That is, executives' degree of knowledge acquisition and subsequent emphasis on business model innovation serves as a conduit through which their cognitive style impacts the growth of the firm under different environmental dynamisms. These questions delineate the theoretical and practical contributions of this study. Chapter three will elaborate further on these questions by proposing a set of hypotheses within a theoretical model.

1.6 Overview of the Research Design and Methods

This research employs a concurrent mixed-methods research design consisting of two phases: 1) simultaneous collection of quantitative and qualitative data and 2) analysis and synthesis of data to corroborate and cross-validate (Creswell, 2003). According to this design, the main objective is to use different qualitative and quantitative methods in an attempt to complement, confirm, cross-validate, and corroborate findings in one study to

develop a more complete explanation for a phenomenon (Creswell, 2003). Chapter four will explain the design and conduct of this methodology.

1.7 Organization and Outline of the Thesis

This dissertation is organized into seven successive chapters. The structure of the dissertation can be explained as follows:

Chapter one outlines the aim and rationale of the study, the gaps in the existing literature, key concepts, research questions, significance and the structure of the dissertation. In particular, the rationale for the focus on SMEs is provided. Chapter two is dedicated to the literature review and explains the cognitive basis of executives' strategic choices, cognitive style, business model and business model innovation, the resource-based view, the knowledge-based view and knowledge acquisition, firm growth, and environmental dynamism. It explains the existing body of knowledge on SMEs and their strategic behavior as the empirical setting of the research. Chapter three discusses the conceptual model of the research and proposes a set of hypotheses. Chapter four explains the methodology of the research and is divided into three sections: in the "firms" section, the rationale and conduct of the concurrent mixed-methods design is explained. In the second part, the design and conduct of the quantitative section is explained, and in the third section the design and conduct of the qualitative section is discussed. Chapter five addresses the analysis of the quantitative and qualitative data respectively. Chapter six includes the final discussion and synthesis of findings. Finally, chapter seven concludes the findings of the research, draws attention to the implications of the study and underlines potential directions for future research. Figure 2 below shows the roadmap of the chapters as explained.

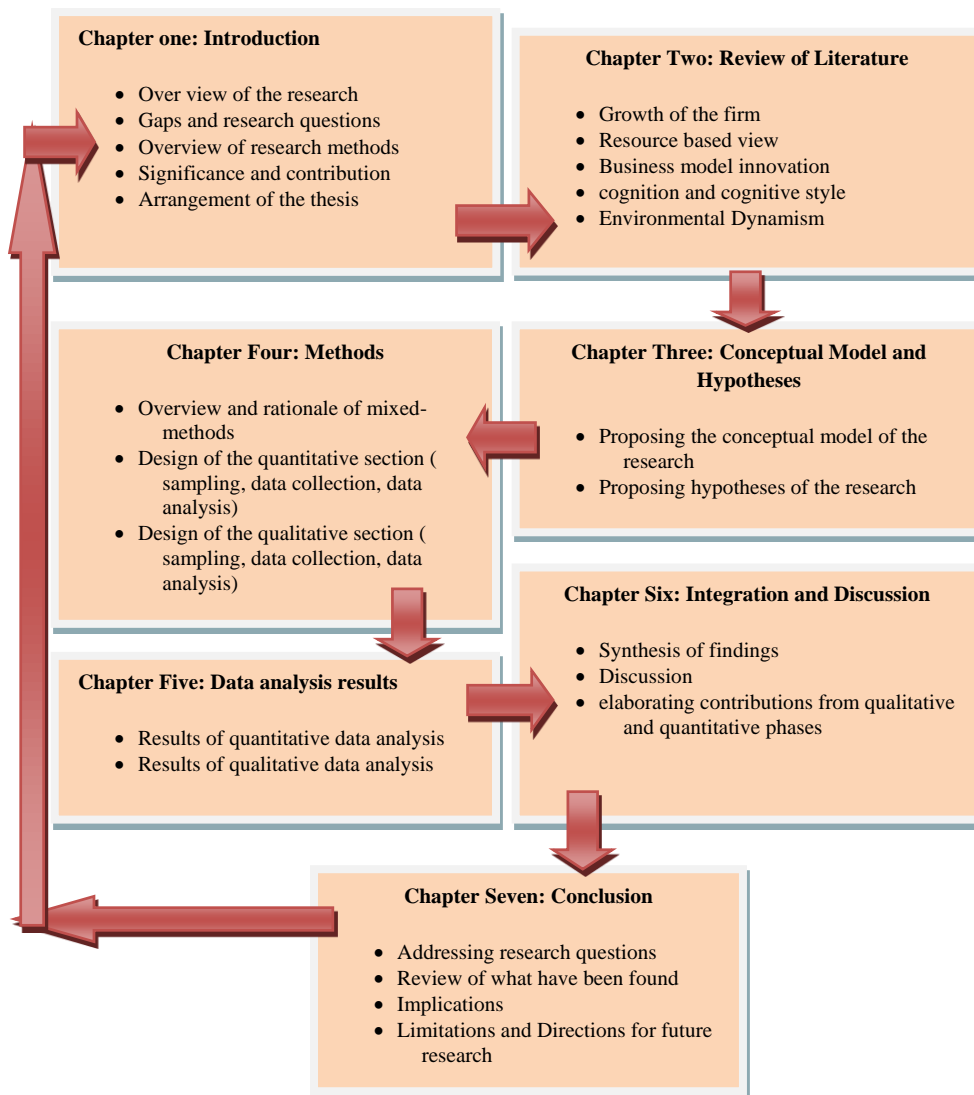


Figure 2: Organization of the thesis

1.8 Summary of the Chapter

This chapter formed the introductory part of this dissertation. It addressed the conceptual building blocks of the research and explained the main gaps in the body of literature. Accordingly, the significance of the research and its contributions were discussed. Then research questions were proposed. Finally, the outline of the dissertation was illustrated.

-CHAPTER TWO-

Review of the Literature

2.1 Introduction

This chapter provides the background of the research by reviewing literature in a number of distinct but related strands. In particular, drawing upon the research objectives and questions as discussed in chapter one, five bodies of literature will be reviewed:

1. Growth of the firm, with special attention to small businesses.
2. Managerial (executive) cognition, with a special emphasis on the dual-information-processing view of executives' cognitive style.
3. Knowledge as a resource and acquisition of knowledge from the resource-based view, knowledge-based view, absorptive capacity, dynamic capabilities, and managerial and organizational learning.
4. Business model of the firm, business model innovation, and the choice of strategic emphasis on business model innovation.
5. The concept of environmental dynamism and its relevance to the behavior of executives.

The results of this review will be applied in developing the theoretical model and proposing hypotheses in the next chapter. Figure 3 illustrates the outline of the literature review in this research.

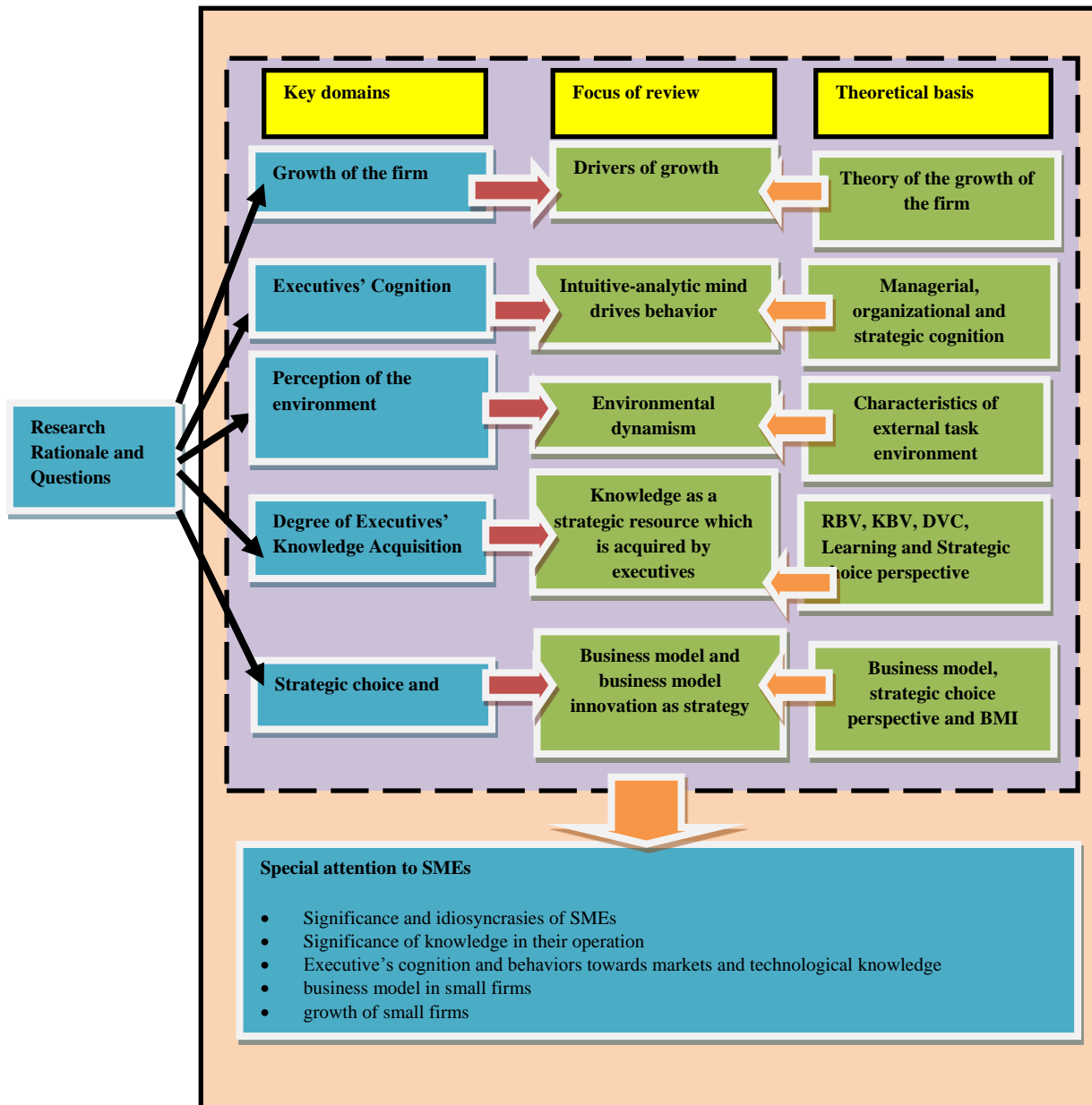


Figure 3: A schematic outline of the literature review

2.2 Growth of the Firm

Firm growth has been the subject of rich and ongoing research in business literature (Weinzimmer, Nystrom, and Freeman, 1998; Bahadir, Bharadwaj, and Parzen, 2009). Over the past few decades, scholars in economics (Williamson, 1966; Penrose, 1955; Baumol, 1962), sociology (Whetten, 1987; Sandell, 2001; Lazerson, 1988), strategic management (Carman and Langeard, 1980; Birley and Westhead, 1990; Buckley and Casson, 2007; Alessandr, Tong, and Reuer, 2012) and entrepreneurship (Davidsson, 1991; Davidsson, 2010; Henderson, 1995; Jarillo, 1989; Wiklund, Davidsson, and

Delmar, 2003) have advanced the understanding of firm growth. The popularity of the topic can be largely attributed to the salience of firm growth to the economic well-being of a nation in general and the dynamism of markets and industries in particular (Storey, 1994; Shane, 1996; Mishina, Pollock, and Porac, 2004). Therefore, it is not surprising that scholarly interest in firm growth continues to increase as new theoretical and empirical explanations emerge and open up new venues for research (Shepherd and Wiklund, 2009). In this spirit, this section intends to provide a review of the literature on this subject.

2.2.1 Definition of growth: Growth versus Performance & Profitability

According to Penrose (1959: 1), “The term ‘growth’ is used in ordinary discourse with two different connotations. It sometimes denotes merely increase in amount; for example, when one speaks of ‘growth’ in output, export, and sales. At other times, however, it is used in its primary meaning implying an increase in size or improvement in quality as a result of a process of development, akin to natural biological processes in which an interacting series of internal changes leads to increases in size accompanied by changes in the characteristics of the growing object”. That is, growth becomes a “more or less incidental result of a continuous ongoing or unfolding process” (ibid). Growth is hence inherently a dynamic measure of change in the amount and state of something over time (Weinzimmer et al., 1998; Davidsson, Achtenhagen, and Naldi, 2007).

Thus, the growth of a firm represents how it forms its long-term survival by accumulating factors (i.e. increased amounts) that drive its success in the market in an evolutionary way (Achtenhagen et al., 2010). Growth has consequently been regarded as one of the dimensions of a firm’s performance (Moreno and Casillas, 2008; Weinzimmer, Nystrom, and Freeman, 1998). However, it cannot necessarily be assumed that an increase in performance also means an increase in growth, or vice versa (Birley and Westhead, 1990). Performance, on the other hand, is an indicator of the effectiveness of a firm’s operation (Venkatraman and Ramanujan, 1986). Effectiveness means how a firm operates effectively in the present and prepares for the future in order to maintain its fitness in a changing environment (Hitt, 1988).

Generally speaking, organizational effectiveness is a function of goal attainment (Georgopoulos and Tannenbaum, 1957). Goal attainment leads to fulfillment of the needs and demands of stakeholders (i.e. employees, owners, and members of general society

with whom the organization transacts) and results in performance (Friedlander and Pickle, 1968). Therefore organizational effectiveness leads to performance and growth is an indicator of performance (Venkatraman and Ramanujan, 1986; Hambrick and Mason, 1984; Weinzimmer et al., 1998).

In industrial organizations, this goal attainment is measured in terms of productivity and profitability (Georgopoulos and Tannenbaum, 1957; Steers, 1975). Productivity and profitability are two closely related components of performance, known as non-financial (operational) and financial performance, respectively (Venkatraman and Ramanujan, 1986). Growth then occurs when a firm converts its financial and operational performance into increases in size in terms of both financial and non-financial (operational) areas such as market share, product portfolio, assets, or employment (Weinzimmer et al., 1998). Therefore performance can be translated into financial growth or growth in size (Whetten, 1987). Financial growth refers to the increase in particular financial indicators of the firm, such as sales, return on assets, market share, etc., whereas growth in size refers to the increase in employment (i.e. number of employees of the firm; Achtenhagen et al., 2010). This indicates that growth must be distinguished from profitability and performance. Debates about the definitions of performance, profitability and growth and their relationships have not been settled yet (Richard et al., 2009; Achtenhagen et al., 2010). More specifically, growth means performance but performance does not necessarily mean growth. Furthermore, effectiveness points to short-term success but growth indicates long-term survival (Steers, 1975; Hitt, 1988) – that is, a growing firm is presumably effective and able to survive in the long run by staying fit, but an effective firm is not always a growing one (Steers, 1975; Friedlander and Pickle, 1968). Finally, a firm can be profitable but remain the same size or maintain its market share (Capon, Farley, and Hoenig, 1990; Weinzimmer et al., 1998).

In an attempt to untangle this debate, Davidsson, Steffens, and Fitzsimmons (2009) argue that growing profitably is different from growing from profit. More specifically, growth without securing profit does not lead to sustained success, whereas securing profit may lead to a temporary period of low growth, but will eventually result in high sustained growth. It must be noted that this issue goes beyond the scope of this research. So, the present research adheres to the profitable growth logic (Davidsson et al., 2009), suggesting that profit will lead to growth. The reason for choosing this logic as the basis

for the current research is that profitable growth is a key assumption in Penrose's growth theory and subsequent resource-based theories (Barney and Clark, 2007). Having defined growth and its relationship with profitability and performance, in what follows, key concerns in understanding the dimensions of growth and its measurements in business studies will be illuminated.

2.2.2 Dimensions of Growth

As noted, Penrose conceived growth as an increase in the amount or quality of a firm's output. It is inherently a change over time which could happen in different dimensions of a firm's output (Weinzimmer et al., 1998). Following this tradition, scholars have conceptualized and measured different dimensions of growth. For instance, Murphy, Trailer, and Hill (1996), through a review of research in entrepreneurship from 1987 to 1993, found that the main dimensions of growth had been: a) change in sales, b) change in employees, c) change in market share, d) change in net income margin, e) change in CEO/owner compensation, and f) change in labor expense to revenue. From a broader perspective which, in addition to entrepreneurship, included management and strategy literature from 1981 to 1992, Weinzimmer et al. (1998) showed that increases in sale or revenue are the most common dimensions of growth, followed by increased number of employees. Delmar (1997) also reviewed growth literature from 1989 to 1996 and reached similar results, arguing that increased sales or turnover are the most common dimensions of growth, followed by increased number of employees and increased profit.

Delmar further argued that composite measures of growth that unify different dimensions could result in a better understanding of growth. More recently, in an updated review of growth literature from 1997 to 2008, Achtenhagen et al. (2010) found that sale and number of employees are still the most important dimensions of growth, but combinations of different dimensions have also increasingly been used. Achtenhagen et al. (2010) concluded that growth in practice can be dimensionalized as a) change in the number of employees, b) change in sales, in terms of sales from existing market segments, from new customers, from new products, or from new markets, and c) change in profit in terms of net profit margin, return on asset, return on equity, and also change in the total value of the firm. The main point derived from this variety in the dimensions of growth is that the use of a combination of dimensions is recommended over single-dimension measures because it appears to create a more accurate picture of a firm's

growth (Delmar, 1997; Achtenhagen et al., 2010; Davidsson et al., 2010; Anderson and Eshima, 2013).

Having considered these different dimensions of growth, the literature also indicates that growth can be conceptualized as absolute and relative. These two distinct conceptions have different connotations for studying growth.

2.2.3 Absolute Versus Relative Growth

It is to be noted that, size such as market share, profit, or number of employees is an absolute concept whereas growth as change in the size over a period of time is a relative concept (Whetten, 1987; Achtenhagen et al., 2010). This conceptual distinction makes a difference when measuring growth (Delmar, 1997). Therefore, when absolute change as a number is measured between two observations, the result is absolute growth, while when the rate of change is calculated, the result becomes growth rate or relative growth (Weinzimmer et al., 1998). Accordingly, “using absolute growth, a large firm would be likely to realize greater growth, in terms of size, compared to a small firm (e.g., a firm with \$2 billion in sales is more likely to increase sales by \$100 million in a given time period than a firm with \$200 million in sales). Conversely, using growth rates, a small firm would be likely to realize greater growth, in terms of percentage changes, compared to a large firm (e.g., a \$100 million increase in sales represents 5% growth for the \$2 billion firm, but 50% growth for the \$200 million firm). Therefore, depending on the formula used to measure growth, organizational size would have a positive impact on absolute growth and a negative impact on growth rate” (Weinzimmer et al., 1998: 240). Hence, in small business literature, relative growth is preferred (Davidsson et al., 2010).

Another aspect of relative growth is the competitive view, which refers to the growth of a firm compared to or relative to its competitors (Achtenhagen et al., 2010). This view has received remarkable attention in the strategy literature due to the notion that strategy concerns the competitive advantage of a firm (e.g. Wiklund and Shepherd, 2003; Anderson and Eshima, 2013; Aspara et al. 2010) and positive growth relative to industry rivals is an indicator of superior performance and competitive advantage (Barney, 1991). Furthermore, this comparison could be used to assess how executives perceive their industry and competitive landscape (Anderson and Eshima, 2013). It is however a subjective assessment which has both psychological limitations and advantages (Achtenhagen et al., 2010). For instance, comparative growth has a motivational

influence on the responsiveness of executives, but could be subject to systematic biases and random differences in interpretations (Weinzimmer et al., 1998). This issue will be further discussed in chapter four.

In conclusion, it has been argued that growth is different from profitability and performance, and it can be also measured in various ways. Chapter four will show how the present study takes these issues into consideration. Having defined firm growth, in the next sections the theoretical foundations of growth will be addressed.

2.2.4 Endogenous Versus Exogenous Theories of Growth

A review of literature concerning firm growth points to two theoretical perspectives about the impetus for growth: exogenous and endogenous. Exogenous growth has its roots in the neo-classical explanations of growth in economics and organizational ecology (Hannan and Freeman, 1977). It assumes that growth is a function of factors which impinge from outside (Romer, 1994). These factors may include supply of land, changes in governmental rules and regulations, such as taxation and incentives, and salary and wage standards which may create opportunities for growth or limit the growth of the firm (Romer, 1987). Given these economic factors, the business and management literature points to two groups of factors: first, from the industrial organization theory (IO), attributes of the industry such as barriers to entry, bargaining power of customers and suppliers, and number and concentration of firms have been argued to determine firm growth (Porter, 1980, 1985). Second, from the organizational ecology view, environmental characteristics such as resource munificence, complexity, and uncertainty impact the dynamism of growth in a population of firms (Hannan and Freeman, 1977; Bahadir, Bharadwaj, and Parzen, 2009). Taken together, the exogenous view suggests that key drivers of growth are beyond the control of individuals in the organization and thus the growth of the firm is exogenously controlled and ultimately limited by the environment (Bharadwaj, Clark, and Kulviwat, 2005). So, firms are swept along by events in their external environment (Knockaert et al., 2011). According to this view, the managerial role is unnecessary in driving growth because firms' growth tends to follow a random-walk model (Helfat et al., 2007).

On the contrary, the endogenous view suggests that growth is mainly driven by human actions inside the organization through accumulation and utilization of knowledge (Romer, 1986; Bharadwaj et al., 2005). This view gives prominence to the choice-making

(i.e. actions) of executives and acquisition of knowledge in firms as core factors of growth (Bharadwaj et al., 2005). Consequently, since knowledge is a limitless and non-depleting resource and in fact increases with use, the endogenous view implies that growth can also be limitless (Bharadwaj et al., 2005). So, unlike the former view, this one assumes that the managerial role is necessary and, indeed, growth is not a non-random phenomenon but can, by contrast, be predicted based on the abilities of executives or top managers of the firm (Hambrick and Mason, 1984; Helfat et al., 2007). Accordingly, this school of thought associates firm growth with strategic choice and managerial discretion (Hambrick, 2007). Therefore growth is not entirely constrained by environmental determinism; rather, it can be contained within an action-deterministic view of managerial behavior (Knockaert et al., 2011; Helfat et al., 2007; Penrose, 1959; Chaston and Sadler-Smith, 2012).

However, in reality both exogenous and endogenous factors impact the growth of a firm (Pitelis, 2009; Delmar, 1997). On the one hand, external factors such as legal (i.e. regulatory) and socio-cultural aspects may limit firms' abilities to acquire and use resources, including knowledge (Sethi, 1979; Basu and Goswami, 1999); on the other, managers may create new values and generate new possibilities for growth (Bharadwaj et al., 2005). This is the conventional view in the contemporary business and management literature (Child, 1972; Hambrick and Mason, 1984; Helfat et al., 2007). In this understanding, this study employs the theory of firm growth which tends to place more attention on endogenous forces. This is the main theory of growth in the business literature, because it puts the actions of executives at the center of attention.

2.2.5 Theory of the Growth of the Firm

First it is to be noted that, throughout this research the terms 'organization', 'firm' and 'enterprise' are used interchangeably, following the convention in strategic management and entrepreneurship (Rumelt, Schendel, and Teece, 1991). The theory of the growth of the firm (TGF) was developed by Edith Penrose (1955, 1959, and 1960). Penrose (1959) conceived firms as repositories of both administrative resources, in the form of managerial services (i.e. actions of executives), and productive resources (i.e. capital, machinery, knowledge, etc.). The principal role of executives is to find growth opportunities and acquire, develop, and deploy productive resources to find and pursue optimal patterns of growth (Rugman and Verbeke, 2004). These abilities determine the

paths and speed (rate) of firm growth (Lockett, 2005). In other words, the key difference between the evolution of firms and that of markets is that firms are regulated by different managerial services that executives bring to the firm, known as administrative models, while markets are not (Penrose, 1959; Pitelis, 2009). This explanation will suffice for the purpose of this research. A more complete explanation of administrative models is presented in appendix 3.

These services can be further divided into strategic and entrepreneurial services. Strategic services address the way in which resources are used, whereas entrepreneurial services are concerned with identification of growth opportunities (Penrose, 1959; Pitelis, 2009). Therefore, executives attempt to find different ways of using the resources controlled and owned by their firm towards exploiting growth opportunities (Lockett, 2005). Growth opportunities originate from subjective assessment of the “productive opportunity set” (Lockett et al., 2011: 49) – that is, “all of the productive possibilities that executives see and can take advantage of” (Penrose, 1959: 31). Furthermore, according to Penrose, “at all times there exist, within every firm, pools of unused productive services and these, together with the changing knowledge of management, create a productive opportunity which is unique for each firm” (p. 85). These unused resources are known as “idle” or “slack.” They exist because it is impossible for the firm to acquire the exact required amount of resources (Moreno and Casillas, 2008).

Therefore, different firms with similar resources can realize growth potential differently (Pitelis, 2007; Lockett, 2005). In other words, even with the same resources, different executives may bring different services to their firm and govern growth differently (Kor, Mahoney, and Michael, 2007). Central to these differences in the activities of managers is the concept of ‘adjustment costs’ (Penrose, 1959) – that is, the time and effort required to integrate managers and operations in the expansion of a firm’s activities (Lockett et al., 2011: 49). These costs are incurred when executives attempt to acquire firm-specific knowledge and use it to exploit productive opportunities (Kor and Mahoney, 2005; Bradley, Wiklund, and Shepherd, 2011). Therefore growth is a dynamic interactive phenomenon between executives, the business environment, and the resources of the firm (Mishina et al., 2004; Kor and Mahoney, 2005).

This explanation implies that growth is a function of various components which do not scale proportionally. That is, for instance, while a firm’s marketing resources may be

exhausted, it might have unexploited capacity in production or other areas that can stimulate and drive growth (Kogut, 2008: 29). Therefore growth is ultimately dependent on the perceptual and administrative potency of executives. Specifically, Penrose further observed that firm growth is not limited by market forces such as demand, but it is limited by the growth of knowledge, specifically managerial knowledge within the firm (Penrose, 1959: xvii) – a principle which is known as the Penrose effect (Tan and Mahoney, 2007).

Given this, two criticisms of Penrose's theory are: first, it assumes that executives are always able and willing to exploit growth opportunities (Bradley et al., 2011). More specifically, in the economics literature it is assumed that all executives are profit-maximizers, and hence their growth attitude is taken for granted (Wiklund, Patzelt, and Shepherd, 2009). In reality, this is not always true, as executives' motivations, willingness and ability to make adjustments to firms' resources, products and productive methods are strategic components that are functions of numerous situational and behavioral variables (Hambrick, 2007; Boone, Brabander, and Witteloostuun, 1996). Second, Penrose assumes that resource slack is central to growth (more slack resources result in more growth). This assumption implies that firms with little slack resources (i.e. resource scarcity), such as small firms, cannot grow. However, research has shown that small firms can gain exemplary growth even with scarce resources (Delmar et al., 2003; Moreno and Casillas, 2007). In other words, evidence suggests that the abilities and attributes of executives, and specifically their opportunity identification and exploitation, could outweigh resource slack in driving the growth of a firm (Bradley et al., 2011; Davidsson et al., 2010) and compensate for resource shortages in resource-poor firms (Delmar et al., 2003).

The theory of the growth of the firm also addresses modes of growth – that is, growing through internal development (organic) or by acquiring other firms (acquisitive). This issue goes beyond the scope of this research. However, a detailed discussion on the modes of growth, as well as a stage view of growth and its non-linearity, are available in appendices 4, 5 and 6, respectively.

2.2.6 Growth of Small Businesses

In the theory of the growth of the firm (TGF), Penrose (1959) devotes a section to small firms and argues that the main TGF is basically for large firms however small firms have also the ability of pursuing productive opportunities and grow. The process is ,

however, different in some aspects from large firms (p., 193-194). In this section, Penrose's ideas on the growth of small firms are reviewed and related to recent research on the growth of small firms.

To begin, it seems appropriate to briefly define what a small business means. A small business is a socio-economic unit consistent with the notion of the firm as defined previously. However, a small business has the following distinctive characteristics: 1) economically it has a relatively small share of the market; however, it may have a substantial share of its specialized niche local markets; 2) managerially, it is basically administered by a single owner, executive or group of part-owners in a relatively non-formal and personalized way, rather than through formalized structures as in large firms; and 3) it is independent and autonomous, in the sense that it is not part of a larger enterprise and hence its owners/managers are free from outside control in their actions (Stanworth and Curran, 1976: 96).

Furthermore, the size of small firms is both an advantage and a disadvantage. It is advantageous because their small size allows these firms to be relatively flexible and enter niche markets which large firms do not dare to enter, hence gaining closer proximity to customers (Storey, 1994). It is also disadvantageous because it is limiting (a strategic liability), which precludes these firms from investing in research and development, acquiring and developing technologies, and achieving economies of scale and scope (Storey, 1994). Therefore, small firms tend to grow organically by increasing their internal capacities rather than acquiring other firms (Lockett et al., 2011).

Penrose (1959) acknowledges these advantages and disadvantages and argues that small firms continue to exist and can grow in markets for of four basic reasons: "1) some economic activities are unsuited for large firms such as those which require fast adaptation to changing environment, small plants, close personal attention to customers, etc. So, small firms are formed to tap into opportunities raised by these conditions. 2) Under some circumstances large firms as a matter of public relationships permit and protect existence of small firms in an industry. 3) In some industries entry is very easy and so, many hopeful businessmen establish firm which leads to existence, at any time, of many small firms and finally, 4) in the development of some industries some small firms get a start because the bigger firms have not got around to mopping them out" (p. 194). So, Penrose assumes that four issues create opportunities, also known as interstices,

which are to be tapped by small firms. (The discussion on the co-existence of small and large firms is further elaborated in Appendix 7).

Given the above, it can be seen that in Penrose's theory, opportunities exist and thus are to be discovered (Penrose, 1959: 189). The small business and entrepreneurship literature also indicates that opportunities can be non-existent and thus must be created by a creative and imaginative mind (Alvarez and Barney, 2007). Accordingly, both opportunity discovery and creation can be sources of growth (Dimov, 2011). Hence, opportunity alertness and similar related attributes such as the ability to perceive opportunities and the efficacy to act upon them have been suggested to drive the growth of the firm in the small business context (Corbett, 2007).

To conclude, this research maintains that the size of a firm is a function of its growth process, and the growth process itself is a function of enterprising management of executives (Davidsson et al., 2010; Fuller and Moran, 2001) – that is, their continuous exploration and exploitation of productive opportunities. In fact, without these enterprising activities, growth is precluded (Penrose, 1959: 8). Research also suggests that in resource-poor firms, such as small firms, executives' innovative use of resources could be even more important than the availability of resources (Moreno and Casillas, 2007).

2.2.6.1 Empirical Research on the Growth of Small Businesses

Following the discussion in the previous section, existing empirical literature on the growth of small firms can be broadly classified into four categories. The first category contains studies that are concerned with the growth-driving factors of executives (manager-owners, founders of small businesses). The second category is about the strategies of small firms. The third category addresses the attributes of small firms and the last one discusses external (industrial) factors that may facilitate or hinder growth.

Although executives' attributes is the most researched category in the small business and entrepreneurship literature (Davidsson et al., 2010), it cannot be separated from factors addressed in other categories. This is because executives' attributes are a necessary but not sufficient condition for growth (Davidsson et al., 2007). Therefore, this section briefly reviews these four categories.

In respect to executives' attributes, scholars have related numerous factors to the growth of the firm. For instance, empirical evidence suggests that executives' aspiration

(Wiklund and Shepherd, 2003a), willingness to grow (Davidsson, 1989 a,b), motivation (Miner, 1990), intention (Kolvereid and Bullvåg, 1996), experience (Storey, 1994), education (Wiklund and Shepherd, 2003a), functional skills (Baum, and Locke, 2004), personal values (Tomczyk, Lee, and Winslow, 2013), social capital and networks (Sullivan and Marvel, 2011b), entrepreneurial self-image (Verheul, Uhlaner, and Thurik, 2005), self-efficacy (Baum and Locke, 2004), communicating vision (Baum, Locke, and Kirkpatrick, 1998), and transformational leadership style (Ling et al., 2008) positively influence the growth of small firms.

In this regard, one factor which has received relatively less attention is executives' tendency to rely on intuitive thinking (Chaston and Sadler-Smith, 2012). This factor has been argued to influence the enterprising management activities of executives, such as sensing and seizing of opportunities (Armstrong and Hird, 2009; Armstrong et al., 2012a,b). The essence of this tendency is captured in the concept of executives' cognitive styles (Sadler-Smith, 2004).

Despite the role of these factors, the literature is still uncertain about the relative importance of each (Davidsson et al., 2010). For instance, Storey (1994) reported a significant role for the executives' education and experience in firm growth, while Davidsson (1989a) found a relatively weak correlation between executives' experience, education, and firm growth. Wiklund and Shepherd (2003a) explained this inconsistency from the aspiration perspective. They argued that high growth aspiration strengthens the link between experience, education, and firm growth. Kolvereid and Bullvåg (1996) also argue that the intensity of the positive link between growth intention, growth motivation, and actual growth is contingent upon the nature of the entrepreneurial choices made by executives. With respect to the cognitive style, literature also suggests that growth is enhanced when reliance on intuition is reflected in intuitive choices (Chaston and Sadler-Smith, 2012).

Therefore, it is evident from the literature that executives' attributes enhance the growth of their firms when they are used in activities that drive growth, such as choices to exploit opportunities. This understanding has been elaborated in different ways. For instance, Davidsson (1989a) states that "to the extent the owner-manager has a choice, going for growth is more entrepreneurial than not doing so when both alternatives are feasible." Jovanovic (1982) also contends that individuals possess different innate

abilities but imperfect capacities to use them in managing the growth of a business enterprise. This leads to the second category of factors, which addresses the different choices that executives make in the form of strategies in order to spur the growth of their firms.

Strategies that drive the growth of small business have also received considerable attention (Carman and Langeard, 1980; Taylor et al., 1990; Eisenhardt and Schoonhoven, 1990). Generally speaking, this literature suggests that small firms achieve growth by developing strategies that are congruent with an entrepreneurial orientation (Davidsson et al., 2010). Entrepreneurial orientation is a strategic tendency behind the strategic activities of a firm and results in developing innovative, risk-seeking, and proactive strategies (Wikund and Shepherd, 2005). Using this orientation, small firms use different strategies to achieve growth. These strategies aim to differentiate the small firm from other firms, both large and small (Porter, 1980; Chen and Hambrick, 1995).

Furthermore, small firms are not able to develop economies of scale and scope to spur growth (Chen and Hambrick, 1995; Storey, 1994). Therefore, their executives tend to serve market niches by introducing new products and services or processes (Rosenbusch, Brinckmann, and Bausch, 2011). The underlying assumption here is that in order to grow, an executive must have an innovative edge to compete against other firms (Rosenbusch et al., 2011).

These innovative moves, however, differ from one firm to another according to the nature of their business. Specifically, service and manufacturing firms use different strategies to enhance growth. For instance, due to the intangibility of the offering and simultaneity of production and consumption, the growth of a small service firm would be damaged if it focused on too many socio-demographic segments (i.e. innovative market expansion strategy; Carman and Langeard, 1980). Similarly, in a study of small firms in the UK, Freel and Robson (2004) found that product innovation does not enhance the growth of manufacturing firms but does improve the growth of service firms.

Despite the existence of this mixed evidence, recent meta-analyses of the consequences of innovation for small firms (Rosenbusch et al., 2011) and antecedents of organic sale growth (Bahadir, Bharadwaj, and Parzen, 2009) show that both innovation orientation (tendency to engage in innovative activities) and innovative activities (e.g.

product and process innovations) themselves have largely positive impacts on small business growth. Literature also suggests that small firms tend to compensate for their resource shortcomings by using external resources through collaboration with large or other small firms to gain the required capability to develop and implement necessary strategies (Davidsson et al., 2010). For example, industrial networks have been found to improve the growth of small manufacturing firms in Korea (Park, Shin, and Kim, 2009).

A final note on the growth strategies of small firms is that strategies lead to growth only when they address adaptation to the contextual environments of a firm (Davidsson et al., 2010). That is why, unlike personal attributes, findings about strategies are less generalizable across industries and countries (Davidsson et al., 2007). Following this understanding, as noted earlier, this study examines the growth outcomes of a less explored strategy known as adoption of new business models in Australian small manufacturing firms, to minimize the confounding effects of contextual contingencies.

The third body of small business growth addresses firm-level attributes. This literature revolves around factors such as firm age, size, structure, and governance (legal form). In respect of the firm's age and size, theory suggests that smaller and younger firms have liabilities of smallness and newness (i.e. a greater risk of failure because of their lack of resources and capabilities; Davidsson et al., 2010) which impede their growth. Empirical evidence is mixed, however: some (e.g. Coad and Tamvada, 2011) support this argument, while others (Bentzen, Madsen, and Smith, 2011) offer evidence rejecting it.

Additionally, firm structure and governance have also been argued to impact firms' growth (Davidsson et al., 2007, 2010). The small business literature suggests that small firms have more flexible and nimble structures, allowing them to absorb opportunities and adapt to the environment quicker than large firms, which in return enhances their growth (Sapienza et al., 2006). Therefore, the flexibility of small firms' structure enhances their growth and the rigidity of their structure impedes their growth (Wiklund and Shepherd, 2005).

Moreover, governance literature distinguishes between growth of small firms that are performing under large corporations (i.e. corporate ventures) and independent ventures founded by entrepreneurs. This literature suggests that independent small firms achieve higher growth in dynamic industries because they have more freedom to choose simple

strategies and implement them more quickly in order to enhance growth, compared to their corporate counterparts (Larrañeta, Zahra, and González, 2013). Additionally, family-owned small firms also follow growth strategies rooted in family history and traditions that lead to reduced innovativeness and relatively less growth than is the case for non-family firms (Hamelin, 2013; Eddleston et al., 2013).

Finally, small business growth has also been related to environmental factors. In this regard, different factors have been argued to enhance or hinder growth. For example, environmental munificence (i.e. abundance of opportunities and resources) has been found to enhance growth (Davidsson et al., 2010), and environmental hostility (i.e. scarcity of opportunities and resources) has been said to impede growth (Davidsson et al., 2007). Therefore, in hostile environments a higher degree of innovativeness is required to achieve desired growth (Casillas, Moreno, and Barbero, 2010).

Similarly, environmental dynamism (witnessing rapid changes) has been posited to restrain growth, but survivors are generally rewarded by higher growth (Bahadir et al., 2009). Further, it has also been argued that “many firms grow simply because the growth of their industry allows them to grow” (Davidsson et al., 2010: 31). Analogously, small firms in more dynamic niches of stagnant industries tend to achieve higher growth than their counterparts in less dynamic niches (Capon, Farley, and Hoenig, 1990). Affirming this notion, Delmar, Wennberg, and Hellerstedt (2011) recently argued and showed that in dynamic environments, technological inter-dependencies between firms increase due to rapid technological changes. This phenomenon in return increases knowledge spill-overs and enhances the growth of the small firms. Given these environmental factors, Davidsson et al. (2010) argue that dynamism appears to be most generalizable factor, as the significance of other factors (e.g. munificence, hostility) seems to be context-specific and varies across industries.

To conclude, small business growth is influenced by executives’ attributes, their subsequent behavior, innovative firm strategies, and environmental conditions, mainly dynamism. An integrative framework can, hence, result in a more complete understanding of why some small firms grow more than others. As explained in chapter 1, this study draws upon this logic. To lay the foundation of this framework, the next section reviews the assumptions of strategic leadership theory and strategic choice view.

2.2.7 Strategic Leadership and Strategic Choice View of Small Firm Growth

Simply because of competition, executives have various choices to make if their firm is to grow (Foss, 2005). Choice-making refers to the process of selecting one option; an option is a course of action that appears possible to take (Macmillan and Tampoe, 2001: 133). Choices are thus made based on evaluations of different cause–effect and means–ends relationships between objects with the potential to impact firms’ behavior (Nutt, 2002).

Choices can be broadly classified as operational and strategic (Rumelt, 1997; Yoo et al., 2009). Operational choices are pertinent to the daily routinized actions of the firm, such as inventory decisions and credit policies (Hambrick and Mason, 1984). Therefore they tend to lend themselves to calculable solutions and can be made by middle managers and operational employees.

Choices are deemed strategic (i.e. made upon a strategic action) if they pertain to the firm’s logic of business (i.e. choices of products, services, markets, etc.), asset structure (i.e. management of resources), and choices regarding how a firm positions itself in the marketplace (Foss, 2005: 25). In terms of making strategic choices, executives are exposed to an ongoing stream of potential internal and external stimuli which need to be considered in evaluating alternatives. Hence strategic choices, also known as strategic decisions, to a great extent mirror the idiosyncrasies (i.e. their attributes) of the executives who make them (Hambrick, 2007).

In addition, the more complex the choice, the more applicable this behavioral theory is thought to be (Hambrick and Mason, 1984). Finally, strategic choices could be made formally or informally, are not always explicit, and can be characterized by infrequency, uncertainty, and multi-functionality of scope (Rumelt, 1997: 132). This reasoning implies that executives of similar firms, facing similar environmental conditions, may make different choices because they have different attributes, and accordingly seek asymmetric competitive positions (Rumelt, 1997). In other words, strategic choice perspective (SCP) (Child, 1972, 1974, 1975) explains the behavior of an organization towards adaptation to the environment through the actions that its executives take (Judge and Zeithaml, 1992).

This view further implies that managerial actions (i.e. choices of executives) create imperfections in markets which could result in both opportunities and threats which

underpin the dynamism of markets (Foss, 2005). Put differently, the strategic choice perspective not only advocates both proactive and reactive behaviors of firms (Child, 1997) and market evolution (Foss, 2005), but is also a fundamental view in terms of both prescriptive and descriptive aspects of strategy (Priem, 1994).

The strategic choice perspective can be summarized by three assumptions. First, the strategic choices of executives are the primary links between the firm and its environment. Second, this perspective focuses on executives' ability to learn about, create, and manage the environment, and hence emphasizes acting on free will. Finally, it assumes that there are different ways in which an organization responds to the environment (Judge and Zeithaml, 1992). Accordingly, executives select and interpret their environment, respond to fixed elements, and attempt to shape the remaining elements to their advantage (Hitt and Tyler, 1991).

In sum, although it is a non-environmental deterministic view of the firm that acknowledges the importance of external environment in behavior of the firm (Judge and Zeithaml, 1992: 770), it is however premised upon action-determinism. That is, the actions of executives determine the competitive performance of firms, such as their growth (Child, 1997).

A theoretical perspective in strategic management which explains the relationships between executives' attributes, the strategic choices made by them, and firm-level consequences such as firm growth is known as the strategic leadership (SL) perspective (Hambrick and Mason, 1984; Hambrick 2007; Finkelstein, Hambrick, and Cannella, 2009). This view is in line with Penrose's (1959) contention that growth is ultimately driven by the behavior of executives. According to Hambrick (1989: 6), "strategic leadership focuses on the people who have overall responsibility for an organization, the characteristics of those people, what they do, and how they do it." Furthermore, Hambrick (1989: 6) adds that a major job of strategic leaders is "to align the organization with the current and expected external environment-technology, market trends and so on."

Besides strategic management, strategic leadership has also gained increasing momentum in small business and entrepreneurship literature (e.g. Tonge, Larsen, and Ito, 1998; Abdelgawad et al., 2013; Wright and Stigliani, 2012). This is because small

business executives (i.e. owners, agent CEOs, funders) are also strategic leaders who are responsible for the growth of their firm, and all of their activities revolve around this responsibility (Tell, 2012). In addition, in the small business context, strategic choices involved in growth are essentially restrained by resource deficiencies caused by liabilities of smallness (Bahadir et al., 2009). Building on this understanding, this study focuses on a specific growth-driving strategic choice by executives of small firms known as emphasis on business model innovation, and explores some factors that could potentially influence this choice.

2.3 Emphasis on Business Model Innovation

A thesis throughout this study is that business model innovation is a growth-driving strategic choice. That is, firms whose executives place more emphasis on business model innovation are more likely to be rewarded by better growth. To develop this argument, this section discusses what a business model is and continues by discussing the role and the importance of business model innovation.

2.3.1 Definition: What Really is a Business Model?

Although the business model concept seems to be a classical and well-studied concept in management literature, recent reviews of the literature on the field (Zott et al., 2011; George and Bock, 2011; Lambert and Davidson, 2012) reveal two commonly agreed-upon issues: first, there is still no consensus on the definition and description of the concept, and the existing definitions are either inconclusive or ambiguous; second, the conceptual position of the concept in management science and organization theory literature has not been clearly determined. As a result, this section provides a brief review of the concept in literature and illustrates an overview of its definitions.

It has been argued that the business model is the logic of a business (Zott et al., 2011). This means a business model comprises a set of assumptions that jointly define the business (Teece, 2010). Given this notion, the concept of the business model has been implicitly used by business scholars who have tried to define what a business enterprise is. For instance, Abbel (1980) stated that a business consists of three assumptions: about customers (Who assumptions); products and services (What assumptions); and methods,

policies, and procedures (How assumptions). These definitions were later used by Markides (1997, 1999) to develop the frameworks of business model innovation.

Another instance is the work of Drucker (1994), in which he defined the theory and logic of any business as a set of two assumptions defined and executed by managers; these are assumptions about what a business enterprise must do to create value for its stakeholders (what assumptions) and, equally importantly, how the firm must get them done (how assumptions). These two were later used by Magretta (2002) to define what a business model is and why it matters.

A review of the literature shows that the concept of the business model first appeared in management research in 1957, in an accounting article written by Bellman and colleagues (Bellman et al., 1957; Osterwalder, Pigneur, and Tucci, 2005). It was used in the title of an academic paper in 1960 (Jones, 1960), as mentioned in the study by Nenonen and Storbacka (2010). However, the current terminology had been neglected till the dawn of information revolution in the late 1990s when technological deregulations in information technologies were increasingly discussed by scholars and related to the business models of e-commerce firms known as dotcoms (Horowitz, 1996; Viscio and Pasternak, 1996; Trimmers, 1998; Donath, 1999).

So, the concept began to gain momentum in business literature by attracting the attention of scholars who were researching new organizational changes and seeking new models for the rapid growth and unexpected performance of e-businesses (Amit and Zott, 2001; Magretta, 2002; Afuah, 2003; Afuah and Tucci, 2000; Amit and Zott, 2001; Yip 2004). Since this, the term has been increasingly gaining widespread popularity amongst scholars and practitioners as a core concept in strategic management and entrepreneurship (Yip, 2004; Morris et al., 2005; Miles, Miles, and Snow, 2005; Zott and Amit, 2007, 2008, 2010; Teece, 2010; Chesbrough, 2010). Appendix 1 offers a summary of definitions of the business model concept.

2.3.2 Genesis of Business Model

Given the above diversity in the definitions and descriptions of the business model concept, in this section a brief explanation of how a business model comes into existence will be developed. The rationale behind this discussion is that whenever a firm is established, it adopts a business model (Teece, 2010).

A business model is not a business or venture idea or a business opportunity. In order to understand what a business model really is and how it comes into being, the differences between a business model, opportunity, and venture idea ought to be clarified. The literature suggests that a business model is developed to exploit (Zott et al., 2011) or enact an opportunity (George and Bock, 2011). An opportunity is itself a complex concept (Dimov, 2011). It has been defined differently as “situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends or ends–means relationships” (Vaghely and Julien, 2010) or “economic circumstance where if the correct good or service were to be properly organized and offered for sale that the result would be profitable” (Eckhardt and Shane, 2010: 48).

Opportunities can be created or discovered (Alvarez and Barney, 2007). The creation of an opportunity means that it did not previously exist but is created by creative minds and the actions of individuals such as entrepreneurs, so its focus is endogenous, whereas discovery of opportunities indicates that they exist and must be searched for and found, so its focus is exogenous (Zahra, 2008). The identification or recognition of an opportunity, regardless of its creation or discovery, implies that an economic system such as a market has not reached its full potential and thus there is room for action to take it closer to its potential (Dimov, 2011). So opportunities cannot be separated from individuals. Importantly, opportunities lack agency – they are not self-propelling entities such as living organisms. So they cannot be named opportunities unless they are acted upon (Dimov, 2007). Put simply, once an opportunity is identified, it must be exploited, and exploitation occurs only when a human begins to act upon the opportunity (de Jong, 2013).

In addition, in order to exploit it, an individual must find the opportunity desirable and feasible (Dimov, 2007). This perception of desirability and feasibility indicates that opportunity exploitation is subjective to the individual and differs from one person to another (Keh, Foo, and Lim, 2002). Specifically, intention to act upon an opportunity is influenced by individuals’ preferences for desirability or feasibility of an opportunity (Krueger and Day, 2010). Some individuals favor desirability and are known as “push entrepreneurs”; some favor feasibility and focus on only necessary aspects of exploitation, and are known as “pull entrepreneurs” (Krueger and Day, 2010). The

cognitive style of an individual can be an important determinant of these preferences, because intuitive individuals tend to favor the desirability of an opportunity whereas analytic ones have a tendency to focus on its feasibility (Krueger and Day, 2010). This implies that cognitive style can be an important aspect of a venture's business model development.

Opportunities can represent venture ideas or a stream of modified ideas (Dimov, 2011). In other words, not every opportunity leads to the creation of a new venture but new venture creation is the most common form of opportunity exploitation (Eckhardt and Shane, 2010). Venture ideas are based on immature beliefs and perceptions of market relationships, and simply reflect what can be done given the existing knowledge and resources (Dimov, 2011). These ideas can emerge through searches based on prior experience or knowledge (Shane, 2000) or by serendipitous discovery and fortuitous circumstances (Vaghely and Julien, 2010). They are then modified to become feasible and desirable opportunities which inspire individuals and trigger actions (Dimov, 2007). To enact an opportunity, the founder or entrepreneur needs to form some structures to increase the viability of the opportunity and reduce its uncertainty as well as its sensitivity to the environment (Dimov, 2011). These structures form the business model of the firm. So, to exploit an opportunity, a business model must be devised (Eckhardt and Shane, 2010).

These structures within the business model may include different components of a business such as financial and non-financial resources, employees, and necessary relationships with customers, suppliers, regulatory bodies, and other institutions (Teece, 2010) within the social context, such as markets and industries in which the business is situated (Dimov, 2011). Individuals may employ a variety of techniques to develop these structures and acquire necessary resources for their business model. For instance, some may use symbolic actions to acquire necessary resources (Zott and Huy, 2007), whereas others may use Bricolage to gain necessary resources (Baker and Nelson, 2005). Some also acquire resources by developing ties (formal and informal relationships) with different bodies (Zhang, Soh, and Wong, 2010). So, the business model represents a logic by which an opportunity is exploited. This logic is actualized by different resource structures such as profit formula, which is a structure for managing revenues and costs and also requires productive capabilities to produce and deliver offerings (Johnson et al.,

2008). These structures enable the founder to carve out a space in the market and secure and sustain this space to run their business (Dimov, 2011). Through this business model, the venture gains legitimacy (Lounsbury and Glynn, 2001) and becomes a new part of the market (Dimov, 2011).

Thus, a business model is not a financial or an operational plan; rather, it is a conceptual model that enables an individual (i.e. the founder of a venture or an entrepreneur) to exploit an opportunity by developing the required resource structures (Teece, 2010). Thus, the business model of a firm is the foundation of its resource base and resource management (Teece, 2010). Since it is based on the cognitive abilities of managers (entrepreneurs, founders), it also becomes a firm-specific resource that represents differences between firms (Alvarez and Busenitz, 2001). Furthermore, when a venture becomes part of a market, it evolves with the market by responding to changes. This shows that the business model of a firm changes over time in order to stay competitive (George and Bock, 2011). This argument is consistent with the notion suggested by Winter and Szulanski (2001), that the business model of a firm evolves through “learning by doing.”

This brief explanation is consistent with both the definition of the business model developed by George and Bock (2011: 99) as “the design of organizational structures to enact a commercial opportunity” and the definition of Amit and Zott (2001) as the “design of content, governance and structure of transactions” (i.e. exchange of goods, services, information) which a firm performs. Furthermore, the logic behind linking and using these structures has been named business model design, which shows how an opportunity can be turned into profit or exploited successfully (Zott and Amit, 2010).

Having explained the genesis of a business model, the literature shows that business models all have a similar function: to define how a firm creates and captures value. Therefore, the theory of the business model (i.e. development and evolution of a business model) is a theory that embraces a wide range of aspects involving how these two phenomena take place (George and Bock, 2011; Zott et al., 2011).

2.3.3 Business Model and the Theory of Value: Value Creation and Value Capture

In their review of the past and present status of business model literature, Zott et al. (2011) argue that the business model seeks to explain both how value is created and how it is captured. Furthermore, as will be discussed later in this chapter, business model innovation and replication strategies also basically tend to change how firms create and capture value. On the other hand, value creation and capture lie at the center of RBV, KBV, and DCV (Makadok and Coff, 2002; Lepak, Smith, and Taylor, 2007). This implies interactions between RBV, KBV and the business model strategies of the firm. Given this, it is deemed appropriate to discuss the theory of value and what value creation and capture mean in business literature.

The concept of value has long been recognized and used in strategy. This can be attributed to the fact that strategic management associates the success of firms with how they create and capture value (Lepak, Smith, and Taylor, 2007). More specifically, scholars in strategy assume that firms' heterogeneity is determined by their ability to create and capture value (Makadok and Coff, 2002). This has led to the development of a variety of models, such as value chain (Porter, 1980), value constellation (Normann and Ramírez, 1993), value shops and value networks (Stabell and Fjeldstad, 1998) and value-based business strategy (Brandenburg and Stuart, 1996). Since this study is situated within the business model literature, it focuses on the notion of value in this stream of research; hence it does not engage widely with other aspects of literature on value, such as value chains or value constellations. As a result, this section proceeds by defining what is meant by value creation and capture, after which its focus is narrowed towards value in the business model concept.

Value can be generally defined as the difference between costs and revenues (Makadok and Coff, 2002). One of the most acknowledged explanations for this phenomenon was developed by Bowman and Ambrosini (2000b) (Lepak et al., 2007). According to Bowman and Ambrosini, the concept of value can be broken down into use value (UV) and exchange value (EV). Use value refers to "the specific qualities of the product perceived by customers in relation to their needs" (p. 2), whereas exchange value refers to "price ... it is the monetary amount realized at a single point in time when the exchange of the good takes place" (p. 3). Perceived value can be then converted into exchange value defined by the price of the offering which customers are prepared and

willing to pay. Therefore, use value is subjective and contingent on the perception and willingness of customers, while exchange value is objective and is realized in the form of total monetary value reaped by the firm from its customers.

Accordingly, value creation is defined as “creating perceived use value” and value capture is defined as “capturing exchange value” (Bowman and Ambrosini, 2000b: 4). Firms succeed when they reduce the total costs of creating “perceived use value” and increase their “captured total exchange value” (Lepak et al., 2007). The process of value capture is also known as value appropriation (Lepak et al., 2007). The difference between value creation and capture determines how a firm gains competitive advantage (Makadok and Coff, 2002). Two general factors influence this difference: (1) competition in an industry and (2) the isolating mechanism a firm uses to protect its value-creating and capturing activities (Lepak et al., 2007). From the industrial side, Porter’s (1980, 1985) value chain analysis and five competitive forces model offers valuable insights into firms’ value creation and capture. However, RBV and its extensions tend to emphasize internal mechanisms of value creation and capture. It accordingly focuses on identifying key VRIN resources and managing them in order to enable firms to create and capture value (Lepak et al., 2007). A key aspect of this approach is acquisition of knowledge about markets and technologies as a key source of value creation and capture (Sirmon et al., 2007). Having discussed the principles of value creation and capture, this study seeks to explain the question of how firms manage the totality of their value creation and capture. It addresses this question from the business model perspective.

Scholars have shown that the business model of the firm defines the underlying logic of value creation and capture (Amit and Zott, 2001; Teece, 2010; Zott et al., 2011). More precisely, the business model allows executives to formulate and manage both value-creating and capturing activities (Zott et al., 2011). This is because the business model of the firm encompasses key hypotheses in the minds of executives about customers’ needs, required resources and activities to address those needs, ways to entice customers to pay for the firm’s offerings that address those needs, and, finally, competitors and their offerings (Teece, 2010). In other words, the business model of a firm shows executives how to enact opportunities by embracing both opportunities (i.e. creating use value) and the resources required to exploit them (i.e. appropriating or capturing exchange value; George and Bock, 2011).

2.3.4 Creating and Capturing Value: Design and Resource Perspectives

Business model literature suggests that two related perspectives explain how a business model defines a firm's value creation and capture. These are the design or configuration perspective and the resource-based perspective.

It is believed that the design perspective contributes to an understanding of the business model (Zott and Amit, 2010). Design has been argued to be an important concept in organization science (Makinen, 2005). Design generally refers to a particular composition (Verser, 1995; Makinen, 2005: 108) or "configuration of elements, materials, and components that give something its particular attributes" (Makinen, 2005: 108). Design seeks to maximize the profitability of a firm through the use of design elements (Drew and West, 2002). Therefore it can be leveraged in order to succeed in a market (Walsh, Roy, and Bruce, 1988).

Firms may have different types of design in their resource base, such as product design or process design (Makinen, 2005; Veryzer, 1995). Recently scholars have begun to look at firms' business models through the lens of design (Johnson et al., 2008; Zott and Amit, 2007, 2008). According to this perspective, the design of a business model is the configuration of different design elements that enables a firm to exploit opportunities (Zott and Amit, 2007). Therefore firms may vary in their development and utilization of this design (Amit and Zott, 2001). Firms can also be identified by the design of their business model. Some exemplar business model designs are Dell, eBay, Amazon, AirAsia, and Apple.

More specifically, different explanations for design elements of firms' business models exist. For instance, Johnson et al. (2008) enumerate four elements of a business model design; namely, profit formula, value proposition, key resources, and key processes. Further, Zott and Amit (2007, 2008, and 2010) specify three design elements for firms' business models. These include the content (i.e. selection of particular activities), structure (i.e. how activities are linked), and governance (i.e. who performs activities) of activities which the firm performs. More recently, Casadesus-Masanell and Ricart (2011) have suggested that the design of a business model consists of three sets of choices: namely, policy choices (i.e. choices that determine actions of the firm), asset choices (i.e. choices that determine resources which a company deploys), and governance choices (i.e. choices that determine how a company arranges the other two sets of choices). Similarly,

George and Bock (2011) describe business model design as structures of resources or capabilities that allow the firm to enact a business opportunity.

Firms also adopt different compositions or configurations of their resources and capabilities, which result in developing different sets of activities involved in their performance (Zott and Amit, 2007). Business model design is hence closely related to the business strategies of a firm (Zott and Amit, 2008). Literature also shows that a firm's business model design evolves over time as the business adapts to the changing environment (Aspara et al., 2011; George and Bock, 2011). This body of literature further suggests that business model design can be an important source of competitive advantage (Zott et al., 2011) and firms which are able to develop new designs or transform their current design into a new one can create a unique market position (George, McGahan, and Prabhu, 2012; Gambardella and McGahan, 2010).

The literature on design further suggests that developing and utilizing design is often the result of cognitive processes of executives that use creativity, intuition, and tacit knowledge (Drew and West, 2002; Makinen, 2005). In the case of business model design, scholars have acknowledged the role of executives' cognition in developing a design. For instance, George and Bock (2011) contend that the cognition of executives is an important factor in developing the resource structures of a business model. In addition, Casadesus-Masanell and Ricart (2011) suggest that the design of a business model stems from executives' choices about resources and governance of activities which utilize resources. Cognition is a key factor in making these choices (Narayanan et al., 2011).

The resource-based view (RBV), on the other hand, offers a complementary explanation. According to the resource-based view a firm is considered a repository of resources or interchangeably strategic assets. Broadly speaking, a resource refers to whatever a firm possesses or controls (Helfat et al., 2007). RBV shares this logic with the strategic theory of the firm developed by Rumelt (1984). According to this theory, a firm is not only a bundle of resources; also, the productivity and value of resources depend on the context in which they are applied (Barney and Clark, 2007: 16). It can be argued that the business model is a resource necessary for the functioning of other resources and capabilities.

The business model of a firm is developed by firm executives, and thus its viability and productivity can be controlled by the firm. Theoretical evidence suggests that executives can change the business model when it loses its viability and expected productivity (Johnson et al., 2008). More specifically, a business model comprises certain structures developed and controlled by executives to deploy resources and capabilities (George and Bock, 2011). Secondly, the business model has been seen as an entity which can be innovated and then utilized as a source of competitive advantage (Crossan and Apaydin, 2010). Competitors can also copy a firm's business model or develop their own new one (Aspara et al., 2010). Therefore the business model of a firm and its design can be conceived as part of a firm's resources.

Additionally, a business model can reasonably be seen as an intangible asset, because it is owned by the firm and cannot be patented (Dickinson, 2000). It also evolves over time through the processes of learning by doing, and hence can follow certain firm-specific paths (Winter and Szulanski, 2001). It can also be singled out as a unit of study and analysis for both executives of the firm and researchers (McGrath, 2010; Zott et al., 2010). This is analogous to the research on firms' resources and capabilities (Rouse and Daellenbach, 1999, 2002). Synthesizing these points, it can be argued that a business model can be regarded as an intangible asset of the firm that is developed and deployed by executives. As an asset it can be a replication of previous successful models or an innovation.

Therefore the business model of a firm and its design are part of a firm's resource base. In addition, according to the resource-based view, possession of resources can only lead to creating and capturing value when an organizational system is in place to define how resources and capabilities are used in value creation and capture activities. To conceptualize this rationale, Demil and Lecocq (2010) proposed a RCOV framework, in which RC stands for a firm's resources and capabilities, O stands for its organization of activities (i.e. design) that use these resources and capabilities to create value, and V stands for value components that define the components of costs and revenue to capture value. According to this framework, executives have to consider the joint interactions of these four components to understand the value creation and capture of their firm. Furthermore, this view assumes that "the BM of a given organization is a snapshot, at a given time, of the ongoing interactions between these core components" (Demil, and

Lecocq, 2010: 234). This dynamic view is also consistent with research into the dynamic management of resources (i.e. dynamic capabilities), in which the business model of a firm is considered as the foundation of a firm's ability to evolve and change (Teece, 2007). This literature also suggests that executives' capability to manage necessary changes in the business model is a central dynamic capability (Katkalo et al., 2010).

The design and resource perspective are combined in the system perspective. Zott and Amit (2010) and Zott et al. (2011) argue that the business model is a system-level construct. By "system," they mean that the business model is a holistic representation of the firm in the business environment or, as Teece (2010) states, the business ecosystem. Systems theory is based on three principles: (1) division of the world into environment and systems, (2) systems can evolve and adapt by responding to environmental changes, and (3) systems are defined in terms of processes or activities (Charlton and Andras, 2003; Luhnmann, 1995). The view of the business model as a system is in accordance with these principles. Winter and Szulanski (2001) posit that the business model of a firm evolves through the choices that executives make to adapt to the environment. These choices are reflected in organizational routines or processes that enable an organization to perform by using its resources and evolve by adjusting the way these resources are used (Teece, 2010).

In the same vein, Mason and Spring (2011) state that a business model is not designed and then implemented; rather, it changes and evolves, as the firm does. They further argue that organizational processes are influenced by the business model of the firm and its evolution. Casadesus-Masanell and Ricart (2010, 2011) conceptualize a business model as an evolving system of choices and their consequences. These choices are about the resource allocation and organizational governance that enable a firm to create profit. They further argue that executives may alter their choices in the face of the need for change. Therefore, the business model of the firm may change, and this may result in subsequent changes in an organization's activities.

These conceptions share the idea that the business model can be conceived as a system of activities and processes which shows how a firm does its business (create and capture value). This system evolves over time, as business environments do. It is believed that this argument suffices for the purpose of this study; hence, further discussion of system theory would go beyond the scope and intentions of this research.

2.3.5 Business Model Versus Strategy

Literature suggests that a business model is not a business strategy (Teece, 2010). In fact, the distinction between these two is important for executives and their resource management (Teece, 2010; Zott, Amit, and Massa, 2011). However, despite this issue, there appear to be various conceptualizations of this distinction. For instance, Porter (2001) argues that the concept of business model is murky at best and substantiating business model concept as different from business strategy is not an innocuous terminology but it is an invitation for faulty thinking. In contrast, Stahler (2002) argues that although strategy and business model are mistakenly equated but they are profoundly different. Similarly, Seddon et al. (2004) assert that business models are abstractions of firms' strategies and play a distinctive role by articulating value propositions and activities that a firm needs to carry out in order to actualize its value offerings. Yip (2004) also acknowledges this distinction and posits that, firms use different strategies such as radical or transformational to change their business model. In line with this, Casadesus-Masanell and Ricart (2010) argue that the business model is a reflection of the firm's realized strategies. More precisely, BM is the logic of the business while strategy is the choice of the business model. So, different strategies can be used to manage business models.

Having established the difference between business model and strategy, another area of debate is pertinent to the type of strategy. Teece (2010) relates the business model to the business strategies of the firm. He argues: "A business model is more generic than a business strategy. Coupling strategy and business model analysis is needed to protect competitive advantage" (p. 179). Teece further underlines that "selecting a business strategy is a more granular exercise than designing a business model" (p. 180). Strategy dynamically protects the business model. More precisely, firms select and implement a business model based on their strategies and the business model is refined as strategies change, to protect the competitive position of the firm. Further, the view of the interactions between business model and strategies has been studied by Zott and Amit, (2008). The study reveals that the alignment between the business model of the firm and its product-market strategies influences the performance of the firm. More recently, Phillips (2011) put forward that strategy and the business model are mutually dependent. The business model describes how value is created, whereas strategy acquires necessary resources and capabilities. In a similar line of reasoning, McGee (2005) posits that the

business model is the link between a firm's intended strategy, its functional and operational requirements, and the expected performance. Therefore, proponents of this view see firms' business models as closely related to the business strategies or competitive strategies of the firms, arguing that the two are complementary and their interactions offer insights into the market behavior of firms.

Alternatively, Caldart and Ricart (2004) argue that business models are linked to corporate-level strategies, as they define the logic of the business underlying the corporate strategies. This is analogous to the dominant logic concept – that is, general managerial logic about the business – developed by Prahalad and Bettis (1986). This idea is later echoed in the works of Casadesus-Masanell and Ricart (2010), Sanchez and Ricart (2010), and Casadesus-Masanell and Ricart (2011), in which the business model is related to corporate strategies.

On the contrary, Slywotzky and Wise (2003, cited in George and Bock, 2011) argue that the business model of a firm incorporates its strategy and structure. This contradicts the views of Yip (2004), Casadesus-Masanell and Ricart (2010) and Teece (2010), who consider business model and strategy interdependent entities. It arguably sees strategies embedded in the business model of the firm.

Finally, studies on formulation of strategies as deliberate or emergent (Mintzberg and Waters, 1985; Mariani, 2007; King, 2008) underline conceptions of the business model related to the firm's realized strategy (Casadesus-Masanell and Ricart 2010) or intended strategy (McGee, 2005). Briefly speaking, Mintzberg and Waters (1985) argue that strategies are formed in the firm either deliberately, according to plans that lead to intended strategies, or emerging partly unintentionally, labeled as emergent strategies. Therefore, the realized strategies of a firm are not always fully intended (Mariani, 2007; King, 2008). This implies a conflicting view between conceptions of the business model as a representation of firms' realized strategies and the business model as a link between the firm's intended strategy and expected profit.

In sum, although these ideas seem to be different, they arguably converge on the point that the business model of the firm and its strategies are distinct but closely related, yet their interactions are complicated and remain under-explained (Zott et al., 2011), with few empirical studies. Zott and Amit (2008) is an exception which empirically supports

the direct and close relationship between a firm's business model design and its product-market strategies, and the impact of this alignment on the firm's performance. This topic goes beyond the scope of this research. Consequently, in the next section, an overview of some theoretical perspectives from the strategy literature used in business model literature is provided in order to form a theoretical ground, upon which research hypotheses are developed in the next chapter.

2.3.6 Business Model and Strategic Positioning of the Firm

Responding to the notion that the business model is not the strategy, yet these two are closely related, scholars have pointed out that the business model of a firm defines its strategic position in a market (Yip, 2004). The terms "strategic position" and "strategic positioning" are attributed to Porter (1980, 1985, 1996). Accordingly, executives formulate strategies to gain and maintain a position in an industry/market where competitive forces are weakest (Park, 2007). Executives can find and sustain a valuable position through differentiation in the form of cost leadership (efficiency) or innovation (Porter, 1996). However, time, competition, and environmental changes erode the value of strategies and sustainability of a strategic position (Rumelt, 1984). Consequently, strategic positioning is a dynamic process (Chan and Soong, 2011; Gavetti and Rivkin, 2007). That is, executives need to maintain their strategic positions or create new ones by changing their strategies and subsequently their resources and capabilities (Teece, 2007; Chan and Soong, 2011). Scholars have argued that this dynamicity is reflected in the business model of the firm (Yip, 2004; George and Bock, 2011; Bock et al., 2012).

Specifically, CEOs consider their business model as a representation of their strategic position in markets (Bock et al., 2012). The business model is argued to define the logic behind the strategic positioning of the firm (Zott et al., 2011). Therefore, executives try to maintain or change their positioning in markets relative to their competitors through their business model (Yip, 2004). This is consistent with the study of Zott and Amit (2008), which empirically supports the importance of the direct link between a firm's product-market strategies and its business model design. Likewise, Patzelt et al. (2008) argue that in the biotechnology industry, firms that have similar strategic positions have similar business models as well.

Alternatively, Tripsas and Gavetti (2000) also show that an inability to align business model with market changes can destroy the strategic position of the firm (as in the case of

Polaroid Corporation). More recently, Aspara et al. (2011) showed how Nokia created a new strategic position by adjusting its business model. Therefore, the business model of a firm is a dynamic entity that changes over time in order to create or maintain the strategic position of the firm (Bock et al., 2012; Teece, 2010). So, executives tend to achieve an optimal position in markets through their business model (Holloway and Sebastiao, 2010).

Arguably, executives' emphasis on the design of the business model of their firm represents the logic of their strategic positioning. As a result, in an industry, multiple business models emerge, compete, and co-evolve. This assumption has gained supportive evidence across industries ranging from biotechnology (Mangematin, 2000) to the British football league (McNamara, Peck, and Sasson, 2012). Therefore, this research holds that the business model of a firm changes over time in order to allow the firm to create and maintain a strategic position.

2.3.7 Business Model Innovation, Reinvention, Transformation

Business model innovation is at the forefront of both strategic management and entrepreneurship research (Trimi and Berbegal-Mirabent, 2012; Spieth et al., 2013; Schneider and Spieth, 2013). Two issues surround this phenomenon. First, business model innovation is different from product and process innovation, and in fact is a special type of innovation. Second, due to the complexity of the business model concept, the concept of business model innovation has also been conceptualized differently.

2.3.7.1 Business Model Innovation as a Special Type of Innovation

Schumpeter (1934) argued that innovation is the engine of economic progress. He further identified five types of innovation: “new products, new methods of production, new sources of supply, exploitation of new markets, and new ways to organize business” (Casadesus-Masanell and Zhu, 2012: 1). Business model innovation captures the essence of the last type (Casadesus-Masanell and Zhu, 2012; Crossan and Apaydin, 2010). Therefore, it is different from innovative outputs of the firm, such as new products and services, as well as production methods, such as new technologies and tools. Scholars (e.g. Sinfield et al., 2012; Amit and Zott, 2012) suggest that innovative products and processes can germinate from new business models and hence are different from business model innovations.

At its root, business model innovation is the quest to develop a new logic of the business (Casadesus-Masanell and Zhu, 2012). This logic determines how things have to be done in order to define the position in which the firm operates competitively (Trimi and Berbegal-Mirabent, 2012). Consequently, innovation in a business model affects the entire value creation and capture of the firm (Zott and Amit, 2010). This new value creation and capture results in innovative business models that provide firms with the ability to create a competitive position in an industry (Zott and Amit, 2007, 2008).

The degree of novelty introduced by a new business model can also be classified in terms of its degree of radicalness (i.e. radical or incremental new business models) (Zott and Amit, 2002) and the scope of its novelty in the form of a business model novel to the markets and a business model based on technological novelty (Trimi, and Berbegal-Mirabent, 2012).

New to the market business models are business models previously adopted in other markets and changes in a new market demands them. An example could be diffusion of the low cost airline logic in different countries. Therefore, they can be called as demand-pull business model innovation (Trimi and Berbegal-Mirabent, 2012). On the other hand, sometimes firms develop new technologies that disrupt existing ones and permit them to leverage them in the form of new business models to create a competitive edge. These are new business models that are developed to commercialize new technologies and hence can be called technology-push business model innovations (Trimi and Berbegal-Mirabent, 2012). New business models using cloud computing (Berman et al., 2012) and Web. 2.0 (Wirtz, Schilke, and Ullrich, 2010) exemplify the use of this generative force in business model innovation.

Regardless of the type of business model innovation, since each firm has a business model, the choice of embarking on business model innovation results in reinvention or transformation of the existing business model. Therefore, the terms “business model innovation,” “reinvention,” and “transformation” have been used interchangeably in the literature (Aspara et al., 2011a, b; Voelpel, Leibold, and Tekie, 2004; Johnson, Christensen, and Kagermann, 2008; Govindarajan and Trimble, 2011).

2.3.7.2 Strategic Importance of Business Model Innovation

There is a consensus amongst practitioners and scholars that business model innovation is an increasingly important strategic choice (Hamel and Getz, 2004; Pohle and Chapman, 2006; Trimi and Berbegal-Mirabent, 2012). Thus, an openness and receptivity to new business models is nowadays regarded as a key competence of executives (Hitt et al., 2002; Johnson, 2010). Literature offers several reasons for this increasing importance.

First, since business model innovations address a firm's value creation and capture at a system level, a high degree of causal ambiguity is involved (Zott and Amit, 2010). This reduces the extent and intensity of competitive imitation (Casadesus-Masanell, and Zhu, 2012) and simultaneously extends the life span of the competitive edge and the growth potential created by a new business model (Kim and Mauborgne, 1997; Trimi and Berbegal-Mirabent, 2012). Additionally, business model innovation creates a competitive labyrinth for competitors. This lessens the severity and likelihood of a fast competitive response. Mitchell and Coles (2003, 2004a, b) state that business model innovation is likely to be responded to in two ways: some competitors continue to follow the old logic, while others will be confused by the new logic and will respond to neither the old nor the new business model. In either scenario, the new competitive edge created by the new business model remains profitable for a longer than usual time. More recently, Gunzel and Holm (2013), in a multiple case study in the Danish newspaper industry, found that adopting new business models is more complicated than adopting new technologies. Therefore, developing new business models is less likely to be met with a quick response by competitors. Hence, it is more strategic than introducing new technologies.

Second, because business model innovation changes both value creation and value capture it influences formation of dynamic capabilities adaptability of the firm (Teece, 2007). In fact, continuous adjustment of a business model is a necessary precondition for developing dynamic capabilities (Katkalo, Pitelis, and Teece, 2010; Teece, 2010) and a strategic move at the heart of the strategic flexibility of a firm (Bock et al., 2012). Literature offers evidence showing that firms whose CEOs did not recognize the value of new business models failed to develop the dynamic capabilities required for co-evolving with markets (e.g. Tripsas and Gavetti, 2000).

Third, new business models can leverage existing competencies and therefore compensate for resource deficiencies (Rhoads, Townsend, and Busenitz, 2011). This enables firms to achieve competitiveness without heavily investing in R&D (Zott and Amit, 2007, 2008). Acknowledging this notion, Gambardella and McGahan, (2010: 263) argue that “business model innovation occurs when a firm adopts a novel approach to commercializing its underlying assets”. For instance, new business models enhance commercialization of technological innovations (Linder and Seidenstricker, 2012) and enable manufacturing firms to integrate new technologies into existing ones to create new technologies used to leap-frog value creation – a phenomenon known as technology cross-fertilization (Björkdahl, 2009). Firms can also develop new business models by combining existing services and products in a unique way without innovating radically new products (Velamuri et al., 2013) or imitating components of business models from different industries and introducing a new combination of them in their own industry as a new business model (Enkel and Mezger, 2013).

Therefore, business model innovation contributes to both the technological side and the market side of a firm’s competitiveness (Doganova and Eyquem-Renault, 2009). Further, Desyllas and Sako (2013) enrich this explanation by showing, through the case of pay-as-you-drive auto insurance, that although business model innovation does not warrant intellectual property protection rights, consequent innovative technologies, business methods, and products can create a protected and sustained revenue stream for the firm.

Finally, business model innovation enables a firm to launch game-changing strategies and transform their industrial landscape in their favor in order to establish new rules and increase their legitimacy (George and Bock, 2011; Park, 2011). Therefore, it enhances firms’ development of new products and facilitates corporate ventures (Wolcott and Lippitz, 2007). It also allows firms to change the rules of the competitive game when things get tough (Lindgardt et al., 2008; Matthyssens, Vandenbempt, and Berghman, 2006). Low-cost airlines are an example of this innovative business model (Sanchez and Ricart, 2010).

These benefits suggest that small firms could benefit from business model innovation for three reasons. First, it is a strategy which does not entirely depend on acquiring new technologies and resources (Gambardella and McGahan, 2010; Desyllas and Sako, 2013).

Second, business model innovation can alleviate problems caused by resource deficiencies, as it improves “brand loyalty of buyers and a reduced price sensitivity of demand as a consequence of customers valuing the uniqueness of the innovation” (Rosenbusch et al., 2011). Third, according to Arend (2004), innovative business models can help executives turn potential resource liabilities into potential assets used in developing new products, methods, etc.

The above benefits are not mutually exclusive and a firm can benefit from any combination of them by emphasizing business model innovation. For instance, a business model can introduce a new production method which changes the industry recipe (Matthyssens et al., 2006). As a result, business model innovation is argued to be more beneficial than technology pioneering and a viable strategic choice for firms of all size, in all countries and in all industries (Comes and Berniker, 2008; Lindič, Bavdaž, and Kovačič, 2012).

It seems appropriate to point out that due to the complexity surrounding the definition of a business model and the discussed benefits regarding the choice of business model innovation, this concept has been conceptualized and labeled in different ways (Schneider and Spieth, 2013). The next sections review some of these conceptualizations in the hope of reaching a unifying point.

2.3.7.3 Strategic Innovation

The concept of strategic innovation was promulgated by Markides (1997). It refers to the act of introducing a new business model based on a gap in industry positioning which enables a firm to create a new market (p. 12). Accordingly, industry positioning refers to how a firm positions itself in the industry in terms of three underlying assumptions of the business model. These include who (customers), what (products and services a firm offers) and how (the production and marketing methods; Markides, 1997). Further, Markides argues that strategic innovation enables a firm to capitalize on a new business model in order to create and capture new sources of value without the help of a major radical technological breakthrough (Markides, 1999). It will accordingly result in the creation of new markets (Geroski, 1998). Therefore, according to this logic, business model innovation happens when a firm innovates strategically (Markides, 1999) through a new business model based on “new who,” “new what,” or “new how” and then attempts to commercialize this discovery (Markides, 1998, Anderson and Markides, 2007).

More specifically, strategic innovation concept basically aims to capture the essence of an integration of strategy and innovation (Krinsky and Jenkins, 1997). It hence has also been conceived of as “revolutionary strategy” (Hamel, 1996) or “strategy innovation” (Hamel, 1998). In a similar line of thinking, Schlegelmilch, Diamantopoulos, and Kreuz (2003) endeavor to synthesize diverse literature and subsequently define strategic innovation as “the fundamental reconceptualization of the business model and the reshaping of existing markets (by breaking the rules and changing the nature of competition) to achieve dramatic value improvements for customers and high growth for companies” (p. 118). Therefore, strategic innovation necessitates that executives challenge the fundamentals and underlying assumptions of their current business model (Schlegelmilch et al., 2003).

However, emphasizing and initiating this move in the design of the current business model is not easy for executives (Markides and Anderson, 2006; Anderson and Markides, 2007). This is mainly because they are cognitively tied to their existing positioning, defined by their current business model (Markides, 1999). More precisely, the assumptions of the current business model become orthodoxy for executives and act as impediments to strategic innovation (Govindarajan and Trimble, 2005a, b). Similarly, Jacobs and Heracleous (2005) also argue that strategic innovation requires a shift in the executives’ assumptions that underpin their business model.

This issue will be further explained in the specific section devoted to the strategic emphasis on business model innovation. The idea of strategic innovation is conceptually related to blue-ocean strategy and disruptive innovations. Consequently, the next sections discuss these relevant streams of research and delineate how business model innovation is central to these diverse domains.

2.3.7.4 Blue Ocean and Value Innovation

The concepts of blue-ocean strategy (Kim and Mauborgne, 2004, 2005a, b) and value innovation (Kim and Mauborgne, 1997, 1999) are closely related to and share some underlying assumptions with business model innovation. As a result, this section presents an overview of this strand of literature with a focus on business model innovation. In the language of Kim and Mauborgne, “blue ocean” refers to new markets, new customer segments or customers’ unexplored needs (Kim and Mauborgne, 2005a, b). Hence, blue-ocean strategy is a strategic move to identify and exploit these opportunities (Kim and

Mauborgne, 2004). In the same line of thinking, value innovators are those firms which identify these opportunities and tap into them by innovating new value propositions and ways of delivering these value sources (Kim and Mauborgne, 1999a). Therefore value innovation is innovation in creating and capturing value (Kim and Mauborgne, 1999 b). More specifically, value innovation is a leap into the blue ocean (Kim and Mauborgne, 2005b). This makes the competition in existing markets and based on existing customers irrelevant and therefore creates a new profit edge for the firm (Kim and Mauborgne, 2004, 2005a). Value innovation and tapping into blue oceans basically happen when a firm introduces a new business model or reinvents its business model (Kim and Mauborgne, 2005a). Therefore, implementing a blue-ocean strategy requires a firm to emphasize business model innovation or, alternatively, reinvention and transformation in the design of the firm's current business model (Kim and Mauborgne, 2005a).

The existing literature offers sufficient empirical evidence in support of value innovation and tapping into blue oceans. For instance, Matthyssens et al. (2006) argue that value innovation is a mindset for staying ahead of competition by renovating business models. The studies by Aspara et al. (2010) and Parviven et al. (2011) have empirically shown that emphasizing blue-ocean strategies positively influences firms' performance. More specifically, the study by Aspara et al. (2010) on a sample of small to large firms across industries demonstrates that placing emphasis on business model innovation with the intention of tapping into blue-ocean strategies increases the profitability of a firm. Similarly, Parviven et al. (2011) argue that enforcing the blue-ocean strategy mindset at sale-management level and implementing it through business model transformation will increase the profitability of a firm. Finally, Berghman, Matthyssens, and Vandenbempt (2012), in a study of 182 industrial firms in the Netherlands, found that value innovation ability is a crucial component of longer-lasting competitiveness.

Despite these results, research on the performance consequences of the blue-ocean strategy is inconclusive, and it cannot be claimed that the blue-ocean strategy always leads to increasing profit (Buisson and Silberzahn, 2010). Consequently, since this research is neither concerned with the profit and performance consequences of blue-ocean strategy, nor does it discuss the "how" of business model innovation, it is contended that

discussion of blue-ocean strategy and its consequences moves beyond the boundaries of this research. The concluding point is that business model innovation and the strategic emphasis that executives place on it is related to blue-ocean strategy and value innovation literature as well.

2.3.7.5 Disruptive Business Models

Bower and Christensen (1995) distinguished between two types of innovation: sustaining and disruptive. Sustaining innovations occur frequently and improve the performance of products in the markets; disruptive ones occur less frequently and introduce new aspects of performance that are usually cheaper, simpler, and easier to use. Therefore, they gradually disrupt the market share of established products.

Literature suggests that disruptive innovations originate from disruptive business models (Yu and Hang, 2010; Sabatier, Craig-Kennard, and Mangematin, 2012). These disruptive business models are innovative business models that challenge the established norms and rules of an industry and are adopted to commercialize disruptive innovations (Markides and Oyon, 2010; Yu and Hang, 2010). Therefore, a disruptive business model is a type of business model innovation; hence, firms that emphasize business model innovation are more likely to develop disruptive business models that challenge established markets and generate a new competitive edge (Johnson et al., 2008; Sabatier et al., 2012). Habtay (2012) also suggests that disruptive business models can be created by innovation in the marketing and sales routines of the business model (i.e. market-driven disruptive business model) or in the production routines of the business (technology-driven disruptive business model).

Scholars have also discussed the challenges faced by executives of both small (Dewald and Bowen, 2010) and large (Charitou and Markides, 2003; Markides and Oyon, 2010) firms in responding to disruptive business models. This issue goes beyond the scope of this study. However, this stream of research suggests that both the choice of introducing a disruptive business model (i.e. business model innovation) and responding to disruptive business models require adjustments to the firm's existing business model.

2.3.7.6 Market-Driving Versus Market-Driven Firms

Another similar concept to business model innovation is the market-driving strategy, which can be connected with the market-driven concept (Jaworski, Kohli, and Sahay,

2000; Kumar, Scheer, and Kotler, 2000). These concepts are situated within marketing science literature and pertain to the stream of research about firms' market orientation (Jaworski et al., 2000). Accordingly, a market-driving firm tends to develop new markets and offer radically new value propositions, instead of following existing markets (Kumar et al., 2000). Therefore, conceptually, the market-driving approach corresponds with value innovation (Kim and Mauborgne, 1997, 1999) as well as strategic innovation (Markides, 1997, 1998).

Although Kumar et al. (2000) acknowledge this resemblance, they argue that strategic innovation and the market-driving concept ought to be distinguished in terms of their conceptualization. That is, the strategic innovation concept embraces a firm which either targets a new customer segment (who) or offers a radically new product/service (what) or a production and delivery system (how), but the market-driving concept embraces firms which tend to apply both new value propositions (what is offered and to whom) and radically new business systems (how in production and delivery); when these two work in tandem, the firm can be described as a market driver.

2.3.7.7 Strategic Resilience and Flexibility

The idea of strategic resiliency proposed by Hamel and Valikangas (2003) echoes the notion of business model reinvention. Hamel and Valikangas argue that in today's turbulent business landscape, the only advantage is the ability to reinvent a business model. This ability must be dynamic, which makes the firm resilient. This argument is partially analogous to the notions of strategic flexibility (Hitt, Keats, and DeMarie, 1998) and dynamic capability (Teece, Pisano, and Shuen, 1997). This is because business model innovation or reinvention is a dynamic capability which enables the firm to become flexible and adapt to environmental changes (Winter, 2003). The recent study by Bock et al. (2012) attests to this idea by investigating the relationship between strategic flexibility and performance during business model innovation.

In light of this logic, Hamel and Valikangas (2003) find that executives must 1) become consciously willing to recognize and initialize change in the design of their business model; (2) develop the ability to form a plethora of options; (3) deal with political issues in their firms that concern changes in resource allocations, acquisitions, and divestments or the re-governance of activities from the current design of the business

model to the new one; and finally (4) gain the power to move beyond simple industrial rules and common sources of advantage towards a new industrial recipe.

2.3.7.8 Transition from Existing to a New Business Model

The choice of business model innovation brings about a transitory phase in which the firm moves from the existing business model to a new one. A great deal of literature has been devoted to this phenomenon (Johnson-Bey, Golm, and Thomas, 2012; Chesbrough, 2007, 2010; Chesbrough and Schwartz, 2007; Danneels, 2010; Tripsas and Gavetti, 2000; Cavalcante, Kesting, and Ulhoi, 2011; Govindarajan and Trimble, 2005a, b; Hamel and Välikangas, 2003).

The essence of this literature is that although this choice could be very rewarding, its execution (i.e. transition) is not easily carried out. Literature offers two broad challenges ahead of executives in this respect: cognitive inertia and structural inertia (Hamel and Välikangas, 2003; Chesbrough, 2007, 2010).

The former refers to the fact that executives have become accustomed to the existing business model, and hence they not only want to protect it but also do not fully recognize the value of a new business model (Hodgkinson, 1997; Chesbrough, 2010). This reduces their tendency towards the adoption of a new business model and consequently creates a barrier to its adoption. Hamel and Välikangas (2003) argue that in this phase executives are in state of denial, nostalgia, and arrogance. Therefore, they need to be freed from these and become aware of alternative business models and their strategic potential. Tikkanen et al. (2005) advocate this idea and argue that change in managerial cognition is a prerequisite of business model change. Doz and Kosonen (2010) add to this debate by arguing that executives need to distance themselves from existing business models, anticipate differing options, and gain foresight and the ability to generate insight in order to successfully lead business model innovation. Govindarajan and Trimble (2011) also argue that executives must be forward-looking and able to forget limiting beliefs related to past business models to be able to renew their business models. Aspara et al. (2011a, b) also show that changes in executives' beliefs about alternative business models and their potential strategic values have been the driving force of Nokia's business model transformation.

Given the above, Hambrick, Geletkanycz, and Fredrickson (1993) argue that executives' commitment to the status quo (i.e. the current business model) is largely caused by their lack of knowledge about new options and their values. Integrating these points, it can be assumed that cognitive inertia of executives can be improved by acquisition of new knowledge, because it enables them to become aware of new options for business model innovation.

The second challenge, however, refers to organizational hierarchies and structures. The more hierarchical and structural an organization is, the more difficult its transition to a new business model will be. This is because, as previously explained, the business model defines a system of activities required for creating and capturing value (Zott and Amit, 2010). These activities take the form of routines or learned patterns of action (Winter and Szulanski, 2001). These routines are reinforced by the structures of the firm – its cost structure, production structure, inventory structure, and so on (Gilbert, 2005). New business models bring alternative systems of activities which cannot be properly performed under the old structural norms and routines and sometimes impose a force to supplant them (Gilbert, 2005; Collinson and Wilson, (2006). Therefore, big and complex structures constrain changes in the business model of the firm.

There are differences between small and large firms in terms of their ability to deal with these inertias. First, small firms tend to be managed by a single executive or a small managerial team in a private rather than public fashion (Curran and Blackburn, 2001). This implies that cognitive bias is rooted in the beliefs and value systems of a smaller number of managers who have more discretion to assess their options. Therefore, their beliefs in the existing business model can be modified more easily compared to that of their counterparts in large firms, whose managerial team is composed of boards and executives who are under the influence of stock markets and shareholders' opinions.

Second, small firms have a smaller and simpler structure because of their smallness and focus on market niches. This reduces problems caused by structure inertia (Chesbrough, 2010). In other words, small firms' nimbleness enhances their business model transition. On the contrary, large firms have divisions, divisional managers, multimarket business units, and complex structures in which all executives have "reached their current level of responsibility by executing within the current business model" (Chesbrough, 2007). Therefore, even with a belief in the new business model, it is very

difficult to rearrange roles and define new responsibilities without creating internal chaos (Cavalcante et al., 2011; Hamel and Valikangas, 2003). Large firms are also bound by corporate roles and contexts that reward caution and asset protection (Dewald and Bowen, 2010).

Given the above, executives of large firms adopt a systematic approach to business model innovation (Bucherer, Eisert, and Gassmann, 2012; Sinfield et al., 2012) in which they develop different scenarios (Gnatzy and Moser, 2012), experiment with multiple new business models in parallel with their current business models, and evaluate them through trial and error (Sosna et al., 2010; Sinfield et al., 2012; Govindarajan and Trimble, 2005a, b) to find the right one.

On the other hand, small firms have fewer resources to pour into new business models and thus are not able to go through the same process of experimentation, but simultaneously could enjoy an easier transition from their current to a new business model due to fewer external constraints and a simpler structure. As a result SMEs adopt an informal and unsystematic approach to business model innovation (Lindgren, 2012) in which new business models are not clearly envisaged or experimented with; rather, they are conjectured and adjusted over time (Morris et al., 2005). This process is known as effectuation and allows executives of SMEs to emphasize new business models by their aspiration, not detailed analysis (Chesbrough, 2010). In addition, since CEOs of SMEs are less bound to corporate rules and boards of directors, they can develop cognitive resilience and the capacity to make choices and lead a smoother business model transition (Chesbrough, 2010; Dewald and Bowen, 2010).

2.3.8 Strategic Emphasis on Business Model Innovation

It has been argued that business model innovation is essentially a strategic choice that represents a business modeling strategy of the firm. The issue that remains unclear is the notion that executives of different firms may place different emphasis on this choice as part of their overall strategy (Aspara and Tikkanen, 2013; Aspara et al., 2010).

To address this issue, the logic of exploration and exploitation raised by March (1991) was employed. March argues that firms fundamentally tend to focus on either exploration or exploitation, at the expense of underemphasizing the other. The term that captures the essence of this logic is “strategic emphasis.” Strategic emphasis (Mizik and Jacobson,

2003) represents the willingness of firms to develop strategies that focus on either exploration, such as innovative behavior, or exploitation, such as imitative or replicating behavior (Aspara et al., 2010).

Furthermore, there is evidence suggesting that the strategic choice to place different emphasis on business model innovation is also related to this tension. As noted earlier, firms that do not change their business model follow the logic of efficiency or exploitation (Winter and Szulanski, 2002), whereas business model innovation applies the logic of flexibility or exploration (Winter, 2003). It has been well documented in the literature that firms cannot pursue a hybrid strategy or pursue flexibility and efficiency simultaneously within one business model strategy (Eisenhardt, Furr, and Bingham, 2010; Schreyogg and Sydow, 2010; Aspara and Tikkanen, 2013). In large firms, executives might change the production system or develop new systems to focus on these two in parallel (Adler, Goldoftas, and Levine, 1999). However, in a small business context, executives do not have sufficient resources at their disposal to develop and pursue two different business modeling strategies. In a study on manufacturing small businesses, Ebben and Johnson (2005) found that attempts to pursue flexibility and efficiency at the same time lead to decreased performance, and in fact firms which have focused on only one logic have recorded better performance.

Maintaining this logic, it can be argued that SMEs face extreme difficulty in developing different business models and place different levels of emphasis on transforming them. Therefore, it is most likely that executives of SMEs will choose one strategy at the expense of the other. Additionally, Eisenhardt et al. (2010) argue that executives' cognition directly influences the choice between flexibility and efficiency. In keeping with this, it is assumed that executives' cognition, and particularly their habitual and dispositional cognitive factors, including cognitive style (i.e. intuitive versus analytic), could impact the strategic choice of emphasizing business model innovation. This would associate the tension between flexibility and efficiency with a lesser known aspect of executives' cognition.

Delving further into this inquiry shows that the dichotomous strategy of emphasizing efficiency, or replication, or flexibility, or innovation has also been addressed from the perspective of tendency towards being the same or becoming different (Deephhouse, 1999). According to this view, executives try to become different in order to reduce

competition and also attempt to be the same in order to gain legitimacy. Both the logic of reducing competition (i.e. high emphasis on BMI) and the logic of achieving legitimacy (low emphasis on BMI) could be a source of success for firms, depending on the competitive structure of their industry (Deephouse, 1999).

Since the business model of the firm is involved in both creating and capturing value, strategic emphasis must be placed on both dimensions of a business model to enact successful business model innovation. Aspara and Tikkanen (2013) argue that although a high emphasis on both value creation and capture creates competitive barriers for competitors, it could undermine the ability of executives to learn from the market and develop superior capabilities.

It has been shown that executives' cognition has a significant impact on this choice. Executives develop a perception of industry and markets that seems to be legitimate and successful (Porac et al., 1989; 2011). This can be called the industry recipe (Spender, 1989). Executives then make choices to direct their firms according to this recipe and along its performance trajectories or pathways to success (Bower and Christensen, 1995).

Research on cognition, however, suggests that some individuals also tend to challenge the established recipes and show tendencies to establish new ones (Armstrong and Hird, 2009). This stream of research further claims that any individual can be classified as inclined towards "doing things better" or "doing things differently" (Kirton, 1984). The former implies a tendency towards efficiency, following and improving established trajectories and recipes, whereas the latter implies a tendency towards innovation and establishing new trajectories (Armstrong and Hird, 2009). The current study extends this logic into business model strategy and the choice of emphasizing business model innovation.

Consequently, it is argued that the choice to be different (Deephouse, 1999) echoes the logic of emphasizing business model innovation. The essence of this choice can be related to the way in which executives make choices. This is reasonably deemed to capture the underlying assumption of why some firms are more innovative in their business modeling than others and how this choice impacts the growth of the firm.

2.3.9 Business Model Innovation and Growth of the Firm

The link between business model innovation and growth is guided by two related insights from organizational theory. The first insight is based on the market perspective. Since Schumpeter (1934), innovation has been central to firm growth (Garud, Tuertscher, and Van de Ven, 2013), because it drives market dynamism. Business model innovation, in this regard, is heralded as a unique type of innovation which has the potential to drive growth by targeting the way a firm creates and delivers value to its customers (Crossan and Apaydin, 2010). It is particularly favored over product and process innovation because these two types require considerable upfront investments with uncertain returns, and business model innovation offers an alternative or complementary way to tackle this challenge (Amit and Zott, 2012).

In this respect, business model innovation refers to any innovative logic of creating and capturing value that enables a firm to create new markets and benefit new consumers or existing consumers in new ways without investing heavily in R&D or specialized assets (Kim and Mauborgne, 1997). Examples are value innovators that aim to create new markets by offering previously ignored sources of value using simple resource structures (Anderson and Markides, 2007; Spieth et al., 2013). Furthermore, since value innovation through business model innovation is all about the logic of business or addressing societal problems in new ways (Wilson and Post, 2013; Thompson and MacMillan, 2010), any firm, from small to large, in manufacturing or service (Chesbrough, 2010; Matzler et al., 2013; Yunus, Moingeon, and Lehmann-Ortega, 2010) – even sport clubs (McNamara et al., 2012) – can achieve growth by adopting this logic.

The second insight is grounded in the resource-based perspective. In this regard, growth has been particularly related to the innovative use of resources (Penrose, 1959). As noted previously, Penrose (1959) argued that growth is achieved when a firm devises new ways of using its resources to enact opportunities. In this regard, recent studies (George and Bock 2011; Zott and Amit, 2010) suggest that the business model of a firm defines its opportunity-enacting activities and determines how different resources can be used.

This reasoning places the business model of a firm at the heart of its growth. However, business models cannot be protected by properly rights and are consequently subject to competitive imitations (Dickinson, 2000; Desyllas and Sako, 2013). Hence, their growth-

driving abilities are eroded by market changes and the actions of competitors (Teece, 2010; Casadesus-Masanell and Zhu, 2012). Consequently, firms cannot sustain the revenue stream accrued from their current business model to guarantee their growth (Desyllas and Sako, 2013). Therefore, emphasis on business model innovation has become the logic of growth not only for large firms (Amit and Zott, 2012; Pohle and Chapman, 2006) but also for small businesses (Chesbrough, 2010; Lindgren, 2012), because it not only enables firms to stimulate growth by using innovative ways of utilizing existing resources but also reduces the likelihood of being trapped by resource inertia and losing their ability to develop new capabilities (Teece, 2010; Achtenhagen, Melin, and Naldi, 2013).

These two insights (market and resource perspectives) are complementary because creating new markets by adopting a new logic is actualized when a firm develops supportive competencies, using its resources to transform the logic into market success (Zott and Amit, 2010; Sheehan, and Foss, 2007). Central to this understanding is the role of executives' knowledge. Literature suggests that not only finding new markets and sources of customer value, but also developing supportive resources to capitalize on new opportunities and exploit them, is largely influenced by the knowledge inventories of executives (Berghman et al., 2012; Doz and Kosonen, 2010).

2.4 Executives' Acquisition of Knowledge

Knowledge is a resource that brings about the capacity to make and execute strategic choices (Barney et al., 2011) such as emphasizing business model innovation. Therefore, the discussion on acquisition of knowledge will begin from the resource-based theory of the firm.

2.4.1 Knowledge As a Resource and Resource-Based Theories of the Firm

It was previously mentioned that a firm is a bundle of resources and the growth of a firm is driven by devising different combinations of resources (Penrose, 1959, 1960). Penrose also argued that managerial knowledge is fundamental in developing different combinations of resources (Pitelis, 2005, 2007; Rugmen and Verbeke, 2002, 2004). This idea was further advanced in the resource-based view (RBV), also known as resource-based theory (RBT), resource-based perspective (RBP), or resource-based logic (RBL) (Wernerfelt, 1984; Barney, 1991; Conner, 1991; Zubac, Hubbard, and Johnson, 2012) and its extensions, the knowledge-based view (KBV; Grant, 1996; Spender, 1996a) and

dynamic capabilities view (DCV) of the firm (Teece, Pisano, and Shuen, 1997; Barreto, 2010). This wide spectrum of theories fall under the broad label of resource-based view (RBV; Barney and Clark, 2007) and jointly attempt to incorporate aspects of human behavior into economic decision-making in order to explain how executives use different resources and capabilities to enable a firm to grow and evolve (Teece and Pitelis, 2009; Kaplan, 2011).

RBV is premised on the assumption that any given firm is essentially a bundle of tangible and intangible resources (known as the resource base), and deployment of these resources leads to heterogeneity in the performance of firms, such as variation in growth (Barney et al., 2001). Further, to sustain its advantage, a firm must develop abilities to acquire and deploy resources which meet certain criteria, including being “valuable, such that it reduces costs or increases value to customers, being rare enough that competitors do not use the same resource to compete away the value, and being difficult to imitate (i.e. inimitable) or substitute (non-substitutable), which keeps competitors from gaining parity” (Barney et al., 2001; Crook et al., 2008: 1142). These criteria form the underlying framework of the RBV known as VRIN (Valuable, Rare, Inimitable and Non-substitutable; Barney, 1991; Grant, 1991).

KBV and DCV are concerned with the notion of knowledge as the most important resource of the firm . They assume that knowledge satisfies conditions of VRIN resources and hence the role that acquisition and utilization of knowledge play in creating and sustaining advantage for the firm is of central importance (Barreto, 2010; Foss 1996a, b). This study is built upon the notion of knowledge as a resource and therefore uses insight from this side of the resource-based view (KBV and DCV).

Focusing on internal factors (i.e. resources and capabilities) and the actions of managers to manage these factors distinguishes RBV from the traditional industrial organization (IO) view (Porter, 1980). IO aspires to place the sources of firms’ advantages in the external environment, including markets and industry (Porter, 1980, 1981, 1985) and factors such as intensity of rivalry, demand and supply dynamism, or industry structure (i.e. Porter’s five forces model; Porter, 1979). This perspective emphasizes the competitive dynamics and actions of the firm to create, defend, or improve its market position (Ndofor, Sirmon, and He, 2011) and follows the economic model of strategy-conduct-performance (SCP) that assumes industry (i.e. structure)

determines firms' strategies (i.e. conduct) and subsequent performance (McWilliams and Smart, 1993; Barney, and Clark, 2007: 12). In contrast, RBV takes a different position and attempts to associate a firm's advantage with its internal sources, such as possession and control of tangible and intangible resources (Wernerfelt, 1984; Barney, 1991). Put differently, RBV aspires to place emphasis on internal strategic thinking rather than on the environment (Hart and Dowell, 2011; Hoskisson et al., 1999; Kor and Mahoney, 2004; Lockett et al., 2009; Buckley and Casson, 2007). Although these two perspectives (i.e. RBV and IO) have different emphases, they are neither independent (Ndofor et al., 2011) nor competing or opposing; indeed, they must be considered complementary perspectives (Kraaijenbrink et al., 2010).

2.4.2 Defining Knowledge as a Resource

2.4.2.1 Definition of Resources in RBV

Definition of resources in RBV is a challenging issue and has been criticized as being ill-defined, all-inclusive and vague, causing a problematic issue for the progress of research (Kraaijenbrink et al., 2010; Priem and Buttler, 2001a, b). This debate goes beyond the scope of this study, which as a result adopts the original conceptualization of organizational resources proposed by Barney (2001), as it is the most commonly used definition in the RBV literature (Barney et al., 2011).

According to Barney (2001: 101), organizational resources are “all assets, capabilities, processes, attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness.” Furthermore, Barney also classifies resources into three general categories, including physical assets (e.g. location, access to raw material, physical technology, equipment, machinery, etc.), human capital assets (e.g. training, judgment, intelligence, employees' knowledge, skills and abilities, relationships, etc.) and organizational assets (e.g. structures, formal and informal relations with environments, planning, controlling and coordinating systems, etc.). As was explained in chapter 1, executives' knowledge about markets and technologies is studied in this research. This resource falls under the human capital side of organizational resources. A more complex discussion on the definition of resources is given in Appendix 8.

In addition, according to RBV, an organization is a resource-based entity and the resource base (RB) of the firm consists of all “tangible, intangible, and human assets (or

resources) as well as capabilities which the firm owns, controls, or has access to on a preferential basis” (Helfat et al., 2007: 4). So, a firm’s behavior and performance outcomes such as growth are determined by the way it develops and makes use of its resource base (Teece et al., 1997).

In light of the above definition, differences in the management of tangible resources, such as physical products, versus intangible ones, such as human skills, are still an ambiguous side of RBV (Hall, 1992, 1993; Kraaijenbrink et al., 2010; Molloy et al., 2011). Moreover, not all resources are strategically relevant; only those resources are considered strategically relevant which enable a firm to formulate and implement value-creating strategies – that is, the ability to improve performance (Barney et al., 2011). Resources which are valuable and rare fall into this category, and resources which are valuable, rare (VR) and also inimitable and non-substitutable (IN) are firm-specific resources which enable sustained superior value creation (Newbert, 2008). A key resource which satisfies these criteria is knowledge (Grant, 1996; Lockett et al., 2009). RBV further pronounces the role of knowledge in the management of firms’ resources (Sirmon et al., 2007; Barney et al., 2011).

2.4.2.2 Knowledge as a Strategic Resource and the Knowledge-Based View of the Firm

The role of knowledge as a strategic resource is traceable to Penrose (1959), who attributes the formation and growth of any business enterprise to the application of entrepreneurial and managerial knowledge as a resource. “Entrepreneurial knowledge is essential for recognizing opportunities in markets, while managerial knowledge is necessary to provide systems and processes to enable opportunity exploitation. So for Penrose, formation and growth are intimately associated with the processes through which knowledge is acquired and applied” (Macpherson and Holt, 2007: 172). Similarly, Nonaka, Toyama, and Byosièrè (2001) state that since the early invention of modern management (Taylor 1911) and proliferation of managerial behavior (Simon, 1947), knowledge has been seen as a key factor in the behavior of an organization.

From another perspective, organizational learning theory (e.g. Levitt and March, 1988; Cohen and Levinthal, 1990; March, 1991; Huber, 1991; Levinthal and March, 1993; March, 1996) suggest that organizations require knowledge to evolve and adapt to the environment through learning. In this context, Walsh and Ungson (1991) state that

organizations, like human beings, require a memory to restore and retrieve knowledge about actions from the past and use it to improve current and future behavior. Cohen and Levinthal (1990) introduce the concept of absorptive capacity, through which they accentuate the centrality of absorbing (i.e. acquiring, transmitting, and using) knowledge in the behavior of an organization.

The above arguments imply that knowledge has attributes of assets (or resources) which can be acquired, stored, and used (Macpherson and Holt, 2007; Lockett et al., 2009). It represents a strategic asset which is owned and controlled by its holder to be deliberately and purposefully used in developing and executing competitive strategies (Helfat et al., 2007; Barney et al., 2011). Furthermore, knowledge about markets and technologies has several idiosyncratic attributes, such as being non-rivalrous (i.e. different firms can acquire knowledge without precluding others from acquiring it for similar or different purposes), being non-depleting (i.e. it will not deplete with usage) and fungibility or versatility (it can be used for different purposes), which makes it a unique strategic resource (Foss, 2005; Kraaijenbrink et al., 2010). Appendix 11 further expands on these attributes.

Based on this understanding, some scholars (Grant, 1996; Spender, 1996a) believe that the resource-based view does not fully acknowledge the role and significance of knowledge as a resource. This belief led to the development of the knowledge-based view (KBV) to resolve this deficiency.

2.4.2.3 What is KBV?

As a corollary of the resource-based view, the knowledge-based view argues that every firm constitutes a bundle of knowledge (Gubta and Govindarajan, 2000). Therefore, the main departure of KBV from RBV is that RBV considers knowledge a generic resource whereas KBV considers knowledge the most important strategic resource of the firm (Foss and Robertson, 2000; Eisenhardt and Santos, 2001; Foss, 2005).

According to KBV, firms supersede markets in their ability to acquire and use knowledge (Foss, 2005). In fact, KBV assumes that all products and processes of the firm are considered embodiments of its knowledge (Grant, 1996). Therefore, acquisition and utilization of knowledge is the most fundamental task of a business organization (Foss,

1996a, b). Given this, it seems appropriate to distinguish between the resource base and the knowledge base of a firm.

2.4.2.4 From the Resource-Base to the Knowledge-Base of the Firm

The resource base of the firm has been decomposed in a number of ways. For instance, it has been dismantled into tangible (i.e. machinery, geographic location, money, raw materials, etc.) and intangible resources (reputation, knowledge, skills, relationships, trust, culture, etc.; Barney and Clark, 2007). Additionally, Miller and Shamsie (1996) argue that resources can be property-based and knowledge-based. Property-based resources are controlled by a firm through property rights and ownership, and hence they can bring value to the firm until they have value in the market. Knowledge-based resources are not proprietary but take the form of know-how, skills, technology, and information, which rarely lose their value and cannot be imitated by rivals, simply because they are hard to understand. These resources bring value to the firm by enabling it to adapt (Miller and Shamsie 1996).

The knowledge-based view is particularly premised upon the knowledge base of the firm (Zander and Kogut, 1995; Kogut and Zander, 1992; Conner and Prahalad, 1996; Spender, 1996; Grant, 1996). The knowledge base of the firm as a part of its resource base (Barney and Clark, 2007) has been defined as “the sum of all knowledge that the firm can utilize for competitive advantage” (Simsek and Heavey, 2011: 82). Therefore, the knowledge base of the firm entails all intangible assets of the firm (Seleim and Khalil, 2011).

The KBV literature points to several dimensions of the knowledge base of a firm. Tacit–explicit, specific–general, simple–complex, depth–breadth, utilitarian–instrumental, declarative–procedural, public–private, and individual–collective are assumed to be the main dimensions of the firm’s knowledge base and have received ongoing attention in the literature. Appendix 10 presents a detailed discussion of these dimensions. Given this introduction into the knowledge base of the firm, Appendix 9 offers a detailed analysis of what knowledge really is in the organizational setting and how it differs from data and information. In this section it suffices to say that knowledge in KBV may be best considered as being acquired in the form of knowledge-as-information and then used in action as knowledge-as-knowledge (Tsoukas and Vladimirou, 2001).

The central tenet in this school of thought is that knowledge is the essence of organization (Tsoukas, 1996) and an organization, like a human being, is intrinsically an information processing machine and a knowledge-driven system (Grant, 1996; Nonaka et al., 2001). Finally, given this nature of knowledge, a given organization may acquire and interpret information and use it in different ways which result in different embodiments of knowledge and subsequent heterogeneity in performance outcomes, such as variations in growth (Nonaka, 1991; Kogut and Zander, 1992; Conner and Prahalad, 1996).

2.4.2.5 How the Knowledge Base of The Firm Is Developed and Maintained

Following the description of the knowledge base of the firm, this section addresses the issue of how the knowledge in the firm comes into existence. Firms develop and maintain their resource bases (i.e. portfolio of all resources), including their knowledge base, through a number of processes. These processes fall collectively under the concept of resource structuring (Sirmon et al., 2007; Garbuio et al., 2011).

Whenever a firm is established it has initial resource endowments, which may include the funder's knowledge, experience, relationships, initial finances, and capital (Brush et al., 2001; Maritan and Helfat, 2011). This would include the initial knowledge base of the firm as well (Brush et al., 2001). As the firm ages and grows this resource base changes; new resources are acquired, developed internally, combined, and also some resources would be divested and disposed of (Sirmon et al., 2007). These phenomena may follow certain paths (i.e. path-dependency) according to the history of the firm or its funders, or sometimes establish and follow new paths (i.e. path-breaking and path-creation; Teece et al., 1997; Garud, Kumaraswamy, and Karnøe, 2010). This issue goes beyond the scope of this research and hence the present section does not widely engage in the path-dependency and path-creation debate (e.g. Garud et al., 2010; Gruber, 2010) in strategy literature.

To sum up, it must however be noted that in a dynamic environment, the resource base of the firm becomes a dynamic entity which changes over time (Katkalo et al., 2010), and the knowledge base of the firm plays a fundamental role in this dynamism (Sirmon et al., 2007; Barreto, 2010). Changes in the knowledge base of the firm are basically path-dependent. However they might sometimes follow new paths based on the strategies of the firm (Foss, 2005; Morroni, 2006).

Literature shows that executives can develop and maintain the knowledge base of the firm through a number of processes. These mainly include acquisition of knowledge from the external environment (George and Zahra, 2002; Huber, 1991), seeking advice from consultants and business advisors (Studdard and Munchus, 2009), creation and development of knowledge internally through coordination and collaboration between individuals and investment in R&D (Nonaka and Takeuchi, 1995), acquisition of new sources of knowledge in the form of hiring new and knowledgeable staff (Chandler and Lyon, 2009), acquiring licenses or patents (Antonelli, 2007), acquiring firms with valuable knowledge bases (i.e. acquisitions or mergers) (Carayannopoulos and Auster, 2010), and pursuing strategic alliances, joint ventures, and partnerships to learn from other firms in different aspects of business (i.e. marketing, R&D, etc.) (Tsang, 2002; Park, 2010). Through all these activities, the knowledge base of the firm remains functional and goes through changes as executives continuously acquire external knowledge and integrate it with knowledge created internally (Von Krogh, Nonaka, and Rechsteiner, 2012).

To conclude, since the current research aims to examine resource acquisition, the concept of knowledge acquisition is studied and other knowledge-based processes such as creation and integration are excluded (Nonaka and Takeuchi, 1995). In reality these processes are intrinsically intertwined and cannot be separated (Nag and Gioia, 2012). However, by focusing only on acquisition of knowledge from external sources, this study develops a parsimonious understanding of how new acquired knowledge is used in an organizational setting. In this regard, in order to understand why some executives prioritize external knowledge over internal knowledge development (i.e. investing in R&D), it seems appropriate to explain the notion of valuing internal and external knowledge.

2.4.2.6 Valuing External and Internal Knowledge

Menon and Pfeffer (2003) found that several factors underpin and explain executives' preferences for acquiring knowledge from an external environment. Their explanations can be summarized into two factors. First, the presence of competition provokes executives to acquire knowledge about competitors by observing, searching, noticing and scanning the competitive landscape of their business. More precisely, external competition brings about knowledge-acquiring incentives as executives are motivated to know more

about their competitors to avoid being outcompeted. This finding was further supported by the work of Menon, Thompson, and Choi, (2006) who concluded that amongst employees, perceived threat from external rivals (i.e. employees of competitors) provoked the acquisition of knowledge more than perceived threat from internal rivals (i.e. employees of the same organization).

Second, knowledge availability influences executives' tendency to search inside or outside. Available knowledge internally reduces the tendency to look outside. When executives think that they have sufficient internal investment in knowledge creation, such as R&D activities they become nonresponsive or less responsive to the environment (Menon and Pfeffer, 2003). On the other hand, when executives realize they need knowledge that is not available internally, such as knowledge about customers' nature, changes, market dynamism, and technologies used by competitors, they become motivated to engage in the acquisition of knowledge from an external environment (Narver and Slater, 1990). This proposition has also been supported by studies by Grant and Baden-Fuller (2004) and De Clercq and Dimov (2008). These two studies show that when executives sense an incongruity in their productive system – that is, a gap between available knowledge and required knowledge for intended production – they rely on external knowledge to fill the gap.

Firm size is an important factor in this context. For instance, since small firms usually lack the financial ability to invest in R&D, they rely heavily on external knowledge acquisition rather than internal development (Svetina and Prodan, 2008; Macpherson and Holt, 2007). Furthermore, competitive pressures from both large and small firms result in a persistent tendency towards external knowledge acquisition in small firms (Thorpe et al., 2006). In addition, the inadequacy of available internal knowledge about markets and technologies results in a critical role for external knowledge acquisition (Burgers et al., 2008). As a result, external knowledge acquisition from key partners such as main customers (Yli-Renko et al., 2001) and relying on external ties for knowledge acquisition (Sullivan and Marvel, 2011a) have been argued to be fundamental factors in the success of small firms. Therefore, it is assumed that executives of SMEs would consider acquisition of knowledge from the external environment a critically important task. Given this, KBV literature (Grant, 1996; Wiklund and Shepherd, 2003b; Nag and Gioia, 2012)

suggests that market and technological knowledge are the most important types of knowledge acquired from the external environment.

2.4.3 Market and Technological Knowledge

To address and explain why, in this study, the focus is on market and technological knowledge, the discussion begins by using insights from Grant (1996) and Spender (1996a) as primary sources of KBV. Grant (1996) argues that firms can generally operate in two ways: by production, where inputs are transformed into outputs and these outputs have greater value than inputs, or by arbitrage, where firms only move products either from one place to another through trade or across time through speculation, without transforming them. However, in resource-based view (RBV and KBV) firms are productive units. In other words, it is generally assumed that firms transfer inputs into output of a greater value, and this is the most important and complex means of value creation (Grant, 1996: 111).

This assertion arguably underpins the conception of a firm in KBV as a knowledge repository, or, more precisely, a “repository of productive knowledge” (Winter, 1988, cited in Witt, 1998). According to this perspective, two central types of knowledge for the firm are knowledge of the markets (i.e. market knowledge) and knowledge of the technologies used in effective production (i.e. technological knowledge). This argument is further supported by Spender (1996a), who argues that “knowledge of markets and technology has always been crucial to business, and the firm's information-gathering and processing abilities have always been a significant means of strategic competition” (p. 48).

2.4.3.1 Market Knowledge

Given the significance of market knowledge, as illuminated in the previous section, this section aims to briefly discuss the nature of market knowledge in KBV. According to the market theory in economics (Hayek, 1945), markets are complex bodies of activity-based knowledge where knowledge about interactions of firms, societies and individuals is distributed. Furthermore, the origins, processes, and boundaries of markets cannot be easily revealed and firms cannot be separated from markets (Spender, 1996a, b).

Market theory also suggests that markets operate to disseminate information to interested firms, but not all firms are equally equipped to take advantage of this

phenomenon (von Hayek, 1989). Consequently, scholars have argued that firms must actively invest in understanding markets by continually acquiring market knowledge (Tripsas and Gavetti, 2000; Marinova, 2004). This allows firms to co-evolve with markets and prolong their success (Murmann, 2003). This is mainly because market knowledge reveals both growth opportunities and threats (Burgers et al., 2008). Therefore, there is reason to assume that “at a fundamental level, firms act on the basis of their market knowledge” (Marinova, 2004: 1).

In this respect, market knowledge can be generally defined as knowledge associated with customers, suppliers, competitors, distributions, market patterns and trends, and marketing approaches (Burgers et al., 2008; Zhou and Li, 2012). Thus, inaccurate or outdated market knowledge harms the performance and evolution of the firm (Marinova, 2004). Wiklund and Shepherd, (2003) assert that market knowledge can increase the ability of a firm to exploit opportunities in at least three ways: 1) increasing the firm’s awareness of customers’ problems and constituting real opportunities to address them; 2) increasing the ability of the firm to determine the market value of new advancements, discoveries, and offerings (innovations); and 3) allowing the firm to gain and use the same tacit knowledge of its users regarding innovations and new products and services. In other words, customer familiarity and understanding of market dynamism is a key factor of successful implementation of innovations (Wiklund and Shepherd, 2003). On this understanding, Zahra and George, (2002) posit that market knowledge is one of the main building blocks of a firm’s successful adaptation.

Furthermore, market knowledge has been shown to be significantly related to innovative strategies such as firms’ business model innovation (Burgers et al., 2008). In particular, acquisition of market knowledge enables a firm to successfully reinvent its business model (Tripsas and Gavetti, 2000). Marinova (2004) addresses the roots of this issue and asserts that if markets constantly change and innovation drives these changes, then market knowledge enhances innovative efforts. Cillo (2005) also observed that acquisition of market knowledge directly enhances firms’ capacity for continuous innovation. Consistent with this argument, the recent study by Sullivan and Marvel (2011a) suggests that acquisition of market knowledge enables new ventures to achieve profit at early stages of commercialization. Similarly, Zhou and Li (2012) studied high-

technology firms in china and found a positive relationship between acquisition of market knowledge and commercialization of radical innovations.

2.4.3.2 Technological Knowledge

According to the economic view of markets (Hayek, 1945), markets change and evolve through historical and technological trajectories. This assumption is a fundamental element of KBV, in which firms produce different goods and services based on technological knowledge and commercialize them based on market knowledge (Grant, 1996; Spender, 1996). However, to understand technological knowledge, it seems appropriate to define technology.

Technology has been defined differently based on different conceptualizations (Gaimon, 2008; Orlikowski, 1992; Lower, 1987). For instance, it can be conceptualized in terms of “hardware” and accordingly defined as “the equipment, machines, and instruments that humans use in productive activities, whether industrial or informational devices” (Orlikowski, 1992: 399). However, in the social context, technology can be defined in terms of “generic tasks, techniques, and knowledge utilized when humans engage in any productive activities” (ibid). Similarly, Itami and Numagami (1992: 119) define technology as “a systematic body of knowledge about how natural and artificial things function and interact.” The first definition is limited to the organizations that employ machinery as their main source of production, such as manufacturing firms; however, the latter two views tend to cover a broader context and allow technology to be meaningful in all types of organization, from manufacturing to service (Orlikowski, 1992). More recently, Betz (2003: 9) defines technology as “knowledge of the manipulation of nature for human purposes.” Finally, Gaimon (2008: 1) defines technology as the “embodiment and deployment of technical and scientific knowledge and discoveries that lead to the creation of goods and services.”

The non-hardware view reflected in the last definitions is used throughout this study because it is more relevant to the analysis of business firms as productive entities (Gaimon, 2008). One conclusion from these definitions is that technology is defined based on knowledge. In the business and management literature, this knowledge and subsequent technology center on the productivities of the firm (Gaimon, 2008; Orlikowski, 1992).

So, a technology can be separated into pieces of knowledge that impact different aspects of a firm's productivity. These pieces relate to know-how, methods, procedures, and experiences of success and failure related to the firm's production possibilities (Dosi, 1982). In an industry that is composed of different firms, technologies change through various trajectories. Accordingly, technological trajectories refer to patterns of problem-solving that are reflected in firms' production of goods and services (Dosi, 1982). Therefore, industrial and market changes influence the technological knowledge that a firm uses in its production.

This study, hence, considers technological knowledge-as-knowledge about "products, technologies and/or processes" (Burgers et al., 2008: 56). Possession of technological knowledge allows the firm to competitively optimize the design, functionality, cost, and reliability of its offerings (i.e. products, services; Wiklund and Shepherd, 2003). Technological knowledge can also be decomposed into component and architectural knowledge (Henderson and Clark, 1990). Component knowledge is the knowledge of aspects and elements of firms' productive processes, such as elements of technologies, design, and innovations (Chau, 2002). It also refers to modular technological knowledge, which concerns materials and fundamental principles used in firms' productive processes (McEvily and Chakravarty, 2002), whereas architectural knowledge pertains to the organization-wide understanding of coordination amongst those components (Matusik and Hill, 1998). More precisely, architectural knowledge defines products and services' normal configurations (McEvily and Chakravarty, 2002).

Literature suggests it is not only technologies which influence markets and the behavior of consumers (Lower, 1987); market opportunities and changes also drive new technologies and lead to technological changes (Castellacci, 2008). These findings imply that market and technological knowledge provide a complimentary knowledge base for firms (Burgers et al., 2008). KBV also assumes that firms require both types of knowledge in order to succeed and generate profit from their knowledge base (Spender, 1996; Grant, 1996). Furthermore, Levinthal and March (1993) assert that firms require market knowledge to discover which markets to enter and require technological knowledge to find out how to perform in those markets. Empirical studies also suggest that firms with a broad knowledge base have better abilities to detect and exploit a greater number of opportunities (Zhou and Li, 2012). More specifically, interaction of market

and technological knowledge is a key determinant of a firm's ability to develop capabilities and implement strategies successfully (Song et al., 2005).

On the contrary, focusing on acquiring only one type of knowledge has been shown to result in problematic situations (Levinthal and March, 1993). For instance, there is empirical evidence showing that possession of technological knowledge accompanied with lack of market knowledge may lead to the inability to transform the business model of the firm (Tripsas and Gavetti, 2000).

In light of the above arguments, it is believed that acquisition of both market and technological knowledge is equally important for a firm. As a result, this study intends to examine acquisition of these two in the current research. It proceeds by arguing that these two types of knowledge form a complementary knowledge base for the firm.

2.4.3.3 Market and Technological Knowledge Complementarity

KBV literature suggests that market and technological knowledge are complementary types of knowledge (Grant, 1996; Spender, 1996). Although emphasis on the acquisition of one may result in the under-acquisition of the other, the value of market knowledge depends on technological knowledge of the firm, and vice versa (Burgers et al., 2008; Lichtenthaler, 2009). Nonaka, Reinmoeller, and Senoo (1998) acknowledge this complementary role by stating that a firm's technological knowledge is not a prerequisite for capitalizing on the acquisition of market knowledge, but could enhance it. Further, Wiklund and Shepherd (2003) assert that these two types of knowledge complement each other in providing executives with the ability to discover and exploit opportunities. More recently, Siegel and Renko (2012) added to this discussion by asserting that both market and technological knowledge contribute to a firm's recognition of opportunities.

On this understanding, Zack (2002) calls these two the building blocks of a firm's strategic knowledge base, because they enable strategy formulation and implementation. Based on this conceptualization, Anderson et al. (2009) argue that strategic knowledge is directly related to a firm's overall competitive position. Therefore, for a firm to excel it must be proficient at acquiring strategic knowledge (Anderson et al., 2009). Following this logic, this study treats the two as separate but complementary resources. It also, as noted, examines how executives' cognitive style could affect the acquisition of these resources.

2.4.4 Knowledge Acquisition

As thus far illustrated, KBV assumes that a firm is a repository of knowledge whose function is to acquire and use this knowledge. Market and technological knowledge specifically play fundamental roles in the success of firms. However, as noted, firms do not have equal skill and ability to acquire this knowledge (Witt, 1998; Zahra and George, 2002). This heterogeneity is indeed argued to be one of the key drivers of firms' differences in markets and industries (Murmann, 2003). Furthermore, knowledge acquisition is a broad concept. Two views have been raised in the literature which are pertinent to knowledge acquisition. The first view addresses knowledge acquisition from the technological side (i.e. information technologies), mainly in management information systems (MIS) and decision support systems (Kim and Courtne, 1988; Liou, Nunamaker, and Jay, 1993). According to this view, knowledge acquisition refers to "the transfer and transformation of problem-solving expertise from some knowledge source to a computer program" (Byrd, Cossick, and Zmud, 1992: 117).

The second view, however, is taken by scholars in KBV (Spender, 1996; Grant, 1996) and considers knowledge as a resource. This view further pays attention to the acquisition of knowledge as a behavioral phenomenon, not a technological one (Zahra and George, 2002; Burgers et al., 2008; Sullivan and Marvell, 2011a, b). However, in KBV, a firm's information technology plays an important role in its knowledge management (Cohen and Levinthal, 1990; Alavi and Leidner, 2001). Specifically, the information processing theory (Galbraith, 1973, 1974) suggests that the fit between a firm's information processing requirements and processing capabilities determines its performance (Cousins et al., 2011). Since this study is situated within KBV (RBV), it focuses on the latter view of knowledge acquisition. Appendix 12 offers an extended discussion of the former.

2.4.4.1 Theoretical View of Resource Acquisition: The Curious Case of Knowledge

There are two general theoretical perspectives about how a firm acquires resources and develops its resource base (Foss, 2005). The first is strategic factor market theory (SFM) (Barney, 1986b) and the second is the asset stock accumulation process view (ASA; Dierickx and Cool, 1989). The former applies to acquisition of tradable resources such as machinery, labor, raw material, geographical location, patents, etc., whereas the latter explains the process of developing untradeable resources or assets such as reputation, research, and development capabilities; trust between the firm and its customers or

suppliers; brand equity, etc. (Foss, 2005). The key assumption here is that these two views are not competing but rather are complementary (Maritan and Peteraf, 2011). This section briefly explains these two and then narrows the attention towards knowledge as a strategic resource.

Barney (1986b) argues that a firm's success is a function of its ability to acquire superior resources, also known as strategic factors. Therefore firms tend to compete over these resources in strategic factor markets. He defines strategic factor markets (SFMs) as "where firms buy and sell the resources necessary to implement their strategies" (Barney, 1986b: 1232). Barney argues that a firm can acquire resources from SFMs in two ways: by luck or by having superior knowledge and calculating the expected price and potential value of the resource (Maritan and Peteraf, 2011). This view offers a starting point to study the acquisition of tradable resources (Maritan and Peteraf, 2011).

In addition, the SFM view implies that the resources of a firm flow, as some new resources are acquired while some are divested (Barney, 1991; Simon et al., 2007). However, a firm's resource base consists of both tradable and non-tradable resources, such as reputation, trust, and expertise, amongst others (Helfat et al., 2007). The asset stock accumulation process developed by Dierickx and Cool (1989) aspires to explain the development and acquisition of these resources.

Dierickx and Cool (1989) contend that some resources, such as reputation and trust, cannot be traded and acquired in SFMs; instead they are accumulated or developed by executives over a period of time. They further assert that these resources become inherently rare, valuable, inimitable, and non-substitutable (VRIN) because of their complicated accumulation path. The authors further describe four characteristics of processes involved in asset accumulation: (1) causal ambiguity, which is related to the inability of competitors to identify and understand all factors and variables leading to the accumulation of a certain asset, such as reputation; (2) asset interconnectedness, which says the pace of an asset's accumulation is influenced by the level of other asset stocks; (3) asset mass efficiencies – that is, the initial level of an asset stock significantly influences the pace of its further accumulation (p. 1509) or, simply, the more assets a firm has, the lower the cost of its accumulation would become; (4) time compression diseconomies, which state the process of accumulation cannot be rushed.

Finally, the asset erosion principle claims that, like tradable resources, untradeable assets also decay in the absence of adequate maintenance, such as required investment in R&D or obtaining knowledge about customers, competitors, and new technological advancements (p. 1508). Additionally, ASA implies that untradeable resources do not flow but instead are accumulated like stocks. Knott, Bryce, and Posen (2003) argue and empirically show that ASA theory cannot always be correct, as evidence suggests that R&D of small firms can sometimes be more productive than that of large firms, and incumbent firms with asset mass efficiencies and causal ambiguities do not always prevail in industries and markets, as ASS predicts.

Given this, Barney (1989) argues that the ASA view does not limit SFM but instead complements it. In fact, a firm's resource base embraces both stock and flow views of resources, and these two provide a complementary model to investigate this notion. This interaction underlines the dynamic capability view (DCV) that purports to associate the survival and competitiveness of firms with their ability to change the structure of their resource base over time (Helfat et al., 2007; Katkalo et al., 2010; Maritan and Peteraf, 2011). These abilities stem from the knowledge that is acquired by the firms and its employees, especially the managers who structure the firm's resources (Katkalo et al., 2010).

Given the above, the modern resource-based view treats knowledge as both a stock and a flow and assumes that it drives a firm's capabilities. Consequently, key questions about acquisition of knowledge relate to what types of knowledge differentiate firm performance and how this knowledge influences the evolution of the firm (Venkatraman and Tanriverdi, 2004: 36). This study maintains these assumptions, as summarized in Table 2.

Table 2: Knowledge Acquisition: Stock Versus Flow Views

Perspective	Assumptions About Knowledge	Key Question	Treating Knowledge As	theoretical school
Resource-based view (including DCV and KBV)	Knowledge as a key resource that drives competitive advantage	What types of knowledge resources and processes differentiate firm performance? How do knowledge stocks embedded in routines of the firm influence evolution of the firm?	Treats knowledge both as a stock and a flow; and as the interplay between stocks and flows.	knowledge as stock, flow and driver of firm's capabilities

Source: Venkatraman, and Tanriverdi, (2004:36)

2.4.4.2 From Acquisition of Knowledge to Success

The success of a firm can be a result of many factors (Porter, 1991; Flamholtz and Aksehirli, 2000; Makadok, 2011). However, according to RBV and its extensions (KBV and DCV), success is derived from the implementation of strategies based on utilization of VRIN resources (Barney, 1991) and knowledge lies at the heart of this phenomenon (Barney et al., 2011; Makadok, 2011). Therefore, an idea echoed throughout this research is that acquisition of knowledge leads to success.

There are some explanations for this assumption. For instance, Barney (1991) argues that knowledge that executives control about their firms and its business environment helps them significantly shape and implement strategies. This view has long been studied in strategic management in the form of scanning the business environment (Hambrick, 1981). Specifically, constant acquisition of knowledge about the business and its environment enables managers to find strategic issues (Ansoff, 1980; Dutton, Fahey, and Narayanan, 1983; Lozier and Chittipeddi, 1986), opportunities, and threats, and devise ways to deal with them (Dutton and Jackson, 1987; Thomas, Reuben, and McDaniel, 1990). Recent studies on this issue suggest that executives may have ambivalent interpretations of the environment, and hence acquiring more knowledge may help them perceive and interpret their environment more effectively (Plambeck and Weber, 2010).

Alternatively, according to RBV and DCV, a firm's success derives from its ability to acquire and utilize VRIN resources (Barney, 1991). Therefore possession of VRIN resources alone does not necessarily lead to success but, more importantly, the ability of a firm to utilize or deploy these resources defines its success (Newbert, 2007, 2008). Sirmon et al. (2007) attribute this ability to the knowledge acquired by the firm. They argue that knowledge as a resource enables executives to manage and deploy other resources. They specifically accentuate that acquisition of knowledge by executives is important for the effectiveness and efficiency of resource management.

Makadok (2011) adds to this debate by arguing that the acquisition of knowledge, such as market and technological knowledge, creates information asymmetry between firms. Knowing more than competitors allows the firm to create and capture more value. More specifically, this asymmetry enables the knowledge acquirer to gain the ability to learn more effectively and consequently succeed. As precisely stated, "private information allows the firm to selectively acquire strategic resources from which competitive advantages can be created" (p. 10). The argument of Makadok (2011) has its roots in the theory about the role of managers' ability to acquire knowledge in their performance in the strategic factor markets (Makadok and Barney, 2001).

As noted earlier, Barney (1986b) argues that firms compete over tradable resources, also termed as strategic factors, such as plant locations, machinery, patents, specific human skills, and labor in strategic factor markets (SFM). He further (2001) argues that in neo-classic economics these resources are known as factors of production, and in RBV they are better known as resources. It was also mentioned previously that SFM can be defined as "where firms buy and sell the resources necessary to implement their strategies" (Barney, 1986b: 1232). On the basis of the strategic factor market view, Makadok and Barney (2001) assume that the more knowledge executives acquire about the markets and their firms, the better able they become to compete and acquire resources from strategic factor markets, and hence to gain more resources and implement strategies more effectively.

More precisely, executives must know what knowledge is necessary and how this knowledge should be acquired to formulate and implement the firm's strategies. Knowledge about the firm's attributes, its current resources and capabilities, as well as its markets and competitors are important elements in anticipating the profit implications of

strategies and resources they need to get implemented (Makadok and Barney, 2001: 1622). Furthermore, SFM assumes that all firms have similar access to knowledge about the business environment but their internal abilities to acquire this external knowledge and balance it with internal knowledge differ, and this defines why some firms create and capture more values (Maritan and Peteraf, 2011). This notion suggests that environmental scanning is a central knowledge-acquiring task of executives. This task has been studied extensively in the literature (Hambrick, 1981; Peteraf and Bergen, 2003; Garg, Walters, and Priem, 2003; Haase and Franco, 2011). Appendix 15 presents a review of this literature.

2.4.4.3 From Knowledge Acquisition to Dynamic Capabilities

The dynamic capabilities view (DCV) is a theoretical extension of the resource-based view. It suggests that firms know “what to do” and learn “how to do it” (Teece et al., 1997; Helfat et al., 2007). Executives’ acquisition of knowledge can be related to the dynamic capabilities perspective in two different ways. First, it is a foundation of firms’ dynamic capabilities, because by acquiring knowledge executives gain the capacity to detect opportunities and threats and devise ways to address them by using resources in different ways (Teece, 2007).

Second, it is a fundamental component of dynamic managerial capabilities. According to Adner and Helfat (2003: 1012), dynamic managerial capabilities (DMC) are “capabilities with which managers build, integrate, and reconfigure organizational resources and competences.” Their conceptualization builds upon the managerial rent model (MRM; Castanias and Helfat, 1991; 2001). This model extends RBV by assuming that executives are key strategic resources of the firm and their skills, knowledge, and abilities form a fundamental aspect of the firm’s development and deployment of resources.

Recent reviews of research on dynamic capabilities (Easterby-Smith, Lyles, and Peteraf, 2009; Stefano, Peteraf, and Veronay, 2010; Barreto, 2010) show that managerial dynamic capabilities appears to remain an under-explored concept. The key assumption underlying dynamic managerial capability is that by acquiring knowledge, executives improve their dynamic managerial capabilities and enrich their human capital, which in turn facilitates the development of dynamic capabilities in their firms (Hodgkinson and

Healey, 2011). Appendix 14 explains how acquisition of knowledge is related to the executives' human capital and organizational human capital theory.

2.4.4.4 Knowledge Acquisition from Individuals to Firms: Locus of Knowledge

Building on the notion that the knowledge acquisition of executives is a component of dynamic managerial capability, this section addresses the phenomenon of individuals' acquisition of knowledge. This is consistent with the assumption of KBV that organizational knowledge acquisition is a collective knowledge acquisition of an organization's individuals (Cohen and Levinthal, 1990; George and Bock, 2001; Sun and Anderson, 2010). This however does not necessarily mean that a firm's acquired knowledge is the sum of knowledge acquired by its individuals (Cohen and Levinthal, 1990; Flatten et al., 2011), but means that firms acquire knowledge at individual level (Zahra and George, 2002; Hotho, Becker-Ritterspach, and Saka-Helmhout, 2012). More specifically, firms acquire knowledge in two ways: 1) through knowledge acquisition of their members; 2) by adding new, knowledgeable members (Mahoney, 1995). As noted earlier, this is different from the purchase of explicit or codified knowledge resources, such as a patent or technology license (Teece, 1998), because knowledge resources are embodiments of knowledge and thus are different from knowledge as a resource (Grant, 1997; Spender, 1996). This research emphasizes the knowledge acquisition of organizational members, and specifically executives.

Knowledge acquisition of individuals in an organization is based on their direct experience, vicarious learning, and search and notice (Huber, 1991). Knowledge acquisition through direct experience refers to the application of information acquired from feedback through direct experience. Vicarious learning is the process in which individuals acquire new knowledge by observing the behavior of others and search and notice refers to the process of acquiring new knowledge through searching and seeking new information to address specific problems (Chandler and Lyon, 2009). Holcomb et al. (2009) add explicit codified sources such as books as another component of individuals' knowledge acquisition.

The interest of strategy is not to maximize knowledge acquisition amongst organizational members, but to clarify what areas of knowledge need to be acquired and devise ways to maximize the effective utilization of them (Grant, 2002: 145). The present

research maintains this view and examines how executives use their market and technological knowledge to lead the growth of their firms.

For executives as primary knowledge acquirers, different areas of knowledge are targeted. Inter-industrial and intra-industrial knowledge are of primary importance here (Schmidt, 2010). Intra-industrial areas of knowledge are customers, suppliers, competitors, and other stakeholders in the primary industry of the firm, whereas inter-industrial areas are customers, competitors, and suppliers and other sources of knowledge in industries other than a firm's own industry (Hambrick, 1981). Two types of knowledge can be acquired from intra and inter industry sources, namely market and technological (Burgers et al., 2008; Lichtenthaler, 2009). Acquisition of these two types of knowledge could influence the performance of the firm (Zack, 2002; Anderson et al., 2009). Given this, research further suggests that due to their familiarity, executives tend to focus more on intra-industrial (i.e. their own industry) areas to acquire knowledge (Cohen and Levinthal, 1990; Zahra and George, 2002; Brettel et al., 2011).

Moreover, people differ in their knowledge acquisition (Holcomb et al., 2009). This implies that executives of different firms in the same industry acquire knowledge differently (Conner and Prahalad, 2002). This difference is seen in terms of both the type and the amount of knowledge acquired, which constitutes heterogeneity in firms' knowledge bases in an industry and results in their differential performance outcomes (Marvel, 2012).

Some explanations can be drawn from cognitive psychology literature to address the above heterogeneity. For instance, knowledge is the result of information processing (Holcomb et al., 2009). Individuals process information differently due to their cognitive differences which then lead to differences in acquisition of knowledge (Conner and Prahalad, 2002). Literature suggests that, at any given point in time, an individual has the choice "whether or not to expand the information set at his/her disposal by acquiring and processing additional information" (Fransman, 1994: 724). This choice is governed by the direct and opportunity costs incurred in terms of the time and effort required for acquiring and processing new information (Fransman, 1994). Therefore, knowledge acquisition is primarily a cognitive phenomenon (Fransman, 1994; Spender, 1996; Hotho et al., 2012). That is, individuals' information processing defines their knowledge acquisition

(Holcomb et al., 2009). The information processing of executives is addressed from the perspective of executives' cognition.

2.4.5 Executives' Acquisition of Knowledge and Business Model Innovation

Given the above discussion about the knowledge and particularly market and technological knowledge, it seems appropriate to argue that the market and technological knowledge of executives is directly related to their capacity to adopt new business models. Existing literature supports this view in three related ways.

First, from an entrepreneurial perspective, executives' knowledge about markets and technologies increases their capacity to sense opportunities and develop means to exploit them (Corbett, 2007). In this regard knowledge is regarded as an entrepreneurial resource central to the process of opportunity recognition and exploitation (Siegel and Renko, 2012; Corbett, 2007; Fiet, 2007), particularly for radical innovations such as new business models (Marvel and Lumpkin, 2007; Marvel, 2012). Therefore, the more knowledge is acquired by executives, the better their capacity to detect opportunities for business model innovation and the higher their emphasis on business model innovation.

The second view pertains to executives' resource management capacities. According to the RBV, business model innovation is a new logic of managing resources (George and Bock, 2011) and firms whose executives are adept at devising new ways of managing resources have the greatest chance to succeed (Danneels, 2012). In this regard, the ability to adopt new business models is a second-order (i.e. competency to create new use of resources) competency (Winter, 2003) which is based on the first-order competency (i.e. competency to obtain or develop new resources) of acquiring knowledge (Danneels, 2012). Therefore, continuous acquisition of market and technological knowledge is an underlying component of business model innovation. According to this view, business model innovation is a dynamic capability (Winter, 2003) and assumes that acquisition of both market and technological knowledge by executives determines how they can purposefully and deliberately develop this capability (Danneels, 2012; Teece, 2010; Berghman et al., 2012).

Thirs, according to the strategic cognition view, the emphasis on business model innovation requires changes in managers' belief structure about the current business model of the firm (Chesbrough, 2010; Tikkanen et al., 2005; Aspara et al., 2011).

Executives' existing beliefs, and changes in them, are formed by their knowledge about markets and industries (Tikkanen et al., 2005). Limited knowledge and a lack of understanding of new trends in the market and technological landscape increases executives' tendency to protect their current business model and emphasize the status quo (Tripsas and Gavetti, 2000; Doz and Kosonen, 2010), whereas possession of new knowledge increases their intention to renovate their business model and control the process more confidently (Pitt, and Clarke, 1999; Achtenhagen et al., 2013). Therefore, by updating their knowledge of markets and technologies, executives develop the capacity to adjust their business modeling beliefs (Tikkanen et al., 2005; Aspara et al., 2011).

Synthesis of these perspectives suggests that executives' acquisition of market and technological knowledge directly impacts their tendency towards adoption of new business models and their control and execution of this choice. However, acquisition of knowledge is itself influenced by executives' information processing, also known as their cognition.

2.5 Executives' Cognition and Cognitive Style

In classical economics the role of executives is unclear and largely understated (Helfat et al., 2007), because the economic theory generally assumes that markets work perfectly and resources, including knowledge, are ubiquitous and homogeneously distributed (Augier and Teece, 2007, 2009). In contrast, the conventional view in strategic management takes an opposite position and argues that markets do not work perfectly and resources are heterogeneously available (Helfat et al., 2007). In other words, strategic management assumes that competitive markets do not function perfectly due to the tasks of executives (Augier and Teece, 2009). Executives intervene in the relationships between markets and organizations by playing critical roles inside the organizations (Augier and Teece, 2009: 410; Charlton and Andras, 2003; Yukl, 1989).

The salience of this role stems from the nature of today's imperfect markets. In perfectly competitive markets where inputs and outputs are homogenous, tasks of executives are not needed, but when markets become imperfect, it raises tasks for the executives which determine how firms compete in markets (Augier and Teece, 2009). These tasks, from formation to implementation, are influenced by their cognition (Augier and Teece, 2009). Therefore, executives are conceived as cognizers. That is, they spend

their time absorbing, processing, and disseminating information about issues, opportunities, and problems (Walsh, 1995: 280). This tenet has given rise to the cognitive view (CV) of executives, which is also interchangeably referred to as the behavioral view (BV) of strategy (Lovallo and Sybony, 2010). This is because the cognition of executives bounds firms' behaviors, including the ability to pursue and therefore compete for opportunities (Gavetti, 2012).

Cognition generally refers to the activities of thinking, knowing, and processing information (Armstrong and Hird, 2009: 421). It however goes beyond simple know-what and know-how. Cognition covers rationality, perception or mindset and mental models, interpretation, emotion, intuition, value judgments, feeling, and morality (Noteboom, 2009). Given this broad conceptualization, cognition can be conceived in terms of "representational structures in the mind and computational algorithms that operate on those structures" (Thagard 1996: 10, cited in Gavetti and Rivkin, 2007: 437). Cognition is partly in-born (Armstrong et al., 2012a) and partly constructed by experience along life trajectories (Noteboom, 2009). Therefore, different individuals have different cognitive structures to the extent that their life trajectories differ (Noteboom, 2009: 4).

Given this introduction, it must be noted that the importance and role of cognition in the behavior of executives and thus the firm is not recent. It has long been recognized and may date back to the work of Bernard (1938), in which he argued that the functions of executives are not all rational, and in fact are a combination of rational and emotional or intuitive decisions. However, Simons (1947) was the first to scientifically deal with rationality and irrationality in the functioning of executives (Akinci and Sadler-Smith, 2011). Simon (1952, 1957) and March and Simon (1968) developed the view of bounded rationality, according to which actions, and specifically, the decision-making of executives cannot be rational because of the inherent cognitive limitations of the human brain.

Following this stream of research, Cyert and March (1963) developed one of the most influential views of the firm, known as the behavioral view or theory of the firm (BT), in which managerial cognitive limitations play a key role in their actions and subsequently performance of their firm. This theory shapes the foundation of the cognitive view of management and organization. (Noteboom, 2009). Behavioral theory aspires to explain and associate the actions of executives, and particularly their decision-making, with their

cognitive limitations, and in this way provides a closer and more realistic view of the firm in markets. According to Augier (2004), Augier and Saravanthy (2004), and Argote and Greve (2007), this stream of work by Simon, Cyert, and March directly and indirectly inspired many theories which have shaped the foundation of the contemporary understanding of strategy, management, and organization.

The roots of this doctrine are in the information processing in a human's brain, which is limited in capacity due to the principle of bounded rationality and hence causes the use of short-cuts or heuristics in making choices and decisions which may result in non-optimal outcomes (Tversky and Kahneman, 1971, 1974; Kahneman and Tversky, 1979).

2.5.1 Executives' Cognition in Strategic Management of Today's Firms

The traditional conception of firms or business organizations in economics and management has been viewed through the lens of the neo-classical economic view that follows assumptions of full rationality (Augier, 2004). This view is incomplete and misleading for an understanding of business enterprise in the changing and industrialized world, for a number of reasons (Kaplan, 2011). The neo-classical view focuses on the external environment and is based on a set of assumptions, such as: (1) a firm enjoys perfect information and certainty about environmental outcomes, (2) it suffers no control or adaptability problems and hence can maximize profit, and (3) its strategies and performance are predictable. Hence, this view fails to provide a clear abstraction and explanation for firms' heterogeneities in a real business environment in which risk and uncertainty are undeniable (Knight, 1921, 1965).

In addition, the classical view is unable to provide explanations for firm behaviors from the perspective of internal mechanisms and functions, such as different attributes of executives and their consequences (Kaplan, 2011; Hambrick, 2007). The cognitive view addresses these inefficiencies and offers a robust view of the firm that is applicable to both economics and management (Pierce, Boerner, and Teece, 2008: 54). This also caused attention to shift from the rational view of choice as the axiom of neo-classic economics to the bounded rationality view as the principle of strategy in the contemporary view (Stubbart, 1989; Kaplan, 2011). Stubbart (1989) explicitly argues that executives' cognition (i.e. information processing) is pertinent to any theory that deals with analysis of internal and external factors. Therefore, studying firms from the

perspective of executives' cognitive differences has become a primary sector of modern strategic management (Narayanan et al., 2011; Kaplan, 2011).

2.5.2 From Cognition to Cognitive Style

Having discussed the importance of executives' cognitive differences in the contemporary business literature, it seems appropriate to open the discussion on cognitive style. Cognitive style (CS) is one of the key aspects of executives' cognitive differences considered in the business literature (Armstrong et al., 2012a,b). It is defined as "consistent individual differences in processing information" (Armstrong et al., 2012a).

These differences were first observed by in 1880s, 1890s (James 1890; Galton 1883) and reflected in Jung's (1923) observations on personality types. Allport (1937) was the first to use the term "cognitive style" in relation to personality traits (Kozhevnikov, 2007). The term "style" broadly describes consistent "differences in structures or observed behaviors associated with typical forms of functioning" (Brigham et al., 2007: 31). Therefore, cognitive style research is basically the pursuit of classifying individuals' consistent or persistent behavior.

The contemporary research in the cognitive style is slightly different from early observations traces back to 1950s when the relations between individual differences in perception and personality became a primary interest in the modern psychology (Kozhevnikov, 2007). A key premise of this invigorated stream was that cognitive style shifts the attention from personality traits to cognitive activities (Blaylock and Rees, 1984). As Pratt (1980) argued, personality is concerned with "what an individual thinks" while cognitive style is about "how an individual thinks." The current thinking in cognitive psychology follows this convention and conceives cognitive style as "individuals' psychological differences that represent consistencies in how they behave, especially in terms of cognitive functions such as acquiring, interpreting and processing information" (Kozhevnikov, 2007: 464).

As implied in the above explanation, cognitive style covers different aspects of cognitive functioning. As a result, over the past few decades, numerous scholars from different disciplines have used this concept to examine the behavior of individuals in various domains. For instance, it has been related to the learning style of students (e.g. Armstrong, Peterson, and Rayner, 2012). Individuals' beliefs in religion and paranormal

activity have also been related to their cognitive style (e.g. Pennycook et al., 2012). The socialization and interpersonal communication of people has also been found to be related to their cognitive style (Kubes, 1992), and even the way people use search engines on the internet (Clewley, Chen, and Liu, 2010) and interact with new technologies and machineries has been argued to be associated with their cognitive style (Vasarhelyi, 1977). This broad literature has however been repeatedly criticized for the myriad of overlapping definitions, as well as inappropriate measurement and instruments (Peterson, Rayner, and Armstrong, 2009). A summary of definitions has been developed and is presented in Table 3.

Table 3: A Summary of Definitions of Cognitive Style

Definition	Source
Perceptual attitudes are special ways, distinctive for the person, for coming to grips with reality.	Klein, (1951:349)
Generic regulatory principles” or “preferred forms of cognitive regulation” in the sense that they are an “organism’s typical means of resolving adaptive requirements posed by certain types of cognitive problems.	Holzman and Klein (1954)
Mode of adjustment to the world.	Witkin, et al. (1962)
stable preferences” exhibited in perceptual understanding and conceptual categorization of the external environment	Kagan, (1965)
Stable attitudes, preferences, or habitual strategies that determine individuals’ modes of perceiving, remembering, thinking, and problem solving.	Messick, (1976)
Consistencies in how individuals perceive, think, make choice and relate to others.	Witkin et al. (1977)
preferred way of gathering, processing, and evaluating information relating to creativity, problem-solving and decision-making	Hayes and Allinson, (1998)
habitual strategies that individuals adopt with respect to perceiving, remembering, thinking and engaging in problem-solving	Saracho, (1998)
Consistent approach towards understanding and solving problems	Brigham and De Castro, (2003)
Heuristics that individuals use to process information about their environment.	Kozhevnikov, (2007)

Despite the different definitions, cognitive psychology literature suggests that people use their cognitive style spontaneously across situations. Therefore, it forms an enduring basis of behavior (Armstrong et al., 2012a). In addition, individuals' cognitive styles have certain attributes which make them significant for research. For instance, cognitive styles: (1) are a pervasive construct which can be assessed using psychometric techniques (i.e. questionnaire); (2) are innate and tend to be stable over time; (3) can be value-differentiated – that is, styles describe different rather than better or worse behavior (Brigham, De Castro, and Shepherd, 2007; Sadler-Smith and Badger, 1998). Finally, in addition to being psychological and cognitive, they are to varying degrees affective (i.e. impacted by the way an individual feels about a task and situation), physiological (i.e. impacted by the ways in which senses such as vision, hearing, and touch provide information to be processed), and sociological (i.e. affected by the surrounding and society in which one lives) (Zhang and Sternberg, 2005: 2).

Therefore, cognitive styles determine significant differences in the behavior of individuals in specific situations (Armstrong et al., 2012a). More specifically, cognitive styles are related to all activities of individuals, especially those which require cognitive, social, and interpersonal functioning (Armstrong and Hird, 2009). Consequently, new concepts such as decision style and learning style have been related to the cognitive style of individuals (Kozhevnikov, 2007). A question that still defies a sure answer is whether these styles are similar constructs with different style labels, or distinctive constructs (Zhang and Sternberg, 2005). Armstrong et al. (2012b) and Peterson et al. (2009) assert that cognitive style differs from learning style. They define learning style as an “individual's preferred ways of responding (cognitively and behaviorally) to learning tasks” and argue that unlike cognitive style, which is relatively stable, learning style is malleable. Furthermore, in regard to the distinction between cognitive and decision styles, Zhang and Sternberg (2005) argue that decision styles are a sub-category of cognitive styles and refer to the preferred way of problem-solving.

Additionally, cognitive style is different from the cognitive complexity (i.e. tolerance of ambiguity) and cognitive ability (i.e. intelligence) of an individual (Kozhevnikov, 2007). These distinctions go beyond the scope and intent of this research. Therefore, in adherence to the objectives of the present study and consistent with Armstrong et al. (2012a) and Chaston and Sadler-Smith (2012), the concept of cognitive style is used throughout this research and its correlations with other styles will not be included in this study.

In an attempt to summarize this broad application of cognitive styles, Kozhevnikov (2007) shows that stylistic preferences for different aspects of cognition are highly correlated. Therefore, the best view of cognitive style is a two-dimensional one in which people can be broadly classified as intuitive or analytical (Kozhevnikov, 2007; Zhang, and Sternberg, 2005). Following this fashion, the next section reviews theoretical perspectives related to intuitive and analytic styles.

2.5.3 Theories of Cognitive Style

There are two prominent schools of thought in the cognitive style literature, namely unitary and dual-information processing (Hodgkinson et al., 2009; Armstrong et al., 2012a,b). These two provide distinctive insights into how analytic and intuitive aspects of executives work and influence their behavior. Therefore, in order to understand the behavior of executives from the cognitive style perspective, the two schools of thought ought to be distinguished (Armstrong et al., 2012a). It also must be noted that although these two schools address the same concept –cognitive style – they originate from incompatible theoretical roots (Hodgkinson et al., 2009a). Hence, this section addresses the issue by elaborating the principles of these two views, and delineates how this study tends to apply the latter (i.e. dual-information processing) perspective.

2.5.3.1 Unitary School

The unitary school, in cognitive style, purports to associate both analysis and intuition with a single aspect of human cognition and predicts that the two represent opposing sides of a same continuum or dimension of information processing (Hodgkinson et al., 2009a). It has its roots in the bipolar view of cognitive style (Kagan and Kogan, 1970, cited in Hodgkinson et al., 2009b) – that is, there is a single overarching dimension underpinning different facets of cognitive style, including intuition and analysis (Hodgkinson and Sadler-Smith, 2003). On the basis of this assumption, Hayes and Allinson (1994) and

Allinson and Hayes, (1996) argued that cognitive style is unidimensional, and hence intuition and analysis are different facets of a common information processing. Accordingly, intuition, within this school, refers to an immediate judgment based on feeling, whereas analysis refers to judgment based on mental reasoning (Allinson and Hayes, 1996: 122).

The unitary school was further applied in a variety of studies related to personality (Allinson and Hayes, 1996), culture and cross-national studies (Allinson and Hayes, 2000), intuition in entrepreneurship (Allinson, Chell, and Hayes, 2000), leadership (Allinson, Armstrong, and Hayes, 2001), and gender differences (Sadler-Smith, Spicer, and Tsang, 2000). However, despite this empirical interest, the unitary perspective fails to embrace the complexity of information processing as illustrated by recent advancements in psychology and neuroscience (Hodgkinson and Sadler-Smith, 2003; Hodgkinson et al., 2009a,b).

More specifically, it does not address the importance of two modes or parallel systems of information processing for variety of tasks required by executives (Hodgkinson, and Sparrow, 2002). Therefore, it leads to problematic issues in interpreting the relationships between cognition and executives' behavior (Hodgkinson and Sadler-Smith, 2003).

2.5.3.2 Dual-system Information Processing /Hemispheric School

The key principle of the dual-information processing view is that behavior is determined by the interplay of two systems: one tends to be automatic and the other more controlling (Barrett, Tugade, and Engle, 2004). This view is based on the assumption that, there can be two parallel cognitive systems which co-exist in the brain and their interactions influence individuals' behavior (Hodgkinson et al., 2009a). These two can be generally labeled as system one and system two (Hodgkinson et al., 2009b). According to this perspective, intuition and analysis are not two ends of the same continuum (i.e. one common information processing system) but instead originate from two distinctive but interrelated systems of information processing (Pacini and Epstein, 1999).

According to Hodgkinson et al. (2009b: 280), this view “offers a compelling psychological explanation for the interplay of intuition and analysis in managerial thought and action.” Hence, it enables a closer and richer understanding of the executives' behavior, and particularly strategic choice-making in the contemporary business

landscape, which is characterized by change, dynamism and uncertainty (Hodgkinson et al., 2009b).

2.5.4 Overview of Six Measures of Cognitive Style

Having noted the two perspectives of unitary and dual view, a review of past research on cognitive style in business and management shows that scholars have used and developed a variety of inventories (see Table 4). Appendix 16 also shows that reliance on intuition or analysis and their underlying hemispheric specializations can be assessed through laboratory methods which are not common in the business literature (Armstrong et al., 2012a). Following the recent analysis by Armstrong et al. (2011a), a brief summary of six of the most common inventories will be presented in this section.

Table 4: Key unitary and dual theories of cognitive style

Unitary School	Dual-System School
Kirton's Innovator-Adaptor Theory (KIA)	Rational-Experiential Indicator (REI)
Cognitive Style Indicator (CSI)	LNTSP(Linear-Nonlinear Thinking Style Profile)
	CoSI (Non-Unitary Cognitive Style Indicator)

Source: adapted from Armstrong et al. (2012a).

It is to be noted that the Myers–Briggs Type Indicator (MBTI) is another important conceptualization of cognitive style. It is however neither a completely unitary nor a dual view (Armstrong et al., 2012a). Table 5 shows a summary of the key assumptions of these six conceptualizations of cognitive style, adopted from Armstrong et al. (2012a). Furthermore, since this study intends to examine the dual-information processing of executives, and the REI theory and inventory (Pacini and Epstein, 1999) is currently the most commonly used measure in business literature (Chaston and Sadler-Smith, 2012), the next section reviews prior studies using this measure. Appendix 17 presents a review of the literature on the other five measures.

Table 5: Assumptions of key conceptualizations of cognitive style

Conceptualization	Underlying assumptions
Kirton's Innovator-Adaptor Theory (KIA)	People's tendency to 'do things better' versus 'do things differently' when solving problems. Adaptors turn to established procedures, while innovators prefer restructuring problems and approaching them from different angles (Appendix 2 further elaborates these two styles)

Cognitive Style Indicator (CSI)	Analysis is characterized by judgement based on mental reasoning and a focus on detail. Intuition refers to immediate judgment on the basis of feeling and a global perspective.
Myers–Briggs Type Indicator (MBTI)	Extraversion versus introversion . Extroversion means operating in the external world of behaviour, action, people and things. Introverts have a focus on the internal world of ideas and reflection. Sensing–intuition Sensing people are more likely to trust information that is in the present, tangible and concrete. Intuitive people tend to trust information that is more abstract or theoretical. Thinking–feeling Thinkers tend to decide things from a more detached standpoint, using logic. Feeling people come to decisions by empathizing with the situation and using consensus. Judgment–perception Judging people prefer planning and organization, while perceivers adhere to a more flexible approach.
Rational-Experiential Indicator (REI)	Rationality refers to a preference for analytical, rational processing, while experientiality refers to intuitive, experiential processing.
LNTSP(Linear-Nonlinear Thinking Style Profile)	Linear thinkers prefer making decisions from external data, information and facts. Non-linear thinkers use internal feelings, impressions and sensations.
CoSI (Non-Unitary Cognitive Style Indicator)	The knowing style refers to a preference for a rational, logical, impersonal way of information processing. The planning style implies a preference for a structured, organized, efficient way of information processing. The creating style refers to a preference for a creative, flexible, unconventional information processing approach.

2.5.4.1 Epstein’s Rational-Experiential Indicator (REI)

The Rational-Experiential Indicator (REI), originally developed by Epstein et al. (1996) and completed by Pacini and Epstein (1999), is one of the most valid and reliable indicators of dual-information processing theories in organization and management literature (Hodgkinson et al., 2009b; Armstrong et al., 2012a,b). It is based on a global theory of personality known as cognitive-experiential self-theory (CEST; Epstein, 1996). CEST posits that people process information by two parallel interactive systems: rational and experiential. Rational is intentional, analytic, primarily verbal and relatively affect free, and operates at the conscious level. Experiential, on the other hand, is automatic, holistic, associationistic, primarily nonverbal and intimately associated with affect, and

operates at preconscious level (Epstein, 1996: 391). Additionally, use of heuristics is naturally associated with the experiential system (Epstein et al., 1992).

CEST further assumes that the behavior of people is a joint function of these two systems which, despite working in an integrated, seamless manner, sometimes have conflicts between feeling and thoughts (heart and mind; Epstein, 1996: 391). The degree of relative dominance of either system is a function of numerous factors, such as individual differences in tendencies to rely on one system more than the other (Epstein, 1996: 391). Table 6 provides a summary of the key aspects of these two systems.

Table 6: Epstein's Rational-Experiential Indicator (REI)

Experiential (Intuitive)	Rational (Analytic)
Holistic	Analytic
Automatic, effortless	Intentional, effortful
Affective: Pleasure-pain oriented (what feels good)	Logical: Reason oriented (what is rational)
Associationistic connections	Logical connections
Behavior mediated by "vibes" from past events	Behavioral mediated by conscious appraisal of events
Encodes reality in concrete images, metaphors, and narratives	Encodes reality in abstract symbols, words, and numbers
More rapid processing: oriented toward immediate action	Slower processing: oriented toward delayed action
Slower and more resistant to change: Change with repetitive or intense experience	Changes more rapidly and easily: changes with strength of argument and new evidence
More crudely differentiated: Broad generalization gradient; stereotypical thinking	More highly differentiated
More crudely integrated: Dissociative, emotional complexes; context-specific processing	More highly integrated: Context-general principles
Experienced passively and preconsciously: we are seized by our emotions	Experienced actively and consciously: We are in control of our thoughts
Self-evidently valid: "Experiencing is believing" gradient; stereotypical thinking	Requires justification via logic and evidence

Source: Epstein et al. (1996 p.391)

Following the growing interest in the dual-system view in business and management (Hodgkinson et al., 2009a), scholars have employed REI to examine how reliance on intuition and analysis (i.e. experiential and rational system) influences the behavior of executives and the performance of their respective firms.

For instance, in operation management, Leybourne and Sadler-Smith (2006) studied 163 project managers in the UK and found that intuition is positively related to both improvisation and externally focused project outcomes. Lipshitz and Shulimovitz (2007) observed that in making credit decisions, bank loan officers use intuition (as the experiential side of REI) to extract and interpret relevant cues from a complex set of information. In marketing, Novak and Hoffman (2009) extended REI to the situational thinking style of consumer behavior and argued that a situational view of REI provides an accurate way of examining a consumer's task performance. Cerni, Curtis, and Colmar (2012) studied the conflict-handling style of 426 undergraduate students in Australia and found that the rational system (i.e. analytic) is positively related with the dominating conflict-handling style and the experiential system (i.e. intuitive) is positively related with the obliging conflict-handling style.

Moving to strategy and entrepreneurship, Hodgkinson and Healey (2011) argue that intuition is an important component for developing dynamic capabilities and REI can be adopted to assess chronic cognitive tendencies (intuitive versus analytic styles) in an organization in order to assess readiness for developing dynamic capabilities. Akinci and Sadler-Smith (2013) also suggest that REI is a key tool for human resource managers to select employees based on their stylistic differences and fit them with an appropriate task to optimize their performance. More recently, Chaston and Sadler-Smith (2012) argued that the experiential (intuitive) style of REI could be linked to entrepreneurial orientation and rationality (analytic) style is likely to be related to the capability side of the executives, and these two impact the growth of the firm.

2.5.5 Executives' Cognitive Styles in Strategy Versus Entrepreneurship

The impetus to study cognitive styles in business and management is the premise that executives' cognitive styles make a difference in their task performance and, consequently, their firms' performance (e.g. growth outcomes; Sadler-Smith, 2004). For instance, scholars have argued that these differences represent executives' orientation towards particular strategies, such as social responsibility (Wong, Ormiston, and Tetlock,

2011), and that the implementation of different strategies requires different styles in order to yield expected outcomes (Hakonsson et al., 2012). However, the issue that is particularly important in this research is that strategic management and entrepreneurship tend to address this issue from two distinct perspectives.

The primary concern of strategic management is that strategic choices (decisions) of executives (Hambrick, 1989; Hambrick, 2007) and strategic cognition seek to explore the cognitive foundation of strategic choices (Narayanan et al., 2011). Accordingly, stylistic differences in respect to strategic choices are addressed by strategy scholars (e.g. Khatri and Ng, 2000; Elbanna et al., 2013). It can be said that the driving question of this research is “how executives think?,” whereas entrepreneurship scholars are mainly concerned with opportunity evaluation and venture growth (Mitchell et al., 2002). Consequently, cognitive style in entrepreneurship research has mainly sought answers for the question of how entrepreneurs think (Mitchell, et al., 2007); hence, issues such as intuitive style and sales growth of small firms (Sadler-Smith, 2004), growth intention of entrepreneurs (Knockaert et al., 2011), growth persistence of entrepreneurs (Groves et al., 2011), cognitive fit and the intention to exit from a venture (Brigham, De Castro, and Shepherd, 2007), and stylistic differences between serial and portfolio entrepreneurs (Brigham and Sorenson, 2008) have been studied.

An emerging literature tends to bridge these two by examining how the growth of small firms (an entrepreneurial aspect) is influenced by cognitive styles of executives through their strategic choices (a strategic aspect) (e.g. Chaston and Sadler-Smith, 2012). This study is situated within this literature. Furthermore, a concept that is related to the stylistic differences amongst executives and has been markedly studied in both entrepreneurship and strategy literature is reliance on intuition.

2.5.5.1 Intuition versus Intuitive Style

The notion of executives’ intuition has advanced in the business literature within a broader stream of strategic cognition and cognitive style literature to explore and explain the importance of intuition as an independent cognitive construct (Akinci and Sadler-Smith, 2011; Elbanna, Child, and Dayan, 2013). The roots of this inquiry can be found in the studies by Van Ness Dearborn (1916), who argued that intuition is real and worthy of studying, and Bernard (1938), who proposed that executives’ mental models are logical (analytic) and non-logical (intuitive). Simon (1955) further advanced this idea by

asserting that executives are intentionally but not wholly rational (analytic or logical) due to inherent limitations (i.e. bounded rationality) which provoke reliance on intuition. Kahneman and Tversky (1973) enriched this debate by showing that, reliance on intuition is not essentially irrational or a-rational – rather it is a natural assessment and “sensible estimation procedures,” based on sophisticated underlying processes (dual information-processing; Akinci, and Sadler-Smith, 2011: 5). Based on these advancements, systematic descriptions of intuition in management began in the 1980s and continue to grow (Akinci and Sadler-Smith, 2011).

Furthermore, Hensman and Sadler-Smith (2011) argue that the studies which make up this ongoing inquiry can be also divided into two phases, namely descriptive and analytical. The former covers studies in the 1980s and 1990s, which were mainly concerned with the ambiguity surrounding the concept of intuition, its importance, managerial relevance, and practicalities in decision-making. The main studies from this phase are: Isaack (1981), which argued that intuition is important in the management of small businesses because managers of small firms engage in fewer formal activities than their counterparts in larger businesses; Agor (1984, 1986), which surveyed executives in different industries and found that intuitive thinking is essential in managerial decision-making; Jankowicz and Hisrich (1987), which studied small firms and observed that in complex situations such as lending decisions, intuition plays a central role; Parikh, Neubauer, and Lank (1994); which studied 1000 managers in 9 countries and found that intuition is widely used in decisions about strategic planning, market research, human resource development, public relations, diversifications, and acquisitions; and Lank and Lank (1995), which also argued that intuition is important and managers must learn about their intuitive power. Shapiro and Spence (1997) added to this view by asserting that managers can tackle the most difficult decisions by harnessing the power of intuition. Kuo (1998) found that managers use intuition when they develop and use decision support systems. Burke and Miller (1999) interviewed 60 executives in the US and observed that intuition is extensively employed when executives need to make novel, unexpected, and quick decisions.

The second phase began in the early 2000s and attempts to explore and explain how and why an executive’s intuition is related to their firm’s performance (Hensman and Sadler-Smith, 2011). The studies (e.g. Elbanna et al., 2013; Khatri and Ng, 2000; Sadler-

Smith, 2004; Hough and Ogilvie, 2005) that were reviewed in the previous sections on six key measures of cognitive style are all examples of research in this phase. It is also to be noted that some scholars have examined the importance of intuition in managers' behavior using interviews rather than quantitative measurements (e.g. Patterson, Quinn, and Baron, 2012; Hensman and Sadler-Smith, 2011).

The key theses put forth by this stream of research are: 1) intuition is ubiquitous and widely used by employees and managers in organizational settings as diverse as strategy (e.g. Elbanna et al., 2013), entrepreneurship (e.g. Chaston and Sadler-Smith, 2012), finance (Hensman and Sadler-Smith, 2011) marketing (Novak and Hoffman, 2009), and operations (Leybourne and Sadler-Smith, 2006); 2) it is generated by the intuitive information processing system and the tendency to rely on and act upon it can be measured by individuals' cognitive style. This tendency has direct and indirect impacts on the firm's behavior by influencing the way individuals deal with their tasks at hand.

Nevertheless, during these two phases, numerous scholars (Behling and Eckel, 1991; Burke and Miller, 1999; Lieberman, 2000; Sadler-Smith and Shefy, 2004; Sinclair and Ashkanasy, 2005; Mitchell, Friga, and Mitchell, 2005; Miller and Ireland, 2005; Matzler, Bailom, and Mooradian, 2007; Hodgkinson, Langan-Fox, and Sadler-Smith, 2008; Hodgkinson et al., 2009) have also pointed out that intuition research tends to suffer from weak conceptualizations, multiple and conflicting definitions (Hodgkinson et al., 2009). However, it seems that the current view of intuition research in the management field has converged on a number of issues.

This view, for instance, holds that intuition originates from an experimental or intuitive information processing system (Hensman and Sadler-Smith, 2011). It is considered as real and an influential cognitive component which works in a rapid and non-sequential fashion (Hodgkinson, Langan-Fox, and Sadler-Smith, 2008). It has been labeled "hunch," "gut-feeling," and "vibe," but has however been distinguished from insight and instinct (Hensman and Sadler-Smith, 2011). Finally, recent studies (Hodgkinson et al., 2009; Hensman and Sadler-Smith, 2011) suggest that dual-information processing is a pivotal theoretical perspective in the study of intuition and the essence of intuition can be captured by measures based on the dual-information processing perspective (Elbanna et al., 2013; Chaston and Sadler-Smith, 2012).

2.5.5.2 Cognitive Style and Environmental Contingencies

Finally, the cognitive perspective further suggests that the environment is not purely exogenous and in fact is mediated by the interpretations made of it by executives (Kaplan, 2011: 667). Narayanan et al. (2011) describe this view as the shift in the link between executives, firm and business environment. According to this perspective, the managerial view of the business environment has changed from being objective to become perceptual and then from perceived to being enacted (Smircich and Stubbart, 1985; Weick, 1995). Hence, environmental features do not determine organizational outcomes but organizations only 'act' through the choices and actions of the managers based on their perception of the environment (Hambrick and Mason, 1984; Kaplan, 2011: 667). In fact, not only executives interpret information; firms are also seen as an interpretive system (Bartunek, 1984; Daft and Weick, 1984).

Based on this logic, cognitive style is also influenced by the perception of the environment (Chaston and Sadler-Smith, 2012; Hodgkinson and Healey, 2008). Literature suggests that the intensity of executives' reliance on intuitive or analytic thinking is influenced by the degree of dynamism they perceive (Baron and Tang, 2011; Chaston and Sadler-Smith, 2012). This is because this dynamism generates uncertainty and complexity, and demands different information processing modes to be made sense of (McKinley, 2011; Cooper-Thomas and Wright, 2013).

2.5.6 Executives' Cognitive Style and Acquisition of Knowledge

According to the strategic cognition view, executives behave in certain ways based on the cognitive processes that precede that behavior (Kaplan, 2011). It was noted that cognitive style captures a stylistic and persistent fashion of information processing that precedes executives' perceptions of the business environment and subsequent responses (Armstrong et al., 2012b). Knowledge acquisition behavior is driven by these processes because it is initiated by the search for and processing of information (Holcomb et al., 2009). In a review of cognitive style literature in business and management, Armstrong et al. (2012a) found that the link between cognitive style and executives' acquisition of market and technological knowledge has not been empirically studied in the literature.

Literature on executive's knowledge acquisition is dominated by the social capital or network perspective, in which executives' social ties, relationships, and networks serve as channels for obtaining information (Sullivan and Marvel, 2011a, b; Powell, 1998). It is to

be noted that social capital (networks of relationships) enhances the flow of information towards executives, but it is cognition that defines how they acquire knowledge by processing information. This is because knowledge is a product of information processing, not networking. Fiet (2007) argues that the knowledge used in choice-making resides in the mind of executives and is essentially tacit in the form of the perception of surrounding factors, including people, places, timing, special circumstances, or specific knowledge of place and time (Fiet, 2007: 597).

Cognitive styles determine how much intuitive or analytic thinking is involved in the perception of surrounding (Hayes and Allinson, 1998). More specifically, the way one uses one's intuitive or analytic information processing can determine how one acquires knowledge. Barbosa et al. (2007) acknowledge this fact by stating that "an individual's cognitive style may influence his/her preferences for different types of learning, knowledge gathering and information processing" (p. 87). Similarly, Hayes and Allinson (1998) assert that cognitive styles affect the way people scan their environment for information and how they integrate their interpretations into the subjective theories and mental models that guide their actions. Similarly, the implicit learning (Appendix 13) view suggests that intuition is an inseparable component of knowledge acquisition (Pretz et al., 2010) and individuals differ in terms of their reliance on intuition when acquiring knowledge.

Given the above, although individuals such as executives exhibit different levels of intuitive or analytic knowledge acquisition, the tendency to acquire knowledge intuitively or analytically is, to a great extent, influenced by the level of perceived environmental dynamism (Hodgkinson and Healey, 2008, 2011).

2.6 Perception of Environmental Dynamism

Environmental dynamism is a characteristic of the external environment of the firm (Duncan, 1972). This section illuminates this concept and explains how the perception of this attribute influences the cognition and subsequent behavior of executives.

2.6.1 External Environment and Its Characteristics

In strategic management and organization science, a firm is considered an open system that influences and is influenced by the external environment (Miller, Ogilvie, and Glick, 2006). There are different views and conceptions of what the external environment of a

firm is. From a simplistic view, Dill (1962) asserted that the concept of “environment” refers to the surroundings of an organization; the “climate” in which the organization functions. From a more advanced view, Duncan (1972) conceptualized the external environment as relevant physical and social factors outside the boundary of an organization that are taken into consideration during organizational decision-making (cited in Elenkov, 1997). Miles, Snow, and Pfeffer (1974), however, defined environment as the network of individuals, groups, agencies, and organizations with whom a firm interacts. More recently, Miller et al. (2006) defined the environment as referring to a set of components, such as organizations, customers, governments and so on, that lie beyond the boundaries of a firm. As noted, a firm is an open system that interacts with its environment.

The open system view of a firm implies that firms engage in transactions with their environment (Miller et al., 2006). Transactions refer to exchange of goods and information that influence both the being and becoming of an organization (Thompson, 1967; Bluedorn et al., 1994). Literature further indicates that these interactions can take place at two basic levels: the first level is known as the task environment, is closest to the firm, and involves environmental elements with which the firm has direct contact, such as competitors, suppliers, customers, and regulatory bodies. The task environment directly impacts business strategies (Elenkov, 1997). The second layer is the general environment, which is distant but influential. It involves sectors, including the economic, political, and social, that affect organizations indirectly (Elenkov, 1997). Each layer and its components have distinct impacts on the way in which executives make choices (i.e. decisions) and drive the behavior of their firm (Miles et al., 1974).

Therefore, external environment has been considered a critically important contingent factor influencing the tasks of organizations and the autonomy of executives by impacting both goal setting and goal attainment (Dill, 1958). Specifically, environmental contingency theory suggests that the characteristics of the business environment determine, to a great extent, the degree of freedom or constraint managers have in their ability to direct their firm (Bluedorn et al., 1994; Boyd and Gove, 2006). Hence managers’ perception of the environment largely determines how they react and respond to the environmental conditions. Indeed, as previously noted, this notion has been incorporated into the managerial discretion concept. It is obvious from the literature that

this has permeated into all theories in organization science, from RBV to strategic choice (Miller et al., 2006).

Consequently, scholars have long attempted to advance our knowledge of the external environment by explaining its characteristics (Dill, 1958; Emery and Trist, 1965; Lawrence and Lorsch, 1967; Downey, Hellriegel, and Slocum, 1975; Duncan, 1972; Aldrich, 1979; Tung, 1979; Dess and Beard, 1984). This debate is ongoing and conceptualizations continue to grow (Ashill and Jobber, 2010; McKelvie, Haynie, and Gustavsson, 2011). Literature indicates that firms' external environment can be best seen as a multi-dimensional construct (Miller et al., 2006). Accordingly, three main characteristics (Duncan, 1972) or interchangeable dimensions (Tung, 1979) have been suggested for this construct. These are complexity, munificence, and dynamism (Boyd and Gove, 2006).

Environmental complexity represents the degree to which an environment is difficult to understand and consequently effectively manage at a given point in time (Miller et al., 2006: 108). Complexity originates from numerosity (i.e. number of relevant elements), heterogeneity (i.e. diversity of elements), dispersion across elements, and interconnectedness amongst elements in the environment (McArthur and Nystrom, 1991; Miller et al., 2006). These attributes compose the totality of the environmental complexity. This would result in difficulties for executives to determine causal pathways and key success factors in the environment (Cavazos, Patel, and Wales, 2012).

Munificence was introduced to the literature as a characteristic of the business environment by Staw and Sz wajkowski (1975). It represents the degree to which an environment supports sustained growth (McArthur and Nystrom, 1991). Munificence derives from "the scarcity or abundance of critical resources needed by (one or more) firms operating within an environment" (Castrogiovanni, 1991: 542). Since firms compete over resources, scarcity of resources would result in hostile behavior amongst firms while an abundance of resources, on the contrary, would result in a benign environment with more exploitable opportunities (Khandwalla, 1976; Miller and Friesen, 1983; Covin and Slevin, 1989), enabling firms to accumulate slack resources and create a buffer for growth (Walters et al., 2010). As a result, environmental munificence has been equated with benignity and resourcefulness, as opposed to scarcity and hostility (Castrogiovanni, 1991).

However, an alternative view has also been discussed in the literature. According to this view, munificence and hostility are closely related, but not the same. Munificence represents availability of resources, quality of opportunities and the degree of their richness and sparseness (Tsai, MacMillan, and Low, 1991); hostility represents the density of organizations competing for resources and the degree of fierceness of their competition (Tsai et al., 1991). Therefore, theoretically, “munificence captures the structure and nature of the markets being entered whereas hostility captures the structure and nature of the firms competing for that market” (Tsai et al., 1991: 12).

Given the above, in recent studies of SMEs (Mitchell et al., 2011; Cavazos et al., 2012), as well as of large and small firms in general (Elbanna and Child, 2007a, b), scholars have followed the former tradition, which conceives munificence and hostility as two ends of a continuum. Consequently, external environment has been viewed as a three-dimensional construct consisting of complexity, munificence and dynamism (Sharfman and Dean Jr., 1991; Kellermanns et al., 2005) and hostility is used as a proxy of munificence or vice versa. So, it is assumed that less hostile environments are more munificent. The present research maintains this argument.

2.6.2 Environmental Dynamism

Dynamism has been increasingly regarded as one of the most important attributes of today's business environment (Elbanna and Child, 2007a; Hough and White, 2004; Roiser, 2011). Indeed numerous researchers have asserted that the current (i.e. 21st-century) competitive landscape can be best characterized as increasingly dynamic (Bettis and Hitt, 1995; Hitt et al., 1998). Environmental dynamism refers to variance in the rate of market and industry changes (Kellermanns et al., 2005). This variance represents variation in terms of magnitude (size), amount (number/dimensions) and rate (frequency) of change in different aspects of markets and industries, such as supply of goods and customer demand (Miller et al., 2006). Consequently dynamism is directly associated with uncertainty, unpredictability, turbulence, volatility, and instability (Kellermanns et al., 2005; Miller et al., 2006). These attributes of the external environment are beyond the control of the firm and affect its overall performance (Kellermanns et al., 2005; Davis, Eisenhardt, and Bingham, 2009).

Scholars have illuminated several causes of dynamism in today's business landscape, including the rapid rate of technological development and diffusion (Bettis and Hitt, 1995), market deregulation and openness across countries, globalization and the rapid internationalization of firms (Hitt et al., 1998), and the dawn of the information era and expansion of internet systems and e-commerce businesses (Bettis and Hitt, 1995). Subsequently, literature shows that these changes have made market boundaries blurred and given rise to uncertainty and unpredictability in the competitive landscape of firms (Eisenhardt and Martin, 2000, 2003).

Having explained this, scholars have paid increasing attention to the notion of environmental dynamism perceived by executives (CEOs; Elbanna and Child, 2007a; Mitchell et al., 2011) to understand how CEOs react to circumstances imposed by environmental dynamism. Since the present research focuses on CEOs, in the next section this issue will be discussed in more details.

2.6.3 Executives' Cognition and Perceived Environmental Dynamism

It has been argued that dynamism in the environment influences behaviours of managers in the firm (Boyd, and Gove, 2006). Specifically, both dynamism in the environment and executives' discretion (free will) jointly determine how they make choices, behave, and govern their firm (Child, 1972; Hambrick and Mason, 1984; Boyd and Gove, 2006). The underlying notion in this context is that, in the context of managerial behavior, perceptions of the environment are more important than the actual environment (Duncan, 1972; Milliken, 1987; Ashill and Jobber, 2010), because managers are persistently involved in assessment and evaluation of the environment (Cycyota and Harrison, 2006) and their cognition as human beings plays an important role in such evaluation (Ashill and Jobber, 2010). More specifically, managers do not simply react to the environments that are carefully demarcated for them (Wood and Bandura, 1989). Rather, they create their own understanding of the environment based on their own interests, concerns, and tasks (Lenz and Engledow, 1986), and selectively acquire and process the information generated by these constructed environments (Wood and Bandura, 1989). In particular, in respect of the task environment of managers, it has been argued that environment is essentially seen as an information source and inputs and tasks are seen as cognitive formulations of goals, as well as activities for and constraints on behaviors required for achieving goals (Dill, 1958). Therefore, in short, factors that

impact perception of the environment are central to the understanding of managers' behavior (Ashill and Jobber, 2010).

Due to this fact, in both psychological decision theories and theories of human information processing, perception of uncertainty caused by dynamism is a significant determinant of managerial behavior (Ashill and Jobber, 2010). Therefore, environmental dynamism scholars have tried to see whether executives perceive their environment as uncertain, unstable, and difficult to predict (Mitchell et al., 2011; Cychota and Harrison, 2006). This perception could also be interpreted as perceived influences of the lack of information, knowledge, and accordingly understanding of markets (Johnston, Gilmore, and Carson, 2008) which impacts the executives' information analysis. This would be then directly manifested in the strategies and choices developed and executed in an organization (Ashill and Jobber, 2010). Further, scholars (Milliken, 1987; Ashill and Jobber, 2010) have attempted to explain this perception in terms of three sub-components: (1) state uncertainty occurs when executives do not feel confident that they understand major trends and events, so cannot assign accurate probabilities to the likelihood of their occurrence; (2) effect uncertainty occurs when executives do not know the nature and effect of an event or trend (i.e. uncertainty in cause and effect); and (3) response uncertainty occurs when executives do not know and cannot predict a likely consequence of a response choice (Ashill and Jobber, 2010: 1279).

Environmental dynamism causes executives to perceive a high degree of uncertainty (Elbanna and Child, 2007a; Kellermanns et al., 2005; Miller et al., 2006). Specifically in the context of SMEs, it can be argued that managers' perception of dynamism in the form of uncertainty or perceived inability to predict changes and challenges in the external environment (Johnston et al., 2008) will be more evident in the strategic decisions made in their firms compared to those made in large firms. This is because SMEs, due to a lack of sufficient time and resources to scan the environment, generally have less information about their environment than large firms (Aragón-Sánchez, and Sánchez-Marín, 2005). Moreover, unlike managers of large firms, who have capable and qualified co-workers to search, analyze, and manage information, managers of SMEs have an imperative and key role in the search for and assimilation of information (Lybaert, 1998).

So, it can be reasonably assumed that in SMEs, executives' perception of environmental dynamism as uncertain and unpredictable can influence their behavior and subsequently their firm's performance. This is consistent with Zahra (1993), who argues that perception of the environment is more important than objective characteristics in executives' behavior. In keeping with this contention, chapter five explains the perceptual measure of environmental dynamism. In this research, dynamism was emphasized because of its close association with uncertainty (Kellermanns et al., 2005; Miller et al., 2006) and its consequent influence on managerial information processing and choice-making (Gove and Boyd, 2006).

2.7 Summary of the Chapter

This chapter reviewed different bodies and streams of research in order to provide a background for the present study. The objective of this review was three-fold: first, to discuss theoretical origins and empirical advancements in the main aspects of this study; second, to integrate, and reflect these findings; and third, to show where this study is situated and how it is positioned in the existing literature. Subsequently, the literature on firm growth was reviewed. It was followed by an overview of the role of the business model and executives' choice of business model innovation as a growth-driving strategy. Attention was narrowed towards the role of knowledge in this choice. Then the resource-based view, the knowledge-based view, and dynamic capabilities were reviewed and the notion of knowledge as a strategic resource, knowledge-based theories, and the significance of knowledge acquisition in different strands of literature were illuminated. Following this discussion the cognitive style of executives as a key factor in their choice-making and knowledge acquisition was addressed and relevant literature was reviewed. Finally, chapter concluded with an overview of environmental dynamism, its perception by executives and its role in the executives' cognitive functioning.

-CHAPTER THREE-

-Research Questions, Conceptual Framework and Hypotheses-

3.1 Introduction

This chapter develops a conceptual framework and the hypotheses of the study. Accordingly it is organized into two main sections. The first section incorporates executives' cognitive styles including intuitive and analytic, the acquisition of market and technological knowledge, an emphasis on business model innovation, and the growth of the firm as well as the perception of environmental dynamism into a conceptual framework. This is then followed by the second section which develops and presents research hypotheses based on the proposed conceptual framework. To empirically test the hypotheses, as noted in Chapter one, a mixed-methods design is adopted which will be explained in the next chapter. To begin the analysis, the research questions proposed in Chapter one are referred to:

RQ 1: How does the duality of the cognitive style of executives explain their difference in growth-driving behavior under different environmental dynamisms?

RQ 2: How does the interplay between executives' degree of knowledge acquisition and the emphasis on business model innovation mediate the relationship between their dual cognitive style and the growth of their firm under different environmental dynamisms?

Drawing on these guiding questions and the review of literature in chapter two, a conceptual framework is developed with 13 hypotheses to capture and examine the nature of their associations.

3.2 Developing a Conceptual Framework

In this section, the study's conceptual framework is developed. It illustrates the relationships among executives' cognitive style, executives' acquisition of knowledge,

the emphasis on business model innovation, and the growth of the firm under conditions of perceived market dynamism. The following three subsections present those relationships specified in the literature.

3.2.1 Cognitive Style and Growth of the Firm

It has long been argued that the growth of a firm as an indicator of performance (Achtenhagen et al., 2010) can be explained by the attributes of its executives (Penrose, 1959; Hambrick, 2007). CEOs, in this respect, have received special attention (Mackey, 2008; Souder et al., 2012). In particular, CEOs' characteristics such as experience and tenure (Simsek, 2007), age and gender (Wegge et al., 2008), education (Hmieleski and Ensley, 2007), leadership style (Ling et al., 2008), and cognition (Marcel et al., 2011; Narayanan et al., 2011) have been studied. With regard to this strand of research, the link between CEOs' cognitive styles remains a less explored side of the literature (Narayanan et al., 2011; Chaston and Sadler-Smith, 2012).

In the organizational context, cognitive style shows different styles by which executives perceive environment, relate to others, and acquire and process information for making different choices (Chaston and Sadler-Smith, 2012). Cognitive psychology literature also suggests that individuals with different cognitive styles have different world views which result in different judgments and choices (Van den Bos and Maas, 2009). Two major styles are intuitive and analytic (Armstrong et al., 2012a; Hodgkinson et al., 2009). Drawing upon this aspect of executives' behavior this study relates executives' cognitive style to the growth of their firms. In addition, this approach is particularly important in small businesses as their executives (CEO or owner, managing director, etc.) have the most power and control over firms' behavior and he or she is not limited by board and stock market mechanisms (Lubatkin et al., 2006).

A review of growth literature suggests that growth is driven by the way executives use their knowledge to take advantage of opportunities (De Clercq et al., 2012, 2013; Gielnik et al., 2012). More specifically, executives constantly interact with their business and its surroundings to absorb information, which allows them to discover or create opportunities and devise different uses for their resources to take beneficial advantage of identified opportunities (Penrose, 1959; Pitelis, 2009). It has been argued that the cognitive style of managers impacts their mindsets and their perception of the environment (Armstrong et al., 2012a,b) as well as their behavior towards opportunities (Cools and Van den Broeck,

2007). So, there is reason to assume that it can be considered as one of the antecedents of firms' growth.

Further, the theory of the growth of the firm is premised on the assumption that executives' cognition influences growth through various administrative behaviors (Pitelis, 2009); in particular, growth is seen as a consequence of innovative activities (Wright and Stigliani, 2012). Amongst various innovative activities, business model innovation is increasingly highlighted (Speith et al., 2013; Gambardella and McGahan, 2010; Matthyssens et al., 2006). Innovative activities in general germinate from opportunities and the capacity to enact them (Penrose, 1959; Corbett, 2007). Literature accords a central role to the role of knowledge acquired by executives in both detecting opportunities and developing the capacity to enact them (Kor et al., 2007; Marvel, 2012). The following sections accordingly include executives' acquisition of market and technological knowledge and their choice to emphasize business model innovation as a growth strategy that acts as a conduit between executives' cognitive style and the growth of the firm.

3.2.2 The Mediating Roles of Executives' Knowledge Acquisition and Emphasis on Business Model Innovation Strategy

3.2.2.1 Executives' Cognitive Style and Knowledge Acquisition

Knowledge is acquired through the processing of information obtained from the environment (Holcomb, et al., 2009). There are generally three ways to obtain information: 1) direct experience, 2) observing the actions and consequences of others, and 3) by explicit codified sources such as books, papers, etc. (Holcomb, et al., 2009). Codified sources are mainly used for general business knowledge and are not considered as sources of business-specific knowledge (Choudhury and Sampler, 1997; Fiet, 2007). Therefore, this study focuses on business-specific information because it is the most important type of information for formulating appropriate administrative behavior (Hambrick, 1982; Fiet, 2007; Garg et al., 2003; Nag and Gioia, 2012). To search for this information executives need to direct their attention towards specific issues that matter more in their operation (Ocasio, 1997). Therefore, differences in attending to business-specific issues could result in the acquisition of different information and create knowledge asymmetries amongst executives (Boynton et al., 1993; Ford et al., 2002; Wood et al., 1996).

Attention can be navigated towards proactive search for information, which is exploratory in nature and aimed at detecting opportunities, or reactive search, which is problem-oriented and aimed at finding a solution for specific problems (Choudhury and Sampler, 1997). It is almost impossible to separate proactive from reactive search as executives use a combination of these two modes in their administration (Nag and Gioia, 2012). Therefore in this study, knowledge acquisition entails a combination of proactive and reactive information search through both direct and vicarious information absorption.

Literature suggests that cognitive style affects how individuals attend to (i.e. pay attention to) different issues because it directly influences how they perceive issues (Kickul et al., 2009). For instance, some issues are seen as problems by analytic individuals whereas intuitive ones see them as opportunities (Cools and Van den Broeck, 2007). Therefore, executives' cognitive style impacts how they direct their attention to business issues and acquire information for them (Allinson and Hayes, 1996). Additionally, the amount of information acquired through this search is determined by the intensity of the search. Intensity refers to the amount of time and effort invested in searching for information (Nag and Gioia, 2012).

To convert this information into knowledge, executives need to process it (Holcomb et al., 2009). The processing of this information refers to searching for relevant information amongst absorbed information, selecting it, and memorizing, retrieving, and making sense of bits of this set of information (Morroni, 2006:26). So, information processing is both time- and energy-consuming. As a result, the main factor that impacts the total amount of acquired knowledge is the ability to effectively process acquired information.

It was noted that individuals' information processing differs according to their cognitive style (Armstrong et al., 2012a). This is because cognitive limitations (i.e. bounded rationality) constrain effective search for and processing of information (Simon, 1947), and cognitive style is an inherent way in which individuals deal with these limitations (Kozhevnikov, 2007). Therefore, cognitive style determines how quickly and effectively executives can process information and hence acquire knowledge. Furthermore, individuals also have unique ways of applying their cognitive style and on the basis of their style they shape "how" and "to what extent" they need to search for "what needs to be known" (Ford et al., 2002; Fiet, 2007).

This is because, based on their cognitive style, individuals develop unique world views and absorb information that is in discordance with their world views (Weick, 1995). This discordance spurs processing of that information (Weick, 1995). So, no two individuals can acquire identical stocks of knowledge (Conner and Prahalad, 2002:108). In keeping with this, this study posits that executives with different cognitive styles acquire different stocks of knowledge.

To conclude, it should be noted that the dual view of cognitive style suggests that the information-processing capacity of individuals varies in the face of environmental dynamism (Hodgkinson and Healey, 2008). Dynamism causes uncertainty and the perception of uncertainty influences the effectiveness of information processing (Ford et al., 2002). Therefore, different individuals with different cognitive styles exhibit different information processing in the face of dynamism. Hence, it can be argued that the link between executives' cognitive style and their acquisition of knowledge is better understood by the inclusion of their perception of environmental dynamism in this relationship.

To investigate this notion from a more precise angle this study focuses on two important types of knowledge, namely market and technological knowledge (Burgers et al., 2008). In a review of literature, Nag and Gioia (2012) lend further support to these two types and argue that executives constantly demand knowledge about the technologies used in their productive processes and markets. Specifically, the acquisition of market knowledge allows executives to implement radical innovations which require an understanding of new markets (Burgers et al., 2008). This helps executives commercialize market opportunities (Lichtenthaler, 2009), bring their new products to the market, and adapt to market changes (Friesl, 2011) by gaining the ability to deal with market turbulence (Lichtenthaler, 2009). Furthermore, the acquisition of market knowledge is particularly important for small firms which rely extensively on their local markets (Macpherson and Holt, 2007).

Alternatively, it has been argued that technological knowledge plays a complementary role in executives' behavior (Burgers et al., 2008; Lichtenthaler, 2009; Clarysse et al., 2010). Technological knowledge enables executives to choose and implement approaches

that increase efficiency, refine their production, and tackle challenges in technological changes (Burgers et al., 2008). It provides important insights into learning and knowledge aspects of the technological environment in which the firm is founded.

These insights may include aspects of technologies, the complexity of underlying knowledge components, and the pervasiveness and scope of different technological components and technological regimes (Clarysse et al., 2010). Therefore, acquisition of technological knowledge permits understanding of the nature of technological advances and the utilization of relevant knowledge (Clarysse et al., 2010).

Executives make use of their acquired market and technological knowledge by making various strategic choices. Amongst these choices, the emphasis on business model innovation is increasingly regarded as a strategic driver of growth (Aspara et al., 2011a, b). By examining this interaction this study postulates that the interplay between executives' knowledge acquisition and their emphasis on business model innovation provides new insights into the consequences of executives' knowledge asymmetries and subsequent behaviors that cause heterogeneities in firms' growth outcomes in an industry (Makadok, 2011).

3.2.2.2 Knowledge and the Emphasis on Business Model Innovation

The resource-based view (RBV) assumes that knowledge is a resource which helps executives choose appropriate strategies (Barney et al., 2011). Further, according to RBV, the strategic value of a resource becomes realized when it is used in developing a strategy that improves a firm's competitiveness (Kraaijenbrink et al., 2010). Using these assumptions it can be argued that knowledge acquired by executives helps them realize the value of new business models and invest in business model innovation as a competitive strategy. In what follows this argument will be elaborated.

It is generally believed that whenever a firm is established it adopts a business model (Teece, 2010). This model changes over time in order to enable the firm to adapt to changes in its business environment (George and Bock, 2011). The decision to change the business model and the degree of newness brought by these changes in the existing business model of the firm has become a key topic of research in the past few years (Teece, 2007; Helfat et al., 2007; Kor and Mesko, 2012). Literature suggests that executives become accustomed to a business model and this model forms their business

mindset (Tollin, 2008) and defines the logic by which they navigate their firms (Kor and Mesko, 2013). Hence emphasizing business model innovation may require executives to abandon what they have grown accustomed to (Chesbrough, 2010). Furthermore, emphasizing new business models necessitates executives venturing into the unknown through a new strategic approach that extends beyond existing products, markets, and competencies of the firm (Neill and York, 2012).

Given this, executives tend to place different emphasis on business model innovation (Bock et al., 2012) largely due to dissimilar perceptions of their business and its environment (Tripsas and Gavetti, 2000; Burgers et al., 2008; Bock et al., 2012). On the other hand, today's changing markets have made the emphasis on new business models a key competency of effective strategic leaders (Hit et al., 2002).

Accordingly, this study maintains that market and technological knowledge that executives acquire from the environment can be a factor in explaining these differences in emphasizing business model innovation. Knowledge acquired by executives enables them to evaluate business assumptions and modify their business mindset (Nag and Gioia, 2012; Kor and Mesko, 2013). New knowledge of markets and technologies enables executives to assess the accuracy of their business assumptions and helps them engineer subsequent choices about their business model (Bock et al., 2012). For instance, studies have shown that firms with similar resources but with executives who have more heterogeneous knowledge have been better able to incorporate innovation into their line of products (Worren et al., 2002; Lakshman and Parente, 2008).

One explanation for this could be the logic that acquisition of knowledge by executives increases both their ability to formulate and pursue a variety of innovative moves and make them succeed in markets. According to the knowledge asymmetry principle in RBV (Makadok, 2011; Makadok and Barney, 2001), when executives acquire more knowledge they obtain a favorable asymmetric knowledge against suppliers of resources (Chi, 1994). This advantage results in a bargaining power which enables them to acquire required resources from strategic factor markets more effectively (Makadok and Barney, 2001). They consequently gain more confidence and a better ability to invest in developing new capabilities (Sirmon et al., 2007) that are required for initiating a new business model (i.e. business model innovation) and pursuing its success in markets.

Therefore, on the basis of the above reasoning, it can be argued that the degree of emphasis on business model innovation is influenced by the amount of market and technological knowledge acquired by executives. This is particularly evident in small businesses. Large firms have the research and development (R&D) capacity to experiment with new business models and develop required knowledge internally or through acquisitive strategies (A&M), but small firms lack these capabilities and hence their executives' understanding of markets and technologies is their main source of innovative strategies (Macpherson and Holt, 2007).

Furthermore, strategic choices in small businesses are more informal and emergent, which denotes that executives' knowledge is converted into strategic choice in a quicker and less structured way (Curran and Blackburn, 2001).

3.2.2.3 Business Model Innovation and Growth

It has been argued that business model innovation is an important factor in a firm's strategic flexibility or resiliency that underpins its continuous growth (Helfat et al., 2007). The origin of this assumption is rooted in RBV. According to RBV, a firm must not only possess valuable, rare, difficult-to-imitate, and non-substitutable resources but also it needs to organize its activities to make use of these resources (Barney and Clark, 2007). This coherent organization of activities is defined by the business model of the firm (Zott and Amit, 2010; Davidsson et al., 2009). Therefore, firms with similar resources can employ different business models (i.e. configuration of activities) and compete in the markets (Zott and Amit, 2007, 2008). A business model is based on a number of assumptions about customers, sources of value for them, and the firm's profit formula (Teece, 2009). Given today's competitive landscape characterized by fast technological changes and shifts in customers' preferences, emphasizing new business models has become a key priority of executives (Zott et al., 2011).

RBV further suggests that competition reduces growth and firms compete not only based on their similar resources but also based on the similar customer needs that they attempt to meet by using their business model (Peteraf and Bergen, 2003). Therefore, addressing similar needs causes firms to adopt similar business models or imitate each other's business models (Teece, 2010). This reduces the ability of firms to reap profit and stimulate growth (Kim and Mauborgne, 2005). Therefore, emphasizing new business models becomes a means to reduce competition and open up new ways to grow (Kim and

Mauborgne, 2005a, b). It can be argued that this threat is even more serious for SMEs because their business model tends to be simpler and hence more vulnerable and susceptible to competitive imitation (George and Bock, 2011). Thus business model innovation is a choice to bypass this situation. It could specifically enable a firm to tap into new sources of customer value and make competition irrelevant (Kim and Mauborgne, 2005a, b). It could also enable a firm to flex and adopt new technologies and develop new capabilities to improve its competitiveness (Parvinen et al., 2011). For instance, it allows a firm to capture profit from new customers, new products, new production, or new commercialization methods (Markides and Oyon, 2010; Anderson and Markides, 2007).

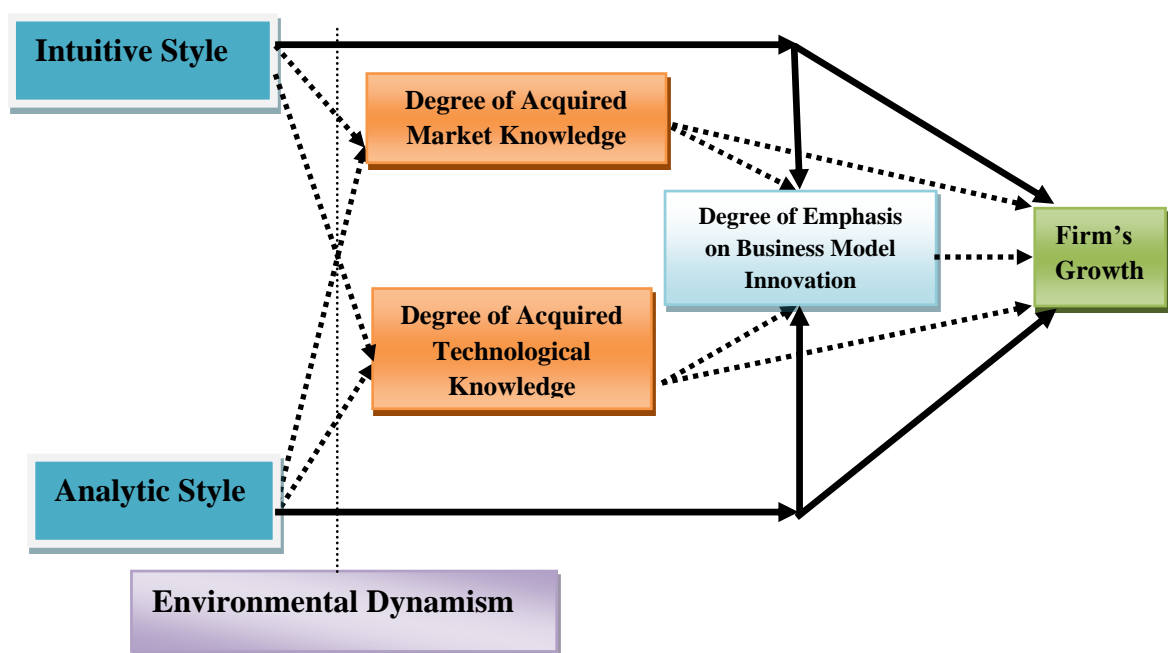
The above argument implies that different levels of effort invested in business model innovation could result in different growth outcomes (Aspara et al., 2010; Aspara and Tikkanen, 2012). This notion is also consistent with an underlying assumption in the theory of the growth of the firm (Penrose, 1959) that the growth of a firm is not contingent upon market forces such as demands for a specific product but is entirely dependent on the ability of executives to set directions for and manage growth by sensing and seizing different opportunities (Teece, 2007) even though it may lead to new products or production methods (Pitelis, 2009).

3.2.3 The Moderating Role of Environmental Dynamism

Dimensions of the business environment such as its turbulence, unpredictability and uncertainty impact the behaviors of executives (Boyd and Gove, 2006; Nadkarni and Barr, 2008). These dimensions can be captured through the concept of environmental dynamism (Kellermanns et al., 2005). In management literature, it has long been argued that executives' perception of environmental dynamism directly impacts how they behave and manage their firm (Nadkarni and Barr, 2008). Indeed, the perception of the environment has been shown to be more important than the actual environment (Milliken, 1987; Ashill and Jobber, 2010). According to the dual-system view of cognitive style, environmental dynamism impacts the activation of different information-processing systems (Hodgkinson and Healey, 2008). This view further suggests that the perception of uncertainty and dynamism impacts the intensity of reliance on intuitive or analytic behavior (Hodgkinson and Healey, 2008; Chaston and Sadler-Smith, 2012). So, depending on their cognitive style, some executives may be less or more subject to the

limiting influence of environmental dynamism on their behaviors (Hodgkinson and Healey, 2011). Therefore, in light of this understanding, the associations of executives' cognitive style with their knowledge acquisition, emphasis on business model innovation, and the firm's growth are examined in interaction with their perception of environmental dynamism.

Based on the above discussion, this study proposes a conceptual framework in which the growth of the firm is the dependent and the cognitive styles of executives are the independent variables. It also suggests that the relationships between cognitive styles and growth are mediated by the interactions between executives' degree of market and technological knowledge acquisition and the degree of emphasis on business model innovation. These intervening mechanisms are also influenced by the degree of environmental dynamism.



Notes:

Thick lines are direct relations

Thick dotted lines are indirect relations and

Thin dotted line is moderated impact

There is also no conceptual link between market and technological knowledge and also intuitive and analytic styles

Figure 4: Conceptual Framework of the study

3.3 Research Hypotheses

Based on the above discussion and suggested research questions, 13 hypotheses were developed for this study and linked to the proposed conceptual framework.

3.3.1 Hypotheses 1 and 2: Dynamism, Cognitive Style and Growth of the Firm

The growth of the firm is determined by the abilities of executives to make adjustments to the firm's resources, products, markets, and production methods (Penrose, 1959; Connell, 2009; Lockett et al., 2011). Executives formulate these adjustments based on a plan in their mind as they interact with their business and its surroundings (Kor et al., 2007). Therefore, these adjustments are firm-specific and thus not-available in the markets (Pitelis, 2009). Executives, as human beings, are however restrained by mental limitations (Kogut, 2008) and hence it has been argued that their planning abilities are highly influenced by their cognition (Boyd and Gove, 2006). It was shown that there are two general styles of cognition known as "intuitive" and "analytic" (Armstrong et al., 2012a). This implies that there could be an association between these two cognitive styles of executives and the growth of their respective firms.

It has been argued (Hough and White, 2004) that dynamic environments can create challenges to manage growth for a number of reasons. First, they pose problems by their fast-changing nature, uncertainty, and enormity of information (Simsek et al., 2010). Furthermore, under dynamic circumstances information is argued to be elusive, inaccurate, or obsolete (Eisenhardt, and Bourgeois, 1988), resulting in indiscernible or at best ambiguous cause-effect and means-ends associations (Simsek et al., 2010). Therefore, detailed analysis and planning become effortful, time-consuming and difficult to carry out effectively (Garg et al., 2003). Thus, executives cannot afford the time, resources, and cognitive capacity required for detailed and comprehensive strategic analyses of options (Hambrick, Finkelstein, and Mooney, 2005). Hence, when executives perceive a high degree of dynamism they generally tend to rely on their internal compass and intuitive judgment to make sense of their environment and behave accordingly (Chaston and Sadler-Smith, 2012; Simsek et al., 2010). Consequently, executives with an intuitive cognitive style are expected to perform more effectively than their counterparts with an analytic style under dynamic circumstances (Khatri and Ng, 2000; Hodgkinson and Healey, 2011).

Research has also shown that in the face of dynamism, reliance on intuition is positively associated with speed and quality of choice making (Hodgkinson et al., 2009a). This is because intuition is a powerful tool for integrating and processing vast amounts of complex information generated by dynamism (Topolinski and Strack, 2009). So, intuitive

executives tend to process information faster and holistically which enables them to cope with dynamism more effectively than analytic executives who process information serially and in detail (Hodgkinson and Healey, 2011). Therefore the following hypothesis can be proposed:

H1: The intuitive cognitive style has a positive impact on the growth of the firm when dynamism is high.

On the other hand, when perceived dynamism is low, executives construct their view of the business environment and its associations as stable and relatively predictable. They accordingly exhibit a greater ability to make sense of market forces such as demand and supply (Simsek et al., 2010). Hence, they can rely more confidently on detailed analysis of strategic issues and options (Miller, 2008). Information under these circumstances can be processed in more detail (Armstrong et al., 2012a) and cause-effect and means-end associations can be formed and made sense of more effectively (Simsek et al., 2010). Therefore, planning for growth and subsequent adjustments would be based on more analysis. Given the above, it could be expected that executives who have a general tendency to rely on analysis could navigate growth more effectively in less dynamic contexts. Therefore, it can be posited that a positive association between the adoption of an analytic style and the growth of firms in perceived low environmental dynamism (more stability) is expected. So:

H2: The analytic cognitive style has a positive impact on the growth of the firm when dynamism is low.

These two hypotheses are in conformity with the dual-system view as a more complex model of cognitive style (Hodgkinson et al., 2009) and extend the currently limited knowledge of the link between executives' dual cognitive style and the growth of the firm (Chaston and Sadler-Smith, 2012) in the small business context.

3.3.2 Hypotheses 3 and 4: Dynamism, Intuitive Style and the Degree of Knowledge Acquisition

As previously mentioned, the cognitive style of executives determines the way they process information (Armstrong et al., 2012a) and accordingly acquire knowledge (Godfrey-Smith, 2002; Holcomb et al., 2009). The difference between the cognitive styles

of individuals is particularly manifested under conditions of dynamism (Hodgkinson and Healey, 2008). In this regard, a dual information-processing view of cognitive style indicates that reliance on an intuitive system would direct attention towards unexpected, novel, and changing bits of information caused by dynamism (Smith and DeCoster, 1998). It also processes information relatively effortlessly and faster under uncertainty (Glöckner and Witteman, 2010). Additionally, an intuitive mindset developed by reliance on intuitive information processing enables individuals to explore more in uncertain situations (Costanzo and Tzoumpa, 2009:290). This is because intuitive people use intuition as a heuristic means to enhance the processing of ambiguous, complex, and uncertain information caused by dynamism (Patterson et al., 2012). Reliance on intuition allows individuals to sift through, select, and process a vast amount of information in a relatively shorter time span (Topolinski and Strack, 2009). This reduced burden allows individuals to acquire more knowledge for use across different contexts in dynamic environments (Holcomb et al., 2009) as it enables them to cut through masses of information (Hodgkinson and Healey, 2011).

Synthesizing these reasonings, it is implied that executives with an intuitive style acquire more market and technological knowledge in a dynamic environment. This is consistent with previous studies such as that by Hodgkinson and Healey (2011) which suggests that in dynamic markets, scanning the environment and searching for information requires executives' intuitive abilities. Thus:

H3: The positive relationship between executives' intuitive style and their acquisition of market knowledge is strengthened when dynamism is high.

H4: The positive relationship between executives' intuitive style and their acquisition of technological knowledge is strengthened when dynamism is high.

3.3.3 Hypotheses 5 and 6: Dynamism, Analytic style and the Degree of Knowledge Acquisition

In general, acquisition of knowledge through searching and processing of information consumes time and effort (Granstrand, 1998). In light of this fact, a dual view of cognitive style suggests that analytic individuals tend to process information in a deeper and more

detailed manner as they are detail conscious (Hodgkinson and Clarke, 2007). Further, reliance on an analytic system makes individuals adopt a deliberative, slow, and step-by-step approach to processing information (Neys, 2006). Therefore, when information changes quickly, information search and processing become more difficult for analytic individuals whose style is slow and effortful. However, when the environment is less dynamic, less ambiguous, and more stable possession of this style could result in efficient information processing (Kozhevnikov, 2007).

Furthermore, previous research has suggested that analytic people can outperform their intuitive counterparts when the environment is more structured, less ambiguous, and more stable (Armstrong et al., 2012a,b). The perception of environmental stability motivates analytic individuals to acquire and process information in detail to fulfill their tasks (Kickul et al., 2009). Therefore, a positive relationship between executives with an analytic style and the degree of knowledge acquisition in less dynamic environments is expected.

This hypothetical relationship is supported by the recent inquiry into the importance of the environment in the role of managers' cognitive style in their behavior (Armstrong et al., 2012a; Chaston and Sadler-Smith, 2012). Consequently, the following hypotheses are proposed:

H5: The positive relationship between executives' analytic style and their acquisition of market knowledge is dampened when dynamism is high.

H6: The positive relationship between executives' analytic style and their acquisition of technological knowledge is dampened when dynamism is high.

3.3.4 Hypotheses 7 and 8: Degree of Market and Technological Knowledge Acquisition and Degree of emphasis on Business Model Innovation

Due to the transaction costs involved in acquiring and processing information, executives have a natural tendency to use their knowledge in making different choices (Foss, 2005) that directly impact the positioning of their firms in markets (Hambrick, 2007). With regard to these choices, strategy literature indicates that today's markets

change quickly and competitive positions are constantly attacked by new and established firms (Teece, 2009). Therefore, emphasizing existing markets would, at best, lead to a temporary/transient state of growth which sooner or later would be imitated and improved upon by other firms (Burke et al., 2009), hence creating new markets instead of competing over existing ones has become a strategic priority in executives' agenda (Lindic et al., 2012; Parvinen et al., 2011).

In this regard, emphasizing business model innovation has been shown to be an increasingly appropriate strategic choice (Chesbrough, 2010; George and Bock, 2011; Bock et al., 2012). Business model innovation is different from product innovation in that it targets the logic of the business (Zott et al., 2011). It is essentially about connecting business dots in a different and novel way (Casadesus-Masanell and Zhu, 2012). So it enables executives to create and tap into new markets (Kim and Mauborgne, 2005a, b; Aspara et al., 2010). This option is, however, complex (Lindic et al., 2012). To succeed in this endeavor executives have to be aware of different aspects of markets (Teece, 2007). Hence executives' market knowledge could play a significant role in this matter (Burgers et al., 2008; George and Bock, 2012; Marvel, 2012).

Previous studies have documented various roles of this knowledge. For instance, it has been argued that new market knowledge has a temporal salience; this means that it enables executives to both make sense of existing customers' preferences and also detect new patterns and trends in customers' tastes (Anderson and Eshima, 2013). Additionally, acquisition of market knowledge enriches executives' understanding of competitors' current and potential moves (De Luca and Atuahene-Gima, 2007). It also facilitates the absorption of critical market issues and increases the depth and breadth of firms' marketing capabilities (Zhou and Li, 2012). These capabilities will then be embodied in new competitive market moves (Madhavan and Grover, 1998) such as new business models (Burgers et al., 2008; Chesbrough, 2010; Teece, 2010).

Therefore acquiring market knowledge opens up new venues for business model innovation. In addition, it is understood that knowledge increases choice-making capacity. So the more knowledge executives acquire, the more possibilities and alternative ways of using resources will be developed (Morrone, 2006; Marvel, 2012). Furthermore, as executives acquire more knowledge they develop a more accurate sense of "how capable they are of engaging in a course of action and how likely it is that they

will engage in the action” (Barbosa et al., 2007:87). It is expected that executives’ emphasis on business model innovation would be positively influenced by the degree of their acquired market knowledge. In brief, the following can be proposed:

Hypothesis 7: There is a positive association between executives’ degree of acquired market knowledge and their emphasis on business model innovation.

On the other hand, technological knowledge is complementary to market knowledge (Burgers et al., 2008; Lichtenthaler, 2009). Although both types of knowledge are idiosyncratic resources (Song et al., 2005), technological knowledge tends to occupy a different part of executives’ knowledge base (Sullivan and Marvel, 2011a, b; Marvel, 2012). This is particularly germane to a firm’s operationalization of innovative modes and methods (Tang and Murphy, 2012). In other words, integrating ideas into an operation requires technological knowledge (Sirmon et al., 2011). Specifically, the acquisition of technological knowledge not only enables executives to understand technological changes and detect remote and close technological opportunities and threats (Zhou and Li, 2012) but it also helps them devise different ways of using existing ideas to address customers’ needs (Tang and Murphy, 2012).

In short, technological knowledge allows executives to assess the possibilities of fulfilling market insights (Lichtenthaler, 2009). Therefore acquisition of technological knowledge is a necessary component of responding to both market and technological changes (Cohen and Levinthal, 1990; Song et al., 2005; Marvel, 2012). Recent research in this regard further suggests that by acquiring technological knowledge executives can reinvent production and distribution systems and experiment with the way they use available resources and networks to develop entirely new business models (Luo et al., 2011). Since emphasis on business model innovation is basically a strategic choice of executives to respond to changing markets and technologies by developing or adopting new business models (Bock et al., 2012), a positive relationship is expected between executives’ degree of acquired technological knowledge and their emphasis on business model innovation. Therefore, the following is expected:

Hypothesis 8: There is a positive association between executives' degree of acquired technological knowledge and their emphasis on business model innovation.

By proposing the above hypotheses this study maintains the notion developed by Hambrick et al. (1993) that executives' tendency to have enduring beliefs in the correctness of their current business could be partly related to their level of business knowledge. In other words, an executive could be committed to the current business model without emphasizing new business models (i.e. business model innovation), perhaps because "it is all he or she knows, unaware of other options" (p. 404). Another explanation could be that executives may know the value of a new business model but they tend to reject or discount it because they don't have enough market and technological knowledge to assess the uncertainty involved in pursuing it (Mosakowski, 2002). In both scenarios, firms' growth is at stake because a new business model will sooner or later be exploited by a more flexible firm (Meyer et al., 2002).

In keeping with this, the above prediction is in accord with the recent study of Berghman et al. (2012) that found a positive association between increased deliberate learning from supply chain partners and the improved ability of executives to initiate business model innovation.

In addition, knowledge acquisition from the environment leads to real-time knowledge. There is substantial evidence suggesting that strategies that emerge from and take advantage of real-time knowledge are more likely to direct successful innovative moves than strategies based on past experiences and existing knowledge that might be outdated (Covin et al., 2006; Lichtenthaler, 2009; Marvel, 2012). This issue is particularly relevant for small manufacturing firms because unlike large firms these firms do not have the internal resources required for performing a comprehensive market and technological research and knowledge accumulation (Thorpe et al., 2006). Therefore their executives' involvement in market and technological knowledge acquisition becomes a key aspect of their strategy formulation and implementation (Chandler and Lyon, 2009).

3.3.5 Hypotheses 9: Degree of Emphasis on Business Model Innovation and Growth of the Firm

Business models are key drivers of a firm's growth (Helfat et al., 2007; Teece, 2010). They determine both value creation and value capture activities that underpin the growth of the firm (George and Bock, 2011; Zott et al., 2011). Given this, business model innovation brings about adjustments in the value creation and capture of the firm (Zott et al., 2011). These adjustments directly impact the growth of the firm because they directly change both the nature of opportunities executives aim to exploit and the way those opportunities are exploited (George and Bock, 2011; Bock et al., 2012). Therefore, emphasizing business model innovation by executives gives rise to a strategic trade-off between the state of value creation and value capture (Aspara and Tikkanen, 2012).

Less emphasis on business model innovation indicates that executives tend to pay more attention to their current value capture system by exploiting their current business model (Lindic et al., 2012). It also increases stability and efficiency (Aspara et al., 2010) whereas more emphasis on business model innovation shows that executives tend to develop new value-creating systems by exploring new sources of customer value (Neill and York, 2012), which allows their firm to become flexible, and tap into new markets and reduce the impact of competition (Bock et al., 2012).

It has become a truism that under today's competitive circumstances characterized by fast technological disruptions, globalization, and market openness, reliance on stability and efficiency does not lead to sustained success, and in fact success lies at the heart of flexibility and differentiation (Teece et al., 1997; Sinfield et al., 2012) by constantly searching for new sources of value (Kim and Mauborgne, 2005a, b). With regard to this shift in the logic of success, literature suggests that innovation, specifically when it is targeted at the business model level, has become a key to becoming flexible and differentiating the entire value system of the firm (Sood and Tellis, 2011; Sinfield et al., 2012).

Therefore, by emphasizing business model innovation, executives can generate longer-lasting market positions due to causal ambiguity involved and the resulting defensibility of new business models in markets (Kim and Mauborgne, 2005a, b; Teece, 2010). Thus,

emphasizing business model innovation allows a firm to reap more profit from the new markets created by adopting a new business model (i.e. business model innovation) instead of sharing profit with others in the mainstream market (Lindic et al., 2012). Additionally, this enables the firm to secure growth from profit more efficiently (Goddard et al., 2012). Emphasizing business model innovation also enables a firm to become flexible (Bock et al., 2012) and consequently enhances its evolutionary fitness to sustain its growth (Helfat et al., 2007).

More specifically, it has been shown that business model innovation enables a firm to grow through: a) an increase in sales by tapping into new sources of customer value (Parvinen et al., 2011) and profitability (Aspara et al., 2010), b) reducing the impact of competition or making competition irrelevant (Kim and Mauborgne, 2004), and 3) an increase in the firm's market share by creating new markets and tapping into them (Markides and Oyon, 2010). Accordingly, it is specifically an important strategic choice for small manufacturing firms in developed open-market economies whose markets are threatened by large firms and competitive products from emerging markets such as India and China (Terziovski, 2010). Synthesizing these findings, the following hypothesis is proposed:

H9: There is a positive relationship between the degree of emphasis on business model innovation and the growth of the firm in small manufacturing firms.

3.3.6 Hypotheses 10 and 11: Dynamism, Cognitive Style and the Degree of Emphasis on Business Model Innovation

Business model innovation is an inherently complex undertaking which requires analysis of different factors and estimation of different opportunity costs (Sinfield et al., 2012). These costs could include the potential cannibalization of the current business model, the obsolescence of some existing capabilities (Desyllas and Sako, 2013), the development and acquisition of new resources and capabilities (Aspara and Tikkanen, 2012), and even the transformation of a firm's structure (Aspara et al., 2011). Therefore, emphasizing business model innovation causes uncertainty and unpredictability for executives (Sosna et al., 2010).

Executives attempt to reduce the impacts of this uncertainty and enhance the calculation of costs by learning, experimenting, and making adjustments to the firm's

resources and capabilities (Sosna et al., 2010; Sinfield et al., 2012). Despite these attempts, assessing business model innovation puts a tremendous demand on processing different information broadly and deeply (Baer et al., 2013), and due to the limited cognitive capacity of individuals they naturally rely on their stylistic information-processing modes to perform these assessments (Hodgkinson and Healey, 2011). Therefore, this study relates the behavior of executives with regard to their emphasis on business model innovation to their cognitive style as their innate stylistic way of processing information and predilections in formulating issues and dealing with uncertainty.

In cognitive style literature, an intuitive style has frequently been associated with the effective processing of information in the face of uncertainty and unpredictability caused by dynamic environments (Armstrong and Hird, 2009; Hensman and Sadler-Smith, 2012). Intuitive individuals also tend to emphasize innovation and creativity and plan more effectively for doing something different by taking risks (Kirton, 1984; Armstrong and Hird, 2009; Hensman and Sadler-Smith, 2012; Dane et al., 2011). Reliance on the power of intuitive information processing also permits individuals to make sense of vast amounts of complex information (Desyllas and Sako, 2013). Therefore there is reason to argue that intuition is a useful means that could help executives plan and analyze different aspects of emphasis on business model innovation.

Furthermore, executives' perception of environment is a key determinant of their behavior (Yan et al., 2010). In particular, The dual view of cognitive style argues that reliance on intuition is emphasized under perceived dynamism and uncertainty (Chaston and Sadler-Smith, 2012). Thus, a perceived high level of environmental dynamism positively impacts the intensity of the association between intuitive cognitive style and emphasis on business model innovation. Hence, intuitive executives are more apt to emphasize new business models when perceived dynamism is high. Therefore, the following hypothesis can be proposed:

H10: The positive relationship between intuitive executives and emphasis on business model innovation is more significant under high environmental dynamism.

On the other hand, business model innovation requires planning and analysis of issues. Since executives with an analytic style employ a deliberative (thoughtful), slow, and step-by-step approach to processing information (Neys, 2006) and tend to pay attention to details and process information more deeply rather than holistically (Kirton, 1984; Thong and Yap, 1995), their planning for emphasizing new business models could be more effective in less dynamic contexts where stability and predictability permit detailed assessments of issues.

In addition, it is common for executives to protect their current business model, particularly when they think market dynamism is low (Meyer et al., 2002). This protective mode enables them to make incremental and minor adjustments to the business model to make their business compatible with low rates of market changes (Meyer et al., 2002). However, rejecting new business models reduces the capacity of the firm to grow (Hitt et al., 2002). Since analytic executives have a natural tendency to maintain the status quo and consciously process information in detail (Neys, 2006), it can be argued that analytic executives tend to place less emphasis on new business models specifically when they perceive a high degree of dynamism. This is because the magnitude of information produced by dynamism reduces the efficiency of analytic information processing (Hayes and Allinson, 1994, 1998) and increases their tendency to maintain the current course of action.

In contrast, when perceived dynamism is low, analytic executives can process information and assess different aspects of innovative strategic choices more effectively (Chaston and Sadler-Smith, 2012). Taking this notion a step further, observations suggest that in more dynamic contexts individuals' tendency to rely on intuition increases (Khatri and Ng, 2000). For analytic executives this would result in a cognitive conflict as it is not compatible with their natural cognitive style (Chaston and Sadler-Smith, 2012). This misfit would negatively impact their behavior (Brigham et al., 2007).

Consequently, when the environment is more dynamic the impact of an analytic cognitive style on executives' emphasis on new business models (i.e. business model innovation) is less pronounced. Formally stated:

H11: The positive relationship between analytic executives and emphasis on business model innovation is significant under less environmental dynamism.

These above hypotheses are consistent with the recent research on strategic management indicating that in dynamic environments intuition is a fast and effective tool for effective strategy formulation and implementation (Hodgkinson et al., 2009a; Hodgkinson and Healey, 2011). These two also point to an interesting issue about small manufacturing firms. Literature suggests that large firms may have different business models for different markets but small firms most likely have a single business model (Zott and Amit, 2007, 2008) which is directly influenced by its executives' characteristics and market conditions due to the smaller size and simpler structure of these firms (George and Bock, 2011). Specifically, manufacturing SMEs tend to focus on either efficiency (stability and lower emphasis on business model innovation) or flexibility (higher emphasis on business model innovation) as their structure and resources don't let them adopt a complex dual strategy (Ebben and Johnson, 2005). Therefore, based on these hypotheses and by focusing on small manufacturing firms this study is able to distinguish between low and high emphasis on new business models from the perspective of executives' cognitive style and their perception of dynamism.

3.3.7 Hypotheses 12 and 13: Degree of Market and Technological Knowledge Acquisition and Growth of the Firm

Growth of the firm, in the view of Penrose, is based on the executives' pursuit of knowledge (Connell, 2009). Market and technological knowledge are two pivotal and complementary types of knowledge in this matter (Wiklund and Shepherd, 2003; Lichtenthaler, 2009). These two jointly create the strategic knowledge base of executives by which they extract value from resources (Wiklund and Shepherd, 2003; Sirmon et al., 2007). Executives use this strategic knowledge to choose and implement necessary strategic actions (Barney et al., 2011), acquire other resources (Foss, 2005) and develop capabilities to make use of firm resources for creating and capturing value (Sirmon et al., 2007, 2011).

Despite their joint influence on a firm's growth, literature suggests that these two ought to be discussed separately due to their strategic differences (Burgers et al., 2008; Marvel, 2012). Market knowledge allows executives to assess the market value of an

offering, detect the locus of profit and track customer changes as well as their problems (Wiklund and Shepherd, 2003). Inability to acquire new market knowledge reduces a firm's ability to achieve the objectives of its radical moves in the target market segments (Tripsas and Gavetti, 2000) whereas the opposite (i.e. the ability to acquire new market knowledge) enables executives to improve the depth and breadth of marketing capabilities to be used in formulating and making successful radical market moves (Zhou and Li, 2012).

Additionally, these two types of knowledge and their respective impacts on firms are particularly important for small firms such as manufacturing SMEs (Burgers et al., 2008; Wiklund and Shepherd, 2003). The key reason for this significance is that executives of small firms are closer to markets and can acquire information more quickly than their counterparts in large firms due to less impact and control from the board and complex governance mechanisms (Ling et al., 2008; Lubatkin et al., 2006). Furthermore, the knowledge of executives is one of the primary endowments of poorly resourced firms such as SMEs (Thorpe et al., 2006). In light of this argument, the following hypothesis is proposed:

H12: There is a positive relationship between executives' degree of acquired market knowledge and the growth of their respective firm.

On the other hand, technological knowledge is also an important factor in the growth. The technological environment in which a firm operates is an important determinant of its short- and long-term operation (Clarysse et al., 2011). As noted, this technological environment represents the underlying knowledge of production such as the scope of technologies, technological regimes and complexities, and the pervasiveness of certain technological aspects in the productive patterns of an industry (Malerba and Orsenigo, 1993). Technological knowledge underpins the technological competencies of the firm which include abilities to design and develop new products and productive processes (Ndofor et al., 2011). In particular, acquired technological knowledge is converted into technological competencies and these competencies are utilized by competitive strategies to stimulate growth (Ndofor et al., 2011). Therefore, acquisition of technological knowledge is a determinant of a firm's potential success in markets (Clarysse et al., 2011).

Additionally, market knowledge cannot be fully utilized in growth-oriented activities without technological knowledge (Lichtenthaler, 2009). According to Delmar et al. (2011), the market success of a firm is contingent upon its understanding of the technological regime of its industry. This can be achieved by acquisition of technological knowledge (Sullivan and Marvel, 2011a). Put simply, technological knowledge allows executives to assess the feasibility of new offerings. Therefore, technological knowledge provides a firm with potentially exploitable market applications (Clarysse et al., 2011). Specifically, previous studies suggest that the acquisition of technological knowledge enables executives to develop different market offerings and thus broaden the growth possibilities of their firm (Tang and Murphy, 2012). Integrating these points, the following hypothesis is proposed:

H13: There is a positive relationship between executives' degree of acquired technological knowledge and the growth of their respective firm.

The above hypotheses are consistent with the notion raised by Levinthal and March (1993) and recently acknowledged by Danneels (2008:520) that knowledge about current markets and technologies has a relatively early and local return because it has clear and immediate use. In light of the above hypotheses, it seems appropriate to point out that through these hypotheses this study is able to examine the separate and joint impacts of market and technological knowledge acquired by executives on the growth of firms and specifically manufacturing SMEs. Therefore, this research not only adds to and extends the recent works of Sullivan and Marvel (2011a) and Marvel (2012) but also sheds new light on the association between executives' pursuit of knowledge and growth of the firm as a relatively less explored side of literature (Marvel, 2012; Nag and Gioia, 2012). Having proposed these hypotheses, Figure 5 shows the hypotheses used in this study.

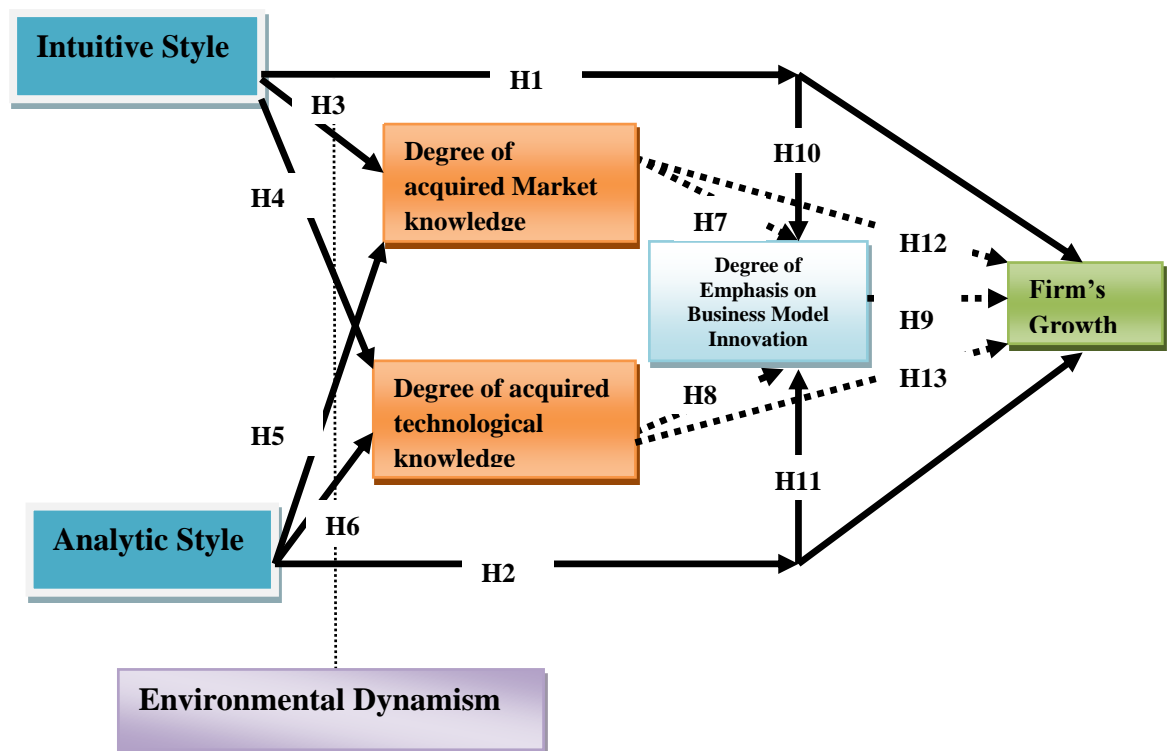


Figure 5: Research Hypotheses

Table 7 presents a summary of the research hypotheses, their description as well as the causal effects that each one examines and their relationships with the research questions.

Table 7: Summary of Hypotheses

Hypothesis	Description	Causal effect	Related Research Question
H1	Intuitive style, high dynamism and growth of the firm	Significantly positive	RQ1
H2	Analytic style, low dynamism	Significantly positive	RQ1

	and growth of the firm		
H3	Intuitive style, acquisition of market knowledge in high dynamism	Significantly positive	RQ2
H4	Intuitive style, acquisition of technological knowledge in high dynamism	Significantly positive	RQ2
H5	Analytic style, acquisition of market knowledge in low dynamism	Significantly positive	RQ2
H6	Analytic style, acquisition of technological knowledge in low dynamism	Significantly positive	RQ2
H7	Acquisition of Market Knowledge and emphasis on Business Model Innovation	Significantly positive	RQ2
H8	Acquisition of Technological Knowledge and emphasis on Business Model Innovation	Significantly positive	RQ2
H9	Emphasis on Business Model Innovation and growth of the firm	Significantly positive	RQ2
H10	Intuitive style, emphasis on Business Model Innovation in high dynamism	Significantly positive	RQ2
H11	Analytic style, emphasis on Business Model Innovation in low dynamism	Significantly positive	RQ2
H12	Acquisition of Market Knowledge and Growth of the firm	Significantly positive	RQ2
H13	Acquisition of Technological Knowledge and and growth of the firm	Significantly positive	RQ2

3.4 Summary of the Chapter

Following the research objectives and questions as discussed in Chapter one and based on the findings of the literature review and analysis, this chapter proposed a conceptual framework and its 13 hypotheses. These hypotheses illustrate the causal relationships

amongst these variables. These hypotheses will be tested empirically through a large-scale survey (quantitative approach) and the results will be corroborated by a series of interviews (qualitative approach). These methods will be explained further in the following chapters. The results of the empirical findings and verification of hypotheses will then be discussed in Chapter six.

-CHAPTER FOUR-

-Research Design and Methods-

4.1 Introduction

This chapter discusses the research design and methods adopted for this study. It is organized into three sections. In the first section, concurrent mixed-methods (CMM) design, its significance, and the rationale behind the choice of this approach will be explained. Following this design, the second section discusses the design of the quantitative phase of this research by explaining the research variables and their measurement as well as sampling and data collection methods. In the last section of this chapter the design and conduct of the qualitative phase will be addressed. This illustrates the design of the interview protocol, the selection of and access to participants, and the conduct as well as the analysis of interviews.

4.1.1 Mixed-Methods Rationale and Design

In management and organization research, mixed-methods design is increasingly used by scholars (e.g. Migiro and Magangi, 2011; Molina-Azorín, 2011, 2012). This trend is consistent with a growing interest in mixed-methods research in other disciplines such as nursing (e.g. Doyle et al., 2009; Andrew and Halcomb, 2009), psychology (e.g. Dures et al., 2011), social science (e.g. Onwuegbuzie and Collins, 2007; Tashakkori and Teddlie, 2010), educational studies (Johnson and Onwuegbuzie, 2004), and accounting (e.g. Brown and Brignall, 2007; Loo and Lowe, 2011).

This surge can be attributed to the ability of mixed-methods design to generate a better understanding of research problems (Molina-Azorín, 2012). It is particularly important for situations where little or no previous work on the constructs and processes under investigation is available therefore a mixed or hybrid use of qualitative and quantitative data can enhance understanding of the phenomenon (Edmondson and McManus, 2007). Aguinis et al. (2009) also endorse this notion and state that further research using a mixed approached in organization and management is warranted due to its potential to create a richer picture of the organizations. However, despite these merits mixed-methods research requires careful conduct as it goes beyond a simple mix of qualitative and quantitative studies (Creswell, 2003; Tashakkori and Teddlie, 2010).

4.1.2 Concurrent Mixed-Methods Design : Definition and Rationale

According to Creswell (2003), concurrent mixed-methods (CMM) design is the most appropriate strategy for triangulating, corroborating, and cross-validating qualitative and quantitative data. As a result, based on the objectives of this research explained in Chapter one, it is assumed that this approach enables us to develop a richer and deeper picture of the causal relationships between embedded and complex concepts such as cognitive style (Hodgkinson et al., 2009) and resource acquisition (i.e. degree of knowledge acquisition) (Foss et al., 2010; Friesl, 2011) and embedded organizational concepts such as business model (George and Bock, 2011).

The concurrent mixed-methods design simply indicates that qualitative and quantitative data are collected independently and separately in parallel not in sequence. So, the collection of one type of data does not influence the other and hence corroboration and cross-validation (i.e. triangulation) is not compromised (Wolf, 2010; Moran-Ellis et al., 2006). It is also worth mentioning that this approach is less time-consuming than sequential mixed-methods design in which study begins as qualitative or quantitative and is completed by the other (Creswell, 2009). In the concurrent design the state of analysis enables integration and corroboration (Tashakkori and Teddlie, 2010).

In line with this argument, this study adopts the design approach of Andrew and Halcomb (2009) because it has been endorsed by Tashakkori and Teddlie (2010) and is consistent with the notion of capturing complex reality through mixing qualitative and quantitative analyses as explained by Cox and Hassard (2005). Accordingly, qualitative and quantitative data will be concurrently and independently collected and analyzed, and then in the discussion phase will be synthesized. This approach could not only provide more opportunities to answer research questions but also allow findings to be assessed from different angles (Tashakkori and Teddlie, 2003). In addition, Bryman (2006) and Saunders et al. (2007) have argued that this method is a suitable approach for corroborating different findings and assisting interpretation. Therefore, it seems appropriate for investigating phenomena whose constructs and their relationships were not well examined in previous studies (Edmondson and McManus, 2007).

To justify the choice of concurrent instead of sequential data collection this study employed the logic of Hanson et al. (2005). Accordingly, the primary logic for selection of the sequence of data collection is the purpose of the study. In this regard, the reasons

for adopting a concurrent strategy can be stated through two primary features of the concurrent mixed methods which make this strategy appropriate for the purpose of this research. First, concurrent mixed-methods strategy is best known for its ability to enable corroboration and cross-validation of quantitative with qualitative findings (Tashakkori and Teddlie, 2007; Campbell and Fiske, 1959; Denzin, 1978). This serves the purpose of this research as explained earlier (Molina-Azorín and Cameron, 2010; Rocco et al., 2003).

Secondly, this approach allows qualitative findings to be nested in quantitative ones not only to corroborate but also to provide a deeper meaning and understanding of the phenomenon of interest (Creswell and Clark, 2007; Tashakkori and Teddlie, 2010) and specifically a better picture of individual-level organizational phenomena (Jick, 1979; Cameron and Molina-Azorín, 2011). This can be best achieved via a hybrid method of data collection and analysis in which quantitative and qualitative data are used to corroborate, cross-validate, or co-refute new links and relationships (Edmondson and McManus, 2007). Therefore, a concurrent mixed-methods research in this research serves two purposes: firstly for cross-validating and corroborating qualitative and quantitative data, and secondly for creating a better understanding and new aspects of the phenomena of interest. This is also in accord with the methodological fitness proposed by Edmondson and McManus (2007).

4.1.2.1 Methodological Fitness

The choice of research methodology is guided by theory (Monge 1990). Methodological fit of a research is assessed by this principle. According to Edmondson and McManus (2007), methodological fitness in a research refers to internal consistency among elements of a research project—research question, previous work, research design, and theoretical contribution. Therefore, although the value-adding features of the concurrent mixed-methods design in this study were discussed, this choice can be further justified based on the framework of methodological fitness as demonstrated in Table 8.

Table 8: Methodological Fitness

<i>Three Archetypes of Methodological Fit in Field Research</i>			
<i>State of Prior Theory and Research</i>	<i>Nascent</i>	<i>Intermediate</i>	<i>Mature</i>
Research Questions	Open-ended inquiry about a phenomenon of interest	Proposed relationships between new and established constructs	Focused questions and/or hypotheses relating existing

Type of data collected	Qualitative, initially open-ended data that need to be interpreted for meaning	Hybrid (both qualitative and quantitative)	constructs Quantitative data; focused measures where extent or amount is meaningful
Illustrative methods for collecting data	Interviews; observations; obtaining documents or other material from field sites relevant to the phenomena of interest	Interviews; observations; surveys; obtaining material from field sites relevant to the phenomena of interest	Surveys; interviews or observations designed to be systematically coded and quantified; obtaining data from field sites that measure the extent or amount of salient constructs
Constructs and measures	Typically new constructs, few formal measures	Typically one or more new constructs and/or new measures	Typically relying heavily on existing constructs and measures
Goals of data analysis	Pattern identification	Preliminary or exploratory testing of new propositions and/or new constructs	Formal hypothesis testing
Data analysis methods	Thematic content analysis coding for evidence of constructs	Content analysis, exploratory statistics, and preliminary tests	Statistical inference, standard statistical analyses
Theoretical contribution	A suggestive theory, often an invitation for further work on the issue or set of issues opened up by the study	A provisional theory, often one that integrates previously separate bodies of work	A supported theory that may add specificity, new mechanisms, or new boundaries to existing theories

Source: Edmondson and McManus, (2007:1160)

According to Edmondson and McManus (2007), when the proposed research questions or knowledge gaps target relationships between new and established constructs in an intermediate field where key concepts are less developed the most fitting approach would be hybrid or mixed-methods which benefit from both qualitative and quantitative data and their analysis and synthesis. This approach enables the research to contribute to an emerging theory by synthesizing insights from deductive causal assessments and inductive reasoning aimed at enriching and supplementing causal findings (Creswell 2003, Molina-Azorin, 2007). Given the fact that antecedents and consequences of business model innovation and the concept of strategic emphasis on business model innovation are largely unknown (Zott et al. 2011). Mixed-methods design appears to be the most fitting method for the purpose of this study. Following this justification, a key

aspect of mixed-methods research is the priority designated to the qualitative and quantitative assessments.

4.1.2.2 Designated Priority/Weight: (QUAN+qual)

A key decision in mixed-methods research is whether priority of interpretation is given to the qualitative or quantitative sections or whether they are treated equally (Creswell, 2003). Since it is the intention of the study to test a hypothetical model and the variables of the study are clear and their relationships can be theoretically explained and hypothesized, it is appropriate to give priority to the quantitative analysis. Therefore, the qualitative section is mainly utilized to further substantiate and complement the findings of the quantitative section (Andrew and Halcomb, 2009:38).

This shows the priority of quantitative over qualitative analysis in this research and indicates the mode of QUAN+qual in the language of mixed-methods research. These two decisions (i.e. time order and weight) shape the form of the design (as simply illustrated in the next figure) (Johnson and Onwuegbuzie, 2004).

4.1.2.3 Operationalizing Concurrent Mixed-Methods Design

According to Onwuegbuzie and Johnson (2006:53), “in basic concurrent mixed designs, the following four conditions define the operationalization: (a) both the quantitative and qualitative data are collected separately at approximately the same point in time, (b) neither the quantitative nor the qualitative data analysis builds on the other during the data analysis stage, (c) the results from each type of analysis are not consolidated at the data interpretation stage until both sets of data have been collected and analyzed separately, and (d) after collection and interpretation of data from the quantitative and qualitative components, a meta-inference is drawn which integrates the inferences made from the separate quantitative and qualitative data and findings.”

Drawing upon this guideline it is important to note that: 1) Sampling is carried out for the qualitative and quantitative phases differently. 2) The contribution of each phase to the research questions differs as such qualitative findings complement and enrich the contributions of quantitative findings. 3) Their analytic approaches (i.e. reasoning logics) do not interfere before final integration (Teddlie and Tashakkori, 2009; Tashakkori and Teddlie, 2010; Molina-Azorín (2007). 4) Final integration requires an integrative way to

develop coherent meta-inferences that are derived from a consistent synthesis of qualitative and quantitative findings (Bazeley, 2009; Woolley, 2009; Castro et al., 2010; Molina-Azorín, 2007). The operationalization of these steps will be discussed in Chapter five and synthesis will be performed in Chapter six.

4.2 Design of the Quantitative Phase of the Study

In this section the research variables and their measurements, sampling and data collection as well as data analysis procedures will be discussed.

4.2.1 Research Variables and their Measures

4.2.1.1 Independent Variable

Cognitive Style: Following a series of discussions by Hodgkinson and colleagues (Hodgkinson and Healey, 2008; Hodgkinson et al., 2009a b), this study employs the modified version of the REI (Rational-Experiential Indicator) developed by Pacini and Epstein (1999) based on the previous works of Epstein (1991, 1994) and Epstein et al. (1998). According to Hodgkinson et al. (2009), this measure is better able to capture the dual essence of information processing as analytic and intuitive and provides a more effective approach to measuring executives' cognitive style (Armstrong et al., 2012a). The rational part has a reliability of 0.90 and the experiential part has a reliability of 0.87, which are above the cut-off value of 0.6 (Nunnally, 1967, 1978).

This measure is a self-report measure of individual differences in intuitive and analytical information processing consisting of 40 items (20 for rational or analytic and 20 for experiential or intuitive) scaled on a five-point Likert-type anchor of 1 equals "definitely not true of myself" to 5 as "definitely true of myself." It should be noted that some items are reverse scaled and these are explained in data entering and analysis in the next chapter. Examples of items for analytic style are: "I prefer complex problems to simple problems" and "I have a logical mind"; and for intuitive style: "I believe in trusting my hunches" and "I tend to use my heart as a guide for my actions."

Further, it should be noted that different versions of the REI have been employed by scholars. For instance, Chaston and Sadler-Smith (2012) adopted a shortened version of the original indicator that consists of 10 items (five for analytic and five for intuitive). This version was shortened from the first edition of the measure (Epstein et al., 1996).

Novak and Hoffman (2009), on the other hand, adopted a 20-item (10 for intuitive and 10 for analytic) version of the second edition of the REI (Pacini and Epstein, 1999).

All measures have shown acceptable reliability and validity in previous studies. That is, in the study of Chaston and Sadler-Smith (2012): 0.86 and 0.77 for intuitive and analytic dimensions respectively, and in the study of Novak and Hoffman (2009): 0.916 and 0.904 for intuitive and analytic dimensions respectively. However, in order to be consistent with the suggestions of Armstrong et al. (2012a,b) in regard to the need for further validation of Pacini and Epstein's (1999) indicator (REI) in business and management, this study adopted the full measure that consists of 40 items and tested the measures in a pilot study. This issue will be elaborated in the next chapter.

4.2.1.2 First Mediating Variable

Emphasis on business model innovation :For measuring the executives' choice of emphasis on business model innovation (BMI), this study adopted the two-item scale developed and employed by Aspara et al. (2010). This choice of measure is due to several reasons. First, this measure is based on the subjective understanding of the business model emphasis from the perspective of CEOs which is consistent with the unit of analysis in this research. Second, this measure has been used in the small business context (Aspara et al. 2010) which shows its reliability and validity for the empirical context of this research. In addition, it has a high reliability of 0.9 which is above the cut-off value of 0.6 (Nunnally, 1967, 1978). Other measures such as that used by Bock et al. (2012) have a single-item dichotomous item measuring whether a firm has a BMI or not. This was considered to be unsuitable for this study.

Accordingly, the emphasis on business model innovation (BMI) is measured by two items targeting the level of CEOs' perceived given emphasis on the business model of their firms by two items. The two items are: (1) "In our strategy, it is central to make initiatives to create novel value by challenging existing industry-specific business models, roles, and relations in certain geographic market areas." (2) "In our strategy, it is central to make initiatives to provide entirely new value for certain people and/or organizations (customers)." These items use a six-anchor Likert scale ranging from 0 equals strongly disagree to 6 equals strongly agree.

Finally, to measure the degree of strategic emphasis on business model innovation this study follows the method used by Aspara et al. (2010:47). According to this method, the sum of a manager's responses on the two items of the emphasis on BMI was calculated to form a continuous variable from low to high emphasis. It is to be noted that, this study did not use Aspara et al. (2010)'s dichotomization of "low" or "high" emphasis on BMI based on a median split within the whole sample because dichotomization causes information loss in the model (Cohen, 1983). So, the two-item measure was converted into a single continuous variable which denotes the degree of emphasis on BMI from low to high.

4.2.1.3 Second Mediating Variable

Degree of Knowledge Acquisition: Following the study of Sullivan and Marvel (2011b), two constructs of market and technological knowledge acquisition were measured by a 10-item five-point Likert-type measure. Market knowledge acquisition was measured by five items indicating the extent to which executives have acquired knowledge about market functioning, suppliers, and manufacturers in the market and first-hand experience, whereas technological knowledge items cover issues such as knowledge about different, general, and specific technologies related to the business. Each item was anchored from 1 = to a very large extent to 5 = to a small extent. This style is also analogous to the measure developed and used by Mom et al. (2007). However, in the study of Mom et al. (2007) the difference between market and technological knowledge is not explicitly reflected in measure. Hence, this study adopted the measure of Sullivan and Marvel (2011b) since it has clearly distinguished these two types of knowledge based on the work of Burgers et al. (2010) and has also employed this measure in the context of small businesses. Accordingly, the composite reliability of both market knowledge acquisition and technological knowledge acquisition was 0.90 (Sullivan and Marvel, 2011a) which is above the acceptance cut-off value of 0.6 (Nunnally, 1967, 1978).

The specific benefit of this measure to this research is that it is one of the most recently developed and used measures for assessing the extent of acquisition of both market and technological knowledge in small business literature. This is particularly different from previous studies which have either measured the acquisition of market knowledge (e.g. Zhou and Li, 2012; De Luca and Atuahene-Gima, 2007; Enderwick, 2011) or

technological knowledge (e.g. Belotti and Tunalv, 1999) , because this measure consists of a set of internally consistent and reliable items for addressing the acquisition of both market and technological knowledge (Sullivan and Marvel, 2011a).

4.2.1.4 Moderating Variable

Perception of environmental dynamism: Environmental dynamism, also known as uncertainty, volatility, or turbulence (Kellermanns et al., 2005), influences executives' behavior (Nielsen, 2010; Mitchell et al., 2011). As noted, dynamism generally refers to a fast rate of changes resulting in the unpredictability of the environment (Elbanna et al., 2011). It therefore influences the cognitive performance of executives (Mitchell et al., 2011). Researchers have used two main approaches to measure environmental dynamism: (1) objective measures using archival data, and (2) subjective measures that measure the perception of executives (Miller et al., 2006). Both measures have advantages and disadvantages. In particular, subjective measures are easy but also subject to inaccuracy of perception (Miller et al., 2006). However, following the studies in SMEs which use the perception of executives by subjective measures (Covin and Slevin, 1989; Miller and Friesen, 1982, 1983; Greene et al., 2008; Mitchell et al., 2011), perceived uncertainty or dynamism was included as the proxy of this environmental condition. One justification for choosing this approach is that, in the context of managerial behavior, perceptions of the environment are more important than the actual environment (Duncan, 1972; Milliken, 1987; Ashill and Jobber, 2010).

To measure this, the scales used in the study of Greene et al. (2008) and Mitchell et al. (2011) were employed. These measures are valid for cognitive aspects of executives in the small business context and are based on the scales developed by Miller and Friesen (1982). The measure comprises six items asked from the executives about their environment. The items are scaled in a 7-anchor Likert format indicating the extent to which the executive "strongly disagrees" (1) to "strongly agrees" (7) (Mitchell et al., 2011:692). The reliability of this measure in recent studies has been high (0.65 in Mitchell et al., 2011) which is also consistent with earlier studies (0.70 in Slevin and Covin, 1997). So, this measure was deemed to be reliable and valid to use.

4.2.1.5 Dependent Variable

Growth of the firm: There is a substantial ongoing debate on measuring the growth of a business enterprise (Weinzimmer et al., 1998; McKelvie and Wiklund, 2010; Lockett et

al., 2011; Achtenhagen, et al., 2010). In small business literature in particular, scholars have relied on subjective measures simply due to the lack of objective data as opposed to the availability of large firms' annual reports (Anderson and Eshima, 2013; Dess and Robinson, 1984). Growth has also been interchangeably measured as performance or profitability (Weinzimmer et al., 1998). However, there is a growing realization that growth is closely related to but distinct from performance and profitability (Watson et al., 2003; Achtenhagen et al., 2010). Consequently, different measures for growth have been employed. For instance, Capelleras et al. (2010) used employment growth rate (i.e. change in the total number of full-time employees) as an indicator of a firm's growth. In addition, Sadler-Smith et al. (2001) employ sales growth as the proxy of a firm's growth.

Having noticed the existence of alternative measures, for the purpose of this research the growth measure of Anderson and Eshima (2013) was adopted. This measure is a subjective comparative method; that is, the responses of firm CEOs as the most knowledgeable informants to the questions about the growth of their firms in the three domains of sales, employment, and market share compared to their main rivals in the main industry of the SMEs. This measure, hence, uses three items anchored on a seven-point Likert scale ranging from 1 meaning "very low" to 7 meaning "very high." A sample item is "*Compared to your industry rivals, how has your 'average sales growth been for the last three years'?*" This measure has a high reliability of 0.85 (above the cut-off value of 0.60 [Nunnally, 1967, 1978]) and offers some advantages over other measures including sole employment growth, sale growth, and use of objective financial data. First, it uses multiple dimensions of growth which is recommended over sole indicator measures such as sale or employee numbers (Delmar, 1997). Secondly, it adopts a three-year time span which is a commonly accepted and employed period for studying growth in small business literature (Achtenhagen et al., 2010; Delmar, 1997). Thirdly, SMEs are not legally obliged to publish their financial annual reports, and also it is generally shown that their CEOs are reluctant to disclose their confidential financial and performance information (Anderson and Eshima, 2013). So, the use of subjective measures has become a prevailing approach (Achtenhagen et al., 2010). Fourthly, the use of perceptions of CEOs about the success or failure of their firm relative to their industry rivals positively influences the responses of CEOs (Dess and Robinson, 1984; Anderson and Eshima, 2013). And finally, subjective comparative measures allow comparison

across industries and market context and consequently enhance the development of broader implications from the study (Achtenhagen et al., 2010).

Summing up, it is assumed that the use of a subjective comparative measure for measuring the growth of SMEs is deemed appropriate for the purpose of this study. Furthermore, to test the internal consistency of this measure one more technique was employed. Following the convention of Anderson and Eshima (2013), executives were asked another subjective question about the profitability of their firm. It should be noted, however, that this item does not show the profit growth of the firm, rather it measures the general profitability of the firm. The rationale behind this technique is that CEOs of SMEs tend to associate their growth with their profitability (Chandler and Hanks, 1993). Therefore, comparing answers to this item with the other three items can be used as a test for internal consistency of growth measure.

Finally, growth was considered as a multidimensional construct (sales, employment, market share) (Achtenhagen et al., 2010). So, following the study of Slater and Olson (2000), this study does not discriminate between items of growth as different dependent variables. If the result of the analysis shows a significant association between the independent (degree of emphasis on business model innovation) and all three dimensions of the dependent variable (growth) this association is characterized as a strong support for the hypotheses (Slater and Olson, 2000), and if there is an association between the independent and only one or two dimensions of our dependent variable this association is characterized as a partial support. The next chapter will further discuss this approach.

4.2.1.6 Control Variables

A number of control variables were incorporated into the research model in order to minimize the possibility of confounded results and spurious interpretations of findings, which may threaten the validity of the results (Atinc, Simmering, and Kroll, 2012). Following Simsek (2007), a number of variables across three levels—individual level (CEO), firm level, and environmental level—were controlled. This allows this study to better investigate the effects of all three temporal variables simultaneously to partial out each one's unique influence (Simsek, 2007:656). Furthermore, suggestions offered by Becker (2005), Breugh (2008), and Atinc et al. (2012) were used in the estimation and interpretation of control effects. Thus: (1) the rationale behind the choice of the control variable was explained for each variable, (2) the direction of the control in the specific

causal relationship of the present research was specified, (3) the influence of the control variable was predicted, and finally (4) the amount of variable by a set of control variables was reported.

Controls include executives' age, gender, experience (tenure and general managerial), and education, environmental munificence, family business ownership, country of origin of SMEs (focusing on a single country i.e. Australia), firms' age, size, the stage of the growth, and the product market strategies. The operationalization and rationale behind these control variables have been explained in Appendix 18. Analysis of these variables will be explained in chapter five and results will be discussed in chapter six.

4.2.2 Sample

4.2.2.1 Level of Analysis

A firm is essentially a multilevel entity comprising individuals, teams, divisions, and units (Hitt et al., 2007; Mathieu and Chen, 2011; Molloy, Ployhart, and Wright, 2010; Klein and Kozlowski, 2000). Thus, research in business and management must specify its level of analysis to avoid confounding issues raised by multilevel complexities (Van de Ven, 2007; Gill and Johnson, 2002).

This point has been highlighted in small business literature as an important feature of research design (Low and MacMillan, 1988; Low, 2001). Chandler and Lyon (2001:103) state that the level of analysis can be "individuals, group or team, project innovation, firm, industry, and macro-environment." With respect to this view it can be argued that the individual level or the micro-level can be specified as the level of analysis in this research. This is because the focus of this study is placed on the cognition and choices of executives as the most powerful and knowledgeable individuals in firms, and in particular SMEs. Hence, as earlier explained in the scope of the study in Chapter one, this research is not a multilevel or macro-level research (e.g. Foss, 2009; Hitt et al., 2007) but is indeed a single-level research emphasizing the micro-level factors (i.e. the cognition and behavior of executives). As the following sections illustrate, this specific level is directly related to the unit of analysis and process of collecting and analyzing data.

4.2.2.2 Unit of Analysis

According to the rationale of the research, the unit of study in this research is executives who (1) acquire market and technological knowledge and (2) make choices

about the business model design of their respective firms. This unit of study is consistent with the research in strategic leadership (Hambrick and Mason, 1984; Hambrick, 2007) and is different from some studies in the strategy process literature in which authors have chosen strategic decision (choices) as their unit of study (e.g. Elbanna and Child, 2007a, b). However, following the studies of Ling et al. (2008a, b), Heavey et al. (2009), Cao, Simsek, and Zhang, (2010), and Nadkarni and Herrmann (2010), the focus was placed on CEOs or managing directors as an equivalent position where the term “CEO” is not defined or is not applicable.

A number of reasons rationalize this choice. First, research in strategic leadership suggests that a CEO is not just another member of a top management team (TMT) or strategic leadership team of a firm (Hambrick, 1994). This is perhaps because in most cases, especially in small businesses, the CEO has a disproportionate and dominating influence on other executives and on the firm, and in the public eye he or she is usually held responsible for the firm’s management and consequences (Nadkarni and Herrmann, 2010). Second, it is argued that in the small business context the CEO (i.e. chief executive officer) of the firm is the most knowledgeable executive. Thirdly, it has also been argued that CEOs of SMEs are directly involved in both making and executing strategic choices (Ling et al., 2008a, b). Finally, they are also most likely to be the founder or owner of the business that empowers their role in directing the growth of their firms (Cao et al., 2010). Therefore, it is posited that the choice of CEO of the firm as the unit of analysis is appropriate for the purpose of this research.

4.2.2.3 Research Issues in Studying CEOs as Elites

It has been argued that CEOs are different from other individuals in organizations (Norburn, 1989). In business and management literature chief executive officers are also known as strategic leaders and upper echelons (i.e. top managers) and regarded as organizational elites (Pettigrew, 1992). Due to the importance of elites in management research scholars have raised concerns and considerations about studying them (Pettigrew, 1992; Bednar and Westphal, 2006). Spender (2001), for instance, asserts that “strategy remains distinct from economics, psychology, political theory, operational research, mathematics, and the other fields from which it borrows, only so long as it captures and reflects management’s agency” (p. 34); that is, the roles of top managers in firms’ behavior.

Two of the main areas of concern in researching elites such as CEOs in both large firms (Bednar and Westphal, 2006) and SMEs (Bartholomew and Smith, 2006) are response bias (low response rate) and psychological biases (accuracy of responses) caused by the complex and demanding nature of their job and their time restrictions (Greer, Chuchinprakam, and Seshadri, 2000; Bednar and Westphal, 2006).

In light of this, a number of approaches were adopted to address these issues. These include a careful selection of samples and population of interest, conduct of pretests and pilot testing, and adoption of data collection methods that increase response rate and minimize the likelihood of psychological biases (Garg et al., 2003; Bartholomew and Smith, 2006).

4.2.2.4 Population Examined in this Study

An SME is generally defined as a firm with fewer than 200 employees (ABS, 2000). According to this definition and consistent with previous SME studies which have used similar definitions (Simsek, 2007; Ling et al., 2008; Simsek and Heavey, 2010; Chandler and Lyon, 2009; Mackey, 2008; Liberman-Yaconi et al., 2010), this study intends to associate CEOs' characteristics and behavior (cognitive style, knowledge acquisition) with firm-level outcomes (emphasis on BMI and growth).

In this respect, in order to define the population of interest in this study, two reports from the Australian Bureau of Statistics (ABS) were used: (1) the registry of businesses census 2010 (i.e. counts of business entries and exits report 8165.0) was used to obtain a picture of the population of interest and distribution of SMEs across states and also their size (i.e. number of total full-time employees), and (2) ABS report no. 81.55 (2011) which is a report of Australian industries in order to see industrial classifications and their attributes for the distribution of SMEs across industries and their value addition to the national economy.

These two reports provide a view of SMEs across states and industrial sectors and their role and significance for the purpose of sampling. Accordingly, in Australia, as at June, 2009, a total number of 2,051,085 actively trading SMEs were operating in different industrial sectors (ABS, 2010:5). Briefly it can be seen that the state of New South Wales (NSW) has the largest number of SMEs and makes the highest contribution to the Australian economy in terms of the productiveness of its SMEs, followed by Victoria and

Queensland. Furthermore, manufacturing, wholesale trade, retail, and construction are the main industries that have the largest industrial added value (ABS, 2011).

From this population the focus is placed on the manufacturing sector to obtain a homogenous sample and control for inter-industrial effects that impact data collection and analysis (Covin et al., 2006). This issue will be further discussed in a separate section. Accordingly, firms in different sections of the manufacturing sector were drawn by their two-digit and four-digit SIC (i.e. standard industrial classification code) (Garg et al., 2003; Covin et al., 2006) based on the Australia and New Zealand Standard Industrial Classification (ABS, 2011). This variation shows that the sample covers a variety of firms in this industrial sector which leads to more generalizable results (Covin et al., 2006).

In addition, Miller and Toulouse (1986) argue that CEOs' attributes have the greatest impact on firms in dynamic industries (i.e. industries that change rapidly). Given this, it has been argued that the Australian manufacturing sector is a highly dynamic sector of the economy which is facing dramatic changes due to technological advancements and competition from India, China, and other emerging economies (Terziovski, 2010). So, focusing on SMEs in the manufacturing sector conforms with Miller and Toulouse's (1986) assertion.

Finally, another qualifying condition for a promising examination of the links between CEOs' and firms' strategies and outcomes is the size of an SME. Miller and Toulouse (1986) posit that when the size of a firm is quite small the associations between CEOs and firms are very strong because he or she has tremendous control and power over the firm. Therefore, in keeping with this proposition, the focus was placed on firms with fewer than 100 employees because decisions in larger firms are assumed to be influenced by a team of managers and also more hierarchical levels that jointly reduce the sheer impact of the CEO (Boone et al., 1996; Liberman-Yaconi et al., 2010). This reasoning applies to both impacts of knowledge acquisition and business model innovation. Regarding the former, Garg et al. (2003) argue that the knowledge acquisition of CEOs has a greater direct impact on firm-level outcomes in smaller than in larger firms. This is because in large firms boundaries of firms are far from CEOs, and also the internal organization is more complex which jointly decreases the direct impact of sole CEOs on firm-level outcomes (Garg et al., 2003; Miller and Toulouse, 1986). Regarding the latter, Chesbrough (2010:361) argues that CEOs of small companies are ideally suited to the task of BMI.

4.2.2.5 Sampling Frame

Analogous to the recent study of Terziovski (2010) on Australian manufacturing SMEs, the contact information of SMEs was obtained from Dun & Bradstreet (DnB), a commercial database. DnB provides an extensive list of small businesses based on the Australia and New Zealand Standard Industrial Classification (SIC) consistent with the ABS (2010, 2011). The data set obtained from DnB for this research includes information about the age, size, postal address, revenue, contact information, and name of the key informant (CEO) of the firm as well as the industrial classification of their firm according to Australia and New Zealand Standard Industrial Classification codes (ANZSIC).

Accordingly, a total number of 2,000 firms from the DnB database were randomly selected using a systematic computer-based process. It is anticipated that at least 200 returns could be used for the final quantitative structural equation model (SEM) analysis (detailed discussion is in Section 4.3.2.9). Following Chaston and Sadler-Smith (2012), in this study the possibility of variance created by differences in the views of executives (owner/managers/CEOs) of business start-ups versus those operating for some years was avoided (Hugo and Garnsey, 2005) by using search criteria in the DnB to draw samples of firms that had been operating for at least three years. This also allows this study to avoid the complexity of studying the growth dynamism and business model development of start-ups and subsequent generalization of findings. It should be noted, however, that this exclusion does not necessarily mean that in the sample there is no entrepreneurial firm but the sample may include a number of entrepreneurial (young growing) firms defined as those firms with less than 10 years of operation (Zott and Amit, 2007, 2008).

4.2.2.6 Sample Drawing Procedure

The following explanation was provided by DnB about systematic computer-based sampling procedures: the selection and drawing of sample data sets follows two steps. In the first step, a count of ANZSIC division versus employee banding is built to form the data set of manufacturing SMEs in Australia, and then a computerized random sampling algorithm (a function of the DnB database) is applied to this data set to draw a random sample of 2,000 firms. The purchased data set includes information about the name of the firm, two-digit and four-digit SIC code, business registration number, name of CEO, telephone and fax number and postal address, year of establishment, size (number of employees), and revenue.

Firms are located across different states in a nationwide scope. This allows the collection of data from a wide population of firms distributed heterogeneously across states and the industrial sector (within manufacturing) rather than a specific state and a particular industry. It therefore improves the representativeness of the research and its generalizability to a national context, and increases the variation of variables for testing the model (Simsek and Heavey, 2011). This initial population is greater than those of recent studies on SMEs such as those of Terziovski (2010) on Australian manufacturing SMEs and Lubatkin et al. (2006) and Ling et al. (2008a, b,) in the US. Therefore, this approach is likely to yield an acceptable response rate.

4.2.2.7 Controlling for Micro-industrial Effects

As noted, the manufacturing sector was selected over multiple industry segments. As explained in Chapter one, this sector has a large number of SMEs and is a significant part of Australia's economy. In addition to this, there are a few methodological explanations for justifying this choice. First of all, although multi-industrial (cross-sectional) samples are widely used, these heterogeneous samples must be adequately controlled for confounding variables caused by inter-industry differences (Anderson, Covin, and Slevin, 2009). Finding and controlling all potential confounding effects is a tedious and almost impossible task (Boone et al., 1996). Secondly, following the logic of strategic groups in strategy research, the effects of strategies such as BMI are the specifics of the industry context (Covin et al., 2006; Chaston and Sadler-Smith, 2012). Therefore single-industry homogenous samples could eliminate the effects caused by multiple and diverse industry sectors (e.g. agriculture, mining, wholesale, and retail trade) and hence would provide a better understanding of the causal links between specific strategies and their firm-level outcomes (Boone et al., 1996). In the same vein, Rouse and Daellenbach (1999, 2002) argue that if research concerning the resources of the firm (here market and technological knowledge acquired by executives) is to yield results it must be isolated within a single industrial sector as different industrial structures (cross-sectional heterogeneity) create biases in explaining sources of performance (here growth) through resources.

Despite these advantages, this choice is not without limitations. This sample could constrain the ability of this study to be generalized to other settings or industries. This implies that this study has low external validity. However, because through this approach this study becomes able to control for inter-industry effects it can achieve high internal

validity (Boone et al., 1996). In regard to this trade-off, literature suggests that high internal validity is to be preferred to high external validity (Boone et al., 1996). Therefore, it is deemed appropriate to delimit this study to an Australian manufacturing context in order to generate a better understanding of hypothesized relationships. This is consistent with Chaston and Sadler-Smith (2012) and Özbilgin (2011) who argue that a contextual perspective could offer a situated and hence deeper understanding of the management phenomenon of interest.

4.2.2.8 Issue of Autonomy in the Firms in Samples

Since the growth, resource acquisition, and realized strategies of firms, like their degree of business model innovativeness, are highly likely to be impacted by their autonomy (Priem, 1994), this study drew samples of firms that are autonomous. That is, they are independent businesses, not subsidiaries of larger firms or divisions or units of conglomerates. This is mainly because parent firms influence the strategy, resources, and growth of the firm by their control mechanism (Child, 1973). So, prior to the purchase of data from DnB it was requested to filter the database, from which samples are drawn, for single, independent, and autonomous businesses.

4.2.2.9 Sample Size

This study uses a multivariate model that involves causal relationships and covariance structures. Therefore the sample size must be big enough to lead to statistically significant results for hypothesized direct and mediating relationships (MacCallum, Browne, and Sugawara, 1996; Williams, Vandenberg, and Edwards, 2009; Westland, 2010). In this regard, previous studies show that calculation of accurate and exact sample size is a complex process (McQuitty, 2004; Sivo et al., 2006) and studies tend to rely on a “rule of thumb” of 200 observations as the minimum required sample size for achieving statistical significance (Garver and Mentzer, 1999; Hoe, 2008). Following this issue, the sample size of this study is expected to be at least 250 in order to be above the minimum requirement and provide sufficient statistical power for testing the hypotheses (Davey and Savla, 2010; MacCallum, Browne, and Cai, 2006).

4.2.2.10 Sampling Strategy

This study sample was drawn from manufacturing firms across Australia. So, there was a high level of homogeneity in the population and under this circumstance the appropriate sampling method was random sampling (Balnaves and Caputi, 2001; Nielsen,

2010). This approach was further advocated by Brewerton and Millward (2001) and Gill and Johnson (2002), who explained that when there is a good sampling frame as well as a geographically concentrated population the best method of sampling is a random one.

To operationalize this strategy the systematic randomized sampling approach was conducted by DnB in which a computer program randomly selected a list of firms from the database for the research. This approach has recently been used for the study of SMEs in Australia (e.g. Terziovski, 2010).

4.2.2.11 Sampling Process

Previous studies (e.g. Mullen, Budeva, and Doney, 2009; Lubatkin et al., 2006; Chandler and Lyon, 2001; Alpar and Spitzer, 1989) indicate that the response rate in a small business context may vary from 5 per cent to 90 per cent with an average of 15-20 per cent. Given this response rate, the lower-end response rate of 15 per cent was expected. So, on the basis of the minimum sample size requirement (200-250), a list of 2,000 firms from Dun & Bradstreet (DnB) was purchased.

Then, having obtained their address and contact information from DnB, a series of calls were made to each firm to explain the research and solicit their participation; in the case of acceptance, a letter (with official university letterhead), which included a brief description and significance of the research, consent form (Appendix 30), and a promise of confidentiality, anonymity, and feedback on findings, was sent to participants (Cao, Simsek, and Zhang, 2010).

This approach is widely recognized as a legitimate approach for small business research (e.g. Mullen, Budeva, and Doney, 2009; Lubatkin et al., 2006; Alpar and Spitzer, 1989; Heavey et al., 2009; Cao et al., 2010). However, it has a few methodological challenges such as response integrity, bias (such as lagged response and non-response), and a low response rate (Braunsberger, Gates, and Ortinau, 2005; Erdogan and Baker, 2002; Greer, Chuchinprakarn, and Seshadri, 2000). Therefore, a series of techniques were adopted to deal with these issues which are explained in the following sections.

4.2.3 Data Collection and Operationalization of the Survey

4.2.3.1 Instrumentation

Prior to the design of the instrument and its operationalization, the method used by Hau and Evangelista (2007), based on the relationship between constructs and measured

and scale development in the work of Edwards and Bagozzi (2000), was utilized. According to this method, first, based on the objectives, research questions, and the theoretical model (i.e. hypotheses), the dimensions (i.e. components or constructs) of the research are identified, then a review of extant literature is conducted to see which constructs have been previously studied, whether they have one or a few established measures, and finally whether their measures cover the aspects which are specific to the research (Edwards and Bagozzi, 2000). Then a decision is made to adopt or develop a measure (Hau and Evangelista, 2007). So, after identifying the constructs and reviewing the relevant literature, a series of measures based on previous studies as explained previously were adopted.

Measures, their items, and scales were adopted from empirical studies in similar contexts to avoid measurement invalidities and achieve reliability (Blalock, 1982; MacKenzie, Podsakoff, and Podsakoff, 2011). Then a series of expert-judgment tests through a panel of researchers (PhD students and academicians) and a number of MBA graduates with industrial experience in executive positions were conducted (Burns, 1996; Murphy, 2009) to discuss and assess the extent to which the selected measures fitted the study and covered its dimensions. Finally the instrument was pilot-tested based on a small-scale sample of executives from the sample selected for the survey (Burns, 1996; Murphy, 2009).

4.2.3.2 Pilot Tests: Design and Execution

Two types of pre-study (pilot) testing were designed and conducted following the suggestions of Schwab (2005). The first test asks individuals in two groups to have a look at the questionnaire and provide information about their understanding and interpretation of each item, overall design, ambiguity, wording, and formatting. The first group consists of individuals similar to those who will complete the main survey (i.e. executives) and the second group comprises academics and researchers who are familiar with the context of this research (i.e. Australian small businesses). This phase of pre or pilot testing is known as the “expert judgment” test.

The logic behind this test is to identify errors over participants’ “frame of reference” and also allows the researcher to identify misleading or difficult-to-understand items. This approach is believed to result in a higher response rate, less missing data, and the attainment of more value results. To achieve this, two separate panels were developed and

employed. The first panel represented the first group and involved five volunteers who were executives of small firms and were studying MBA at two different business schools based in Sydney, Australia. Their opinions about the questionnaire were solicited, and answered by altering and modifying wording and some design issues in the questionnaire.

The second panel was made up of four academicians and two doctoral students who had had experience in studying SMEs in Australia. The same questions about the design, wording, and understanding of the questionnaires were asked. Some notes were taken and applied to the final design of the questionnaire which was used in the second phase of pilot testing.

The second phase of pilot testing is a pilot survey. It uses a larger number of participants and serves as a regular but basic research project. The objective of this test is to see whether scores behave as expected. It allows this study to assess the internal consistency and reliability of items and validate adopted measures for the main survey. In this section data were analyzed using exploratory and confirmatory factor analyses to assess the reliability of measures. To do so, the first 30 responses of our survey were used for pilot testing (t-test criteria of a minimum 30 sample size were adopted). Then they were excluded from the main survey as suggested by scholars to avoid bias in the results (Dillman, 2007). Based on the analysis of results, the required changes were applied to the questionnaire and it was sent to the sample population (participants in pilot phases were excluded to avoid bias).

The use of a panel of experts and pilot survey is a common pretest phase in business and management, especially in the small business context (Simsek and Heavey, 2011; Cao et al., 2010; Terziovski, 2010). This may be attributed to the fact that small and medium-sized firms rely more on their local and domestic markets (Lubatkin et al., 2006; Cao et al., 2010; Ling et al., 2008a, b). It is particularly important for improving the quality of data and increasing the rigor and relevance of the findings in a pragmatist (mixed-methods) research (Schultz, 2010) to validate data for the domestic and local business context.

Overall, the results covered issues pertinent to the formatting and design of the questionnaire, linguistic ambiguity, the relevancy and clarity of items in the survey, and

an approximation of the time required to complete the survey (Dillman, 2007; Salant and Dillman, 1994).

4.2.3.3 Design of the Final Survey

According to Oppenheim (2001), the design of a questionnaire influences the rate and speed of response. A respondent-friendly layout not only decreases the non-responsiveness but also increases the response rate (Dillman, 2007). Although there is no consensual rule or standard for a proper design, it must in general be convenient and appealing for respondents (Brace, 2008). Therefore, the questionnaire was designed based on this logic by addressing some generally acknowledged criteria suggested by Dillman (2007) which include:

1. Clear, high-quality, black and white print in a standard format (A4), single-side (only the front page) in portrait (vertical style), with a staple in the left corner and folded to create a booklet format. This makes a questionnaire look conventional and people feel comfortable filling it in (p. 83).
2. The first page is extended to provide simple and clear instructions on how questions must be answered in addition to a glossary of key terms (p. 81).
3. Ordering of questions from general to more specific, with short questions such as gender and age at the end (p. 93).

In organizing the questionnaire several techniques were used. First, in order to minimize the influences of psychological biases involved in survey response and common-method variance the advice given by Podsakoff and Organ (1986) was followed. In addition, suggestions about the organization of surveying to reduce the psychological burden of responding to a long questionnaire were taken into consideration (Dillman, 2007). Accordingly, the items related to outcomes (dependent variable), which is the growth of the firm, were placed at the end of the questionnaire following related items such as the growth stage of the firm. Antecedents such as the extent of acquiring knowledge and technological knowledge were placed before. Then the dependent variable was followed by some control variables including demographics. As noted earlier, the final design and format of the questionnaire were reviewed by a number of experts, and based on their comments slight modifications were made to the design. A copy of the final survey is available in Appendix 27.

In short, the final design of the questionnaire consists of 57 questions organized as follows. The first section measures executives' cognitive style as the independent variable of the current study. It consists of a 20-item questionnaire targeting intuitive (10 items) and analytic (10 items) aspects as explained earlier and numbers from 1 to 20. It should be noted that the original measure consisted of 40 items, however during the pilot test 20 items were dropped to obtain the required reliability. This issue will be discussed in the next chapter.

The second section contains two questions measuring executives' strategic emphasis on business model innovation (questions 21 and 22). The third section is about the degree of market and technological knowledge acquisition and consists of two questions, each one with five items numbered 23 to 27 for the degree of technological knowledge acquisition and 28 to 32 for the degree of market knowledge acquisition. The fourth section entails 12 items, six for measuring the perceived environmental munificence from number 33 to 38 and six for measuring the perceived environmental dynamism from number 39 to 44. The fifth section entails two single-item questions, one about the breadth of product offering (45) and the second about the breadth of market segment (46). Question 47 in the sixth section asks CEOs to specify the stage of the growth of their firms by providing four descriptions for four stages of the growth as explained previously. Section seven contains four questions (48-51) about the relative growth of the firm. The last section (Section eight) collects demographic data of CEOs. This includes data about their age, gender, education, experience, and also a question about whether the firm is a family-owned business. It contains questions from number 52 to 57. A full survey is provided in Appendix 27.

4.2.3.4 Implementing Mail Survey

To implement the mail survey this study followed the framework of Dillman (2007) and used the five contact point techniques. This system includes five successively implemented techniques. First, a brief pre-notice letter was sent to potential respondents a few days prior to the questionnaire. Second, the questionnaire, which includes a cover letter (instruction, description of the significance of the survey, and consent inform letter and glossary), was sent. Thirdly, a "thank you note" was sent few days after the questionnaire. Fourthly, a second round of questionnaires was sent again after four weeks

to all firms to remind them to participate in this study. Finally, after four weeks “a thank you note” was sent to all participants.

A Web-based format of the survey was also developed to increase the response rate and provide participants with a wider range of choices. Hence, participants can either complete the survey by return mail or in a Web-based format. This technique will be explained in the next section.

4.2.3.5 Hybrid Survey

A hybrid or mixed-mode survey is an appropriate approach for increasing the response rate of a survey (Dillman, 2007:217; Kroth et al., 2009). This is also a methodologically proven approach to deal with survey preference bias. Dillman (2007:218) states that people have mode preferences and asking them to choose their preferred mode of survey reduces the negative influences of this bias on the survey results. This hybrid method basically uses different modes of survey such as print questionnaires and online surveys (Dillman, 2007). So, a hybrid survey by combining a print and postal survey with an online survey (Web-based) was adopted. This approach is similar to the study of Forbes (2005).

The motive behind this choice can be further justified through the fact that, although postal survey is one of the most common methods of data collection in management and business research (Jobber and O'Reilly, 1998; Braunsberger, Gates, and Ortinau, 2005), it has the disadvantage of a low response rate (Faria and Dickinson, 1992; Greer, Chuchinprakarn, and Seshadri, 2000; Erdogan and Baker, 2002). Hence this issue can be improved by using another mode such as an online survey. Online surveys have been successfully applied in management and business research (Simsek and Veiga, 2000, 2001; Sauermann and Roach, 2013) and particularly in the small business context (Simsek et al., 2005). Therefore, a hybrid survey comprising a mail and online survey (Parackal, 2003a, b; Dillman, 2007) was adopted for the purpose of this study.

To operationalize this method a number of issues must be taken into consideration. First, there is no previous compelling evidence on the order of post or online surveys, or on which one is more appropriate (Dillman, 2007:241), hence all the sample firms were contacted and asked to choose their preferred mode. Secondly, conducting each mode

requires specific considerations. These issues are discussed in detail in the relevant sections.

4.2.3.6 Implementing Online Survey

The results of the Australian Business Assessment of Computer User Security (ABACUS) survey in 2010 show that 94 per cent of SMEs use the Internet (Hutchings, 2012). Therefore, it was assumed that Internet survey can be used in conjunction with the traditional postal survey method for collecting data from SMEs' executives because, due to the prevalence of executives' Internet usage, they may prefer to answer questions online. Consequently, to implement an online survey the framework suggested by Simsek et al. (2005:118-189) was employed. This framework is available in Appendix 19 and a copy of the first phase of the online survey is shown in Appendix 28 (Figure 25). The results of the online survey were entered into SPSS to be combined with the results of the postal survey for the final analysis.

4.2.4 Quantitative Ethical Considerations

The design and operationalization of the quantitative phase have been approved by the Macquarie University ethics committee. Appendix 25 presents the ethics approval letter and Appendix 26 illustrates how the conduct of the quantitative phase complied with the general required ethical code of conduct.

4.2.5 Biases and Neutralizing Techniques

A survey is inherently limited by a number of unavoidable biases which influence its results (Dillman, 2007). These biases generally are response rate, psychometric biases, and recall or retrospective biases. Understanding and adopting appropriate techniques to deal with these issues is a central part of quantitative research. The steps undertaken to improve response rate, minimize psychometric biases, and address recall biases are discussed in Appendices 33, 34, and 35 respectively. The results of these tests will be discussed in Chapter five.

4.2.6 Common-Method Variance (Bias)

Common-method variance (CMV) or bias (CMB) refers to the amount of spurious covariance shared among variables because of the common method used in collecting data (Buckley, Cote, and Comstock, 1990; Malhotra, Kim, and Patil, 2006). To minimize the impact of this bias the recommendations of Podsakoff et al. (2003) were followed, and

to assess its potential influence on the findings of the study two tests of Harman's single common factor and common latent factor analysis were performed. Chapter five presents the results of these tests and Appendix 54 offers a detailed explanation of this bias.

4.2.7 Overview of Statistical Analytic Techniques

IBM SPSS version 20.0 and its extension package for structural equation modeling, AMOS 20.0 (Analysis of Moment Structure), were used for the purpose of this study (Arbuckle, 2011; Byrne, 2010). Furthermore, to perform this method, the suggestions of Shook et al. (2004), as shown in Table 9, were followed. The significance of this method is explained in Appendix 39.

Table 9: Key Issues in the Use of Structural Equation Modeling

key Issue
sample issues <ul style="list-style-type: none"> a) General Description b) Number of Observations c) Description of Sample d) Statistical Power
Measurement Issues <ul style="list-style-type: none"> a) reliability of measures b) measure of Discriminant validity c) measure of Convergent validity
Reproduce-Ability Issues <ul style="list-style-type: none"> a) input matrix b) name and version of software used c) starting values d) computational option used e) analytical anomalies encountered
Equivalent Models Issues <ul style="list-style-type: none"> a) potential existence acknowledged as a limitation
Re-specification issues <ul style="list-style-type: none"> b) changes cross-validated c) re-specified models not given status of hypothesized model

Source: Shook et al. (2004: 403)

This protocol will be used in the next chapter in more detail.

4.2.8 Construct Specification

4.2.8.1 Specifying Formative and Reflective Measures in this Research

The relationship between constructs and their measures in the form of reflective versus formative is a key issue in the execution of structural equation modeling (Diamantopoulos and Siguaw, 2006; Diamantopoulos, Riefler, and Roth, 2008; Williams et al., 2009; Edwards, 2011). Misspecifying the nature of measures influences the application of SEM and its interpretation (Bagozzi, 2007; Williams et al., 2009). Consequently, in order to avoid this pitfall the attributes of each type (i.e. reflective versus formative) were assessed using the descriptions proposed by Freeze and Raschke (2007) (available in Appendix 20). In addition, as Edwards (2011) argues, a key determinant of the type of measure is the dimensionality of the measure. In this regard, reflective measures have a redundant view of the sample side of a construct whereas formative measures are basically multidimensional and hence each part addresses a specific attribute of the construct. Having considered these notes, all measures were specified as reflective. This specification is detailed in Appendix 21.

4.2.9 Modeling Equivalency and Clarifying a Model's Causal Directions

In cross-sectional studies the issue of testing causal directions is a difficult issue to resolve (Hult et al., 2006). Strategy researchers have attempted to test “whether the direction of causal relationships revealed by data is the same as hypothesized ones,” which results in a phenomenon known as the problem of “unclear causality” or presence of “equivalent models” (Henley et al., 2006). Unclear causality or equivalency of models refers to the presence of alternative causal models that fit the data and thus create covariance or correlation matrices which offer different interpretations (Henley et al., 2006:516).

Although it is generally accepted that this problem can be resolved through longitudinal or time-lagged data in which causal directions unfold over time (Bromiley, 1991; Hult et al., 2006), since the present study does not collect longitudinal or time-lagged data the instruction proposed by Henley et al. (2006) was employed. This instruction has been exhibited in Appendix 53.

This method has been used in previous studies such as the research of Camisón and Villar-López (2010) on SMEs. Henley et al. (2006) suggest that SEM can reveal these models. Camisón and Villar-López also argue that a two-staged structural equation

modeling not only tests causal relations between the latent variables but also has the advantage of revealing the direction of the relationship between variables. Accordingly, using the two-stage SEM the existence of equivalent models was recognized and some of the equivalent models were identified and discussed. The results will be explained in the next chapter.

4.2.10 Methodological Robustness

Robustness is assessed by examining the validity and reliability of its constructs and measures (Ping, 2004; Easterby-Smith et al., 2008; Carlson and Herdman, 2012) as well as the validity of its design (i.e. internal and external) (Bergh et al., 2004; Slater and Atuahene-Gima, 2004). In this study, for the constructs the guideline of Shook et al. (2004) was followed. In addition, the reliability of measures, their face and content validity (Burns, 1996), dimensionality (Churchill, 1979; Ping, 2004), and discriminant (Lehmann, 1988) and convergent validity (Campbell and Fiske, 1959; Lehmann, 1988; Carlson and Herdman, 2012) were assessed. In regard to the internal and external validity of the design, the history and response bias for internal validity and sampling for external validity were assessed. In what follows, these issues will be further elaborated. Appendix 23 presents an overview of these issues. The results of the reliability and validity tests will be presented in Chapter five.

4.3 Design of the Qualitative Phase of the Study

As discussed earlier, the qualitative phase of this study is used to provide additional insights into the findings of the quantitative phase. Hence, this phase was designed with this objective in mind. To design the qualitative phase a review of mixed-methods research in business and management (Molina-Azorín, 2007, 2011a, b; Cameron and Molina-Azorín, 2010, 2011; Migiro and Magangi, 2011) with a focus placed on a concurrent approach (e.g. Osborne, Stubbart, and Ramaprasad, 2001; Dyer and Hatch, 2006; Kim and Gelfand, 2003; Magnan and St-Onge, 2005) was conducted.

4.3.1 Instrumentation: Design of the Interview Protocol

To design the interview protocol (i.e. qualitative instrumentation) the suggestions of Creswell (2007:133) were followed. Accordingly, the questions were designed by sorting questions from general to specific and ending with questions on how to learn more or seeking comments. In addition, the pruning technique proposed by Gillman (2005:29) was undertaken. According to this technique, after drawing key ideas for developing

questions based on the literature the primary questions are reduced to their essentials by (1) grouping them based on the key aspects of the research, and (2) setting out different questions according to a logical narrative order (the protocol is available in Appendix 29).

Finally, the wording and phrasing of questions were reviewed by some experts from the department of linguistics and management for its linguistic and conceptual accuracy. The interview was then piloted before the main data collection phase.

Interview protocol consists of six parts: an introductory part, followed by four sections corresponding to the four key parts of the theoretical model, and a closing part. After the introductory section, which aims to give a brief description of the research and its participants, the first section addresses the knowledge acquisition behavior of executives. This section comprises four open-ended questions which aim to explore in-depth aspects of knowledge acquisition including its degree (Sullivan and Marvel, 2011a), underpinning activities (Chandler and Lyon, 2009), and sources of knowledge (McGee and Sawyerr, 2003) in order to corroborate, add, and extend the findings of the quantitative phase of the research.

The second section is designed to explore the perception of growth in addition to the link between acquired market and technological knowledge by the executives of the firm. It therefore consists of two questions. The first one targets the perception of growth which in the SME context is basically organic growth (Locket et al., 2011), and the second one aims to explore how acquired knowledge has been linked to the perceived growth. This is the key link embedded in KBV and RBV (Macpherson and Holt, 2007).

The third section entails five questions. It explores the emphasis given by executives to their business model design by addressing their tendencies towards innovating, value creating, and capturing activities in their business. It thus aims to (1) explore CEOs' cognitive preferences towards innovation, and (2) target the main aspects of this strategic emphasis by asking about the key strategic activities, resources, and knowledge acquisition involved in innovation. Questions are derived from the recent studies of business model design (Morris et al., 2005; Zott and Amit, 2010), innovation (Teece, 2010; Chesbrough, 2010), and CEOs' cognitive preferences in their BM (George and Bock, 2011; Armstrong et al., 2012b).

Finally, the fourth section is designed to explore the role of intuition and rationality in the behavior of executives and see how this aspect of managerial behavior and subsequent growth impacts the outcomes of the firm. It consists of six questions targeting CS from different perspectives such as intuitive preferences, analytic roles, and CS as dual information processing. These questions are based on the recent studies of Mitchell et al. (2005) on intuiting, Hensman and Sadler-Smith (2011) on intuiting as a part of dual CS, Kickul et al. (2009), Sadler-Smith (2004), Woiceshyn (2009), and Hodgkinson and Healey (2011) on the CS and its role in the strategic behavior of executives, specifically resource management (choice of BM and knowledge acquisition). The interview is then concluded with a closing section in which the interviewer acknowledges and appreciates the participation of the interviewees and solicits their comments and suggestions about the interview. The table below illustrates a summary of the interview protocol. The theoretical roots of the interview protocol are shown in Appendix 22.

This design is consistent with the approach proposed by Seidman (2006) and Gillham (2005). In light of this design, in order to show how this protocol generates data that fit the objectives of cross-validation and corroboration, a matrix (Table 10) was developed to match interview sections and questions with research questions and hypotheses.

Table 10: Interview questions and corresponding research question

		Research Questions													
Hypothesis		RQ1						RQ2							
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	
Interview questions															
S1	1														
	2														
	3														
	4														
S2	5														
	6														
	7														
S3	8														
	9														
	10														
	11														
	12														
S4	13														
	14														
	15														
	16														
	17														

Light blue and dark blue colored parts show how each interview section relates to hypotheses and research questions.

4.3.2 Piloting and Expert Judgment Testing

After the design of the interview protocol a pretest judgment test and a pilot test were carried out (Gillham, 2005:55) in order to: (1) refine the questions and increase the validity and reliability of the interview, (2) assess challenges, and (3) anticipate difficulties and problems which may occur during the main data collection phase (Creswell, 2007; Yin, 2009).

4.3.2.1 Expert Judgment Testing

The interview protocol was reviewed by two MBA students who had work experience at executive level, one DBA student, one PhD student, and two academics (i.e. senior researchers). It was assumed that these experts were familiar with both the executive side of the research and its theoretical foundation. In particular, the DBA and PhD students were qualitative researchers and the academicians had produced qualitative publications. They were asked to provide comments about the wording, phrasing, and overall design of the interview protocol. The results suggested that the protocol was acceptable and its design was satisfactory.

4.3.2.2 Piloting

According to Seidman (2006), piloting an interview enables the researcher to assess the design and structure of the interview and its ability to collect desirable data. Gillham (2005:25) also suggests that once the questions are pruned and the structure of the protocol is formed the interview must be piloted in two or three (no more than three is suggested) times with actual scheduling and conduct. The rationale driving this piloting is the fact that in qualitative research the quality of data is the function of the quality of data collection. So, following Gillham (2005) and Seidman (2006), the key objectives of the piloting were set as: (1) to see whether the structure, transparency, and wording of questions were appropriate, (2) to see whether questions targeted what they were designed for, and (3) to see what the latent problems and challenges were in the conducting of the interview which might not have been anticipated by the researcher.

As a result, the interview protocols of this research were piloted in a series of meetings with two MBA students who are currently working in SMEs at executive level operating in a wide range of industries. Mainly, therefore they are familiar with the business model

of their firms, knowledge acquisition, and also their cognitive style could be analyzed as executives.

To do so, they were contacted via the Macquarie Graduate School of Management (MGSM) Alumni network and briefed about the principles and aspects of the research. Then they were asked to read the interview protocols and provide their feedback. They were assured of the confidentiality, anonymity, and purpose of the pilot interviewing. Interviews took 35-50 minutes and were conducted in December 2011 and January 2012. They were recorded with the permission of the participants and then transcribed for analysis.

4.3.3 Sampling: Unit, Approach and Process

4.3.3.1 Unit of Analysis

As explained earlier in Chapter four, the unit of analysis in this research was executives (CEOs) of SMEs. However, to translate this unit into qualitative research language the notion of case was adopted. A case generally refers to a bounded phenomenon or system (Miles and Huberman, 1994; Creswell, 2007). Baxter and Jack (2008) suggest that a case entails or corresponds with the unit of analysis and its choice is based on the research questions. So, given the research questions (Chapter one), a case is defined as the bounded system of the relationships between an executive's cognitive style, his market and technological knowledge, choice of emphasis on business model innovation, and the growth of his respective firm.

This approach is logically consistent with the context-specific description of case in quality research (Yin, 2009; Creswell, 2007; Baxter and Jack, 2008). Then, to link this case to the unit of analysis this question was asked: "Do I want to analyze individuals or processes or programs?" (Baxter and Jack, 2008:545). This led to a congruent view of the case (i.e. a bounded system of cognitive style, choice, and activities) which is viewed through the lens of the analysis (CEO). So, consistent with the sampling frame of the quantitative section the unit of analysis for the qualitative phase is the CEOs of SMEs. The next section explains how these informants are sampled and accessed.

4.3.3.2 Sampling Process

To purposefully sample and access the informants the theory-driven case-based logic, also known as "theory-based sampling," was chosen for the purpose of this study (Miles

and Huberman, 1994:29). In theory-driven case sampling the objective is to find examples of theoretical constructs and thereby elaborate on and examine them (Creswell, 2007:127). A key aspect of this issue is the notion of careful selection of cases based on “variance maximization” or “extremes” (Miles and Huberman, 1994:29), that is, the selection of cases which have the greatest potential to show differences and manifest phenomena (Creswell, 2007:127).

In this study, the purpose is not to develop a theory using contrasting cases, rather it is to find evidence conforming and disconfirming with hypotheses. Therefore, the sampling process is based on the theoretical model of the research and those who provide information for testing hypotheses (Dickson, Lee, and Riegel, 2011). Thus, sample cases are chosen to: 1) generate a richer understanding of the causal links, and 2) shed light on aspects of the links that have not been addressed in the hypothesized model (Creswell, 2007).

So, following this logic, CEOs from the same population of the surveys were asked to participate in an interview. The structure and purpose of the interview were explained in the consent form sent to them along with the survey. This enables the collection of data for cross-validation and corroboration and allows this study to add new context-specific information to the quantitative findings. This approach is similar to previous mixed-methods research in management (e.g. Dyer and Hatch, 2006; Kim and Gelfand, 2003). Consistent with this notion, and in accordance with the concurrent mixed-methods design, interviews were conducted with willing CEOs during the period of the distribution and collection of surveys.

4.3.4 Data Collection

To conduct the interviews and collect the data, several issues pointed out by Seidman (2006) on the length of the interview, Gillham (2005) about types of interview (distant or phone interview, online and one-to-one), and finally Creswell (2007) on the process road map were taken into account. Accordingly, the length of interview was organized to be less than one hour: between 30 and 45 minutes on average. This is consistent with the recent studies of Hensman and Sadler-Smith (2011), and Newey and Zahra (2009).

Furthermore, the time and place of interview were chosen by the participants and permission for recording the interviews was obtained (a copy of the informed consent

letter for interviewees is available in Appendix 31). In addition, respectfulness, courtesy, and appreciation were shown to the participants and at the end of the interview they were asked to provide their feedback, advice, and comments. Finally, there was some caution about how the interviews would be carried out which mainly included avoiding prejudice and using probes and prompts to navigate the interviews and extract relevant rich data (Gillham, 2005). In addition, interviewing techniques suggested by Dundon and Ryan (2010) were employed to encourage reluctant participants. Appendix 32 offers a more detailed explanation of how these steps were undertaken.

4.3.5 Overview of Qualitative Data Analysis

4.3.5.1 Analytical Procedure

To analyze the qualitative data (i.e. the transcribed interviews) a content analytic approach was chosen because it has a number of advantages that make it appropriate for this study. According to Duriau et al. (2007:7), content analysis can be used “in conjunction with other methods for the purpose of cross-validation and corroboration. In addition, when it is done correctly, it leads to the specification of category criteria for reliability and validity checks and also creates a replicable database. It is also a safe methodology because the coding scheme can be corrected if flaws are detected as the study proceeds, and finally it is non-intrusive, and therefore does not suffer from researcher demand bias.”

The content analytic approach in this study has two objectives. First, to see whether and to what extent the qualitative findings support the quantitative findings, and second to see what additional findings emerge from the qualitative data. These two objectives were pursued by developing codes and applying them in content analysis (Neuendorf, 2002).

4.3.5.2 Coding and Thematic Analysis

Codes and coding are integral to qualitative data analysis (Strauss, 2003). According to Benaquisto (2008a), codes are concepts and their interpretation is carried out through explicit data. Codes can be developed prior to data collection or emerge during data analysis (Benaquisto, 2008a). So, basically a coding frame (CF) is used for forming and using codes. A CF is a framework for organizing, classifying, and summarizing raw data which can be developed deductively prior to the research, or inductively emerge and be adopted by the research, or evolve and expand through the extant research (Benaquisto, 2008b).

Following the suggestions of Auerbach and Silverstein (2003), coding was defined as the process of organizing text and discovering patterns within its structures in order to address research concerns (p. 31). Furthermore, a coding process was then set according to Auerbach and Silverstein (2003:35) by sifting through transcribed interviews and notes in order to abstract the data from raw text to relevant text to themes and finally into research concerns. These procedures will be explained in Chapter five.

4.3.5.3 Computer-Assisted Qualitative Data Analysis (CAQDA)

By their nature, qualitative data such as texts (transcribed interviews) tend to be non-standardized and complex (Hall, 2008:36). Therefore, Nvivo 9.0 was used in this research to support the analyst with the storage, coding, and systematic retrieval of qualitative data (Bloor and Wood, 2006:35). To do so, interview recordings were saved in separate files in Nvivo and then they were transcribed and added to new files. For each individual as the representative of a case (i.e. SME) a folder was created. Each folder contained the interview recording, its transcription, memos, and notes. Nvivo's folders were password protected in compliance with the ethical codes of the research. To use this software package the instructions of the QSR manual (2010), as well as the general methods and techniques of Richards (1999) and Bazeley and Richards (2000), were followed.

4.3.5.4 Analyzing Codes

To analyze codes and find evidence for hypothetical relationships two methods of pattern matching (Dul and Hak, 2008) and Unitizing, Categorizing, and Classifying (UCC) technique were used (Butterfield et al., 1996; Hensman and Sadler-Smith, 2011). These two are content analytic approaches that can address the first and second objectives of the qualitative phase respectively. The pattern-matching method aims to find evidence matching hypotheses while the UCC method aims to explore new patterns which may improve understanding of the causal links. The operationalization of this procedure will be explained in Chapter five.

4.3.5.5 Analytic Generalizability

Analytic generalizability refers to the generalizability of propositions and differs theoretically from the statistical generalizability of the quantitative approach (Healy and Perry, 2000; Yin, 2009). It applies in qualitative research and can be achieved through justification of propositions through review of prior studies, and attainment of methodological fitness (Eisenhardt, 1984; Yin, 2003; Gummesson, 2008). It may

resemble thick description technique and also validity, transferability, and accuracy of data (Miles and Huberman, 1994; Healy and Perry, 2000). So, to achieve analytic generalizability, the validity and reliability of the qualitative design and conduct must be addressed.

4.3.6 Validity and Reliability Concerns in the Qualitative Phase

Reliability and validity issues in the qualitative study differ from those in the quantitative study (Denzin and Lincoln, 1998). Therefore, in order to ensure the reliability (Riege, 2003; Yin 2003) and validity (Patton, 2002; Miller, 2008) of the qualitative phase different steps such as accuracy, dependability, trustworthiness, authenticity, and comparative analysis were undertaken in this study. Appendix 24 explains these issues in more depth.

4.3.7 Qualitative Ethical Considerations

Similarly to the quantitative phase, the design of the qualitative phase was approved by the Macquarie University ethics committee and it was assured that the operationalization was in full compliance with the ethical codes of conduct. Accordingly, the ethics approval letter and ethical considerations of the qualitative phase are available in Appendices 25 and 26 respectively.

4.4 Summary of the Chapter

This chapter explained the research methods and techniques in three sections. The first section explained the mixed-methods design, the rationale for the choice of mixed methods and research-specific justifications for concurrent mixed methods. This was then followed by a detailed explanation of the design and conduct of the quantitative section of this research. The chapter continued and concluded with a detailed discussion on the design and conduct of the qualitative section.

-CHAPTER FIVE-

-Results of Quantitative and Qualitative Data Analysis-

5.1 Introduction

This chapter explains the results of the qualitative and quantitative analyses. The process of data analysis follows the order explained in the previous chapter and accordingly is organized into two sections. The first section discusses the analytic process and results of the survey and the second section explains the analysis and results of the interviews. Hypotheses will accordingly be tested in the first section and the results will be compared with the results of thematic and content analyses in the second section. Synthesis and integrative discussions will be elaborated in the next chapter.

5.2 Quantitative Analysis

5.2.1 Results of Pretest Studies

5.2.1.1 Expert Tests

From the experts' feedback it was concluded that the questionnaire has content and face validity and its design format and structure as well as the approximate time required to be filled in are appropriate and meet the criteria written in the consent form. The two key issues raised during this pretest assessment were the size of the questionnaire and its page layout. These were noted but no modification was performed.

5.2.1.2 Pilot Test

Although all items and measurements had been adopted from previous studies, a pilot survey was conducted prior to the main survey to assess the reliability of the items in the Australian context. The results of Cronbach's alpha coefficient test for the internal consistency of the scale and its reliability (Cronbach, 1951) showed that the original 40-item cognitive-style inventory is long, not internally consistent and can be shortened (Table 48, Appendix 38). Therefore, 20 items were deleted (Table 11). This finding is consistent with previous studies that used a shortened version of the REI inventory (Novak and Hoffman, 2009; Chaston and Sadler-Smith, 2012). All other measures have reliabilities that compare favorably to previous studies as shown in Table 11. The results of this test will be further explained in the next section.

5.2.1.3 Reliability Assessment

Composite reliability of scales using the Cronbach's alpha test shows adequate reliability of all measures (above 0.6 as suggested by Nunnally, 1967, 1978) after deleting some items as illustrated in Table 11. Items which were dropped belong to the intuitive (item 3, 7, 9, 10, 11, 13, 15, 17, 18, and 20) and analytic (item 22, 26, 27, 28, 32, 33, 34, 37, 38, and 40) style of executives. Results of three tests justify this trimming procedure. First, internal consistency test via Cronbach's alpha suggested that problematic items should be excluded for the measures to achieve an acceptable reliability as shown in Table 11. Measures before trimming showed very low reliability (The initial alpha for the intuitive or experientiality cognitive style was 0.44, and for the analytic cognitive style was 0.39). Second, the results of a pre-test principal component analysis revealed very low loadings for these items. However, after excluding them the results showed two clear factors with high loadings (above the cut off value of 0.7 as suggested by Hair et al. 2006). These loadings have been shown in Table 55 in the Appendix 51. Thirdly, in a post-hoc analysis a confirmatory factor model was developed using all items in the cognitive style measures. Test of the model with AMOS suggested an inadmissible solution caused by poor factor loadings and potential cross-loadings (Byrne, 2010). These tests offer guideline for trimming the cognitive style measures and a solution to adopt highly reliable measure as summarized in Table 11.

Table 11: Reliability after Pilot Test

Latent Variable	Number of Items in original format	Items Deleted due to low Reliability	Reported Original Alpha in the Literature	Obtained Scale Cronbach's Alpha
Cognitive Style (REI)	40	20 (10 analytic and 10 intuitive)	Rationality (Analytic) : 0.90 Experientiality (intuitive) :0.87	Rationality (Analytic): 0.93 Experientiality (Intuitive) :0.92
Market Knowledge Acquisition	5	-	0.90	0.92
Technological Knowledge Acquisition	5	-	0.90	0.92
Emphasis on Business Model Innovation	2	-	0.81	0.89
Growth Of The Firm	4	-	0.85	0.89

Perceived Dynamism	6	-	0.83	0.89
Perceived Munificence	6	-	0.71	0.88

After this reliability test, the modified scales were put into the main questionnaire which was used in the final survey (Appendix 27).

5.2.1.4 Altering Firm Growth Scale

In Chapter four, it was stated that firm growth is measured by a three-item scale and its internal consistency would be checked using one profitability item. The results of the pretest study showed that profitability and growth correlate significantly ($r=0.89$, $P<0.001$). The experts including academic scholars and industry professionals (MBAs) who revised this scale in the pre-test phase also advised that integrating the subjective profitability item into the growth item and using a four-item scale to measure growth seems more appropriate. This undertaking is consistent with the observation of Chandler and Hanks (1993) that executives of SMEs tend to equate growth with profitability. Therefore, as the above Table 11 shows, a four-item scale for measuring firm growth was used in the analysis.

5.2.2 Entering Data from the Main Survey

5.2.2.1 Combining Mail and Web-based Survey Data

A total number of 54 envelopes failed to reach the firms in the sample and were returned to the sender due to problems such as change of address or inadequate addressing. The problematic cases were followed up in collaboration with DnB. This issue indicates a 2.7% error in the database which, according to DnB, is within the standard range for commercial databases; however, since updating the database is a time-consuming procedure it was agreed to continue the analysis with the remaining cases. Finally, 314 questionnaires were collected from 1,946 firms indicating a response rate of 16.14% which is within the range suggested in the literature (as explained by Curran and Blackburn (2001), the response rate in SME survey research varies between 7 and 86 % depending on numerous factors such as time of data collection, location, industry etc.).

In this study, 118 questionnaires were from the online survey and 196 were postal. Then, using firm age and firm size, two non-parametric tests of Mann-Whitney U and 2-

sample Kolmogorov-Smirnov were employed across online and postal sub-populations to examine whether these two have different distributions. Asymptotic p-value of greater than 0.05 for both tests (0.788 and 0. 701 for firm age and firm size in Mann-Whitney U and 0.889 for firm age and 0.866 for firm size in Kolmogorov-Smirnov Z) indicated that these two sub-populations are not statistically different (Sheskin, 2004). Therefore online and postal responses were combined into one SPSS file for further statistical analysis. Analogous to Terziovski (2010) on surveying SMEs and Novak and Hoffman (2009) on a survey using a cognitive-style scale, the obtained responses were checked. Subsequently 15 responses were dropped because they were incomplete, resulting in a calibration set of 299 workable questionnaires.

5.2.2.2 Reverse Coding Considerations

Nine out of the 20 items of the cognitive-style (shown in Appendix 38) measure had to be reverse-coded prior to the analysis. This was carried out using the data transformation feature of SPSS 20.0. Then the new transformed values were used in the analysis.

5.2.3 Descriptive Analysis

Simple descriptive and frequency analyses were run on the characteristics of executives and firms in order to gain a holistic understanding of the data. The results are shown in Table 12. For continuous variables means and standard deviations were used and for the categorical ones the frequency distribution was reported.

Table 12: Descriptive Statistics of Executives and Firms

Variable	N	Mean±S.D.	Frequency(%)
Executives			
Experience	299	-	25 (8.36%) less than 2 years 98 (32.78%) executives 2-5 years 61 (20.4%) executives had more than 10 115 (38.46%) executives had between 5 to 10 years.
Tenure	299	-	18 (6.02%) less than 2 years 78 (26.09%) executives 2-5 years 75 (25.08%) executives had more than 10 128 (42.81%) executives had between 5 to 10 years.
Age	299	-	116 (38.80%) in the range of 50-59 years 74 executives (24.75) in the range of 40-49 59 (19.73%) were 60 or above 60 years old, 34 (11.37%) in the range of 30-39 years of age and 16 (5.35%) were younger than 30 years old.

Gender	299	-	264 (88.29%) male 35 (11.71%).were female
Education	299	-	112 (37.46%) had TAFE or equivalent college or trade degrees, 92 (30.77%) had finished year 12 or equivalent, 44 (14.72%) had finished year 10, 36 (12.04%) had a bachelor degree, 12 executives (4.01%) had a master degree and 3(1.00%) had completed a doctoral degree.
Firms			
Firm Size	299	15.16 ±2.65 employees	-
Firm age	299	18.27±2.37 year	-
Family Ownership	299	103 yes, 196 no	34.45 % family firm, 65.55% non-family firm

A more detailed description of executives and firms as well as the distribution of firms according to their SIC (Standard Industrial Classification) is available in Appendices 41 and 42 respectively. Finally, means of age, revenue, and size of population based on the objective data obtained from the database were calculated and were compared with the means of same variables in the sample. This test was done to detect sampling errors (i.e. the error caused by observing a sample instead of the whole population) in order to find whether our sample can represent the population of interest. 7.56 % errors was detected which is less than 10% cut off value as recommended by Scandura and Williams (2000). Therefore, there is reason to argue that sample firms represent the population.

5.2.4 Screening and Preparing Data for Hypotheses Testing

Assessing data is the first step in running analysis (Kline, 2010). In order to apply structural equation modeling, a number of conditions must be met. They mainly include the assumption of distribution known as multivariate normality, the effects of multicollinearity, and the identification of outliers and missing data (Kline, 2010). SEM is a correlation-based method and these conditions affect correlation coefficients in estimations and can often result in errors (Schumacker and Lomax, 2004:221).

5.2.4.1 Results of the Test for Multivariate Normality

Following Byrne (2010), the AMOS normality detector and the values of standardized kurtosis and z-test critical ratio (CR) revealed that no item in the model substantially violated normality. Then the multivariate kurtosis values were used with their associated z-statistic. A cut-off value of 5.0 was used as the guideline (Byrne, 2010). Accordingly, a

degree of multivariate non-normality was detected in the data (kurtosis = 148.588, CR = 32.455). So, the Satorra-Bentler robust method (Satorra and Bentler, 1994) as suggested by Byrne (2010) was performed in M-plus (Muthén and Muthén, 2012). Then, goodness-of-fit indices for two models as suggested by Byrne (2010) were compared and it was concluded that the existence of multivariate non-normality does not create bias and therefore this error is acceptable. Appendix 43 details this test.

5.2.4.2 Detecting and Dealing with Multivariate Outliers

In survey research, questionnaires are subject to careless or inattentive responses from respondents. This would result in outliers in the data (Meade and Craig, 2012). The squared Mahalanobis distance (D^2) in AMOS (Byrne, 2010:106) was used to detect outliers. This technique is specifically appropriate for multi-item surveys because it can detect the pattern of responses across a series of items (Meade and Craig, 2012). Typically, an outlying case would show a D^2 value that stands distinctively apart from all other D^2 values (Byrne, 2010:106). Accordingly, minimal evidence of serious multivariate outliers was found (only one case with Mahalanobis d-squared of $D^2 = 104.2$, $p\text{-value}=0.000<0.001$). Therefore, it was reasoned that the issue of multivariate outliers is not likely to pose a threat to the analysis. A detailed description is available in Appendix 44.

5.2.4.3 Results of the Test for Detecting and Dealing with Missing data

Missing or incomplete data are an inevitable occurrence in survey-based research (Byrne, 2010). Missing data were expected to be minimal. However, since the questionnaire is composed of both personal and business-related questions a small number of missing cases were detected by AMOS (3%) which is likely to create a bias (Cohen and Cohen, 1983). Then the Full Information Maximum Likelihood (FIML) approach as the most appropriate technique for dealing with missing data in AMOS and expectation-maximization (EM) in SPSS were employed (McLachlan and Krishnan, 1996; Schafer and Graham, 2002; Byrne, 2010). It was found that the missing cases were missing at random (MAR). Then, following Terziovski (2010:896), in the data set the variable means for the missing cells were substituted. Appendix 45 offers a more detailed description of this procedure.

5.2.4.4 Homoscedasticity, Factor Adequacy , Multicollinearity and Dimensionality

Homoscedasticity (i.e. residuals are normally distributed and have uniform variances across all levels of the predictors) is usually caused by multivariate non-normality, outliers, and measurement errors (Kline, 2011). As previously discussed, these issues were not likely to affect the data analysis of this study. However, to go one step further, following Kline (2011:65), a scatter plot of the standardized residuals against the standardized predicted scores for the same data for the dependent variable (firm growth) was developed in SPSS and no evidence of heteroscedasticity (uneven distribution around zero) was observed (Appendix 46).

Then, following Merrilees, Rundle-Thiele, and Lye (2011), the Kaiser-Meyer-Olkin (KMO) test to measure sample adequacy was used to examine whether or not data were adequate for running the exploratory and confirmatory factor analyses required for the structural equation modeling. The cut-off value is 0.6. The results (Appendix 47) suggest that the sample size is adequate.

With regard to collinearity, Grewal et al. (2004:528) argue that “good measure reliability, a model whose explanatory power is high, and a large sample size can effectively protect against the deleterious effects of multicollinearity.” However, to detect multicollinearity, Grewal et al. (2004) suggest that since multicollinearity is closely related to discriminant validity, if the discriminant validity criterion proposed by Fornell and Larcker (1981) is satisfied, the errors caused by multicollinearity are unlikely to occur. This method has become common and been adopted recently by scholars such as Lubatkin et al. (2006), Ling et al. (2008a, b), and Cao et al. (2010). This issue will be further discussed in the section on discriminant and convergent validities. In addition, following Byrne (2010), the standardized estimate values of all correlations in the model by a confirmatory factor analysis (CFA) were used to find and locate multicollinearities. An estimate value of more than 1.0 leads to an inadmissible model and values above 0.85 indicate multicollinearity. The results exhibited in Appendix 48 show satisfactory loadings and hence absence of multicollinearity.

As a step further, the inter-factor correlations were also examined for signs of multicollinearity. The correlation matrix of all the variables including the control variables as well as their mean and standard deviations are presented in Appendix 52. The

results show that no inter-factor correlation is above the recommended value of 0.85 (Hair et al., 2006). This provides additional evidence for the absence of multicollinearity.

Finally, since the present research is interested in analyzing data at the composite or scale level, not the item level (Gerbing and Anderson, 1988; Danes and Mann, 1984; Anderson, Gerbing, and Hunter, 1987), the dimensionality of measurements was assessed. A unidimensional (homogenous) measure can be explained by a single latent method factor (Byrne, 2010: 295). To examine this, a confirmatory factor analysis for each construct was performed (Harlow, 2005). Following this procedure, the results of the total variance explained for research constructs showed that constructs can be assumed to be unidimensional (Appendix 49).

5.2.5 Analysis of Discriminant and Convergent Validity

The notion of convergent and discriminant validity of a construct was established by Campbell and Fiske (1959). Literature indicates that it has become necessary to detect these validity aspects in all studies based on structural equation modeling (Byrne, 2010). Following Hair et al. (2006), the correlation matrix and standardized regression weights of all factors in a model are estimated (shown in Appendix 52) using a confirmatory factor analysis in AMOS. Then four indicators including Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV), and Average Shared Squared Variance (ASV) are used to examine the assumptions of convergent and discriminant validity based on a number of criteria. The first criterion is: $CR > 0.7$, and then for convergent validity the criteria are: $CR > (AVE)$ and $AVE > 0.5$, and for discriminant validity the criteria are: $MSV < AVE$ and $ASV < AVE$ (Appendix 50).

It has been argued that this method is superior to the traditional multi-trait multi-method (MTMM) approach of Campbell and Fiske (Fornell and Larcker, 1981; Hair et al., 2006). The results of the analysis are shown in Table 13. It can be accordingly argued that the assumptions of convergent and discriminant validity of constructs have been met in this study.

Table 13: Values of CR, AVE, MSV, and ASV for Convergent and Discriminant Validity

Construct	CR	AVE	MSV	ASV
Perceived Dynamism	0.992	0.977	0.888	0.666
Analytic Cognitive Style	0.977	0.860	0.753	0.134
Intuitive Cognitive Style	0.957	0.887	0.753	0.131
Market Knowledge Acquisition	0.976	0.904	0.882	0.667
Technological knowledge Acquisition	0.971	0.855	0.799	0.665
Growth	0.977	0.967	0.766	0.668
Perceived Munificence	0.992	0.896	0.801	0.666
Emphasis on Business Model Innovation	0.933	0.885	0.785	0.643

Furthermore, in accordance with Chaston and Sadler-Smith (2012) and Armstrong et al. (2012a), the duality of the cognitive-style measure was further tested using an exploratory factor analysis. The results (Appendix 51) showed two separate factors consistent with Pacini et al. (1999) and the predictions of dual information processing theory.

5.2.6 Power Analysis

In SEM, in addition to the primary sample size estimation, the stability of the covariance matrix and the use of asymptotic theory must be taken into account in order to assess the adequacy of statistical power and accuracy of estimations (MacCallum et al., 1996; Byrne, 2010). With respect to the sensitivity of the power to the sample size, a post-hoc power analysis based on multiple regression was done (Cohen, 1988) with the following parameters: firm growth is the endogenous variable. It is predicted by 5 variables (Figure 4), the observed R^2 is 0.8 (Table 17) and the confidence level is 0.05 (95%). The power given the sample size of $N=299$ is 0.99, suggesting that model has sufficient predictive power with this sample size.

Furthermore, it has been argued that, “researchers definitely should estimate the power associated with a test of a model prior to its being tested” (McQuitty, 2004:182). To do so, the method developed by Kaplan (1989) was used. This method has been shown to be useful for business studies (McQuitty, 2004). According to this method, a combination of the modification index (MI) and the expected change statistic (EC) (par change in AMOS) is used to guide model modifications. Kaplan (1996) argued that “parameters with large MIs and large ECs should be freed first. Parameters associated with large MIs and small ECs need to be studied carefully and if they represent a key part of the model they must be kept. Parameters associated with small MIs and large ECs also

need to be studied carefully again. Finally, parameters associated with small MIs and small ECs could be ignored.” This protocol was employed using standardized ECs, and after modifications, the final model achieved a CFI of 0.973 with a degree of freedom of 755.

Further to this, the table for the association between CFI, degree of freedom, and minimum sample size for achieving a power of 0.8 developed by Kim (2005) was used. According to this table, with a CFI of greater than 0.95 and a degree of freedom of more than 500, a sample size of 250 yields 0.8 power. Furthermore, with an increase in the DF the sample size will decrease. Therefore, it can be argued that in this research with CFI = 0.973 and DF = 755 the sample size of $N = 299$ could lead to an adequate power. This is consistent with the results of post-hoc power analysis.

With regard to asymptotic theory and the stability of the covariance matrix, simulation studies using Monte Carlo techniques show that sample sizes of 100 to 125 or larger often yield adequate results provided that reasonably reliable measures are used (reliabilities greater than 0.65) (Jackson, 2003; Jaccard and Wan, 1996). This study’s sample size exceeds this standard (with $N = 299$), and also, as explained, reliabilities of measurements were also high. So the assumption of stability of covariance matrix cannot be rejected in this study. In conclusion, it is argued that the data set used in this research could provide adequate power for assessing the hypothesized model.

5.2.7 Structural Modeling Procedure

To implement the structural equation modeling technique the operationalizing suggestions of Williams et al. (2009) (Appendix 40) were employed and the two-step approach proposed by Anderson and Gerbing (1988) was used as the basis for model building and testing. This approach is increasingly used by scholars in business and management (e.g. Lubatkin et al., 2006; Ling et al., 2008a; Song et al., 2010; Kim et al., 2013) and it has also been argued that it is the most appropriate technique for examining moderated-mediation models (Roberts et al., 2013) such as the proposed model of this research.

According to this approach, the first step involves a confirmatory factor analysis (CFA) to test the measurement model of the study and see whether it fits the observed data. This model “specifies the structural model linking the observed variables and the

underlying theoretical factors (latent variables) which are presumed to determine responses to the observed variables” (Krause, Scannell, and Calantone, 2000:43). This model must be trimmed to attain adequate fit (Anderson and Gerbing, 1988).

The second phase involves “comparing a sequence of nested structural models to gain information concerning the structural model that best accounts for the covariance observed between the exogenous and endogenous constructs” (Ling et al., 2008:565). This method has been found to be very common amongst management scholars (Medsker, Williams, and Holahan, 1994) and argued to be very effective for causal research in marketing, strategic management, and psychology (Shook et al., 2004; Williams et al., 2009). Numerous recent studies on small and medium-sized firms have also adopted this method (Lubatkin et al., 2006; Ling et al., 2008a,b). Hence it appears to be appropriate for the purpose of this research.

5.2.7.1 Step One: Confirmatory Factor Measurements Models

Each latent variable needs to be explicitly assigned a metric or measurement model which allows the examination of the psychometric properties of the construct (Lubatkin et al., 2006; Anderson and Gerbing, 1988). Accordingly, each variable (factor) was assigned a multi-item model based on its conceptualization as explained in Chapter three. Then different fit indices were used to assess their fitness.

Next, similar to the study of Cousins et al. (2011), the model’s goodness of fit was assessed using several indices. The criteria examined include chi-square (χ^2), the comparative fit index (CFI), the incremental fit index (IFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). To apply these indices a few guidelines are available including Marsh, Balla, and McDonald (1988), Gerbing and Anderson (1992), and Hu and Bentler (1999). These provide several “rules of thumb” cut-off values for goodness-of-fit (GOF) indices.

It has been basically suggested that when a hypothesized model fully captures the data from a sample population, the CFI, IFI, and TLI are expected to have values of 1.0, and the RMSEA a value of 0.0. Although standards for such indices are difficult to establish, a value of 0.90 or higher for the CFI, IFI, and TLI, and a value of 0.08 or lower for the RMSEA are typically suggested as having adequate fit (Marsh, Hau, and Wen, 2004; Simsek and Heavey, 2011:90). Assigned measures of constructs were separately assessed

according to this guideline and evidence for satisfactory fit to the observed data was found (Table 14).

Table 14: Fit Indices of Constructs' Measurement Models

Measurement Models	χ^2	CMIN/DF	GFI	AGFI	TLI	IFI	RMSEA
Intuitive Cognitive Style	96.97***	1.85	.927	.901	.921	.949	.020
Analytic Cognitive Style	55.44**	1.91	.965	.934	.993	.995	.044
Market Knowledge Acquisition	5.46*	1.09	.993	.978	.997	.998	.018
Technological Knowledge Acquisition	4.11*	.82	.994	.983	.999	.999	.001
Perceived Dynamism	5.11*	.73	.994	.983	.999	.999	.001
Perceived Munificence	13.18*	1.46	.986	.967	.998	.999	.039
Firm Growth	1.9**	.44	.998	.992	.999	.999	.001

*Note: ***= $p < 0.001$, **= $p < 0.01$, *= $p < 0.05$*

Then, following the suggestions of Anderson and Gerbing (1988) and consistent with the recent studies of Lubatkin et al. (2006), Son et al. (2012), and Kim et al. (2013), a full measurement model was developed in which all correlations are freely estimated. The fitness of this model provides basic evidence for developing and testing structural models.

To develop this model all multi-item factors (i.e. intuitive cognitive style with 10 items, analytic cognitive style with 10 items, market knowledge acquisition with five items, and technological knowledge acquisition with five items, growth of the firm with three items, and dynamism and munificence both with six items) were used. Emphasis on business model innovation was not modelled because it has two items and, as explained in Chapter three, the construct is calculated by summing means of two and transforming into a continuous variable indicating low to high emphasis on business model innovation.

In the initial model all items were loaded onto their respective latent variable. However, in the full measurement model these loadings resulted in a poor model fit. Therefore, the model was trimmed using modification indices (MIs) in AMOS. In order for the model to fit, two latent variables (analytic and intuitive style) needed to be trimmed. Modification indices (i.e. deleting factors with low loadings and covarying factors in the same measure with high covariance) were used to perform the trimming (Byrne, 2010). These values were obtained by trimming the model using fit indices in AMOS. The goodness-of-fit indices of the final model are illustrated in Table 15.

Table 15: Fit Indices of Full Measurement Model

Index*	Recommended cut of value
Chi-Squared/DF=2.257	<3 good fit, <5 acceptable fit
P-VALUE=0.001	
CFI =0.973	1.0 very good fit, >0.9 good
IFI=0.978	1.0 very good fit, >0.9 good
TLI=0.957	1.0 very good fit, >0.9 good
GFI=0.939	>0.95 very good fit, >0.9 acceptable
AGFI=0.888	>0.9 very good, >0.8 acceptable
RMSEA=0.071	0.0-0.01 very good fit, <0.05 good fit, <0.08 acceptable fit
P-CLOSE=0.193	

**source: Hu and Bentler,(1999). Furthermore, these cutoff values for fit indices can be used because the sample sizes is larger than 250 (Hu and Bentler,1999)*

Furthermore, as exhibited in the table 15, the P-value of the model is 0.001 which is less than 0.05. This indicates that the fit between the observed and postulated model is not very strong. This conclusion is justifiable due to the size of the research (N = 299). Literature suggests that with sample sizes close to 300 a strong fit is very unlikely to occur (Hair et al., 2006).

According to Hair et al. (2006), when a best-fitting model is obtained, “each of the constructs can be evaluated separately by: (1) examining the indicator loadings for statistical significance, and (2) assessing the construct’s reliability and variance extracted.” Given that the results of the CFA indicate that the relationship between each indicator and its respective variable was statistically significant ($p < 0.001$), this would verify the hypothesized relationships among the indicators and constructs, and allow us to argue that the proposed framework has an acceptable degree of convergent validity among its constructs.

5.2.7.2 Step Two: Sequential Analyses of Nested Models

Following Anderson and Gerbing (1988), five nested models were developed and compared: a saturated model (Ms), a null model (Mn), a theoretical model (Mt), the “next most likely” constrained model (Mc), and the unconstrained alternative model (Mu).

In the present study, similar to the studies of Lubatkin et al. (2006) and Ling et al. (2008a), the saturated model (Ms) is equal to the measurement model and also represents the theoretical model of the interest. The null model (Mn) is the model in which all associations between constructs (latent variables plus covariates) have been constrained to

zero (i.e. there are no posited relations of the constructs to one another) (Anderson and Gerbing, 1988:418).

According to the two-phase SEM approach, a significant difference between the M_s and M_n indicates that “sufficient covariance exists between the latent variables to warrant testing the hypothesized model” (Lubatin et al., 2006:662). Table 16 shows a significant difference ($\Delta \chi^2=1493.10-1295.83=197.27$, $\Delta Df=20$) which warrants the examination of the proposed hypothesized model. On the basis of this analysis, another three alternative nested models were developed and contrasted to gain a richer understanding of the relationships between latent variables (Anderson and Gerbing, 1988).

To develop these nested structural models a three-step procedure proposed by Jöreskog (1993) and used in the studies of Lubatin et al. (2006), Ling et al. (2008a), and Krause et al. (2000) was followed. This approach first assesses a model fit using various fit indices, then examines the significance of the “completely standardized path estimates” as a test of the model’s hypotheses, and finally demonstrates the amount of variance explained in the endogenous constructs as an indication of the substantive contribution of practical significance (Lubatin et al., 2006:662).

Accordingly, in the next phase, Model 2, which consists of the control variables (covariates), was contrasted with the null model. Then Model 3 was contrasted with Model 2. Model 3 is an alternative submodel of the main theoretical model and consists of control variables as well as the proposed relationships between cognitive style, emphasis on BMI, and growth. Following this logic, in the next phase another alternative theoretical submodel (Model 4) was developed and contrasted with Model 3. Model 4 includes control variables and all the hypothesized links between cognitive style, market and technological knowledge acquisition, and growth of the firm. Finally, Model 4 was compared with Model 5. This sequential comparison of nested models shows the model that best fits the data (Anderson and Gerbing, 1988).

To compare models a sequential chi-square difference test (SCDT) was employed in which the underlying assumption is that there is no significant difference between two nested structural models (Anderson and Gerbing, 1988). Rejecting this hypothesis (i.e. P-value of $\Delta \chi^2$ less than 0.05) shows that models differ and a model can be found to represent the best fit (Krause et al., 2000).

The results of the SCDT are shown in Table 16. It can be seen that: 1) There is a statistically significant difference between M5 and the null model ($\Delta\chi^2=197.27$, $df=20$, p -value=0.0001) permitting the test of nested models. 2) There are significant differences between alternative models. 3) Model 5 provides the best fit to the data. Since alternative submodels have also had an acceptable fit, their association with the dependent variable (growth) was also compared. The results shown in Table 17 suggest that Model 5 has the largest amount of correlation coefficient of latent variables with the growth ($R^2= 0.80$). Therefore, it can be concluded that Model 5 is most likely the appropriate model to fit the observed data.

Table 16: Results of the SCDT of Nested Models

<i>Summary of the results of fit indices for contrasts among alternative measurement nested models</i>										
Nested Model	χ^2	Df	CFI	IFI	TLI	AGFI	RMSEA	Comparison	$\Delta \chi^2$	Δ Df
Model5: <i>Covariates + (CS-KA- EBMI- Growth)</i>	1295.83	574	0.981	0.978	0.957	0.888	0.071	Model 5 Vs. Model 4	39.041*	2
Model4: <i>Covariates+(CS-KA-Growth)</i>	1334.88	576	0.971	0.976	0.954	0.886	0.072	Model 4 Vs. Model 3	50.889*	3
Model3: <i>Covariates +(CS-EBMI- Growth)</i>	1385.76	579	0.961	0.966	0.952	0.884	0.078	Model 3 Vs. Model 2	19.673***	3
Model2: <i>Covariates only</i>	1405.44	582	0.959	0.963	0.951	0.88	0.08	Model2 Vs. Model1	87.66*	12
Model 1: <i>Mn : Null model</i>	1493.10	594	0.957	0.958	0.951	0.88	0.08	-	-	2

Note: CS: Cognitive Styles (both Analytic and Intuitive), KA: Knowledge Acquisition (both Market and Technological), BMI: Emphasis on Business Model Innovation.
 *:significant at $p < 0.05$
 **:significant at $p < 0.01$
 ***: significant at $p < 0.001$

Table 17: Comparing Correlations With Growth In the SCDT

Nested model	R^2 on growth
Model5: <i>Covariates + (CS-KA- EBMI- Growth)</i>	0.80
Model4: <i>Covariates+(CS-KA-Growth)</i>	0.71

Model3: <i>Covariates +(CS-EBMI-Growth)</i>	0.73
Model2: <i>Covariates only</i>	0.21

Note: CS: Cognitive Styles (both Analytic and Intuitive), KA: Knowledge Acquisition (both Market and Technological), BMI: Emphasis on Business Model Innovation

In addition, following the recommendations of Shook et al. (2004) and Williams et al. (2009), an additional model comparison technique was used to rule out potential alternative relationships between constructs. Accordingly, three rival models were developed and compared with the hypothetical models of the study (with and without control variables) (Appendix 53). In the rival models, the causal directions between BMI and knowledge acquisition and between growth and knowledge acquisition as well as between growth and BMI were reversed. This approach is consistent with the study of Shu et al. (2012). It is to be noted that in this approach, a Chi-Square Difference Test (CSDT) is not performed and just goodness-of-fit indices for rival models are compared with the hypothesized model of the study (Shu et al., 2012). The results are illustrated in Table 18.

Table 18: Results of SCDTs of Alternative Rival Models

Nested Model	χ^2	Df	CFI	IFI	TLI	AGFI	RMSEA
Hypothesized model with covariates Controls+ (CS-KA-EBMI-Growth)	1295.83	574	0.981	0.978	0.957	0.888	0.071
Hypothesized model without covariates CS-KA-EBMI-Growth	1195.86	367	0.988	0.979	0.961	0.902	0.067
Rival model 1: CS-EBMI-KA-Growth	995.85	369	0.989	0.980	0.971	0.901	0.063
Rival model 2: CS-KA-Growth-BMI	1195.86	367	0.988	0.979	0.961	0.902	0.067
Rival model 3: CS-EBMI-Growth-KA	990.62	367	0.979	0.968	0.968	0.899	0.065

Note: CS: Cognitive Styles (both Analytic and Intuitive), KA: Knowledge Acquisition (both Market and Technological), BMI: Emphasis on Business Model Innovation

As can be seen, the results of rival model comparison indicate that the hypothetical model is identical with Rival Model 2. This issue can be further discussed with respect to the existing literature and the causal directions that are supported by the literature. Chapter six will address this issue in more depth. In addition, Rival Model 1 and Rival Model 2 also have acceptable fit and can be supported by data. Hence, their causations

must be explained by the existing literature. These models go beyond the conceptual scope of this research and will be briefly discussed in Chapter six as potential areas for future research. In light of that, the proposed hypothetical model both with controls and without controls has been supported by data. The following sections will examine the paths to test research hypotheses.

5.2.8 Test of Hypotheses

To test hypotheses, first a path analysis was performed to detect significant paths (Hair et al., 2006). The existence of enough variance between the full and null model allows the employment of maximum likelihood for estimating path coefficients (Kline, 2010). Table 19 shows the results of path analysis.

Table 19: Results of Non-moderated Maximum Likelihood Path Analysis

Paths			Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimates
TKA	<---	ACS	.33	.031	10.64	***	.34
MKA	<---	ACS	.33	.040	8.25	***	.34
TKA	<---	ICS	.51	.041	12.43	***	.52
MKA	<---	ICS	.54	.053	10.18	***	.55
EBMI	<---	TKA	.51	.13	3.92	***	.54
EBMI	<---	MKA	.54	.21	2.57	**	.56
EBMI	<---	ACS	.12	.03	4.00	***	.15
EBMI	<---	ICS	.35	.03	11.66	***	.35
GROWTH	<---	EBMI	.49	.03	18.15	***	.48
GROWTH	<---	TKA	.33	.14	2.35	**	.34
GROWTH	<---	MKA	.34	.16	2.12	**	.33
GROWTH	<---	ICS	.49	.13	3.77	***	.51
GROWTH	<---	ACS	.44	.14	3.14	***	.46

Notes: *** p -value < 0.01; ** p -value < 0.05; * p -value < 0.10

ACS: analytic cognitive style, ICS: intuitive cognitive style, MKA: market knowledge acquisition, TKA: technological knowledge acquisition. EBMI: Emphasis on Business Model Innovation

As shown in Table 19, all paths are significant (critical ratio or Z-score are greater than 1.96) and positive. This offers initial insights into the validation of hypothetical relationships proposed in Chapter three. For instance, the results show a positive significant relationship between executives' acquisition of market knowledge and their emphasis on business model innovation ($B = 0.54$, $CR = 2.57$ which is significant at P -value < 0.01).

Similar evidence exists for executives' acquisition of technological knowledge and their emphasis on business model innovation ($B = .51$, $CR = 3.92$, P -value < 0.01). These results offer supportive evidence for hypotheses 7 and 8. Furthermore, the results show

that the link between emphasis on business model innovation and growth of the firm is positively significant ($B = 0.49$, $CR = 18.15$, $P < 0.01$). Therefore, hypothesis 9 is supported.

Finally, growth of the firm has been found to be influenced by executives' acquisition of both market ($B = .34$, $CR = 2.12$, $P\text{-value} < 0.05$) and technological knowledge ($B = .33$, $CR = 2.35$, $P\text{-value} < 0.05$). These findings suggest that hypotheses 12 and 13 are supported. The path analysis is illustrated in Figure 6.

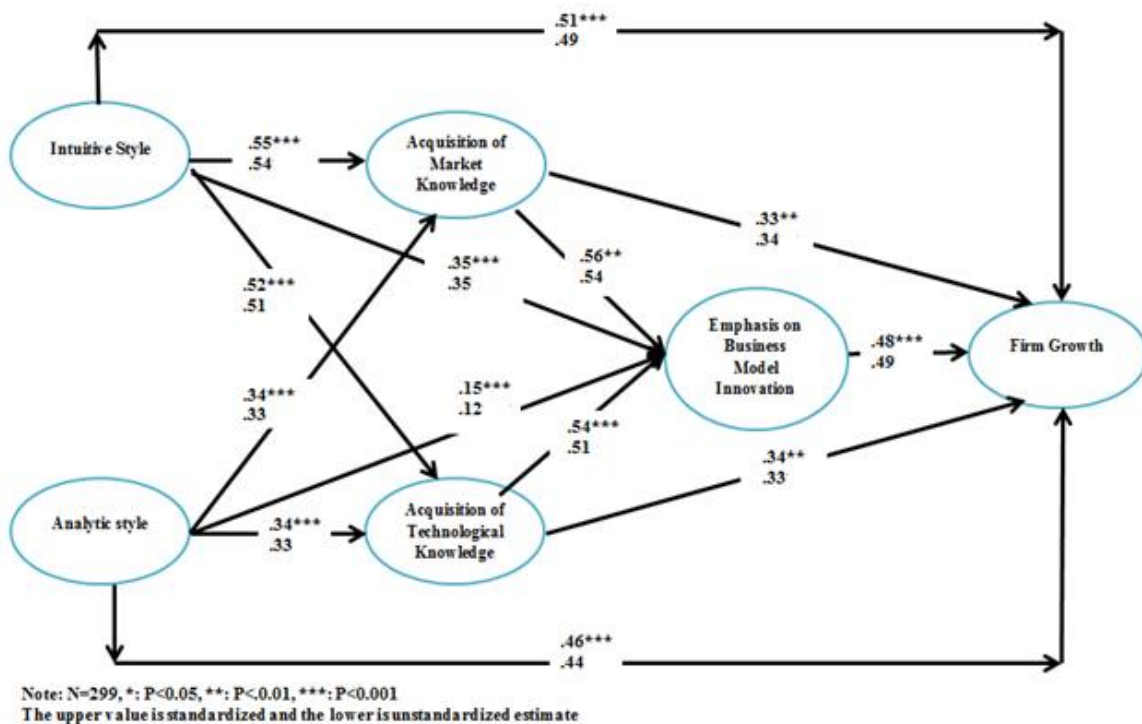


Figure 6: Standardized and Unstandardized Estimates (Maximum Likelihood Path Analysis)

5.2.8.1 Interpreting Moderation Inference

In 8 out of 13 hypotheses of the research it was argued that the role of perceived dynamism was a moderator in the associations between executives' cognitive style and their acquisition of market and technological knowledge, choice of emphasis on new business models (business model innovation), and subsequent growth outcomes of the firm. To assess these moderational inferences a combination of two methods (i.e. multigroup modeling and interaction) in structural equation modeling was employed (Aguinis, 2002; Sauer and Dick, 1993).

Research in organization studies has mostly examined moderation through hierarchical moderated regression (Aguinis, 1995) or Hierarchical Linear Models (Davison et al., 2002). However, advances in SEM enable a better estimation of moderation (Barnette and Williams, 2005). Accordingly, following Barnette and Williams (2005), the moderated effects were estimated by “creating subgroups based on a moderator variable and use of multi-sample techniques as used in measurement invariance with this difference in tests of moderation with latent variables focus is placed on the equality of structural parameters linking latent variables to one another” (p. 152).

There are different ways to form groups such as cluster analysis and summated means (Barnette and Williams, 2005). In this study, a technique based on summated means known as “quantile splitting” was used as it is a common dichotomization method (Cohen 1983) and have been used in recent research (Elbanna et al., 2013). Accordingly, the perception of dynamism was computed by summing means of items and was then dichotomized to form two groups representing executives who have described their environment as low and high in dynamism. It should also be noted that dichotomization of Likert-style scales such as that of dynamism in this research is based on the mean of the variable (Cohen, 1983). This grouping is also consistent with the hypotheses developed in Chapter three. Then two groups were formed in AMOS and path estimates were calculated and their significance and Z-score for the impact of moderational inference were calculated and compared (Barnette and Williams, 2005; Real, Roldán, and Leal, 2012). Group 1 consisted of 130 responses and was labeled “low dynamism” and Group 2 consisted of 169 responses and was labeled “high dynamism.” A significant difference between the paths (Z-score of greater than 1.96 with P-value of less than 0.05) indicates a statistically significant difference in the estimates (unstandardized regression weights) between low and high dynamism and therefore a statistically significant moderation effect.

Before performing this test, two chi-square difference tests were conducted for examining 1) Configural and metric invariance of factorial structure of constructs across groups and 2) a variance test on structural model for investigating existence of variance across groups to test significance of moderation (Byrne, 2010: 198). Fit indices of Configural invariance (freely estimated measurement model across groups [$\chi^2/Df=1.9$,

GFI=0.911, AGFI= 0.898, IFI=0.995, TLI=0.970, RMSEA=0.063, P-close=0.211]) show sufficient fit and offer evidence for Configural invariance. In addition, Chi-square test for metric invariance (measurement model variance is fully constrained and contrasted with the freely estimated model) is significant: ($\Delta\chi^2$, =21.102, $\Delta df=15$, $p=0.13>0.05$). Therefore, a multigroup analysis can be performed.

A chi-square difference test was used to determine whether the difference between these models was statistically significant to allow a comparison of moderation paths. To do so the unconstrained model loaded in multigroup modeling was contrasted with a fully constrained model (Anderson and Gerbing, 1988). The results (Table 20) show that enough difference in variance exists between these two models ($\Delta\chi^2$ (35.972[12]) = 0.0001<0.001). Therefore multigroup analysis can be performed.

Table 20: Chi-square Difference Test for Multigroup Analysis

Models	Chi-square	DF
Unconstrained	20.211	9
Constrained	56.183	21
Difference	35.972	12

The two-tailed P value CDT (35.972[12])= 0.0003<0.001

Further to the results shown in Table 20, the results of multigroup analysis have been illustrated in Table 21. It must be noted that, scholars have used both p-values and confidence interval for showing significance of paths in a multi-group analysis. Since this research follows Byrne (2010), p-values were reported instead of confidence interval (Byrne, 2010, p. 269). Z-statistics (Z-score) are t-values and were calculated using the approach explained by Byrne (2010, p. 238) and their significance follows t-distribution (i.e. $Z>1.96$ is significant at $P<0.05$).

Table 21: Results of Multigroup Path Analysis for Moderation Effects

Paths		LOW DYN		HIGH DYN		Z-score#
		Estimate#	P	Estimate#	P	
MKA <--- ICS		.44 (0.43)	0.000	.57 (0.57)	0.040	3.222***
						3.111***

MKA	<---	ACS	.31 (0.30)	0.050	.18 (0.16)	0.020	
TKA	<---	ICS	.42 (0.40)	0.010	.41 (0.42)	0.000	2.455**
TKA	<---	ACS	.32 (0.30)	0.000	.20 (0.18)	0.000	2.556**
GROWTH	<---	ICS	.38 (0.36)	0.010	.58 (0.57)	0.000	1.311
GROWTH	<---	ACS	.26 (0.25)	0.000	.25 (0.24)	0.040	1.011
EBMI	<---	ICS	.39 (0.38)	0.040	.45 (0.44)	0.000	1.133
EBMI	<---	ACS	.37 (0.35)	0.020	.35 (0.34)	0.000	1.003
EBMI	<---	MKA	.56 (0.54)	0.000	.58 (0.57)	0.000	13.011***
EBMI	<---	TKA	.48 (0.47)	0.000	.45 (0.44)	0.000	8.59***
GROWTH	<---	EBMI	.48 (0.48)	0.045	.51 (0.51)	0.000	1.001
GROWTH	<---	MKA	.35 (0.33)	0.000	.37 (0.35)	0.000	4.811***
GROWTH	<---	TKA	.30 (0.28)	0.000	.37 (0.35)	0.000	4.091***

Notes: *** p -value < 0.01; ** p -value < 0.05; * p -value < 0.10

N (low dynamism)=130

N (high dynamism)=169

#: Estimates used in calculating the significance of moderated paths (z -score) are unstandardized regression weights shown in brackets , other estimates without brackets are fully standardizes regression weights

ACS: analytic cognitive style, ICS: intuitive cognitive style, MKA: market knowledge acquisition, TKA: technological knowledge acquisition. EBMI: Emphasis on Business Model Innovation

As Table 21 illustrates, there is a statistically significant difference in the association between intuitive cognitive style (ICS) and acquisition of market (MKA) ($B = 0.43$ in low dynamism with a P -value of $0.00 < 0.05$ and $B = 0.57$ in high dynamism with a P -value of $0.04 < 0.05$) and technological knowledge (TKA) ($B = 0.40$ in low dynamism with a P -value of $0.01 < 0.05$ and $B = 0.42$ in high dynamism with a P -value of $0.00 < 0.05$). These differences are significant (Z -score = 3.22 with a P -value of 0.00 for the MKA and Z -score = 2.45 with a P -value of less than 0.05 for TKA).

Therefore, perceived dynamism matters in the associations between executives' intuitive style and their acquisition of market and technological knowledge. In addition, under conditions of perceived high dynamism these associations are stronger ($B = .057$ and $B = .042$). So, hypothesis 3 and hypothesis 4 are supported. On the other hand, perceived dynamism also makes a difference in the relationships between executives' analytic cognitive style (ACS) and acquisition of market (MKA) and technological knowledge (TKA). This difference has been represented by $Z\text{-score} = 3.111$, significant at $P < 0.01$, and $Z\text{-score} = 2.556$, significant at $P < 0.05$ respectively.

As shown in Table 21, under conditions of perceived low dynamism analytic style is positively associated with acquisition of market ($B = 0.30$, $P\text{-value} = 0.05$) and technological knowledge ($B = 0.30$, $P\text{-value} = 0.00$), whereas when perceived dynamism is high these associations change to $B = 0.16$, $P\text{-value} = 0.02$, and $B = 0.18$, $P\text{-value} = 0.00$. Therefore, dynamism dampens the positive relationships between analytic cognitive style and acquisition of both market and technological knowledge. This evidence provides reason to assert that hypotheses 5 and 6 are supported. These four hypotheses provide grounds to further discuss the link between executives' cognition and acquisition of resources (i.e. knowledge) in Chapter six.

Furthermore, as exhibited in Table 21, the relationship between the intuitive cognitive style of an executive and his/her emphasis on adopting/developing new business models (i.e. emphasis on business model innovation) is positively significant under both perceived low dynamism ($B = 0.38$, $P\text{-value} = 0.04 < 0.05$) and high dynamism ($B = 0.44$, $P\text{-value} = 0.00 < 0.05$). Furthermore, the difference in estimates is not statistically significant ($Z\text{-score} = 1.113$). Therefore, hypothesis 10 is not fully supported as dynamism does not influence the relationship between intuitive style and emphasis on business model innovation.

Similarly, the relationship between analytic cognitive style and emphasis on business model innovation is also positively significant under perceived low dynamism ($B = 0.35$, $P = 0.02 < 0.05$) as well as perceived high dynamism ($B = 0.34$, $P = 0.00 < 0.05$). The difference in the regression weights is, however, not statistically significant ($Z\text{-score} = 1.003$). Hence, hypothesis 11 is not fully supported.

The above results suggest that, inconsistent with theoretical predictions, dynamism does not play a significant role in the relationships between executives' cognitive style and their emphasis on business model innovation. This issue will be further discussed in Chapter six.

Multigroup moderation analysis also offers interesting evidence for interpreting proposed relationships between executives' cognitive style and growth of the firm. The analysis shows that there is a strong association between intuitive style and growth of the firm under both perceived low ($B = 0.36$, $P\text{-value} = 0.01 < 0.05$) and high ($B = 0.57$, $P\text{-value} = 0.00$) dynamism. Although this indicates that the association is stronger under perceived high dynamism, this difference in these associations is not statistically significant ($Z\text{-score} = 1.311$). Similar observations have been made for the relationships between analytic style and growth in perceived low dynamism ($B = 0.25$, $P\text{-value} = 0.00 < 0.05$) and high dynamism ($B = 0.24$, $P\text{-value} = 0.04 < 0.05$). Further, the difference is not statistically significant ($Z\text{-score} = 1.011$). Hence, hypotheses 1 and 2 cannot be fully accepted (i.e. not fully supported).

5.2.8.2 Additional Findings on Moderational Effects

The results of multigroup analysis also suggest that there is a positive and statistically significant relationship between the acquisition of market knowledge by executives and their emphasis on business model innovation ($B = 0.54$, $P\text{-value} = 0.000 < 0.5$ under conditions of perceived low dynamism and $B = 0.57$, $P\text{-value} = 0.000 < 0.05$ under conditions of perceived high dynamism), and the difference due to dynamism is also significant ($Z\text{-score} = 13.011$, $P\text{-value} < 0.01$). This finding not only indicates that hypothesis 7 is supported but also implies that when perceived dynamism is high the link between executives' acquisition of market knowledge and emphasis on business model innovation is more significant than in conditions of low dynamism.

Analogous to this observation, the relationship between executives' acquisition of technological knowledge and their emphasis on business model innovation was also found to be significant and positive under both conditions of perceived low ($B = 0.47$, $P\text{-value} = 0.000 < 0.05$) and high ($B = 0.44$, $P\text{-value} = 0.000 < 0.05$) dynamism. The difference caused by the difference in the perception of dynamism was also statistically significant ($Z\text{-score} = 8.59$, $P\text{-value} < 0.01$).

Therefore, not only is hypothesis 8 supported but also it can be inferred that the role of technological knowledge acquisition in executives' emphasis on new business models is more salient under conditions of low dynamism. The opposite was, however, evinced for the role of market knowledge acquisition. This issue indicates the different role of these two types of knowledge in executives' behavior which will be discussed in more detail in Chapter six.

Additionally, as proposed in Chapter three, following the theory of the growth of the firm (Penrose, 1959), the executives' acquisition of market and technological knowledge was related to the growth of the firm in hypotheses 12 and 13 respectively. The results as shown in Table 21 indicate that executives' acquisition of market knowledge is positively related to the growth of their firm in both low ($B = 0.33$, $P\text{-value} = 0.000 < 0.05$) and high ($B = 0.35$, $P\text{-value} = 0.000 < 0.05$) dynamic environments, offering empirical support for hypothesis 12.

Moreover, the association was stronger in more dynamic environments ($Z\text{-score} = 4.811$, $P\text{-value} < 0.01$). This is consistent with theoretical predictions and suggests that when environments become more dynamic the acquisition of market knowledge becomes more significant in leading the growth of the firm. Chapter six will further elaborate this issue. Similar evidence was also found for technological knowledge acquisition. First it was observed that executives' technological knowledge acquisition is positively associated with the growth of their firm in both low ($B = 0.28$, $P\text{-value} = 0.000 < 0.05$) and high ($B = 0.35$, $P\text{-value} = 0.000 < 0.05$) dynamic environments. This difference is also significant ($Z\text{-score} = 4.091$, $P\text{-value} < 0.01$). So, hypothesis 13 is also supported.

Finally, in hypothesis 9 the role of executives' emphasis on business model innovation and growth of the firm was proposed. The results of multigroup structural analysis show that executives' emphasis on business model innovation positively influences the growth of their firm when the environment is perceived as both low ($B = 0.48$, $P\text{-value} = 0.045 < 0.05$) and high ($B = 0.51$, $P\text{-value} = 0.000 < 0.05$) in dynamism. Therefore, there is empirical evidence to support hypothesis 9. In addition, although this association is found to be more significant when the environment is perceived as highly dynamic, this difference is not statistically significant ($Z\text{-score} = 1.001$).

The above results are illustrated in a path model (Figure 7). In the paths the first number from the top is the regression weight (B) in the first group (low dynamism) and the second number is the regression weight (B) in the second group (high dynamism).

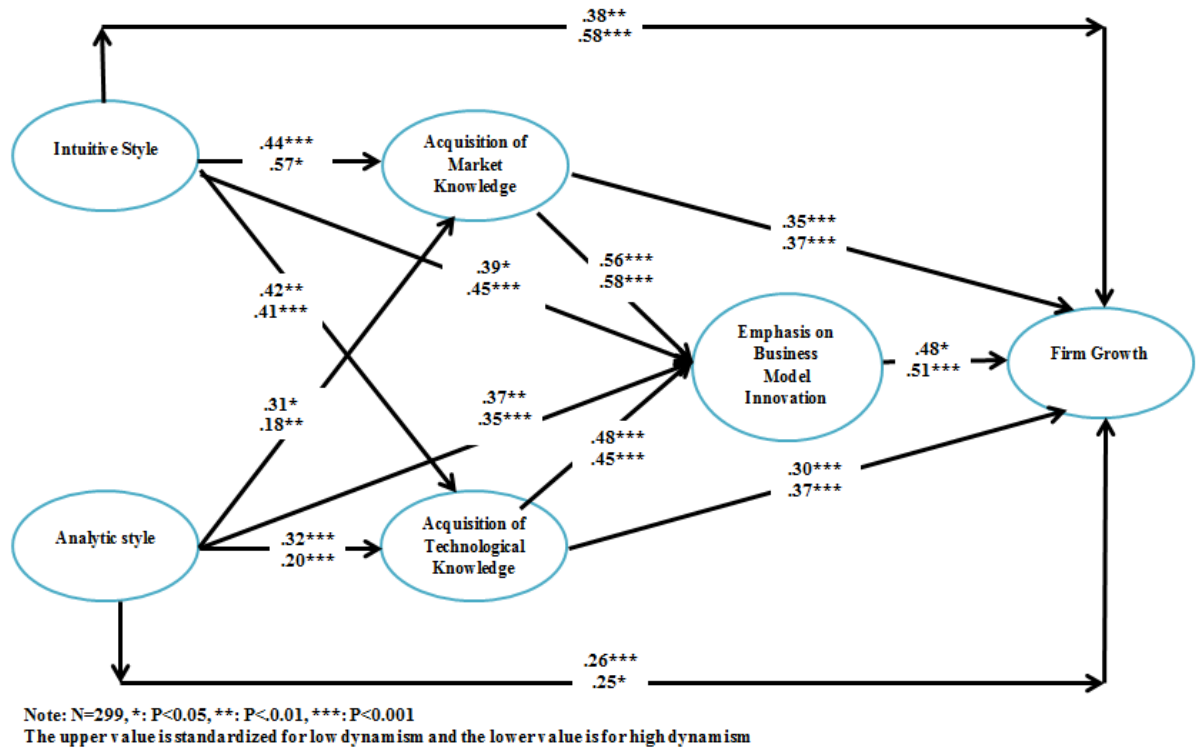


Figure 7: Standardized Estimates of Paths in the Multigroup Analysis

5.2.8.3 Plotting Interaction effects

Although splitting the sample into two groups by using means is more scientific and less arbitrary in multigroup analysis, it may result in information loss (Jette et al., 2003). In addition, this method is the most common approach for estimating the moderational impact in causal relationships in SEM (Williams et al., 2003). However, it is basically designed and used for categorical variables (it was done by transforming dynamism into two categories of high and low). So, Bagozzi, Baumgartner, and Yi (1992) argued that “when variables are measured as continuous it is preferable to model moderated variable effects as multiplicative interactions to retain the full information contained in continuous variables” (Sauer and Dick, 1993:639).

Therefore, to gain a better understanding of the moderation effect an interaction approach was also employed (Sauer and Dick, 1993) which is based on the moderation analysis in multiple regression (Aguinis, 2002 ;Williams et al., 2003).

Accordingly, all variables including analytic and intuitive styles, emphasis on business model innovation, market and technological knowledge acquisition, growth of the firm, and the perception of dynamism were standardized and the interaction products were created as separate variables in SPSS (Chaston and Sadler-Smith, 2012). Then structural models with interaction components were created and the paths including interaction were examined (Williams et al., 2003). The model appeared to fit the data adequately ($\chi^2 = 185.1$, $df = 97$, $CMIN/DF = 1.9$, $GFI = 0.981$, $AGFI = 0.954$, $TLI = 0.971$, $IFI = 0.988$, $RMSEA = 0.02$). Therefore, the results of path analysis were interpreted to gain a richer understanding of moderational effects through interaction products. Path coefficients (i.e. unstandardized regression weights and their associated critical ratio and standardized estimates) are shown in Table 22.

Table 22: Results of Interaction Analysis for Moderation Effects

Paths (Between standardized variables and interaction products)			Unstandardized Path estimates				Standardized Estimates
			Estimate (B)	S.E.	C.R.	P	
ZMKA	<---	ZICS	.128	.014	9.143	***	.14***
ZMKA	<---	ZACS	.091	.014	6.578	***	.11***
ZMKA	<---	ZICS_ZDYN	.019	.014	13.571	***	.023***
ZMKA	<---	ZACS_ZDYN	-.09	.014	-6.428	***	-.11***
ZMKA	<---	ZDYN	.990	.07	14.242	***	.980***
ZTKA	<---	ZICS	.110	.005	22	***	.13***
ZEBMI	<---	ZICS	.10	.016	6.5	***	.12***
ZTKA	<---	ZACS	.092	.004	23	***	.11***
ZEBMI	<---	ZACS	.053	.016	3.31	***	.07***
ZTKA	<---	ZICS_ZDYN	.020	.004	5	***	.022***
ZEBMI	<---	ZICS_ZDYN	.091	.062	1.46	n.s	.09
ZTKA	<---	ZACS_ZDYN	-.003	.001	-3	***	-.005***
ZEBMI	<---	ZACS_ZDYN	.090	.06	1.5	n.s	.11
ZTKA	<---	ZDYN	.818	.117	6.991	***	.819***
ZEBMI	<---	ZDYN	.091	.08	1.137	n.s	.094
ZGROWTH	<---	ZICS	.023	.001	23	***	.024***
ZGROWTH	<---	ZACS	.239	.02	11.95	***	.241***
ZGROWTH	<---	ZICS_ZDYN	.13	.08	1.62	n.s.	.14
ZGROWTH	<---	ZACS_ZDYN	.01	.01	1	n.s.	.013
ZGROWTH	<---	ZDYN	.963	.07	13.757	***	.961***

Note: The z-score (C.R.) is significant at the 0.01 level if it is greater than 2.58 indicated by *** and at 0.05 level if greater than 1.96 indicated by **, similarly for standardized weights :

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

n .s.: not significant

ZICS: standardized intuitive cognitive style, ZACS: standardized analytic cognitive style, ZDYN: standardized perceived dynamism, ZGROWTH: standardized firm growth, ZMKA: standardized market knowledge acquisition, ZTKA: standardized technological knowledge acquisition.

Finally, a number of plots were drawn using Microsoft Excel based on the path coefficients in order to enhance interpretation of moderational effects. These would show how the relationship between research constructs is dependent on the value of the moderator variable (Fairchild and MacKinnon, 2009). The results are explained as follows.

The path between executives' intuitive cognitive style and their acquisition of market knowledge is positive ($B = 0.128$) and significant ($CR = 9.143$, $P\text{-value} < 0.01$). In addition, the interaction between dynamism and market knowledge acquisition is also strong, positive, and significant ($B = 0.990$, $CR = 14.242$, $P\text{-value} < 0.01$). And finally, the association between the interaction term ($ZICS_ZDYN$) and market knowledge acquisition is also positive and significant ($B = 0.019$, $CR = 13.571$, $P\text{-value} < 0.01$). This implies that dynamism strengthens the positive link between intuitive cognitive style and acquisition of market knowledge. Therefore, consistent with previous multigroup analysis, this shows further support for hypothesis 3. This interpretation is plotted in Figure 8.

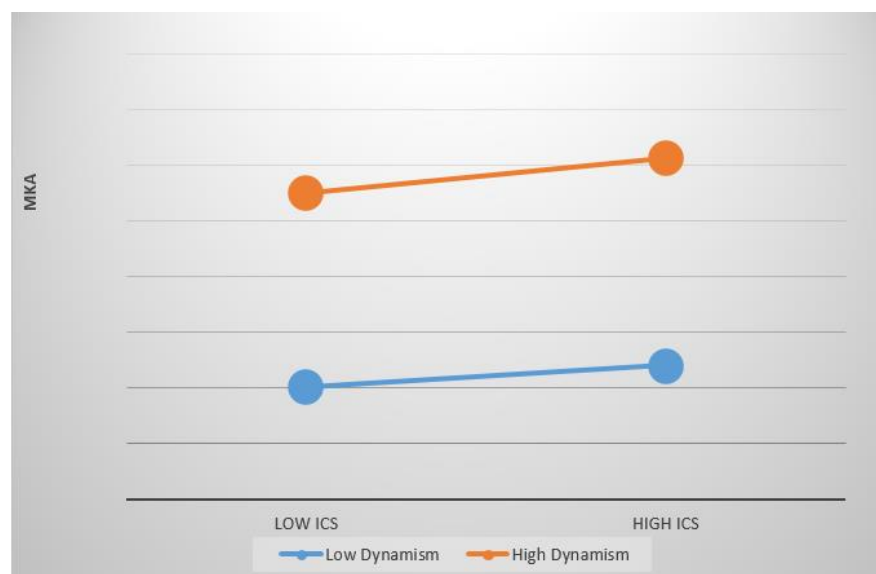


Figure 8: Interactions between Dynamism, Intuitive Cognitive Style and Acquisition of Market Knowledge

The path between executives' intuitive cognitive style and their acquisition of technological knowledge is positive ($B = 0.110$) and significant ($CR = 22$, $P\text{-value} < 0.01$). In addition, the interaction between dynamism and technological knowledge acquisition is also strong, positive, and significant ($B = 0.818$, $CR = 6.991$, $P\text{-value} < 0.01$). And

finally, the association between the interaction term (ZICS_ZDYN) and technological knowledge acquisition is also positive and significant ($B = 0.02$, $CR = 5$, $P\text{-value} < 0.01$). This indicates that dynamism strengthens the positive link between executives' intuitive cognitive style and their acquisition of technological knowledge. Therefore, congruent with previous multigroup analysis, it offers additional support for hypothesis 4. Figure 9 illustrates this interpretation.

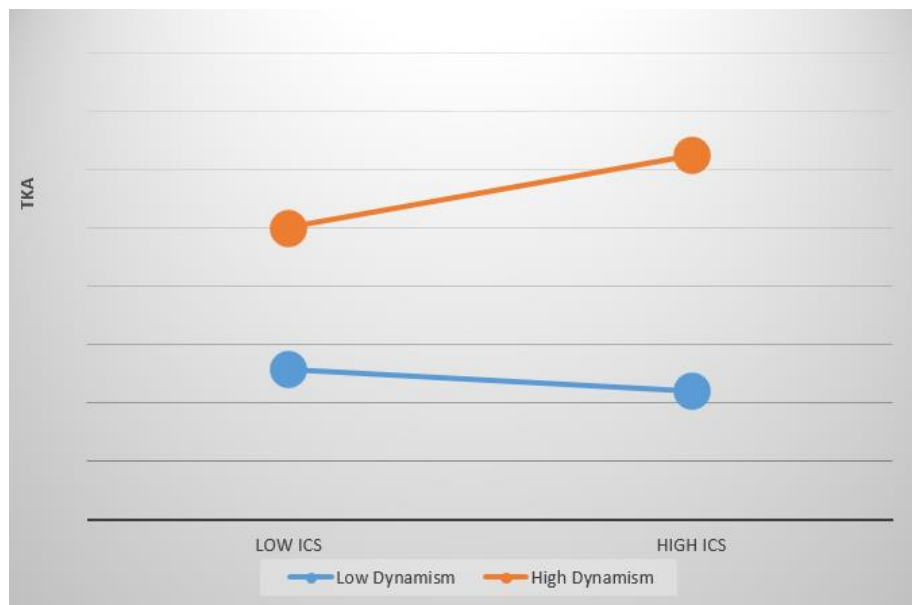


Figure 9: Interactions between Dynamism, Intuitive Cognitive Style and Acquisition of Technological Knowledge

Similarly, the path between analytic cognitive style and acquisition of market knowledge is positive ($B = 0.091$) and significant ($CR = 6.578$, $P\text{-value} < 0.01$). In addition, the interaction between dynamism and acquisition of market knowledge is also strong, positive, and significant ($B = 0.990$, $CR = 14.242$, $P\text{-value} < 0.01$). And finally, the association between the interaction term (ZACS_ZDYN) and acquisition of market knowledge is negative and significant ($B = -0.09$, $CR = -6.428$, $P\text{-value} < 0.01$). This indicates that dynamism dampens the positive association between executives' analytic cognitive style and their acquisition of market knowledge. Therefore, in accordance with the results of multigroup analysis it supports hypothesis 5. Figure 10 illustrates this interpretation.

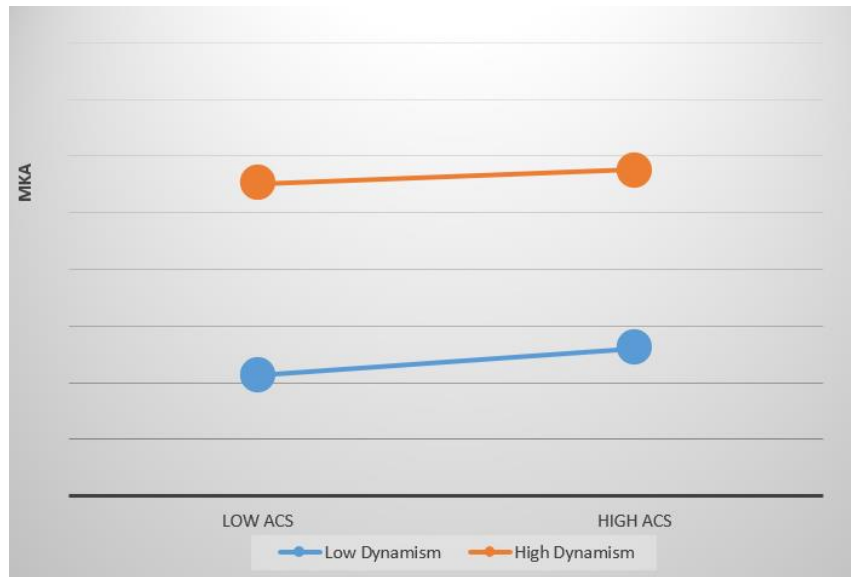


Figure 10: Interactions between Dynamism, Analytic Cognitive Style and Acquisition of Market Knowledge

Furthermore, the relationship between analytic cognitive style and acquisition of technological knowledge is positive and significant ($B = 0.092$, $CR = 23$, $P\text{-value} < 0.01$). In addition, the interaction between dynamism and acquisition of technological knowledge is also strong, positive, and significant ($B = 0.818$, $CR = 6.991$, $P\text{-value} < 0.01$). And finally, the association between the interaction term ($ZACS_ZDYN$) and acquisition of technological knowledge is negative and significant ($B = -0.003$, $CR = -3$, $P\text{-value} < 0.01$). This indicates that dynamism dampens the positive association between executives' analytic cognitive style and their acquisition of technological knowledge. Therefore, as previously discussed in the multigroup analysis, it can be argued that hypothesis 6 is supported. Figure 11 illustrates this interpretation.

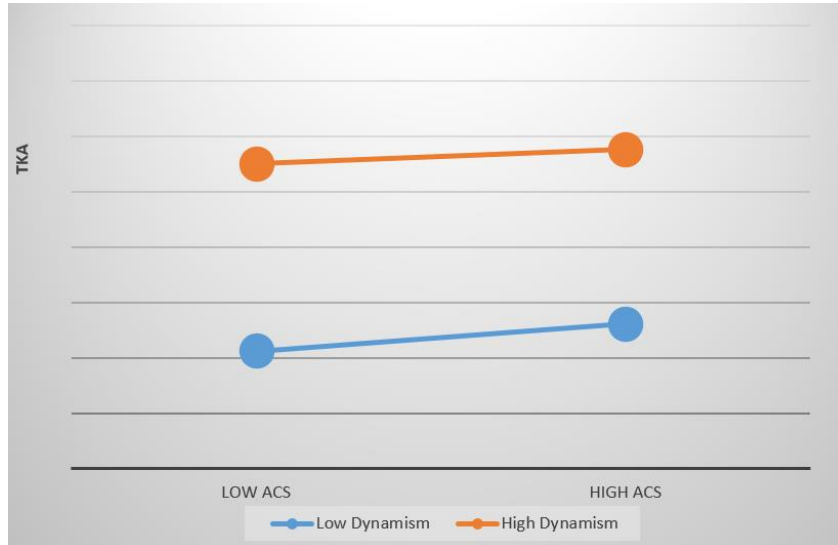


Figure 11: Interactions between Dynamism, Analytic Cognitive Style and Acquisition of Technological Knowledge

Finally, as Table 22 shows, the interactions between executives' perceived dynamism, intuitive cognitive style, and their emphasis on business model innovation cannot be established because the path between the interaction term (ZICS_ZDYN) and emphasis on business model innovation (ZEBMI) is not significant ($CR = 1.46 < 1.96$, $P\text{-value} > 0.05$). Similar results have been found for the relationship between analytic cognitive style (ZACS_ZDYN) and business model innovation ($CR = 1.5 < 1.96$, $P\text{-value} > 0.05$). These findings are consistent with multigroup analysis and suggest that hypotheses 10 and 11 cannot be fully supported as dynamism does not appear to have a statistically significant impact on these relationships.

Using the same reasoning, it can be argued that the association between executives' intuitive style and the growth of their firm does not get impacted by the perception of dynamism as the path between the interaction term (ZICS_ZDYN) and growth (ZGROWTH) is not significant ($CR = 1.62 < 1.96$, $P\text{-value} > 0.05$). Interactions between analytic cognitive style, perception of growth, and growth are also deemed non-significant ($CR = 1.0 < 1.96$, $P\text{-value} > 0.05$). Therefore, as discussed in multigroup analysis, hypotheses 1 and 2 are not fully supported.

It is to be noted that since effect sizes of interaction terms were small, the moderation effects may not be easy to detect by comparing slopes in the plots (Figures 8, 9, 11). As a result the effect sizes in Table 22 are used for interpreting the moderation effects.

5.2.9 Examining Mediation effects

Although mediational effects were not hypothesized in Chapter three, the proposed conceptual model raises a few questions about the mediational effects of: 1) executives' acquisition of market and technological knowledge of the relationship between executives' cognitive style and growth as well as the choice of emphasis on business model innovation, and 2) the choice of emphasis on business model innovation on the relationships between executives' cognitive style and growth of the firm. In addition, as discussed in Chapter four, these mediating influences are moderated mediations (Roberts et al., 2013; Preacher, Rucker, and Hayes, 2007) because the moderating effects (acquisition of knowledge) in some instances are moderated by the perception of dynamism. This interplay is relevant to the second research question and also offers a deeper understanding of the causal links in the model. Therefore, in this section these potential mediations will be tested and interpreted. The results will be further discussed in Chapter six.

Following the suggestion of Williams et al. (2009), a revised edition of the method initially suggested by Baron and Kenny (1986) was used to detect and interpret the indirect effects. According to Baron and Kenny (1986), for testing a mediational analysis four steps must be undertaken: 1) direct relationships without mediation must be tested as the necessary but not sufficient condition, 2) relationships between independent and mediator must be examined. 3) Then relationships between mediator and dependent variable must be assessed, and finally 4) type of mediation (full, partial, or non-mediation) should be interpreted with supportive statistics such as Sobel test or bootstrapping algorithm (Mathieu and Taylor, 2006; Mathieu, DeShon, and Bergh, 2008). Wood et al. (2008) also urge researchers to provide 1) a complete description of the conditions for mediation (full versus partial) and the associated steps followed in the analyses, and 2) the results of analyses in one complete mediation table.

With regard to the conditions and types of mediation, the algorithm developed by Zhao, Lynch, and Chen (2010), as illustrated in Figure 12, was adopted as it is a more advanced methodology and offers revisions to the method of Baron and Kenny (1986). Therefore, it directly addresses the issue raised by Williams et al. (2009). In addition, in order to examine the significance of the indirect effects, the bootstrapping in AMOS was used instead of the Sobel test (Arbuckle, 2011; Zhao et al., 2010). There are two reasons

for this choice. First, the Sobel test requires normal distribution as a precondition (Mathieu and Taylor, 2006); however, as was shown earlier, this study's data have a degree of non-normality. So, bootstrapping is the best alternative method (Mathieu et al., 2008). Secondly, bootstrapping is generally regarded as a better technique for testing mediations in complex models (Mathieu and Taylor, 2006; Wood et al., 2008).

Furthermore, the suggestions of Mathieu and Taylor (2006) were used, in which: valid constructs (convergent and discriminant validity) are used whose causal links are based on the research questions, hypotheses grounded in a theoretical model and tests of mediations have been explained step by step, and the results have been exhibited in separate tables in detail. It should also be noted that, since this study has multiple mediators, the joint effects of two mediations were examined simultaneously (Mathieu et al., 2008; Preacher et al., 2007).

Finally, to distinguish between mediating effects in low versus high dynamism, conditions and interpretations were examined separately in multigroup structural modeling and the results were compared (Preacher et al., 2007; Arbuckle, 2011). The interaction effects method was ignored because in moderated mediation it will eventually take the form of multigroup analysis (Preacher et al., 2007; Ng et al., 2008).

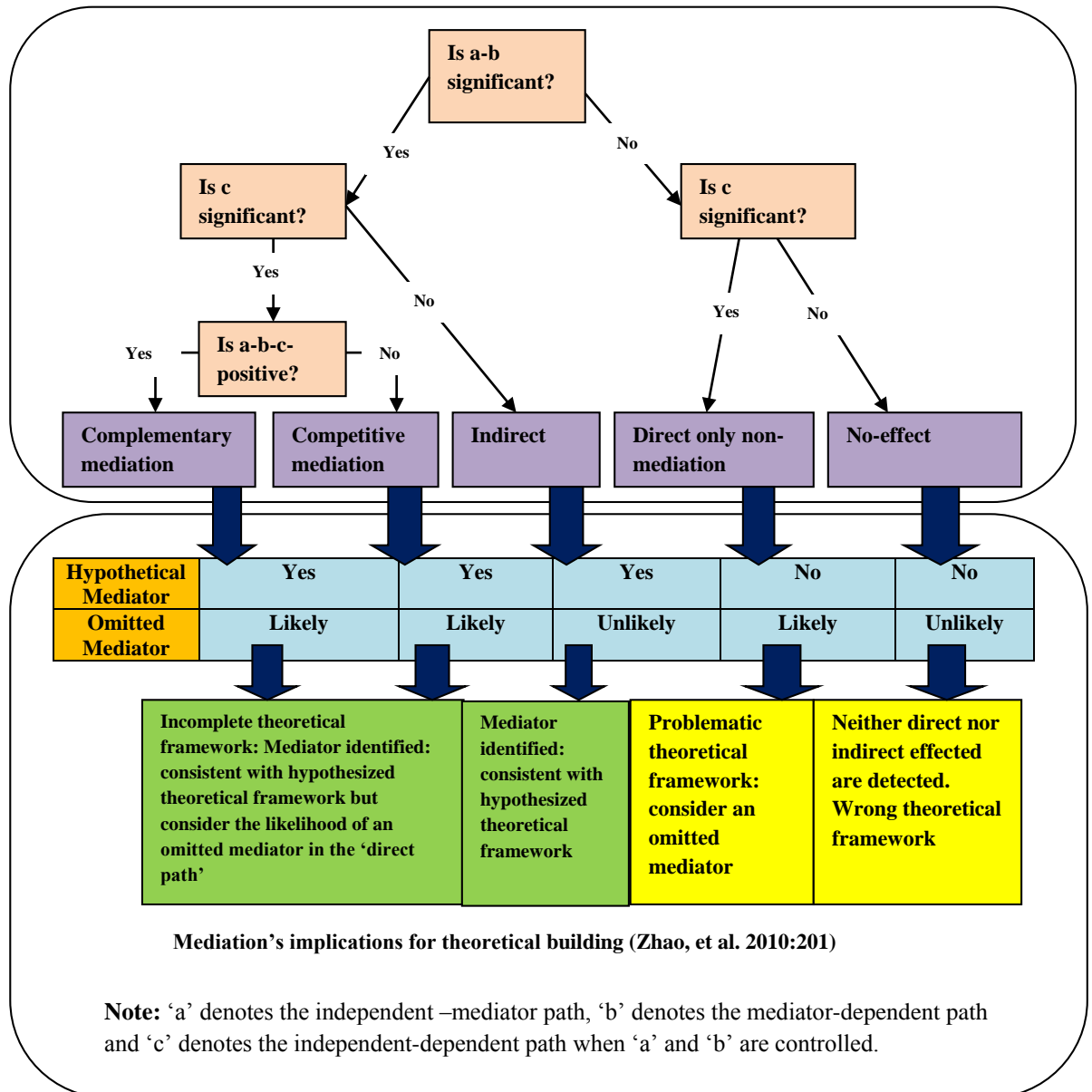


Figure 12: Interpreting Types of Mediation

To examine the significance of paths, the “two-tailed significance” in the “bias-corrected percentile method” in AMOS for bootstrapping was used. Bootstrapping was set for 2,000 samples to achieve sufficient power (Arbuckle, 2011). The results are summarized in Table 23.

Table 23: Results of Multigroup Mediation Analysis Using Bootstrapping

Mediations in Multi-group SEM (moderated mediation)					
Direct Path	Direct Beta Without Mediation	Mediation Effects	Direct Beta W Mediation	Indirect Beta	Type of observed Mediation
I-G	0.54* 0.63**	M	0.36** 0.38*	0.29* 0.31**	Partial-complementary Partial-complementary
		T	0.34** 0.36***	0.26** 0.28**	Partial-complementary Partial-complementary
		E	0.31** 0.33*	0.25** 0.26*	Partial-complementary Partial-complementary
		M-E	0.36* 0.38**	0.33* 0.34**	Partial-complementary Partial-complementary
		T-E	0.36** 0.37**	0.34** 0.35**	Partial-complementary Partial-complementary
		M-T	0.33* 0.35 (n.s.)	0.30** 0.32*	Partial-complementary Full-indirect mediation
		M-T-E	0.39* 0.41 (n.s.)	0.31** 0.35*	Partial-complementary Full-indirect mediation
A-G	0.44** 0.42**	M	0.29** 0.27**	0.25* 0.23**	Partial-complementary Partial-complementary
		T	0.28** 0.26*	0.21** 0.20**	Partial-complementary Partial-complementary
		E	0.29** 0.28*	0.19** 0.19*	Partial-complementary Partial-complementary
		M-E	0.26* 0.25**	0.21* 0.19**	Partial-complementary Partial-complementary
		T-E	0.25** 0.23**	0.24** 0.23*	Partial-complementary Partial-complementary
		M-T	0.26 (n.s.)	0.27**	Full-indirect

		0.25**	0.26**	mediation
				Partial-complementary
	M-T-E	0.29 (n.s)	0.26**	Full-indirect mediation
		0.28 (n.s.)	0.26*	Full-indirect mediation

Estimation method: Bootstrapping, iteration: 2000, two-tailed significance of bias-corrected percentile
: P<0.05, **:P<0.01, *:P<0.001, n.s : not-significant (i.e. p> 0.05)*
A: analytic style, M: market knowledge acquisition, E: emphasis on BMI, G: Growth, I: Intuitive style, T: technological knowledge acquisition
First values from top are for low dynamism group (N=130), Second values form top are for high dynamism (N=169)

5.2.10 Interpreting Results of Mediation Analysis

Based on the results of bootstrapping and according to the algorithm of Zhao et al. (2010), the mediations can be interpreted as follows. First of all, the results as illustrated in Table 23 and Figure 13 show that the non-mediated path between the intuitive cognitive style and growth as well as the analytic cognitive style and growth was found to be significant in both low and high dynamism groups. Therefore, the first assumption of mediation as set by Baron and Kenny (1986) is met.

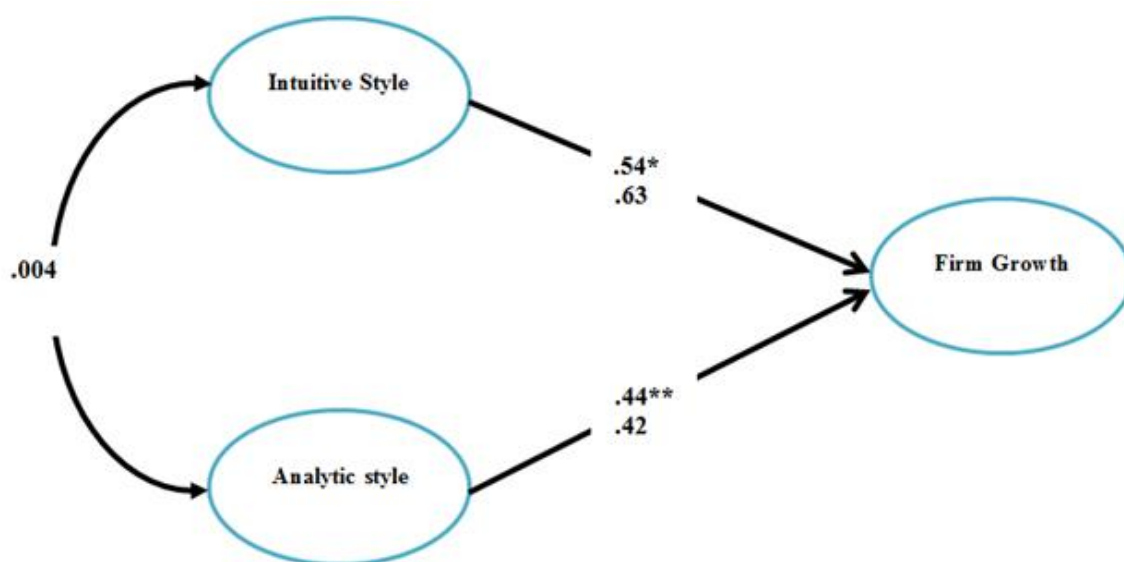


Figure 13: Standardized Significance of Non-mediated Path between Executives' Intuitive, Analytic Cognitive Style and Growth of the Firm

The results of bootstrapping showed that executives' acquisition of market knowledge partially mediated the relationship between executives' intuitive cognitive style and growth of the firm in both conditions of perceived low (direct B = 0.36, P-value <0.01,

indirect $B = 0.29$, $P\text{-value} < 0.05$) and high (direct $B = 0.38$, $P\text{-value} < 0.05$, indirect $B = 0.31$, $P\text{-value} < 0.01$) dynamism.

Similar results have been obtained for the role of executives' acquisition of market knowledge in the relationship between executives' analytic style and growth of the firm in low (direct $B = 0.29$, $P\text{-value} < 0.01$, indirect $B = 0.25$, $P\text{-value} < 0.05$) and high (direct $B = 0.27$, $P\text{-value} < 0.01$, indirect $B = 0.23$, $P\text{-value} < 0.01$) dynamic environments.

The same interpretation was made for the following mediating factors: 1) executives' acquisition of technological knowledge, 2) executives' emphasis on business model innovation, 3) the joint mediating role of executives' acquisition of market knowledge and emphasis on business model innovation, and 4) the joint mediating role of executives' acquisition of technological knowledge and emphasis on business model innovation.

In addition, analysis revealed that under conditions of perceived high dynamism the joint impact of market and technological knowledge fully mediates the relationship between executives' intuitive cognitive style and the growth of the firm. As Table 23 shows, despite the significance of the non-mediated path ($B = 0.63$, $P\text{-value} < 0.001$), the indirect beta is significant ($B = 0.32$, $P\text{-value} < 0.05$) but the direct beta is not ($B = 0.35$, $P\text{-value} > 0.05$). In addition, the joint impact of executives' acquisition of market and technological knowledge and the emphasis on business model innovation also results in the same conclusion (non-mediated path: $B = 0.63$, $P\text{-value} < 0.001$, mediated path: indirect $B = 0.35$, $P\text{-value} < 0.05$, direct $B = 0.41$, $P\text{-value} > 0.05$).

Furthermore, it was found that under conditions of perceived low dynamism the joint impact of executives' acquisition of market and technological knowledge fully mediates the relationship between executives' analytic style and growth of the firm (non-mediated path: $B = 0.44$, $P\text{-value} < 0.01$, mediated path: indirect $B = 0.27$, $P\text{-value} < 0.01$, direct path: $B = 0.26$, $P\text{-value} > 0.05$).

Moreover, it was also observed that the joint impact of executives' acquisition of market and technological knowledge and emphasis on business model innovation fully mediates the relationship between executives' analytic cognitive style and growth of the firm under both conditions of perceived low (non-mediated path: $B = 0.44$, $P\text{-value} < 0.001$, mediated path: indirect $B = 0.26$, $P\text{-value} < 0.01$, direct $B = 0.29$, $P\text{-value} > 0.05$)

and high (non-mediated path: $B = 0.44$, $P\text{-value} < 0.001$, mediated path: indirect $B = 0.26$, $P\text{-value} < 0.05$, direct $B = 0.28$, $P\text{-value} > 0.05$) dynamism.

5.2.10.1 An Additional Intervening Analysis

Finally, the mediating role of executives' emphasis on business model innovation in the relationship between their acquisition of market and technological knowledge and growth of the firm was separately modeled and examined using the same approach as explained in the previous section. The non-mediated paths were proven positively significant (Figure 14), allowing them to be mediated by emphasis on business model innovation.

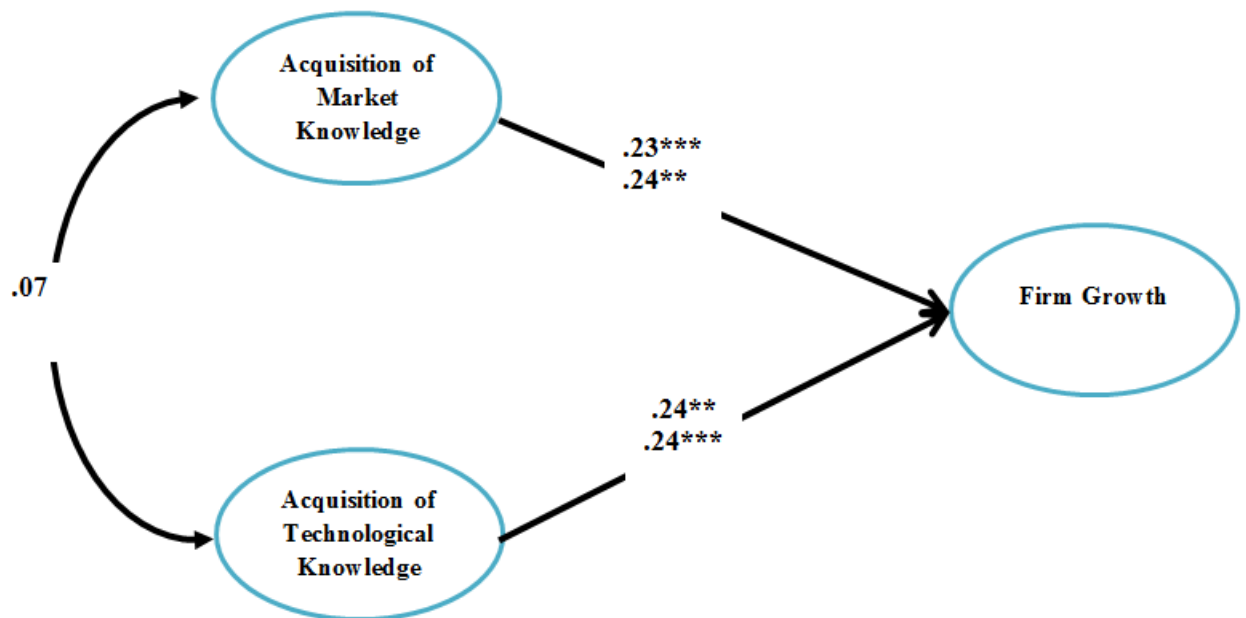


Figure 14: Standardized Significance of Non-mediated Paths between Executives' Market and Technological Knowledge Acquisition and Growth of the Firm

Given the significance of non-mediated paths in both conditions of low (M-G: $B = 0.23$, $P\text{-value} < 0.001$, T-G: $B = 0.24$, $P\text{-value} < 0.01$) and high (M-G: $B = 0.24$, $P\text{-value} < 0.01$, T-G: $B = 0.24$, $P\text{-value} < 0.001$) dynamism, the table below was developed to detect and interpret this potential mediation.

Table 24: Results of an Additional Multigroup Mediation Analysis

Mediations in multi-group SEM (moderated mediation)					
Direct Path	Direct Beta Without Mediation	Mediation Effects	Direct Beta W Mediation	Indirect Beta	Type of observed Mediation
M-G	0.23***	E	0.19*	0.05*	Partial-complementary
	0.24**		0.21**	0.07*	Partial-complementary
T-G	0.24**	E	0.17*	0.11*	Partial-complementary
	0.24***		0.19**	0.09*	Partial-complementary

Estimation method: Bootstrapping, iteration: 2000, two-tailed significance of bias-corrected percentile
*: $P < 0.05$, **: $P < 0.01$, ***: $P < 0.001$, n.s : not-significant (i.e. $p > 0.05$)
M: Market knowledge acquisition, , G: Growth, T: Technological knowledge acquisition
First values from top are for low dynamism group (N=130), Second values form top are for high dynamism (N=169)

As Table 24 indicates, emphasis on business model innovation partially mediates or complements the relationship between executives' acquisition of market and technological knowledge and growth of the firm in both perceived low and high dynamism.

To conclude, as mediation analysis in the last two sections showed, the orchestration of variables in the proposed model offers a general partial mediation with few exceptions when joint effects are taken into account. According to Zhao et al. (2010), this implies that some other variables might, in effect, have been omitted. Chapter six will further discuss the findings of this mediation analysis and Chapter seven will propose several directions for future research according to these findings.

5.2.11 Ad Hoc Analyses

5.2.11.1 Detecting Response Biases

First, non- and late-responding executives were identified and profiled (Appendix 36). Then two ad hoc analyses (t-test and ANOVA) (Appendix 37) were performed to detect non-response and late-response biases. Since the logic of late- and non-response bias is the same, similar approaches were employed for detecting them (Armstrong and Overton, 1977). This approach is consistent with Walter, Auer, and Ritter (2006). For the late-response bias, a sample of firms whose CEOs responded late (usually in the second phase of the survey) was compared with a sample of firms whose CEOs responded in the first

two weeks of the survey. In line with Martín-Peña and Díaz-Garrido (2008), in order to compare these two samples a combination of t-test (i.e. mean comparison) and ANOVA (i.e. variance comparison) was utilized. Variables including the age of the CEOs, their education, their experience, and their tenure were used in the analysis and the results showed that at a confidence interval of 0.95 for all the four variables there is no statistically significant difference between these two groups.

In addition, since these variables are categorical, a cross-tabulation test and the associated chi-square test was used to detect relationships between cases from early and late responding firms (Chinna, Karuthan, and Yuen, 2013). First, a dummy variable for response-time (1= early and 0=late) was defined. Then it was used against CEOs' age, education, experience and tenure in contingency tables of SPSS 20.0 .Chi-square values and their p-values ($P < .05$ shows a significant relationship [Chinna et al. 2013]) as shown in the table 25 show no significant difference between CEO's from early and late classes in terms of age, education, experience and tenure. Therefore, the two populations are not statistically different.

Table 25: Results of an Ad Hoc Cross-Tabulation (Chi-square) Analysis for Late-response Bias

Variable	Cross-Tabulation	
	Chi-Square	Sig.
Age	2.93	.559
Education	1.36	.852
Experience	3.98	.394
Tenure	.936	.333

A similar approach was undertaken for detecting non-response bias (Walter et al., 2006). A sample of non-responding firms was compared with a sample of early-responding firms across variables such as size of the firm (number of full time employees), age of the firm (years of establishment was deducted from 2012) and revenue (the revenue figure was included in the purchased data set from DnB). These three were continuous variables. Therefore, only ANOVA and T-test were performed. The results (Table 26) showed that for these three variables there is no statistically significant difference between two groups (i.e. non-responding and responding) of firms, (all P-values were below the recommended value of 0.05). Therefore, it was assumed that the two populations are not statistically different.

Table 26: Results of an Ad Hoc ANOVA Analysis for Non-response Bias

Variable	ANOVA (Levene Test)		T-test	
	F	Sig	T	Sig
Firm' size	1.013	0.13	1.36.	0.000
Firm's Age	1.518	0.22	1.49	0.000
Revenue	2.606	0.11	1.79	0.002

Additionally, similar to Terziovski (2010), five phone calls were made to non-responding firms to further explore the causes of non-responsiveness. Short phone interviews revealed that sampling and survey design were not sources of any concern. Therefore, it can be concluded that neither late-response bias nor non-response bias were a threat to the validity of the results.

5.2.11.2 Common Method Bias

To run Harman's single common factor test the variables confirmed and fitted in the model during the confirmatory factor analysis were selected. Then a principal axis factor analysis with no rotation was run, and instead of using eigenvalue the number of extracted factors was limited to 1.0. If the emergent factor accounts for variance of more than 50 percent of the model it indicates the existence of CMB and implies the likelihood of highly biased variations in the model's causal directions (Podsakoff et al., 2003). However, the results of single factor extraction, as illustrated in Appendix 55, demonstrate only 45 per cent (44.871), which is less than 50 percent. Although this percentage implies a degree of common variance explained by a single factor, it is not the majority.

Therefore, in addition to Harman's single common factor test a common latent variable was developed to assess the covariance of latent variables with an imaginary latent variable to further examine the amount of bias, even if negligible (Hair et al., 2006). According to this method, a factor named "common" is created and then regressed to all observed variables in the CFA model and the paths are all equally constrained. Then the regression weights show the amount of bias caused by this common factor.

The results of the common latent factor test in AMOS (available in Appendix 56) show that less than 0.1 percent bias is caused by a common latent factor ($R = 0.027$, $R^2 = 0.00729$ or 0.07 with a P-value of 0.041 which is less than 0.05), which is significant but negligible. The overall results of these techniques revealed that the common-method bias was unlikely to be a threat to the findings of this study.

5.2.11.3 Control Variables (covariates)

Control variables were treated as exogenous variables in AMOS (Arbuckle, 2011) and were regressed to the variable on which they might have an impact as discussed in Chapter four. Then the standardized regression weights of these associations were assessed to examine the degree of their impact (Arbuckle, 2011; Atnic et al., 2011). As the results show in Table 27, a number of covariates have significant impacts on the research variables. For instance, the breadth of product (PMS1) and market (PMS2) strategies of the firm appears to be negatively related to the emphasis on business model innovation ($B = -0.391$, $CR = -23.984$ and $B = -0.384$, $CR = -21.333$). This means that firms with a narrower product market strategy place more emphasis on adopting new business models. This finding will be further explained in Chapter six.

Table 27: Results of Control Variable Path Analysis

Covariates (Control Variables)	Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimate
MKA <--- MUN	.108	.101	1.06	n.s.	.111
TKA <--- MUN	.103	.101	1.01	n.s.	.105
GROWTH <--- MUN	.102	.101	1.01	n.s.	.101
TKA <--- STAGE	.231	.163	1.41	n.s.	.233
MKA <--- STAGE	.244	.159	1.53	n.s.	.241
EBMI <--- PMS1	-.391	.016	-23.984	***	-.395***
EBMI <--- PMS2	-.384	.018	-21.333	***	-.385***
EBMI <--- EXPERIENCE	-.004	.013	-.312	n.s.	-.004
EBMI <--- EDUCATION	.041	.010	4.1	***	.039***
EBMI <--- GENDER	-.005	.035	-.133	n.s.	-.007
EBMI <--- AGE	-.04	.016	-2.5	**	-.037**
EBMI <--- TENURE	.001	.001	1	n.s.	.003
EBMI <--- FAMILY	.067	.064	1.04	n.s.	.071
EBMI <--- F_SIZE	-.07	.02	-3.5	***	-.077***
EBMI <--- F_AGE	.001	.005	.240	n.s.	.003
GROWTH <--- F_SIZE	.006	.005	1.2	n.s.	.007
GROWTH <--- F_AGE	.001	.005	.240	n.s.	.003

Notes: *P<0.05, **P<0.01, ***P<0.001

MKA: market knowledge acquisition, TKA: technological knowledge acquisition. EBMI: Emphasis on Business Model Innovation, MUN: perceived munificence, STAGE: stage of growth, PMS: product-market strategies, F_SIZE: firm size, F_AGE: firm age.

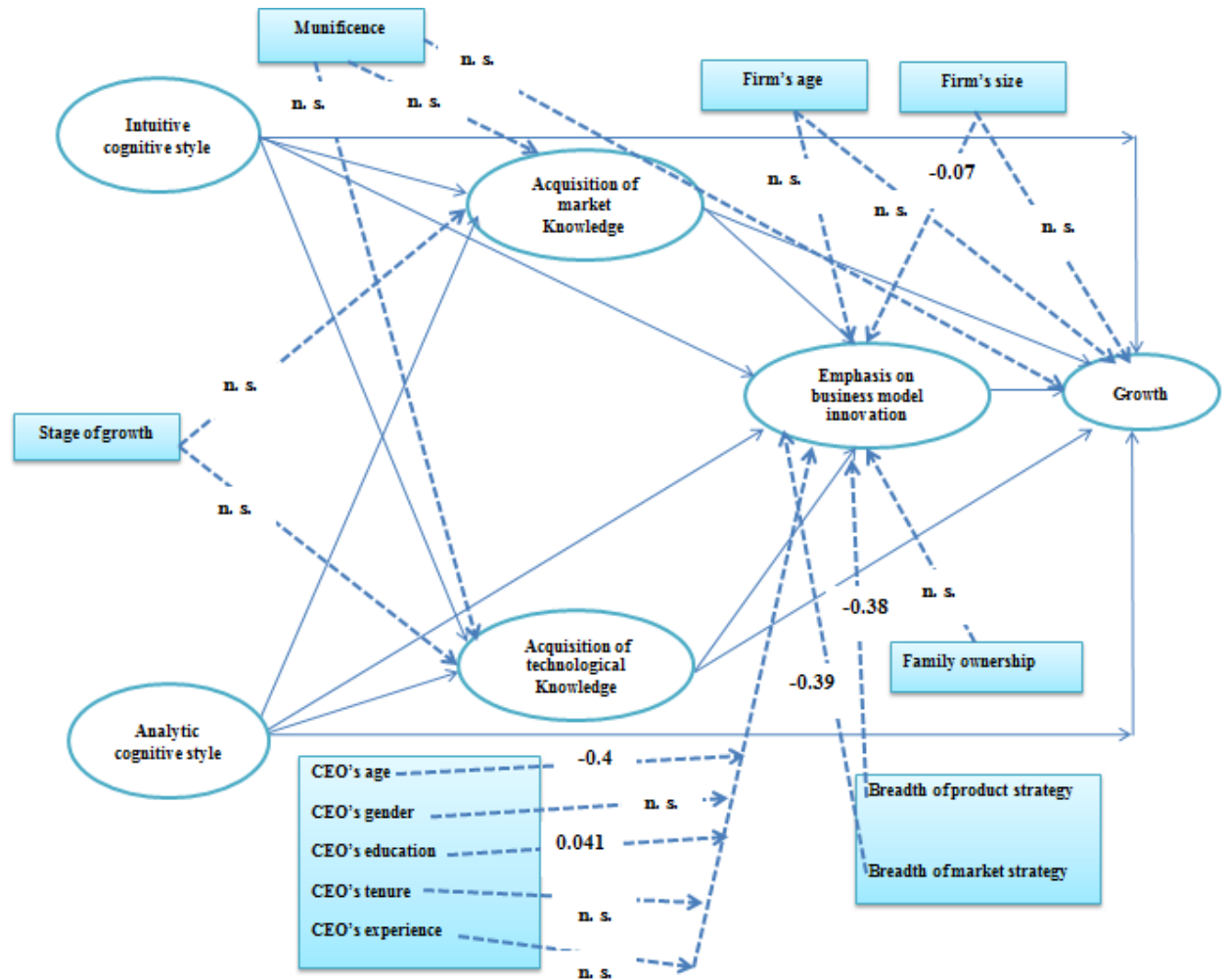
In addition, although the relationships between the stage of growth and the degree of executives' market ($B = 0.244$) and technological ($B = 0.233$) knowledge acquisition are considerable, they are not statistically significant ($CR = 1.53$ and $CR = 1.43$, which are less than the minimum cut-off rate of 1.96). Therefore, it cannot be assumed that executives of firms in higher stages of growth might acquire more knowledge. This reasoning is consistent with the literature on the growth of young ventures, suggesting that in the early stages of growth executives tend to invest a considerable amount of effort in acquiring markets and technological knowledge (Burgers et al., 2008; Sullivan and Marvel, 2010a, b).

Moreover, the relationships between executives' demographics (i.e. age, gender, education, experience, and tenure) and their emphasis on business model innovation are interesting in several ways. For instance, CEOs' education was found to be positively related to their emphasis on business model innovation ($B = 0.041$, $CR = 4.1$, $P\text{-value} < 0.001$) but their experience, tenure, and gender were not related to their tendency towards adopting new business models. In addition, the age of the CEOs was also negatively correlated with their emphasis on business model innovation ($B = -0.04$, $C.R. = -2.5$, $P\text{-value} < 0.05$). This result will be further discussed in Chapter six.

The results also indicate that the impact of firms' age and size on both executives' emphasis on business model innovation and the growth of the firms is not statistically significant. Additionally, there was no association between firms' family ownership and the emphasis on business model innovation in the findings of this study.

In light of the above analysis on control variables, a number of linear regression analyses were conducted for the dependent variables which the controls are associated with. These include the growth of the firm, market and technological knowledge acquisition, and the emphasis on the business model innovation. This method was used to further examine the total and partial variance caused by the control variables (Hair et al., 2006). The results showed that the total variance on growth caused by demographic factors and product-market strategies was $R^2 = 0.16$, which is slightly less than the average in the literature (Atinc et al., 2012). Similar results were obtained for market knowledge acquisition ($R^2 = 0.18$), technological knowledge acquisition ($R^2 = 0.17$), and the emphasis on BMI ($R^2 = 0.16$). The findings of this analysis will be discussed in

Chapter six. To sum up, the effects of the control variables were limited and are illustrated in Figure 15.



Note: dotted lines represent controlled paths and solid lines represent hypothesized paths

Figure 15: Effects of Control Variables

5.2.11.4 An Ad Hoc Cluster Analysis

In line with Lubatkin et al. (2006), a cluster analysis was also conducted in addition to SEM to gain a deeper understanding of the different relationships between the variables of the study across sample firms. The commonly used K-means clustering approach was employed (Hartigan and Wong, 1979). First of all, through a series of “trial and error” tests the number of clusters was calculated as four ($K = 4$) based on the logic that these

four clusters fitted the model best (Lubatkin et al., 2006). The results of ANOVA (analysis of variance across clusters) and membership number (size) as well as attributes of these four groups are shown in Table 28.

Table 28: Results of an Ad Hoc Analysis of Variance across Clusters

	Cluster		ANOVA Error		F	Sig.
	Mean Square	df	Mean Square	df		
EBMI	207.835	3	.040	295	5178.679	.000
GROWTH	53.558	3	.007	295	7794.783	.000
TKA	15.753	3	.005	295	2927.846	.000
MKA	26.199	3	.005	295	4908.791	.000
ICS	106.614	3	.186	295	572.780	.000
ACS	196.189	3	.286	295	686.634	.000

Note: ACS: analytic cognitive style, ICS: intuitive cognitive style, MKA: market knowledge acquisition, TKA: technological knowledge acquisition. EBMI: Emphasis on Business Model Innovation

The results of the F-test in ANOVA, as shown in Table 28, reveal that the four groups are significantly different ($p < 0.05$). Furthermore, the final cluster centering, as illustrated in Table 29, shows that Group 1 with 102 firms (CEOs) has a relatively higher comparative growth which is also associated with a higher degree of executives' acquisition of market knowledge (1.12) and technological knowledge (1.32) and a greater degree of emphasis on business model innovation (12.00).

In contrast, Group 3 with 42 firms has the lowest score for growth (3.58), which is also associated with a lower emphasis on BMI (8.95) and alower degree of executives' acquisition of market (2.38) and technological knowledge (3.54). Therefore, the overall results of cluster analysis support the assertion that growth in Australian manufacturing SMEs is related to the degree of emphasis on BMI (hypothesis 9) which can be explained by the degree of market (hypothesis 12) and technological knowledge (hypothesis 13) acquired by their executives.

Table 29: Results of Final Cluster Analysis

Clusters' membership size and final cluster centers				
	1 (N=102)	2 (N=94)	3 (N=42)	4(N=61)
EBMI	12.00	10.00	8.95	8.97
GROWTH	5.74	4.72	3.58	3.59
TKA	1.32	1.72	3.54	2.58
MKA	1.12	1.31	2.38	2.35
ICS	1.55	2.48	3.49	3.58
ACS	4.65	1.45	4.34	3.52

Note: ACS: analytic cognitive style, ICS: intuitive cognitive style, MKA: market knowledge acquisition, TKA: technological knowledge acquisition. EBMI: Emphasis on Business Model Innovation

Having explained the quantitative analysis, the next section addresses the analysis of qualitative data. The objective of the next section is to 1) offer additional insights into quantitative findings and particularly research hypotheses, and 2) provide a richer understanding of the growth of the firm and the proposed mechanisms involved in it from a qualitative view.

5.3 Qualitative Analysis

5.3.1 Outline of the Procedure

The qualitative analysis begins with the description of data. As Miles and Huberman (1994) suggest, a full detailed description of data is necessary for establishing reliability. This is then followed by describing data analysis and concluded by illustrating key findings. Findings are categorized into two classes. The first class discusses findings that are directly related to the research hypotheses. This class aims to corroborate quantitative findings. The second class, however, reveals additional interesting findings and directs attention towards new aspects and issues that have arisen from the qualitative analyses and have not been addressed in the quantitative section. However, it is prudent to say that because these findings derive from only five interviews they lack the required rigor for developing theoretical propositions.

5.3.2 Description of the Data

Data are described in three tables. In the first table (Table 30) a description of the firms analyzed in the qualitative section is presented illustrated. The second table (Table 31) exhibits characteristics of the executives who participated in the interview process, and the last table (Table 32) shows the mode, time, place, and duration of the interviews.

Table 30: Description of Firms in the Qualitative Analysis

Pseudonym	Area of activity	Age of the firm	Location	Size
A	Biological Product	10	NSW (Sydney)	25
B	general industrial machinery and equipment	7	NSW (Wollongong)	20
C	Dental equipment and Supplies	15	NSW(Sydney)	31
D	Biological Product	8	NSW(Liverpool)	18
E	Chemicals and Chemical Preparations	11	SA (Adelaide)	20

Table 31: Description of Executives who Participated in the Qualitative Analysis

Executives' Description					
Firm	Age	Industrial Experience	Tenure	Education	Gender
A	45	More than 15 years	5	Engineering (B. Sc.)	Male
B	52	More than 20 years	7	TAFE	Male
C	60	More than 25 years	6	TAFE	Male
D	48	More than 12 years	5	Business degree	Male
E	41	More than 10 years	7	Business degree	Female

Table 32: Description of Interviews Conducted in the Qualitative Analysis

Interviewee	Mode*	Date/Time**	Duration	Pages of The Transcription
Mr. A from firm A	F	5 th September at 2 pm	35 Ms	2.5
Mr. B from firm B	T	10 th September at 4:30 pm	30 Ms	2.5
Mr. C from firm C	F	29 th August at 10 am	25 Ms	2
Mr. D from firm D	T	25 th September at 5 pm	30 Ms	2
Mrs. E from firm E	S	3 rd September at 10:30 am	33 Ms	3

* F=face to face, T=telephone interview, S=Skype interview

** time of interviews are Sydney local time

In total, 2 hours and 55 minutes of recorded interviews were transcribed into 12 pages of text (Appendix 60). This transcript was then coded for analysis (Miles and Huberman, 1994).

5.3.3 An Overview of Interviews

In order to gain a holistic understanding of the qualitative data, the transcribed interviews were simply reviewed before the process of coding. This pre-analysis review is a part of the detailed description and assessment of qualitative data analysis and enhances coding and further analysis (Cassell and Symon, 2004).

Accordingly, all executives stated that their business environment was constantly changing and three executives (Mr. A., Mr. C., and Mrs. E.) indicated that these changes mainly occurred in the supply of raw material and technological sectors. They generally believed that the economic systems and political legal policies in Australia were stable and supportive of their business. Hence this allowed them to respond to these changes more effectively. On the other hand, Mr B. and Mr D. asserted that their business milieu was basically changing in the demand side, not the supply side. They both added that stability of supply had been caused by their strong ties and networks with business partners, and in particular suppliers (Appendix 60).

All the executives indicated that they constantly engage in acquiring new knowledge about customers, competitors, and technologies as well as general trends in business. They were particularly interested in learning about the crisis in Europe, global financial meltdown, and the rise of India and China and their potential impacts on their business. Mr. A. and Mr. C. noted that the global financial crisis had changed the way they look at customers: customers have become less loyal, increasingly “value-seeking,” and “less-for-more” value hunters. These general trends have made these executives 1) keep a very close and open eye on both customers and competitors, and 2) feel pressure to develop radically new value offerings.

Key themes related to their mode of acquiring knowledge were direct observations and engagement in the market, and learning from customers through contacts, feedback, and business meetings. In all firms there was no systematic market or competitive intelligence units. Executives implied that in small firms, sophisticated marketing and competitive

intelligence units are not very cost-efficient, nor are they necessary for their decision-making.

Similarly, technological knowledge was mainly perceived in the form of productive know-how. This knowledge includes: 1) new machineries, tools, and systems (i.e. advanced manufacturing technologies or AMTs), 2) new materials (green, environmentally friendly, less wasteful, and more cost-efficient raw materials), and 3) new methods of production, delivery, and inventory. This knowledge is acquired directly through observations, workshops, seminars, and trade fairs.

In the second section of the interview, participants were asked about the relationship between their market and technological knowledge acquisition and the growth of their firm. In general, it was found that market and technological knowledge were both directly used in growth of the firm. All five CEOs agreed upon the centrality of market and technological knowledge and their interaction in finding and tapping into growth opportunities. Different firms, however, used different aspects of these two broad fields of business knowledge. For instance, Mr. B. and Mr. C. stated that cost-reducing new technologies have played a key role in their recent increase in sales, whereas Mr. A. argued that keeping track of customers' needs has been key in the continuous growth of the firm. Mr. D., however, said that customization based on rich customer knowledge has been the key determinant of sales growth and Mrs. E. believes that intelligent use of new technologies quicker than competitors has enabled her firm to stay at the top of the game.

The third section of the interview addressed the emphasis on business model innovation. All the participants said that the business model of their firm has changed since its inception. In addition, they mentioned that they don't intend to stick to the current business model for the foreseeable future simply because it is constantly attacked by both new entrants and existing firms. So, continuous business model innovation is an inseparable aspect of their strategies. In sum, emphasis on business model innovation in the form of adopting or developing new business models appeared to be a key aspect of the job of a CEO.

In regard to the conception of a business model, three executives (Mr. A., Mr. B., and Mrs. E.) thought of it as a "virtual reality" of the business or a model of the system by which products are produced, delivered, and converted into money. Therefore, changes in

the production system, delivery system, and/or commercialization mechanism represent business model innovations. On the other hand, Mr. C. and Mr. D. had a slightly different conception of a business model. For them, a business model is the framework in which operational and financial aspects of the business fuse and make the business an operationally and financially feasible set of activities.

Regardless of their different conceptions of a business model, all the CEOs mentioned that they have changed and will change their business model as this is the reality of today's business. In addition, they all mentioned that business model innovation is all about challenging the established industrial formulas.

Further, there was consensus about the more important contribution of business model innovation to the growth of the firm compared to product and process innovation because launching new business models is more appealing to customers and competitors find it more difficult to copycat. However, it was raised that developing/adopting a new business model is more difficult than developing new products because ideas for new business models are rare and difficult to evaluate (Mr. C., Mr. A., and Mrs. E.). Furthermore, when a firm challenges industrial recipes by launching a new business model this new recipe becomes the new standard and gradually loses its uniqueness (Mr. B.). The interviews also revealed that business model innovation can take different forms. For instance, it can be about a unique way of customization (Mr. A.), or a new method of cost management (Mr. B. and Mr. D.), inventory (Mr. C.), and delivery (Mrs. E.). Finally, all the executives emphasized that the idea of a new business model can emerge from either or both market and technological knowledge, however its execution always requires a combination of market and technological knowledge.

The last section explored executives' cognitive style. All the executives expressed that they frequently experience intuitive hindsight and gut feeling. However, their reliance on their intuition varies. Mr. A., Mr. B., and Mr. D. stated that they have a strong belief in their gut feelings because they know that gut feeling can be right and helpful most of the time. So, with a little hesitation they usually act upon their intuitive hints. On the other hand, Mr. C. and Mrs. E. said that usually they do not act on their intuition as they think it is not very accurate and justifiable.

In addition, it was mentioned that intuition is usually used in detecting and pursuing opportunities. It helps executives choose where they direct their attention (Mr. B. and Mr. A.) in order to search for new information and opportunities (Mr. B. and Mr. D.).

In regard to analytic and deep thinking, all the executives stated that most of their time is occupied by analyzing issues and deeply evaluating different aspects of their business. In line with the role of intuition as explained in the previous paragraph, Mr. C. and Mrs. E. said that they tend to analyze all issues vigorously and their intuition is their last resort which they tend to avoid, particularly when the issue involves costly and risky decisions. In general, Mr. C and Mrs. E. can be characterized as analytic as they tend to engage in analytic thinking more than Mr. A., Mr. B., and Mr. D., who are best described as intuitive.

The interviews also revealed that intuition and analysis are both employed in acquiring market knowledge and technological knowledge and adopting or developing new business models: “It is almost impossible to separate intuition from analytic thinking in how I acquire new knowledge and manage my business model transformations” (Mr. B.). These findings are summarized in Appendix 57.

5.3.4 Process of Coding and Analysis

Following the above review of the interviews, coding was carried out based on a coding frame to explore themes from the interviews. A coding frame is a framework for organizing, classifying, and summarizing raw data. This frame can be developed deductively prior to research or inductively during the research (Benaquisto, 2008b). Since in this study the primary purpose of qualitative analysis is to find qualitative evidence related to the research hypotheses, a coding frame was developed based on the research variables and hypothesized causal relationships prior to the coding of the transcribed interviews (Benaquisto, 2008b). This coding frame, also known as “codebook,” is shown in Appendix 58. Weber’s protocol (Weber, 1990), as shown in Table 33, was then used, because of its widespread use in business research (Duriiau, Reger, and Pfarrer, 2007), to apply these codes to the transcripts (Appendix 60). Then, to analyze the coded text, two methods of UCC and pattern matching were employed (Appendix 59 further explains these methods).

Table 33: The Weber Coding Protocol

The Weber Protocol For Coding text	
Step	Description
1	Definition of the recording units (e.g., word, phrase, sentence, paragraph)
2	Definition of the coding categories.
3	Test of coding on a sample of text.
4	Assessment of the accuracy and reliability of the sample coding.
5	Revision of the coding rules.
6	Return to Step 3 until sufficient reliability is achieved.
7	Coding of all the text.
8	Assess the achieved reliability or accuracy

Source: Weber, (1990) cited in Duriau et al. (2007:19)

The results of this pattern-matching analysis revealed that five hypotheses (H7, H8, H9, H10, and H11) gained direct qualitative support and were corroborated by quotes from participating executives. Table 34 shows some illustrative quotes and their corresponding hypotheses. The full transcript containing these quotes is available in Appendix 60.

Table 34: Supportive Quotes for Research Hypotheses

Variables	Hypotheses	Illustrative Quote	Participant
<ul style="list-style-type: none"> Acquisition of market knowledge Emphasis on new business models 	H7: Market knowledge acquisition is positively related to emphasis on business model innovation	<i>"We had developed a vigorous new business model based on a unique understanding of our clients' needs...."</i>	Mr. A.
		<i>"I personally believe that, market intelligence is the key to develop a game-changing strategy...."</i>	Mr. C.
		<i>"To find new niche sources of unique value we need to constantly learn about and from our customers and competitors"</i>	Mrs. E.
<ul style="list-style-type: none"> Acquisition of technological knowledge Emphasis on new business models 	H8: Technological knowledge acquisition is positively related to the emphasis on business model innovation	<i>"Technological learning is a key for playing the game better than others...."</i>	Mr. D.
		<i>".....Our business model is built on cutting edge technologies and we intend to keep it this way"</i>	Mr. B.
<ul style="list-style-type: none"> Emphasis on business model innovation Growth of the 	H9: Emphasis on business model innovation is positively related to the growth of the firm	<i>"Our unique customer values have been the main impetus of our market share growth...."</i>	Mr. B.

<div>firm</div> <ul style="list-style-type: none"> Acquisition of market knowledge Growth of the firm <ul style="list-style-type: none"> Acquisition of technological knowledge Growth of the firm 	<p>H12: acquisition of market knowledge is positively associated with growth of the firm</p> <p>H13: acquisition of technological knowledge is positively associated with growth of the firm</p>	<p><i>“This now has become a common sense that in order to stay profitable we need to introduce game-changing strategies....”</i></p>	Mr. C.
		<p><i>“....we have come to understanding that future growth should be coupled with new business models those that have not been used or identified by others ”</i></p>	Mr. A.
		<p><i>“I constantly learn from and about our customers and use this knowledge in devising ways to grow our business... ”</i></p>	Mr. D.
		<p><i>“.....without customer intelligence i wouldn't have been able to maintain our control over the customers and increase our share of the market”</i></p>	Mrs. E.
		<p><i>“Technical know-how not only allows me to find and evaluate growth opportunities but also it is the main asset in our market expansions”</i></p>	Mr. B.
		<p><i>“Most of the time i use my understanding of technologies in evaluating growth opportunities and finding ways to address them ”</i></p>	Mr. A.

As Table 34 shows, a number of hypotheses have gained qualitative support. However, in order to gain a richer understanding of the links between the coded transcripts and hypotheses the Unitizing, Categorizing, and Classifying (UCC) technique was conducted (Hensman and Sadler-Smith, 2012). This method enables this study to not only complement pattern-matching findings but also extract additional meanings and create more insights into different aspects of the research (Butterfield et al., 1996).

Accordingly, in the unitizing stage, transcribed interviews are broken down into a series of meaningful independent units known as “thought units” (TUs). TUs are derived from thematic analysis and coding procedures and are recorded and numbered. According to Butterfield et al. (1996), thought units could range from a phrase, through a complete sentence, to several sentences. The goal is to capture a complete thought or idea.

Two groups of thought units were accordingly developed: a group that contains TUs pertinent to the hypotheses and a group that contains TUs revealing new ideas related to theory but not hypothesized. All the quotes reported in Table 34 were placed in the first group of TUs as they capture the ideas that exemplify the research hypotheses.

Then, in the categorizing stage, TUs are further analyzed and narrowed into emergent categories known as “subordinates.” The subordinates, also known as “subcategories,” were matched with the research hypotheses. The rationale is to let data speak for themselves and categories emerge from the data, and the purpose is to “minimize differences between thought units within a category and maximize differences between thought units in different categories” (Butterfield et al., 1996:1483).

Finally, for examining relationships the expansion protocol was used. This protocol, defined as a “conceptual interpretation of the hidden meanings and features of texts” (Gephart, 1993:1468), uses keywords (codes) to expand upon meanings in the text (Sonpar and Golden-Biddle, 2008). To achieve scientific robustness initial codes are fully consistent with research variables (Sonpar and Golden-Biddle, 2008:804). To further justify the applicability of this method, it should be noticed that Morris et al.’s (2006) study of growth motivations in women entrepreneurs applied a similar procedure. They coded interviews based on variables defined in a quantitative study and assessed the extent to which each interviewee used the keywords or variables of the study and then they expanded the meaning of the phrase interpretively. The findings will be explained in the next section.

5.3.5 Findings Related to Research Hypotheses

The findings of the qualitative analysis are classified into two parts. The first part addresses findings that are related to hypotheses and the second part discusses additional findings that emerged from the data. It should be noted that synthesis of quantitative and qualitative findings will be discussed in Chapter six.

5.3.5.1 Qualitative Findings Related to Hypotheses 1 and 2

Hypothesis 1 was concerned with the moderating role of dynamism in the executives’ reliance on their intuition and growth of their firm. In general, it was observed that executives’ behavior is directly influenced by their intuition. Some executives, including Mr. A., Mr. B., and Mr. D., expressed their faith in their intuition and reliance on intuitive

choice making: *“I believe in my gut feelings; they have proved to be right on many occasions and give me confidence to act ”* (Mr. D.). Whereas Mr. C. and Mrs. E. seem to be more analytic and despite their frequent intuitive experiences they don’t tend to act upon their intuition and prefer to go through analytic thinking: *“I am aware of the intuitive side of my behavior but I usually don’t act upon it”* (Mr. C.).

Furthermore, all the executives stated that their business environment is constantly changing (i.e. it is dynamic). Therefore, it can be argued that executives’ intuitive and analytic style both impact the growth of the firm indirectly through their influences on their behavior regardless of the perception of dynamism. More specifically, no qualitative evidence was found suggesting that the intensity of reliance on intuitive or analytic thinking and its consequence on the growth of the firm is impacted by the perception of dynamism. As a result, it can be concluded that, consistent with the quantitative results, hypotheses 1 and 2 are partially supported by the qualitative analysis.

5.3.5.2 Qualitative Findings Related to Hypotheses 3 and 4

Following the reasoning of previous sections, although it was observed that intuition helps executives direct their attention towards sources of information and hence plays a role in the acquisition of both market and technological knowledge, no evidence regarding the role of dynamism in navigating this attention and the intensity of search as well as the quantity of acquired knowledge was explored. Therefore, it seems reasonable to state that intuition is a part of executives’ knowledge (market and technological) acquisition but the extent to which this role is dampened or strengthened in conditions of perceived high dynamism is unclear in the qualitative analysis. So, the qualitative analysis cannot fully support hypotheses 3 and 4.

5.3.5.3 Qualitative Findings Related to Hypotheses 5 and 6

Analogously, the interviews showed that the executives use their analytic style in their daily behaviors including engagement in the acquisition of new knowledge about technologies and markets. Their deep thinking allows them to make sense of their observations and converting information into meaningful abstract knowledge about their business: *“I carefully analyze information I receive about our customers and competitors and try to find a way to use it in profitable ways”* (Mrs. E.). *“Introspectively, I enjoy thinking through issues that I come across before I take them seriously in my decisions”* (Mr. C.). As is evident, analytic information, processing is directly involved in the

executives' acquisition of knowledge. However, it was not clear whether or not this mechanism changes in the face of dynamism, and if it does to what extent. In light of this, it can be concluded that hypotheses 5 and 6 were partially supported by the qualitative analysis.

5.3.5.4 Qualitative Findings Related to Hypothesis 7

It was repeatedly observed in the interviews that market knowledge is a key aspect of business model innovation. Different aspects of this relationship were uncovered. For instance: *"We had developed a vigorous new business model based on a unique understanding of our clients' needs"* (Mr. A.), or *"I personally believe that market intelligence is the key to developing a game-changing strategy"* (Mr. C.), and *"To find new niche sources of unique value we need to constantly learn about and from our customers and competitors"* (Mrs. E.). These exemplifying quotes lead to the conclusion that the acquisition of market knowledge by executives is strongly related to their emphasis on business model innovation. Therefore, it can be said that hypothesis 7 is supported by the results of the qualitative analysis.

5.3.5.5 Qualitative Findings Related to Hypothesis 8

Similarly to hypothesis 7, hypothesis 8 predicted an association between executives' acquisition of technological knowledge and their emphasis on business model innovation. The qualitative analysis endowed this prediction with further credence. As Table 34 shows, Mr. D. stated that: *"Technological learning is a key for playing the game better than others."* And Mr. B. also pointed that: *"Our business model is built on cutting-edge technologies and we intend to keep it this way."* In addition, as shown in Table 34, the acquisition of knowledge about new raw materials, methods, machineries, and techniques is a key source of finding new business model opportunities. So, it is safe to argue that hypothesis 8, in addition to the quantitative support, gains qualitative support as well.

5.3.5.6 Qualitative Findings Related to Hypothesis 9

Hypothesis 9 postulated a relationship between executives' emphasis on business model innovation and growth of the firm, which was supported by the quantitative findings. The qualitative analysis also showed that the executives believe in such a relationship and state different reasons for supporting this claim. For instance, Mr. B. pointed out that: *"Our unique customer values have been the main impetus of our market share growth."* In addition, Mr. C. indicated that: *"It has now become common sense that*

in order to stay profitable we need to introduce game-changing strategies.” Mrs. E. also said that: “We have come to understand that future growth should be coupled with new business models that have not been used or identified by others.”

5.3.5.7 Qualitative Findings Related to Hypotheses 10 and 11

This study was not able to find qualitative evidence supporting the assertion that the perception of environmental dynamism influences the tendency of executives to put emphasis on business model innovation. In fact, the analysis of interviews suggests that both the analytic executives (Mr. C. and Mrs. E.) and the intuitive ones (Mr. A., Mr. B., and Mr. D.) have a strong tendency towards emphasis on business model innovation as they believe that developing and adopting new business models is a strategic imperative in today’s business landscape (Table 34). However, it can be inferred from the analysis of the interviews that both intuitive and analytic thinking play respective roles in how executives search for and implement new business models. For instance, Mr. C. pointed out that: *“I like to analyze all potential business models that I am suggested and choose the more promising ones. This gives me confidence to invest my resources in them.”* Further, Mr. D. also stated that: *“I sometimes intuitively come to know which idea can be turned into a new business model for my business.”* So, it can be argued that qualitative analysis partially supports both hypotheses 10 and 11.

5.3.5.8 Qualitative Findings Related to Hypotheses 12 and 13

The last two hypotheses proposed a relationship between executives’ acquisition of market and technological knowledge and the growth of the firm. The quantitative analysis offered empirical support for these two hypotheses. The analysis of interviews also showed that the executives acknowledge the existence of such relationships. For instance, Mr. D. pointed out that: *“I constantly learn from and about our customers and use this knowledge in devising ways to grow our business.”* And Mrs. E. asserted that: *“Without customer intelligence I wouldn’t have been able to maintain our control over the customers and increase our share of the market.”* These two quotes exemplify the rationale behind hypothesis 12 and lead to the conclusion that qualitative analysis supports hypothesis 12.

In regard to hypothesis 13, similar results were obtained. Quotes from Mr. B. and Mr. A. illustrate how the qualitative results lend further support to the argument that executives’ acquisition of technological knowledge contributes to the growth of the firm:

“Technical know-how not only allows me to find and evaluate growth opportunities but also it is the main asset in our market expansions....” (Mr. B). And: “Most of the time I use my understanding of technologies in evaluating growth opportunities and finding ways to address them.” (Mr. A.). Therefore, it seems reasonable to argue that hypothesis 13 was corroborated by the qualitative findings.

5.3.6 Results of Unitizing, Categorizing and Classifying (UCC) Approach

In addition to the above pattern-matching analysis, the Unitizing, Categorizing, and Classifying (Butterfield et al., 1996) was also performed. A total number of 145 thought units (TUs) were found and then categorized into 34 subcategories following the thematic analysis. The subcategories correspond with the key issues related to the research hypotheses. Similarly to Hensman and Sadler-Smith (2011), these thought units and respective subcategories are illustrated in Table 35.

Table 35: Description of Thought Units

Category	Sub-Category	Participants					Total
		Mr. A	Mr. B	Mr. C	Mr. D	Mrs. E	
Dynamism and its importance	<i>Change is constant and considerable</i>	1	1	2	1	1	6
	<i>Supply side of the market</i>	1	0	1	0	1	3
	<i>Technology side</i>	1	0	1	0	1	3
	<i>Demand side of the market</i>	0	1	0	1	0	2
	<i>Crisis in EU</i>	1	1	1	1	1	5
	<i>GFC (Global Financial Crisis)</i>	1	2	1	1	1	6
	<i>Rise of India and China</i>	1	1	1	1	1	5
Acquisition of market knowledge	<i>Via observations</i>	1	1	1	1	2	6
	<i>From direct contacts and engaging in the market</i>	1	1	3	1	1	7
	<i>From feedbacks</i>	1	1	1	1	1	5
	<i>Form business meetings</i>	1	1	1	1	1	5
	<i>About Customer's behavior</i>	1	0	1	0	0	2
	<i>About Competitors value offerings</i>	2	1	1	1	1	6
Technological knowledge acquisition	<i>New machineries, tools and systems</i>	1	1	1	1	1	5
	<i>New materials</i>	0	1	2	1	0	4
	<i>New methods of production , delivery, and inventory</i>	1	1	0	0	0	2
	<i>Contestant change in the business model</i>	1	1	1	1	1	5
	<i>Centrality of business model innovation in the strategy of the firm</i>	1	1	2	1	1	6
	<i>Business model innovation as changes in the production system; delivery system and/or commercialization mechanism</i>	1	1	0	0	1	3
	<i>Business model innovation as changes in the way operational and financial aspects of the business are linked to create a competitive edge</i>	0	0	1	1	0	2
	<i>Logic of business model innovation is to</i>	1	1	2	1	1	6

Business model innovation	<i>challenge the industrial established formulas</i>						
	<i>Business model innovation contributes significantly to the growth of the firm</i>	1	1	1	1	1	5
	<i>Business model innovation is more difficult than new product/.process development</i>	1	1	1	1	1	5
	<i>Business model innovation takes different forms</i>	1	1	1	1	1	5
	<i>Customization</i>	1	0	0	0	0	1
	<i>Cost management</i>	0	1	0	2	0	3
	<i>inventory</i>	0	0	1	0	0	1
	<i>delivery</i>	0	0	0	0	1	1
	<i>Ideation required market and/or technological knowledge</i>	1	1	1	1	1	5
	<i>Execution required both types of knowledge</i>	1	3	1	1	1	7
Cognitive style	<i>Prefer to rely more on Analytic thinking</i>	0	0	1	0	1	2
	<i>Prefer to rely more on intuitive thinking</i>	1	1	0	1	0	3
	<i>Use of both intuition and analysis in acquiring new knowledge</i>	1	1	2	1	1	6
	<i>Use of both intuition and analysis in adopting/developing new business models</i>	1	1	1	3	1	7
Total							145

Table 35 shows that the biggest portion of thought units and subcategories was pertinent to business model innovation. In order to illustrate these portions a simple pie chart was created (Figure 16).

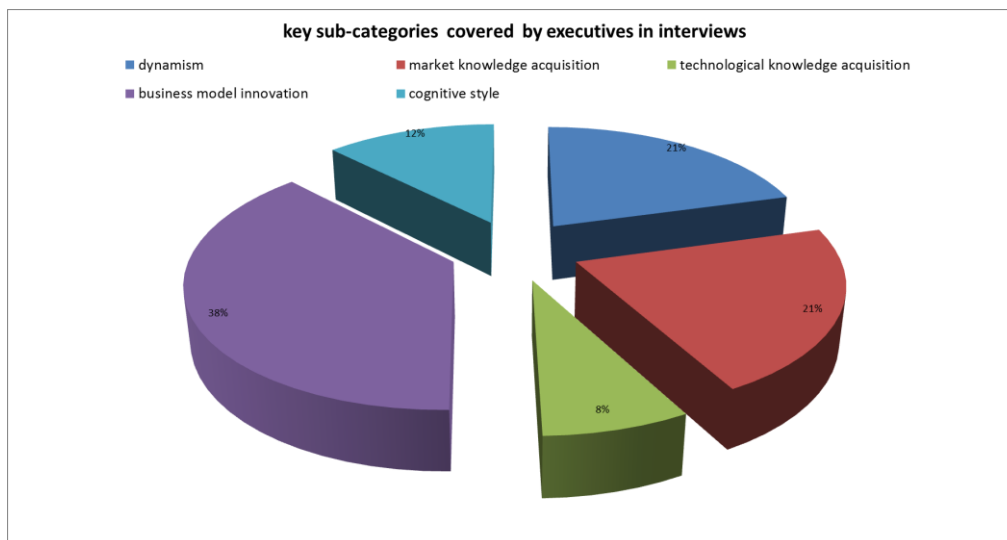


Figure 16: Pie Chart of the Results of Subcategories in the UCC Method

To further examine how these thought units relate to the research hypotheses, each subcategory was treated as a node, and based on the hypotheses the associations between the nodes were coded to form themes. Nvivo modeling was used to explore how many themes related to each hypothesis (Bazeley and Richards, 2000). The results of this analysis are exhibited in Table 36.

Table 36: Numbers of Supportive Themes for Each Hypothesis by Interviewees

Hypotheses	Number of Supportive themes by participants				
	Mr. A	Mr. B	Mr. C	Mr. D	Mrs. E
H1	1	0	1	1	0
H2	0	1	0	0	1
H3	0	1	0	1	0
H4	1	0	1	0	0
H5	2	2	2	1	3
H6	2	1	2	1	2
H7	1	2	3	2	2
H8	1	2	1	1	2
H9	2	2	2	2	2
H10	0	1	0	0	1
H11	0	1	0	1	0
H12	2	3	2	2	3
H13	2	1	1	3	2

Based on Table 36, a plot was created to demonstrate how each participant addressed each research hypothesis. Figure 17, for instance, shows that themes related to hypothesis 12 appeared three times in the interviews of Mr. B. and Mrs. E. Similarly, Mr. D. addressed themes directly related to hypotheses 13 on three occasions.

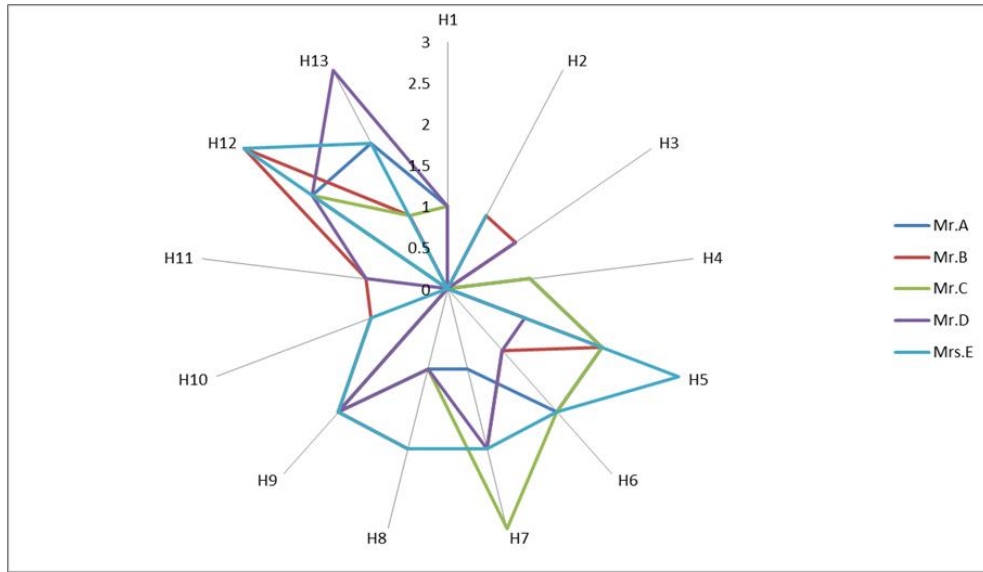


Figure 17: Radar Graph of Number of Corroborating Themes by Each Interviewee for Each Hypothesis

These results are consistent with the previous discussion on the extent to which the qualitative analysis corroborates the research hypotheses. For instance, very few themes corroborating hypotheses 1, 2, 3, and 4 have been explored. Chapter six will further explain how these findings will add value to the quantitative findings of the study.

5.3.7 Additional Findings

A number of additional issues emerged from the qualitative analysis which will be discussed briefly in this section. These issues have been categorized into three major subjects, namely knowledge acquisition modes, post- and pre-business model innovation knowledge acquisition, and heterogeneity of business model innovation.

5.3.7.1 Knowledge Acquisition Modes: About and From

The quantitative section of this study addressed the acquisition of market and technological knowledge. It was assumed that these two types of knowledge are acquired separately and also have separate impacts on business model innovation and the growth of the firm. These hypotheses were verified empirically by the quantitative analysis.

The qualitative section adds an extra dimension to this understanding by finding that the relationship between market and technological knowledge is complex and a knowledge-based view of the firm indicates that they are complementary sources of knowledge. In particular, it was observed that two mechanisms exist in this relationship:

firstly the acquisition of knowledge about markets from technologies, and secondly the acquisition of knowledge about technologies from markets. Therefore, it cannot be said that executives acquire market knowledge only through observing markets, and neither do they acquire technological knowledge through technological interactions and sources. In fact, markets can be a source of technological knowledge and technologies can be a source of market knowledge.

A number of quotes exemplify this finding. For instance, Mr. B. pointed out that: *“I have learned many things about customers from the technological side of my business like what types of customers I can serve and how well I can satisfy them.”* Alternatively, Mrs. E. said that: *“By looking at markets I come to know what kind of methods, tools, and processes I need and how I can get access to them.”* Mr. D. also noted that: *“On many occasions I learned something about the marketing of my business from technologies we use and about technologies we need to use from markets we serve.”* The conclusion is that executives use both markets and technologies to develop their knowledge base and the interaction between these two is complex. Chapter six will further elaborate this issue.

5.3.7.2 Pre- and Post-Business Model Innovation (BMI) Ideation Knowledge Acquisition

In Chapter three it was proposed that executives’ acquisition of market and technological knowledge is associated with their emphasis on business model innovation. In the first section of this chapter this proposition was tested and gained empirical support. The qualitative analysis extended this relationship and enriched understanding of the association between executives’ market and technological knowledge and their emphasis on business model innovation. It was found that executives’ acquisition of knowledge is related to their emphasis on business model innovation in two modes: pre- and post-BMI.

In the pre-BMI mode, executives tend to acquire market and technological knowledge to search for potential business models and evaluate alternatives, while in the second mode, or post-BMI phase, executives seek market and technological knowledge to execute or implement the business model idea that has been discovered or created.

In both modes, the acquisition of knowledge is associated with the emphasis on business model innovation but the difference is in the nature of this emphasis. In the former the emphasis is basically on the ideation of a new business model to develop or

adopt whereas in the latter the emphasis is basically about execution, implementation, or enactment of the newly developed or adopted business model. Some exemplifying quotes are presented in Table 37.

Table 37: Supportive Quotes for the Emergent Theme of Post- and Pre-BMI Ideation Knowledge Acquisition

Knowledge Acquisition Phase	Participant	A Sample Illustrative Quote
Pre BMI ideation KA	Mr. A,	<i>We had developed a vigorous new business model based on a unique understanding of our clients' needs...</i>
	Mrs. E,	<i>To find new niche sources of unique value we need to constantly learn about and from our customers and competitors</i>
Post BMI ideation KA	Mr. B,	<i>New business model is more than a nice idea ,To get it succeed in the market place we need to boost our market intelligence creation ...</i>
	Mr. D,	<i>Technological learning is a key for playing the game better than others</i>

5.3.7.3 Different Forms of Business Model Innovation

The last additional theme is about different forms of business model innovation. The quantitative section validated the claim that firms with a higher emphasis on business model innovation witness more growth. However, it was not mentioned that business model innovation as a strategy could take different forms. The qualitative section partially addressed this deficiency. It was found that different executives have different perceptions and consequently conceptions of what a new business model could be. Therefore, by implication, in an industry different firms may introduce different forms of business model innovation. More specifically, as previously discussed for Mr. A., Mr. B., and Mrs. E., business model innovation can be carried out by challenging industrial norms in terms of production system, delivery system and/or commercialization mechanism.

On the other hand, Mr. C. and Mr. D. had a slightly different conception of business model innovation. For them, business model innovation is developing a radical integration of operation and finance to do business more efficiently. Therefore, it can be concluded that business model innovation is firm-specific and its formulation is based on

executives' perception of what a business model is and how it works in their particular firm. Chapter six will shed more light on this issue.

To summarize and illustrate how each executive was positioned across these four emergent issues, the number of nodes and themes addressed to each one of these issues was counted, as shown in Table 38.

Table 38: Number of Supportive Themes for Each Emergent Theme by Interviewees

Emergent Additional Themes	Participants				
	Mr .A	Mr. B	Mr. C	Mr. D	Mrs. E
Knowledge Acquisition From Technologies About Markets	2	1	2	2	2
Knowledge Acquisition From Markets About Technologies	3	2	3	2	2
Pre BMI Knowledge Acquisition (Ideation)	1	2	2	2	1
Post BMI Knowledge Acquisition (Implementation)	2	2	1	2	1
BMI Takes Many Forms	1	3	1	2	3

Similarly to the previous section, the results of this thematic analysis were plotted in Figure 18. This shows that Mr B. has three coded themes related to the notion of “acquiring knowledge from technologies about markets.” In addition, the notion of knowledge acquisition from markets about technologies has been addressed on three occasions by both Mr. A. and Mr. C. Similar conclusions can be drawn for other themes and their respective coverage by executives.

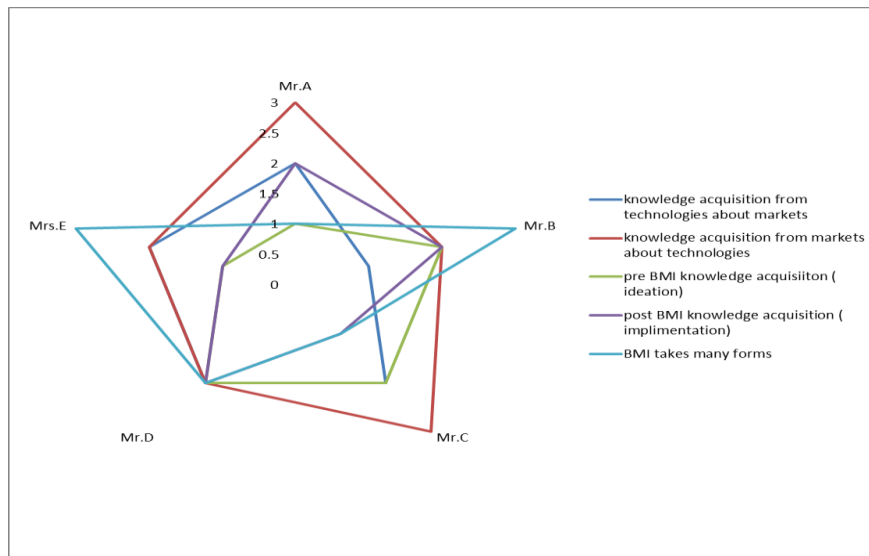


Figure 18: Radar Graph of Number of Corroborating Themes by Each Interviewee for Each Emergent Theme

Since the objective of the qualitative analysis in this study was to find evidence for corroborating the findings of the quantitative section, a deeper and more sophisticated analysis of the qualitative data will be avoided. This goes beyond the primary scope and intent of the research.

5.4 Summary of Qualitative and Quantitative Findings

Before concluding this chapter, a summary of the qualitative and quantitative findings is presented in Table 39. This table compares how the quantitative and qualitative findings support each hypothesis.

Table 39: Summary of the Results of Quantitative and Qualitative Analysis of Hypotheses

Hypothesis	Quantitative Analysis	Qualitative Analysis	Comment
Hypothesis 1	Not fully supported	Partially supported	The positive association between executives' intuitive cognitive style and firm growth was supported but analysis found that dynamism does not make a difference in the causation.
Hypothesis 2	Not fully supported	Partially supported	The positive association between executives' analytic cognitive style and firm growth was supported but analysis found that dynamism does not make a difference in the causation.
Hypothesis 3	Fully supported	Partially supported	The positive association between executives' intuitive cognitive style and their acquisition of market knowledge was supported and analysis found that dynamism intensifies this association .

Hypothesis 4	Fully supported	Partially supported	The positive association between executives' intuitive cognitive style and their acquisition of technological knowledge was supported and analysis found that dynamism intensifies this association .
Hypothesis 5	Fully supported	Partially supported	The positive association between executives' analytic cognitive style and their acquisition of market knowledge was supported and analysis found that dynamism dampens this association.
Hypothesis 6	Fully supported	Partially supported	The positive association between executives' analytic cognitive style and their acquisition of technological knowledge was supported and analysis found that dynamism dampens this association.
Hypothesis 7	Supported	Supported	The association between acquisition of market knowledge and emphasis on business model innovation was found to be positive and strong.
Hypothesis 8	Supported	Supported	The association between acquisition of technological knowledge and emphasis on business model innovation was found to be positive and strong.
Hypothesis 9	Supported	Supported	Analysis showed a positive strong relationship between emphasis on business model innovation and growth of the firm.
Hypothesis 10	Not fully supported	Partially supported	The association between executives' intuitive cognitive style and their emphasis on business model innovation was supported but analysis found that dynamism does not make a difference in the strength of this association.
Hypothesis 11	Not fully supported	Partially supported	The association between executives' analytic cognitive style and their emphasis on business model innovation was supported but analysis found that dynamism does not make a difference in the strength of this association.
Hypothesis 12	Supported	Supported	Analysis showed a positive strong relationship between executives' acquisition of market knowledge and growth of the firm.
Hypothesis 13	Supported	Supported	Analysis showed a positive strong relationship between executives' acquisition of technological knowledge and growth of the firm.

5.5 Summary of the Chapter

In this chapter quantitative and qualitative data were analyzed using structural equation modeling and thematic analysis respectively. Hypotheses were tested and corroborated with findings from the qualitative analysis. In sum, the empirical findings provided support for the theory developed in Chapter three and showed that the empirical data explain the associations between the constructs as expected by hypotheses. These findings will be further discussed and elaborated in the next chapter.

-CHAPTER SIX-

-Discussion of Findings-

6.1 Introduction

The purpose of this chapter is to discuss the findings of the study. It elaborates the results of qualitative and quantitative analysis and explains additional findings derived from the study and compares and contrasts them with the existing literature.

The thesis of this research is that executives' cognitive style from the perspective of dual information processing theory plays both a direct and indirect role in their management of growth. It was proposed and tested that the duality of cognitive style when considered concomitantly with the perception of environmental dynamism offers a new perspective in executives' acquisition of market and technological knowledge and emphasis on business model innovation as two factors that are separately and jointly involved in the growth of the firm. The interaction of these two intervening factors as a mechanism that could play a role in the growth of the firm was also hypothesized and empirically tested. Through these predictions, this study contributed to several related bodies of knowledge in strategy and entrepreneurship literature.

As explained earlier, the context of manufacturing SMEs was selected to empirically examine the proposed theory. Findings from a hybrid (postal and online) survey of 299 firms based on a two-phase structural equation modeling and qualitative analysis of interviews with five CEOs show that empirical findings are generally in favor of theoretical predictions. Several interesting issues also emerged from the analysis. The details of these findings will be presented in the remaining parts of this chapter.

As discussed in Chapter four, in concurrent mixed-methods design the synthesis of qualitative and quantitative findings will take place in the discussion section (e.g. Dickson et al., 2011; Tashakkori and Teddlie, 2010). Accordingly, this chapter is organized into three sections: 1) the synthesis of qualitative and quantitative findings related to the research hypotheses and around the research questions; 2) additional quantitative findings

based on the analysis of covariates (control variables); and 3) additional inductively derived qualitative findings.

6.2 Synthesis of Qualitative and Quantitative Findings Related to Research Hypotheses

Growth of the firm is one of the most prevalent and enduring areas of research in strategy (Helfat et al., 2007) and entrepreneurship (Wright and Stigliani, 2012). Literature suggests that in numerous studies scholars tend to equate growth with the competitive success of the firm (strategic view) (Weinzimmer et al., 1998; Helfat et al., 2007) and consider it the very essence of entrepreneurship (entrepreneurial view) (Wiklund et al., 2009). Even scholars have suggested that growth is the result of continued entrepreneurship (Davidsson, 1991). This implies that growth is situated within the intersection of strategy and entrepreneurship. Thus, many theoretical views can inform the understanding of growth. Consequently, an important yet underemphasized way to advance the understanding of growth is to develop and test frameworks based on multiple theoretical views (Davidsson et al., 2009; Wiklund et al., 2009).

In order to make the intended contributions, as noted in Chapters one and three, a conceptual framework based on a multi-theoretic view was proposed and tested. A significant feature of this framework is that it tests an extended version of the strategic leadership view of the growth in entrepreneurship recently proposed by Wright and Stigliani (2012) based on the original strategic leadership framework (Hambrick and Mason, 1984). Figure 19 exhibits this theoretical extension, that is, an extended set of relationships between executives' cognitive style (i.e. strategic leader), their acquisition of knowledge and their emphasis on adopting new business models (choice and resource configuration) and subsequent growth (performance outcomes) of their firm, and the role of perceived dynamism in these interactions (environmental contingencies).

More specifically, Figure 19 corresponds to Figure 4 presented in Chapter three. This correspondence between two figures shows how the proposed model of the study in Chapter three extends the dominant model of the growth in the small business. It is informed by insights from the strategic leadership and resource-based views. As depicted in Figure 4, both direct and indirect relationships between executives cognitive style and firm growth were hypothesized in order to develop a more nuanced and complete picture of the way executives' complex characteristic such as their dual information processing at

a micro-level influence strategies and performance outcomes at a macro-level. In accordance with this micro-macro linkage, Figure 19 shows that characteristics of executives in small firms indirectly influence firm level outcomes by a resource-based mechanism composed of two sub mechanisms, namely the executives' access to strategic resources such as knowledge and the choice of resource-management modes such as the degree of emphasis on BMI. These two indirect effects are shown in the middle section of Figure 19 and are represented by dotted arrows in Figure 4.

Therefore, this study provides a broader theoretical context and analysis for growth. In particular, the findings of this study reinforce the complexity of the factors involved in the growth of the firm and underline the importance of incorporating both moderated-mediation mechanisms and control variables at individual, firm, and industry levels into the understanding of the growth of the firm.

Specifically, based on the findings of this study, it appears more relevant to: 1) consider interactions between executives' cognition, their behavior such as acquisition of knowledge, and growth-driving choices such as adopting new business models simultaneously rather than separately, and 2) include control variables that may impact executives' choice making to develop a more fine-grained understanding of proposed causations. The findings from the analysis of the conceptual framework are exhibited in Figure 20. Additional findings from the analysis of the control variables will be discussed later and are shown in Figure 21.

Following this rationale, the quantitative and qualitative findings have been integrated and organized in the following order. First, results related to the direct relationship between executives' cognition and growth will be discussed. Then the indirect relationships will be discussed. These direct and indirect relationships are illustrated in Figure 21. In the figure below, blue ellipses represent research constructs in hypothesized relationships and red ellipses represent control variables. The findings have been labeled as explained in the legend. The following sections will discuss these findings.

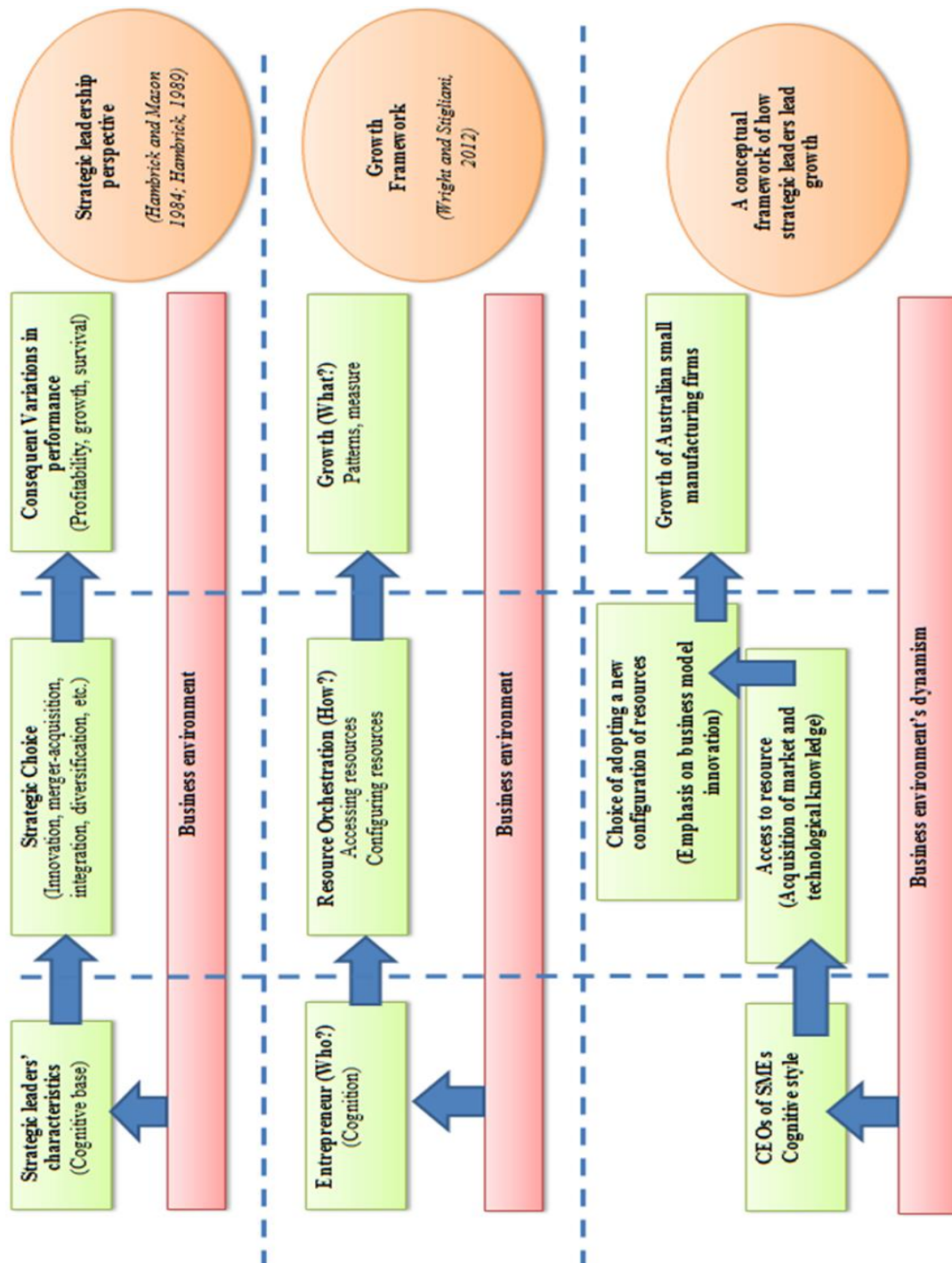


Figure 19: Theoretical Foundation of the Proposed Framework

The figure below shows the empirical results of the relationships in the conceptual model of the study. The following sections will discuss these findings.

6.2.1 Dual Cognitive Style of the CEO and Growth of the Firm

Literature on management has long held the premise that firms do not grow on their own, their executives run their growth (Wright and Stigliani, 2012). This has shifted the attention from firm-level factors such as structure and culture to cognitive factors at the individual level (i.e. micro-foundations) such as cognitive style that define how executives behave. The center of this attention is the notion that “how” and “why” firms grow is more important than “how much” they grow (Tang et al., 2009).

It was noted that the extant limited understanding of this issue is a particularly problematic omission in the current growth literature (Wright and Stigliani, 2012). As a result, in the framework for growth of the firm this link was addressed in two ways: first via a direct link between executives’ cognitive style and growth of their firm under conditions of perceived dynamism, and second through an indirect link. This section discusses the findings related to the former part and the next section addresses the latter theorization.

The direct relationship between the growth of the firm and the cognitive style of its executives (CEOs) was addressed in hypotheses 1 and 2. As discussed earlier, these two hypotheses are based on the strategic leadership view. The use of cognitive styles as a predictor of growth draws on the idea derived from the strategic leadership view that cognition is the main antecedent of executives’ behavior that determines how a firm grows (Hambrick, 2007). The findings of this study suggest a positive relationship between both types of cognitive style (i.e. intuitive and analytic) and the growth of the firm. In addition, it was observed that the perception of dynamism does not make a difference in the strength of these associations. These findings are interesting in several ways.

First, these findings concur with the exposition in the literature (e.g. Chaston and Sadler-Smith, 2012; Tomczyk et al., 2013) that CEOs’ cognitive differences play a significant key role in the way they lead their firms towards meeting their growth potential. This conclusion also gives additional credence to the preponderance of evidence from previous studies indicating that the role of the CEO in the growth of the firm is non-negligible (e.g. Delmar and Wiklund, 2008); at least evidence discovered in this study suggests so in Australian small manufacturing businesses.

In addition, these findings were particularly germane to the dual view of cognitive style (Chaston and Sadler-Smith, 2012; Tomczyk et al., 2013). The majority of previous research on cognitive style has used a unitary view of cognitive style (e.g. Dutta and Thornhill, 2008; Armstrong and Hird, 2009; Kickul et al., 2009). It has been argued, however, that the unitary view is simplistic and inaccurate (Hodgkinson et al., 2009). So, a key strength of this study is its departure from this stream of research by subscribing to a more complex and accurate view of cognitive style based on the dual view. This allowed this research to add new insights into the studies of Sadler-Smith (2004) and Chaston and Sadler-Smith (2012).

Research based on a unitary view suggests that growth as a consequence of entrepreneurial behavior tends to be associated with reliance on intuition, and specifically under conditions of dynamism reliance on intuition is more likely to lead to favorable growth outcomes (e.g. Armstrong and Hird, 2009; Brigham et al., 2010). Surprisingly, the findings of the present study reveal that growth is associated with reliance on both analytic and intuitive behavior and the perception of dynamism does not make a difference in the way this association works. This is, in part, consistent with the findings of Sadler-Smith (2004) who reported a positive and not-moderated by environmental instability association between intuitive style and the sales growth of small firms. The present study, therefore, does not support the assumption that the relationship between executives' intuition and performance outcomes is more significant and evident in dynamic business environments (Khatri and Ng, 2000).

These findings raise the possibility that unlike the previous research in the unitary camp (e.g. Armstrong and Hird, 2009; Brigham et al., 2010), in the dual-view camp the perception of environmental dynamism is not a significant contingency factor in explaining the direct relationship between executives' cognitive style and growth of the firm. Therefore, in conformity with the dual view, effective management of growth is based on both rationality and intuitive style and it is not prudent to conclude that intuitive or analytic style is superior to the other in managing the growth of the firm even under conditions of dynamism.

There could be several possible explanations for the observed non-significant role of dynamism in the above causation. For instance, one explanation which might be contrary to the cognitive style literature could be that the perception of dynamism plays no

substantive part in distinguishing the role of intuitive and analytic style in the growth of the firm. One way to further investigate this possibility and substantiate this claim is to use alternative measures of dynamism such as objective calculations, or use proxies such as uncertainty, turbulence etc. (Boyd et al., 1993; Harrington and Kendall, 2005).

Another explanation for this finding could be related to the measure of intuition. As Chaston and Sadler-Smith (2012) argued, the cognitive-experiential measure of cognitive style (Epstein, 1994) is a psychodynamic perspective. Hence, it would be reasonable to argue that this measure might not be able to account for the interactions between intuition, analysis and the perception of dynamism.

Furthermore, the unrecognized role of dynamism might have been caused by this study's data. Although the power of the proposed model was tested in Chapter five, focusing on a single industry and a data set of 299 firms may have led to less variance than expected, resulting in less explanatory power in the model (Kline, 2011) to reflect the interactions between the cognitive style and the perception of dynamism. These issues can be addressed by replicating this model in other contexts using different samples. The next chapter will further discuss this issue.

Finally, since qualitative findings cannot detect the moderation effect, the analysis of interviews did not help us clarify this issue. It resulted, however, in corroborating evidence that neither analytic nor intuitive style is superior over the other as Mr. A., Mr. B., and Mr. D. all stated that they had faith in their intuitive power and used it in their growth-driving actions, while Mr. C. and Mrs. E. expressed that they are not intuitive and would rather be characterized as more analytic, yet their firms appeared to be growing competitively. So, based on synthesizing the qualitative and quantitative arguments it seems logical to argue that hypotheses 1 and 2 are not fully supported but the respective role of intuitive and analytic style in the growth is evident in the data. This conclusion could add to the debate on strategy and entrepreneurship that both styles play a role in the way executives lead their firm towards growth. However, the nature of this mechanism remains unclear in the present research.

In light of the above discussion, consistent with the recent research on the dual cognitive style view (Chaston and Sadler-Smith, 2012), the cognitive style of executives appears to have complex relationships with the growth of their firm. As discussed in this

section, to some extent this can explain inconsistencies in previous research examining the direct link between these factors and perhaps represent a reason for the undetected moderating role of environmental dynamism. This study, however, posits that some of the complexity of this relationship can also be captured through indirect effects (e.g. Chaston and Sadler-Smith, 2012; Armstrong and Hird, 2009; Kickul et al., 2009; Dutta and Thornhill, 2008; Brigham et al., 2010).

As explained in Chapter five, in order to investigate these intervening (mediating) mechanisms this study examined both the separate and joint effects of indirect relationships involving executives' acquisition of knowledge and the emphasis on business model innovation. It is prudent to argue that innovation implementation is also a possible intervening factor that serves as a conduit through which innovation is converted into firm growth (Klein, and Sorra, 1996). This study did not include this path because, executives of small firms enjoy considerably more power in innovation implementation than their counterparts in large firms where firm size, hierarchical and complex structures cause managers to delegate implementation and authority to other managers (Ling et al. 2008). As a result, executives of small firms are well suited to set the climate of the organization through their goals and develop a supportive and homogenous climate with minimal noise for enhancing employees' engagement in the implementation process (Nadkarni, and Herrmann, 2010). In addition, they can leverage their power and authority to take the initiative and persuade employees to engage in a rapid implementation of strategic orientations (Nadkarni, and Herrmann, 2010).

The above explanations are consistent with the conditions for a successful innovation implementation (Klein, and Sorra, 1996) and correspond to the proposed theoretical model of the research. The finding that a strategic emphasis on business model innovation stimulates growth offers empirical support for this argument. Given this, as discussed in chapter one the focus was placed on the understanding of the underlying mechanism of innovation orientation (i.e. emphasis on BMI) rather than its implementation. It is however an interesting extension and will be discussed further in directions for future in the next chapter.

Keeping this in mind, the following sections are devoted to discussing indirect links separately and jointly in this research.

6.2.2 Dual Cognitive Style and Acquisition of Knowledge

It was hypothesized that both analytic and intuitive styles are strongly related to the degree of market and technological knowledge acquired by executives and the strength of this association is contingent upon the perception of dynamism. Accordingly, drawing upon the dual information-processing theory (Samuels, 2009) it was predicted that when perceived dynamism is high, intuitive executives tend to acquire more market (hypothesis 3) and technological (hypothesis 4) knowledge than their analytic counterparts (hypotheses 5 and 6 respectively for market and technological knowledge). Therefore it was expected that it would be observed that environmental dynamism strengthens the knowledge acquisitive capacity of intuitive executives while it dampens the knowledge acquisitive capacity of analytic executives.

The quantitative analysis revealed empirical support for all these four hypotheses (Table 34). Therefore, the present study does not reject the proposed relationships and the theoretical predictions appear valid. Specifically, the analysis provides empirical support for the idea that executives' cognitive style influences the way they acquire knowledge and this impact is not universal but contingent upon the environmental context.

Furthermore, the qualitative data analysis (Table 34) also revealed that both intuition and analysis are parts of executives' understanding of markets and technologies. In particular, depending on their cognitive preferences they make different use of these factors in making sense of issues. These qualitative findings in conjunction with quantitative inferences lead to the conclusion that cognitive style as a persistent and relatively stable attribute of executives is an antecedent of their market and technological knowledge. In line with the recent recognition of the importance of the dual view it can be said that duality of cognitive style is a useful concept in improving the current understanding of the extent to which executives acquire knowledge (i.e. their absorptive capacity). In discussing these results a number of interesting issues need to be addressed.

First of all, this article makes advances in applying dual cognitive style theory to the individual locus of knowledge in the knowledge-based view (Felin and Hesterly, 2007) and particularly executives' absorptive capacity (Boal and Hooijberg, 2000) by linking

executives' cognitive styles to their degree of knowledge acquisition in the face of dynamism. This is significant because a recent review of cognitive style research (Armstrong et al., 2012a) has shown that literature has a general paucity of research on the way cognitive style impacts the acquisition of knowledge. Hence, by linking executives' cognitive style to their acquisition of knowledge as a strategic resource this study provides further insight into the cognitive micro-foundations of resource acquisition and absorptive capacity (Volberda et al., 2010) which may result in strategic asymmetries in the way executives take advantage of their richer knowledge repositories (Marvel, 2012).

This said, the proposed model, supported by empirical findings, suggests that variations exist in the executives' repository of market and technological knowledge and these variations can be explained by the concomitant interactions between their cognitive style and perception of environmental dynamism. An explanation for this finding from cognitive science is that acquisition of knowledge begins by searching for information. Information search is deeply rooted in cost-benefit assessments and when the environment is perceived as highly dynamic the benefits of new knowledge exceed its costs (Guo, 2001). Given this increased perceived benefit, the intuitive information processing can perform more effectively simply because it reacts to uncertain and unclear information caused by dynamism through simplifying search rather than seeking clarified information (Schaninger and Sciglimpaglia, 1981). Thus, in the face of dynamism, reliance on intuition may result in a richer knowledge repository. This finding is particularly relevant to the research on managerial dynamic capabilities and the assertion put forth by Hodgkinson and Healey (2011) that in a dynamic context reliance on intuition is integral to administrative functioning. So, an important implication of this reasoning is that acquisition of business knowledge is not always necessarily run by deliberate learning.

In light of the above discussion it should be noted that, in line with previous research on cognitive style (Brigham et al., 2007; Chaston and Sadler-Smith, 2012), it is the thesis of this research that intuitive and analytic styles are value-indifferent. That is, neither is superior over the other, rather they have different functionalities. For instance, the findings of this study suggest that these two styles exhibit different functionalities in terms of acquiring market and technological knowledge under different environmental conditions.

These differences can also be explained from cognitive fit literature. Cognitive fit literature suggests that executives will be most successful at performing their tasks when approaching tasks through a cognitive mode that most closely matches the requirements of their environment (Brigham et al., 2007; Cooper-Thomas and Wright, 2013). This research and its findings can be situated within this view and adds new insights into this literature as it suggests that different cognitive styles under varying environmental dynamism would lead to differences in the acquisition of market and technological knowledge.

These findings from a contingent perspective are consistent with the dual information processing which is recognized as a way to adjust the simplistic and biased unitary view of cognitive style by offering a more complex and situational application of cognitive style. In accordance with Novak and Hoffman (2009), it is reasonable to argue that these findings offer added value in predicting executives' acquisition of market and technological knowledge. It is also prudent to note that these findings need cautious interpretation for a number of reasons.

In effect, although these findings indicate that stable individual differences and particularly their cognitive style can play an important role in explaining how an asymmetric knowledge base is formed amongst executives, they also suggest the need for some caution in both adapting a universal approach to relating cognition to knowledge acquisition and interpreting the notion of intuitive knowledge acquisition.

In respect to the former, it is important to notice that knowledge acquisition is influenced by both types of information processing and this study suggests that perception of environment impacts the relative strength of one system. So, developing a universal model for understanding how intuitive and analytic systems contribute to executives' knowledge acquisition is difficult and is not within the scope of this research. As a result, following Brigham et al. (2008) it can be argued that considering the interaction between styles of knowledge acquisition with the environment leads to important implications for the knowledge base view in that cognitive fit explains formations of knowledge asymmetries amongst executives.

In respect to the latter point, the findings of this study may seem counter-intuitive in that intuition has been traditionally associated with reliance on existing knowledge and connecting dots based on current knowledge (a more outside-in approach to knowledge) (Singh et al., 2010; Maggitti et al., 2013), which is the opposite of acquiring new knowledge by searching and absorbing external information (an extraneous or inside-out approach). This study found that intuitive executives have a tendency to acquire more knowledge when they see the environment as dynamic in nature. This addresses the calls for further investigations on the micro-foundations of knowledge acquisition and the absorptive capacity of strategic leaders (Volberda et al., 2010) and executives' capacity to develop dynamic capabilities (Hodgkinson and Healey, 2011). Specifically, this finding suggests that the interaction between cognitive style and the perception of individuals can help explain, from the individual perspective, why there are differences in firms' absorptive capacity (Volberda et al., 2010).

Finally, although literature on resource-based theories including resource-based view, knowledge-based view, and dynamic capabilities suggests that knowledge acquired by executives is a strategic resource of the firm (Kraaijenbrink et al., 2010), helping them choose the right strategies to sense and seize opportunities (Barney et al., 2011) and the act of acquiring knowledge, particularly about markets and technologies, is an important intangible competency of the firm (Sutcliffe and Weber, 2005); this literature tends to assume that resources and competencies are given, leaving a gap in the understanding of how resources and particularly knowledge are acquired and added to the resource base of the firm (Kraaijenbrink et al., 2010). The findings, as explained in this section, further narrow this gap by showing that the executives' cognitive style and its interaction with their perception of dynamism is applicable to their acquisition of knowledge as a strategic resource and can explain why some executives appear to be more competent in acquiring knowledge from the environment.

Additionally, by identifying the interaction between executives' cognitive style, perception of dynamism, and their degree of acquired market and technological knowledge it furthers the understanding of factors that influence the extent to which executives acquire a strategic resource. Thus, it seems logical to argue that these findings extend the application of cognitive style from decision-making to resource-based theories. This extension, as supported empirically, can be an important added value of this research

and give extra merit to the stream of work on the micro-foundations of resource-based theories (Foss et al., 2011) and particularly the human capital (i.e. knowledge) of executives (Coff and Kryscynski, 2011).

In light of these explanations, it is believed that the findings of this section represent an important step not only in gaining a better understanding of how stable stylistic cognitive attributes such as cognitive style and perception of environment construe a mechanism for executives to acquire strategic resources, but also in ultimately helping to develop a more complete model of executives' knowledge acquisition for furthering research into the micro-foundations of the knowledge-based view, absorptive capacity, dynamic capabilities, and organizational learning.

6.2.3 Dual Cognitive Style and Emphasis on Business Model Innovation

It has been explained that in the 21st century, executives, regardless of the size and scope of operation of their firms, need to emphasize new business models (Ireland et al., 2001). It has also been argued that cognitive barriers are very important in preventing executives from emphasizing new business models (Chesbrough, 2010). Building on this argument, two positive associations between executives' intuitive and analytic cognitive style and their emphasis on business model innovation contingent on the perception of dynamism were proposed in hypotheses 10 and 11 respectively. It was specifically predicted that perceived dynamism strengthens the former and dampens the latter. The objective of this speculation was to improve the existing understanding of the cognitive factors involved in executives' emphasis on new business models.

The analysis of the data offers empirical evidence in support of the first expectation while it does not support the second. This means that both intuitive and analytic styles are positively associated with the emphasis on business model innovation and surprisingly the perception of environmental dynamism does not make a statistically significant difference in distinguishing these two relationships. As expected from the dual perspective, this finding is incompatible with the predictions of the unitary view suggesting that the analytic style tends to be associated with efficiency (little or no emphasis on BMI) while the intuitive style is correlated with a high emphasis on innovation (Allinson and Hayes, 2012) such as BMI. Consequently, this finding further substantiates the emerging debate (Hodgkinson et al., 2009a, b) that a dual view of

cognitive style could lead to new findings which may run contrary to the speculation of the traditional unitary view.

In addition, although it was not the purpose of the qualitative analysis to provide evidence of moderation inference, it offered corroborating evidence for the role of intuitive and analytic styles of executives in adopting new business models. It was found that both the analytic and the intuitive style believe in the strategic importance of adopting new business models. Further, the analysis of the interviews showed that intuitive and analytic preferences play respective roles in evaluating new business model ideas. Therefore, by combining qualitative and quantitative inferences it can be concluded that both cognitive styles play a relatively equal role in executives' emphasis on adopting new business models regardless of the dynamism they perceive in their business environment. This finding contradicts the commonly held notion that business model innovation is pursued in more dynamic environments (Eisenhardt and Martin, 2000).

Literature offers a number of likely explanations for this observation. The first is rooted in the context of the data used in this research (i.e. Australian small manufacturing firms). Literature indicates that the Australian manufacturing sector is increasingly being challenged by fierce economic conditions caused by issues such as intense competition from India and China, global financial crisis such as the recent one in the Euro Zone, the small size of the domestic market, and the increasing value of the Australian dollar (Industry Innovation Council of Australia, 2011). Under these conditions a strategic coping mechanism is to be open to innovative value creation and constantly emphasize new business models (Abdelgawad et al., 2013). This may lead to a situation in which all executives, regardless of their cognitive style and perception of dynamism, place great emphasis on new business models.

Another possible explanation for this observation, which can occur due to methodological issues and may run counter to the previous one, could be that although there is a difference between analytic and intuitive styles and their emphasis on new business model innovation in face of dynamism, however, the subjective measure of dynamism as applied in this research is not able to capture and exhibit this difference. In the same vein, another possibility could be that although the REI (rational-experiential inventory) measure of intuition and analysis is regarded as one of the best and most appropriate measures of cognitive style in dual information-processing theory, it is not,

however, apt to detect differences between intuitive and analytic executives in respect of their innovative choices in the face of dynamism (Chaston and Sadler-Smith, 2012). Therefore, it is possible that future research using different measurements of dynamism or cognitive style will obtain different results.

Finally, these observations are interesting and add new insights to the literature in several ways. First, scholars often tend to make the assumption, either explicitly or implicitly, that innovative activities of firms are associated with the intuitive power of their executives (Akini and Sadler-Smith, 2011; Mitchell et al., 2005). Previous research has also recorded evidence suggesting that intuition is a key factor in executives' creativity and their subsequent orientation towards innovation (Chaston and Sadler-Smith, 2012). The findings of the present study are, however, indicative of the relative importance of analytic style in executives' tendency to adopt new business models. This is in line with the recent finding of Wu et al. (2012) suggesting that analytic information processing and personal factors associated with it such as the need for cognition can also play a role in the innovative practices of executives.

Furthermore, most previous research has studied the cognitive style and particularly the intuitive style of executives in their product or process innovation (e.g. Puccio et al., 1995; Tollins, 2008; Dayan and Elbanna, 2011), creative personality (e.g. Meneely and Portillo, 2005; Muñoz-Doyague et al., 2008), or general strategic decisions (e.g. decisions about investment in capital equipment, product, introduction or discontinuation, geographical expansion, diversification, restructuring, downsizing) (e.g. Khatri and Ng, 2000; Elbanna et al., 2013). Therefore, as previously noted in Chapter one, little evidence is available on the link between executives' intuitive and business modeling behavior such as emphasis on adopting new business models. This finding is important for two reasons. First, business model innovation is increasingly becoming relevant to both scholars and practitioners and it is clearly different from product and process innovation (Zott et al., 2011). Hence, this observation extends the empirical knowledge on the cognitive micro-foundations of this emerging type of innovation. Secondly, previous studies have mainly examined executives' tendency towards innovative activities using unitary measures and this study is amongst the very early attempts to apply dual information-processing theory (Chaston and Sadler-Smith, 2012; Akinci and Sadler-Smith, 2013) to this context.

Moreover, as noted previously in Chapters one and three, the differences between the intuitive and analytic styles of executives remain an underexplored realm in strategic cognition research (Narayanan et al., 2011). Therefore, these findings, discussed in this section, help enrich this strand of research by suggesting that emphasis on business model innovation as a strategic choice is proven to be correlated to both styles regardless of the executives' perception of dynamism. This adds to the strategic cognition literature by showing that, although intuition and analysis influence executives' behavior and differentiate their tendency towards strategic issues and subsequent choices, since the scope of strategic choices is limited due to the environmental forces, the resource limitations of the firm and bounded rationality of executives' (Kaplan, 2011) different styles could lead to similar behavior (e.g. choices of emphasis on BMI).

Another interesting issue in this context pertains to the notion of innovation implementation (Dong, Neufeld, and Higgins, 2008; Klein, and Sorra, 1996; McAdam, Moffett, S., Hazlett, and Shevlin, 2010). Although this study, as discussed in this section, focuses on the role of executives' cognitive style in their emphasis on business model innovation, the implementation of business model innovation is also an interesting mechanism. Research suggests that executives' cognitive style can be related to innovation implementation in two ways. Innovation implementation is a risky process associated uncertainty and complexity (Dong, Neufeld, and Higgins, 2008; Klein, and Sorra, 1996). Therefore, the information processing style of executives matters in the way they approach uncertainty and risk to manage the implementation process effectively. Secondly, an innovation is implemented when executives of the firm set a supportive climate and conducive structure by which employees gain an appropriate use of innovation (Klein, and Sorra, 1996). Small firms have less district internal boundaries, simpler structures and a higher degree of employees' multitasking (McAdam, et al. 2010; Tersowski, 2010). Consequently, organizational climate and structure for implementing new business models can be quickly developed (Chesbrough 2010). Executives' cognitive attributes have been argued to influence organizational structures (Miller and Toulouse, 1986). Therefore, it can be argued that the relationship between executives' cognitive style and the implementation of business model innovation is an additional mechanism that could add value to this study. In order to keep the parsimony of the theoretical model of the study and avoid complexity this study this not include this mechanism into the

theoretical model of the research. Chapter 7 sheds more light on this issue as a direction for future research.

Finally, this finding is valuable in that it presents new evidence from Australia. This contextualizes this study which not only enriches the limited body of knowledge on the Australian manufacturing sector and small business context but can also be used as a basis for comparison with studies conducted in the US, Europe, and other regions.

6.2.4 Acquisition of Knowledge and Growth of the Firm

Most of the existing literature focuses on the existing or prior knowledge of executives in the form of their experience and education and little attention has been paid to their acquisition of new knowledge or their capacity to keep their market and technological knowledge current (Marvel, 2012; Nag and Gioia, 2012). In particular, an underlying and empirically informed assumption of the small business literature is that these firms suffer from resource disadvantages and a consequent lack of ability to capitalize on extensive internal research and development (R&D). So, their executives engage in knowledge acquisition to realize the growth potential of their business (Macpherson and Holt, 2007).

The above reasoning is in accord with Penrose's idea that the growth of the firm is ultimately the growth of its executives' knowledge (Penrose, 1959). Building on this insight the present study predicted that variation in the growth of the firm can be partly explained by the variation in the degree of market (hypothesis 12) and technological (hypothesis 13) knowledge acquired by their executives.

According to the resource-based view, as an extension of Penrose's theory of the growth of the firm these two are distinct resources shaping the knowledge base of executives (Grant, 1996; Wiklund and Shepherd, 2003). The former is indicative of market trends and changes encompassing the activities of competitors, suppliers, customers, and all players in the marketplace that impact a firm's success in the market (Burgers et al., 2008), while the latter indicates how technological underpinnings of the business production, logistics, and overall value chain of the business evolve (Burgers et al., 2008). The overall implication is that, although each one has an impact on a firm's growth, they are complementary and executives require both kinds of knowledge to lead the growth of their firm. It was argued that examining the simultaneous role of these two types in an integrated framework is an important contribution to the literature that is

achieving widespread recognition (e.g. Sullivan and Marvel, 2011a, b; Marvel, 2012; Kim et al., 2013).

Both hypotheses gained empirical support from quantitative and qualitative analysis. The quantitative analysis revealed statistically significant estimates for the impact of both market and technological knowledge acquired by executives on the growth of their firm. The qualitative analysis also expanded the understanding of these links by shedding light on some of the ways these two types of resources contribute to the growth of the firm. For instance, it was mentioned that customers' (Mr. A. and Mr. B.) knowledge and intelligence are directly used in developing and keeping control over market sales to spur growth. It was also observed that technological know-how is used in both finding and evaluating growth opportunities.

More specifically, in respect of the role of executives' acquisition of market knowledge in the growth of small firms, the findings of this study are consistent with the findings of several recent studies. For instance, De Luca and Atuahene-Gima (2007) found a positive association between the depth and breadth of market knowledge as two products of the degree of market knowledge acquisition and sales growth of products developed by 363 Chinese high-technology firms. Chandler and Lyon (2009) found a strong and positive relationship between executives' involvement in the acquisition of market knowledge and growth of new ventures. Similarly, Li et al. (2010) also found a positive relationship between executives' acquisition of market knowledge and the growth of 140 vendors in china. More recently, Molina-Morales et al. (2012) reported a positive association between the acquisition of knowledge and sales growth of new products in a sample of 224 small firms in the Spanish footwear industry.

Despite this logical causation, it was noticed that existing evidence is inconclusive. For instance, Sullivan and Marvel (2011a) reported no significant relationship between executives' acquisition of market knowledge and the sales growth of 151 young technology ventures in the US. Friesl (2012) also documented similar findings in a study of small biotechnology firms in Germany.

In regard to technological knowledge, similar conclusions can be drawn. Research in organization theory has held the premise that firms are placed within continuously evolving technological paradigms and compete along technological trajectories (Dosi,

1982). So, a commonly held assumption is that keeping technological knowledge current is a strategic imperative (Porter, 1985; Hitt et al., 2000). Consequently, to keep abreast of technological change, firms either invest in internal research and development, or acquire knowledge from external resources. It was noted that small firms tend to follow the latter logic due to liabilities of smallness and resource constraints (Sullivan and Marvel, 2011a, b; Macpherson and Holt, 2007). In line with this explanation, the findings of this study show that the growth of small manufacturing firms in Australia is strongly and positively associated with the extent to which their executives acquired technological knowledge. In particular, one could conclude from this finding that the benefits of growth accrue to firms whose executives are adept at acquiring technological knowledge.

Similar results have been reported by recent studies, such as Ng et al. (2012) in a study of Malaysian SMEs, and Delmar et al. (2011) in a study on Swedish firms. However, Clarysse et al. (2011), in a study of Belgian corporate and university spin-offs, found mixed results indicating that new technological knowledge could negatively impact the growth of university spin-offs whereas it positively influences the growth of corporate spin-offs. Díaz-Díaz et al. (2008) also reported mixed findings in a study of Spanish firms. They found that the acquisition of explicit new technological knowledge such as a license could immediately improve growth while the acquisition of tacit knowledge hinders growth.

Although existing evidence on the association between the acquisition of both market and technological knowledge and the growth of the firm appears to be equivocal, the findings of this study show that ongoing acquisition of both market and technological knowledge by executives is important for the growth of small firms. In addition, a key feature of this study that could help dismantle this inconsistency is that previous studies have focused on the acquisition of knowledge at the firm level, however this study focuses on the executive (i.e. individual) level because it is assumed to be at the center of the knowledge-based view: “The emphasis upon the role of the individual as the principal repository of knowledge, I believe, is essential to piercing the veil of organizational knowledge and clarifying the role of organizations in the creation and application of knowledge.” (Grant, 1996:121).

A key theoretical explanation for this mechanism from the resource-based view, congruent with the findings, is that neither executives nor a firm collectively possess all the relevant knowledge required for the success of the firm in markets (Chandler and Lyon, 2009). Therefore, this resource must be continuously acquired to update the knowledge base of the firm and enable executives to narrow the gap between “what they know” and “what they need to know” to enable growth (Zack, 2002). This also mirrors the point put forward by Sutcliffe and Weber (2005) suggesting that executives’ inaccurate understanding of the environment may lead to failure to achieve their intended outcomes and this accuracy is strongly correlated with the amount of knowledge an executive acquires.

In addition, in line with Penrose’s (1959) growth theory and a recent debate on the resource-based view (Kraaijenbrink et al., 2010), it is argued that knowledge is a fungible and non-rivalrous asset. This means that it can be used in different growth-driving activities and the acquisition of it by one firm does not preclude other firms from acquiring it. The results reported in this section provide evidence for these two assumptions. First, based on the fungibility assumption of knowledge, by acquiring more knowledge executives broaden the spectrum of services they can render from this resource to be used in the growth of the firm and hence the degree of their knowledge acquisition could spur the growth of their firm. Consistent findings substantiating this assumption have been reported by Sullivan and Marvel (2011a, b) and Marvel (2012). Second, the executives of our sample firms could have been subject to a wide range of similar market and technological changes as they all operate small firms in the Australian manufacturing sector. So, applying the notion of knowledge as a non-rivalrous resource it can be concluded that executives do not compete over knowledge but instead the extent of their acquisition gives them the capacity to leverage their knowledge in stimulating growth (Tsoukas, 2005; Chandler and Lyon, 2009).

Therefore, this research empirically strengthens the support for the assertion that the growth of small firms (here manufacturing enterprises) is positively influenced by the extent or degree of knowledge acquired by their executives. Thus one could conclude that the more market and technological knowledge executives acquire, the better capacity they develop to realize the growth potential of their firm.

Moreover, it was theoretically argued and empirically supported that executives' market and technological knowledge behave as two separate constructs and each makes a separate contribution to the growth of the firm. This implies that although these two share the common nature of being environmental knowledge, they tend to behave differently. This has important implications for the knowledge-based view and absorptive capacity of the firm in which scholars (e.g. Lichtenthaler and Lichtenthaler, 2009; Lichtenthaler, 2009) tend to combine these two and investigate the overall impact of the acquisition of knowledge on the growth of the firm. The findings of this research suggest that decomposing rather than composing executives' knowledge acquisition could improve the understanding of factors that drive the growth of the firm.

A potential explanation for this observation is that market knowledge is market- or context-specific not firm-specific but technological knowledge is firm-specific not market-specific (Fletcher and Harris, 2012). This means that acquisition of market knowledge does not address a firm's technological knowledge needs and vice versa. So, market and technological knowledge do not make each other redundant or irrelevant. Hence, acquiring only one type of knowledge may hinder firms' growth while developing the capacity to acquire both would be more effective in stimulating growth. For instance, Kim et al. (2013) provide supportive evidence for this argument by showing that technological knowledge is used in assessing the novelty and market knowledge is used in evaluating the meaningfulness of a new product and this complementary role positively impacts the performance of a new product.

In the face of this argument, one could ask "what is the extent of this complementary relationship?" Although this issue was not within the primary scope of this research, the analysis of the qualitative data led to an interesting finding about this relationship which will be explained in a separate section.

In addition to the above discussion, there is reason to add that linking executives' acquisition of the two types of knowledge to the growth of their firm is theoretically advantageous in that growth as a dependent variable is a relatively distal outcome. This could permit the study of the complex mediating mechanism in addition to the direct link because executives can enable growth by using their knowledge in multiple ways (Delmar and Wiklund, 2008:451). Therefore, as an extension to the above understanding, this

study also examined the indirect effect of executives' acquisition of knowledge on the growth of the firm. The next two sections discuss the findings related to this investigation.

6.2.5 Acquisition of Knowledge and Emphasis on Business Model Innovation

Although this study provided evidence supporting the direct link between executives' acquisition of market and technological knowledge and the growth of the firm, the resource-based view and its extension the knowledge-based view suggest that the true value of knowledge as a strategic resource is realized when it is used in helping executives choose and implement a strategic course of action (Barney et al., 2011). Furthermore, the knowledge-based view of the firm holds that all activities of executives are knowledge-dependent (Grant, 1996). This theorem provided encouragement for a closer examination of the link between executives' acquisition of knowledge and their behavior, particularly the way they use their knowledge in growth-driving strategies.

This study did so by examining the relationship between the degree of market (hypothesis 7) and technological (hypothesis 8) knowledge acquired by the executives and the degree of emphasis they place on adopting new business models as a strategic growth-driving course of action. An important feature of this study is that it offered and tested links between the acquisition of both types of knowledge and emphasis on business model innovation. This is important for two reasons. First, a considerable proportion of previous research has examined the innovative consequences of only market (e.g. Li and Calantone, 1998; De Luca and Atuahene-Gima, 2007; Zhou and Li, 2012) or technological knowledge acquisition (McEvily and Chakravarthy, 2002; Díaz-Díaz et al., 2008; Clarysse et al., 2011), which points to an incomplete picture of how an innovative move comes into existence.

Second, literature tends to consider business model innovation as a product of new customers' value, new markets, and/or investment in unrecognized/untapped markets (Burgers et al., 2008), which underestimates the potential role of technological knowledge. A significant distinction is made by the findings of this study that support the claim that both types of knowledge influence the emphasis on business model innovation.

Both hypotheses were supported by the quantitative and qualitative analysis. The quantitative analysis reported in Chapter five (Table 23) shows a strong positive association between the extent of executives' market and technological knowledge

acquisition and the degree of emphasis they placed on business model innovation. This conclusion was further supported by the qualitative findings. For instance, it was observed that three executives (Mr. A., Mr. C., and Mrs. E.) provided corroborating quotes for hypothesis 7 and two executives (Mr. D. and Mr. B.) offered corroborating quotes for hypothesis 8 (Table 34). These observations are in line with and could be used to generalize the recent work of Svejnova et al. (2010) who found a strong link between an executive's knowledge acquisition and his ability to recognize and develop a new business model in a case study of a small Spanish firm.

This consistent support offers empirical evidence for vindicating the prediction that executives' knowledge asymmetries can explain differences in their tendencies towards business model innovation in their firms. This also moves the causality debate on business model innovation a step further by linking both market and technological knowledge acquisition to adopting new business models. This causality is important for three reasons. First, it suggests that both market and technological knowledge play a role in executives' emphasis on business model innovation. Therefore, focusing only on market or technological knowledge may result in an incomplete understanding of business model innovation. This conclusion could adjust the view put forth by Burgers et al. (2008) that business model innovation in small firms is mainly associated with new market knowledge. Second, it provides further support for the complementary role of market and technological knowledge as two components of a firm's innovative activities. This reasoning also tends to oppose Hitt et al.'s (2000) claim that in the 21st century technological knowledge is more important than market knowledge. Therefore, it lends further support to the view that a simultaneous acquisition of market and technological knowledge is more effective in developing the capacity to emphasize innovation than focusing only on market or technological knowledge (Lichtenthaler, 2009).

Finally, flowing from this finding is an implication of how executives' low level of market and technological knowledge acquisition (i.e. low executive knowledge absorption) may impair their ability to recognize the potential of new business models. This reasoning is theoretically important because it has the potential to extend the literature on strategy (Helfat et al., 2007) and entrepreneurship (Trimi and Berbegal-Mirabent, 2012) in which the issue of why some executives, and by implication some firms, place more emphasis on adopting new business models than others is being

increasingly studied as a way to inform the strategic flexibility (Bock et al., 2012), game-changing capabilities (Abdelgawad et al., 2013), adaptability (Reeves and Deimler, 2011), and dynamic capabilities (Teece, 2007) of firms.

6.2.6 Emphasis on Business Model Innovation and Growth of the Firm

Literature on the association between business model and growth of the firm is dominated by qualitative analysis of single or multiple case studies in which the growth of a firm (mainly a large multinational corporation) is explained by analysis of its business model (Morris et al., 2013; Chatterjee, 2013) which has precluded generalizable results. In addition, literature suggests that a business model of a firm is a dynamic entity that should change over time (Teece, 2007) and thus an emphasis on changing it is not only an indication of short-term profitability but can determine whether a firm is able to grow or not (Helfat et al., 2007). In an attempt to address these issues in the extant literature this study performed a quantitative analysis of business model change (i.e. executives' emphasis on adopting new business models) and its impact on the growth of firms. This link was also explored in interviews with five executives.

Hypothesis 9 speculated on a positive association between executives' emphasis on adopting new business models (i.e. business model innovation) and the growth of the firm. This hypothesis was supported by both qualitative and quantitative analysis. This evidence is in line with recent research (Bock et al., 2012; Casadesus-Masanell and Zhu, 2012) showing that firms with an emphasis on business model innovation are more likely to witness favorable growth outcomes than firms with no intention to adopt new business models.

A conventional interpretation of these arguments would lead to the conclusion that the growth of small manufacturing firms in developed economies such as Australia where open-market conditions apply and many firms serve similar customer needs using relatively similar products is largely contingent upon the abilities of the firm to become business model innovators.

In support of this claim, qualitative analysis also revealed that business model innovation is all about differentiation. Hence, firms that place a greater emphasis on adopting new business models are simply firms that tend to play their business differently and as a result of this tendency they are more likely to experience competitive growth.

Therefore, according to these findings the growth of a firm can be seen as a function of its executives' tendency to adopt new business models.

Several explanations exist for this observation. One reason that could explain this causation is the fact that attempting to increase sales for products in markets shared by other firms is no guarantee for continued success (i.e. growth) (Davidsson et al., 2009). Therefore, firms that attempt to develop new markets or address new customer needs are better able to increase their sales and grow organically. A more nuanced reason could also be the notion that firms with a tendency to innovate their business model are highly likely to learn to develop routines and capabilities that extend their existing products and services to new customers' needs (Cavalcante et al., 2011; Berghman et al., 2012). This learning, in return, leads to an increase in sales and market share.

Finally, the findings of this study are based on small manufacturing firms. Recent research into the business model innovation of small firms (Rhoades et al., 2011; Morris et al., 2013) suggests that this strategy is employed as a way to attenuate resource-based weaknesses. Specifically, because small firms have simpler structures and a higher degree of flexibility they can convert new business models to market outcomes faster than large firms (Zott and Amit, 2007, 2008). Therefore, executives of small businesses become content with their limited resources and rely on new business models to spur growth (Berghman et al., 2012).

In addition, there is theoretical reason to assume that the strong link between emphasis on new business models and growth observed in this study can be explained by the nature of small businesses. In general, in small business the idea of a new business model emerges most likely in the mind of the top executive (CEO, owner, managing director, etc.) (Abdelgawad et al., 2013), and then with the passage of time an entire firm will grow around implementing this idea (Simon et al., 2007:133). The smaller size and simpler structure of small businesses reduces the coordination costs and decreases potential conflicts in this process. As a result, they usually experience a faster and smoother transition to new business models than larger firms (Chesbrough, 2010). In addition, lower costs, more flexibility, and reduced conflicts imply that executives can make the necessary adjustments required for directing growth in a more efficient and faster way (Penrose, 1959). Therefore, small firms can convert their emphasis on new business

models to growth outcomes in a shorter time than larger firms. This may explain the strong causal link between these two factors that was found in this study.

Based on this finding it can be concluded that the strategic benefits of growth, including increased flexibility and adaptability to environmental demands, and an enhanced capability to pre-empt competitors' imitative moves, may accrue to small manufacturing firms whose executives embrace the importance of incorporating new business models into their firm's value chain.

Although these findings seem logical and have theoretical support, they are in contrast with Aspara and Tikkanen (2012), who found no relationship between the emphasis on business model innovation and the growth of 188 firms (large and small) in the Netherlands. This contrast is surprising and could be explained from at least two views. First, literature suggests that in some industries fast-second firms (i.e. fast imitators) benefit from new business models more than business model innovators (Markides and Geroski, 2005), and second, the success of new business models can be influenced by institutional factors such as culture in the country in which a firm operates (Kostova et al., 2008; Lazonick and Tulum, 2011). Therefore, it is possible to speculate that in some countries emphasis on business model innovation may not lead to growth, as, for instance, reported by Aspara and Tikkanen (2012). Overall, it can be concluded that, although this study offers new empirical insights into the currently limited literature on the consequences of business model innovation (Trimi and Berbegal-Mirabent, 2012; Zott et al., 2011), the existing evidence is mixed at best, which suggests a need for further research. This issue will be discussed in the next chapter.

6.2.7 Discussing the Intervening Mechanisms

To address the second research question and in order to obtain a richer understanding of the relationships between research constructs, a number of intervening (i.e. mediating) mechanisms were assessed in Chapter five. The results will be discussed in this section.

6.2.7.1 The Mediating Role of Knowledge Acquisition

In Chapter five, the moderated-mediating role of market knowledge, technological knowledge, and the joint impact of market and technological knowledge were examined in the link between executives' cognitive style and the growth of the firm (Table 23). Several interesting issues were discovered.

First, both market and technological knowledge partially mediate the relationship between executives' intuitive style and the growth of the firm under conditions of low and high dynamism. This evidence proves the existence of a moderated-mediation relationship. A possible explanation for this partially moderated mediation is that an intuitive style could link to the growth of the firm through various mediating mechanisms other than acquisition of knowledge. For instance, research into executives' cognition suggests that an intuitive style could impact the innovativeness, risk taking, or entrepreneurial orientation of the firm (Chaston and Sadler-Smith, 2012) as well as product creativity (Dayan and Di Benedetto, 2011) as potential mediating factors impacting growth of the firm. Furthermore, consistent with predictions offered by dual information processing (Chaston and Sadler-Smith, 2012), the perception of dynamism influences the strength of the impact of cognitive styles on individuals' behavior. In general, it has been suggested that intuition could impact several variables simultaneously. Similar evidence was obtained for analytic style. This observation can also be explained from the same perspective. In other words, the analytic style of executives could simultaneously impact various factors, including their innovativeness (Wu et al., 2012) and the rationality of decisions (Sadler-Smith, 2004), as variables that have potential impact on the growth of the firm. Therefore, one factor such as the acquisition of market or technological knowledge is very unlikely to fully mediate the relationship between this style and the growth of the firm. This reasoning is consistent with the research in the strategic leadership, indicating that full mediations in strategic cognition are very unlikely to occur because executives' cognition influences growth through interactions with many different factors (Narayanan et al., 2011). Hence, one single factor such as knowledge acquisition could be loosely coupled with the growth of the firm.

Finally, a key implication of these findings is that, although market and technological knowledge appear to be important mediating factors in the relationship between executives' cognitive style and growth of the firm, their partial mediating roles suggest the plausibility of additional intervening mechanisms in this link. This implies a need for further research which will be discussed in the next chapter.

An intriguing finding was, however, evinced when the joint impact of market and technological knowledge acquisition was taken into account. It was found that the acquisition of market and technological knowledge fully mediates the relationship between an intuitive cognitive style and the growth of the firm in conditions of high dynamism (Table 23). It also fully mediates the relationship between an analytic cognitive style and the growth of the firm in conditions of low dynamism (Table 23). These fully moderated mediations suggest that the impact of executives' cognitive style on growth is completely transmitted through their acquisition of market and technological knowledge in the face of dynamism.

An implication of this finding is that executives' acquisition of market and technological knowledge separately and jointly has different levels of influence on the firm's growth. This highlights the importance of executives' capacity to acquire both market and technological knowledge as complementary resources (Wiklund and Shepherd, 2003; Sullivan and Marvel, 2011a; Marvel, 2012) and underscores the role of their joint effect in the growth of the firm (Penrose, 1959; Burgers et al., 2008).

This occurrence can be explained from three perspectives. The first possibility is that market and technological knowledge are truly complete mediators. In light of the previous discussion on the simultaneous impact of cognitive style on different factors, this possibility seems suspicious and casts doubt on the interpretation of full mediation. Given that, the second possibility for this observation is methodological and concerns the sample size. For testing the moderated-mediation effects the multigroup method was used in which the sample is split. It is possible that a smaller sample size might have resulted in a non-significant direct beta for paths (Table 23). This leads to the determination of full or complete mediation, which in fact could be partial (Rucker et al., 2011). Therefore, using a larger sample size could result in a partially mediated path between executives' cognitive style and growth in the face of dynamism. The last possibility for this interpretation could be multiple indirect effects involving unmeasured variables. It has been argued that this phenomenon, known as the "suppression effect," conceals the significant direct effect (Rucker et al., 2011), resulting in the determination of full mediation.

Therefore, to test these speculations and untangle the perplexity surrounding these findings future research could use new variables and larger sample sizes to examine the link between executives' cognitive style, the acquisition of market and technological knowledge, and the growth of the firm under conditions of perceived dynamism. Chapter seven will further discuss this issue.

6.2.7.2 The Mediating Role of Emphasis on Business Model Innovation

The findings pertaining to the mediating role of emphasis on business model innovation suggest that it partially mediates the relationship between intuitive style and growth as well as the one between analytic style and growth under conditions of both high and low dynamism (Table 23). This partial mediation can also be explained from the view that intuitive and analytic styles could impact the growth of the firm through simultaneous impacts on different factors including business model innovation. This reasoning is supported by path analysis as explained earlier.

Furthermore, the mediating role of emphasis on business model innovation supports the premise that executives' cognitive factors are converted into outcomes through their emphasis on different strategies (Hambrick, 2007). It also further substantiates the claim that innovative choices (e.g. business model innovation or product innovation) made by executives mediate the relationship between their characteristics and firm-level outcomes (i.e. growth) (Manral, 2011; Hakonsson et al., 2012; de Jong, 2013).

A closer look at this finding also reveals that the inclusion of emphasis on business model innovation in the link between executives and growth furthers the existing understanding of how executives matter in the growth of the firm and explains a possible path through which their cognitive style influences the firm's growth. Furthermore, the findings also show that the choice of emphasis on business model innovation mediates the impact of both the intuitive and analytic styles of executives on growth. This observation contradicts the research (e.g. Chaston and Sadler-Smith, 2012) suggesting that innovative choices are mainly outcomes of intuitive information processing.

This controversy can be dismantled by the fact that business model innovation is increasingly seen as a strategic imperative for growth (Pohle and Chapman, 2006). Therefore, both analytic and intuitive executives consider it as a viable choice for stimulating growth. Hence, although it partially mediates the way executives' cognitive

style influences the growth of the firm, it does not distinguish between analytic and intuitive executives in the same fashion as expected in the cognitive style literature.

This finding is also important in that it offers evidence from the small business context. The smallness of these firms implies that both the link between executives' cognitive style and innovation (CS-BMI) and that between innovation and outcome (BMI-Growth) are more immediate and less confounded by other factors such as the influence of boards of directors and business unit structures (Rosenbusch et al., 2011). Therefore, this finding could present more fine-grained evidence for the mediating role of business model innovation in order to extend research in entrepreneurship (Wiklund et al., 2011) and strategy (Zott et al., 2011).

6.2.7.3 The Joint Mediating Role of Knowledge Acquisition and Emphasis on Business Model Innovation

The results showed that both knowledge acquisition and emphasis on business model innovation have a separate positive impact on the growth of the firm. The question that remains open is "how would the joint interaction of these two impact growth of the firm?" This question is important not only because it is related to the second research question (proposed in Chapter one) but also because it allows this study to examine one additional mechanism for more deeply explaining and understanding the association between executives' cognitive style and the growth of the firm. This question was addressed in this study by examining the joint mediating role of three interactions: 1) market knowledge acquisition and emphasis on business model innovation, 2) technological knowledge acquisition and emphasis on business model innovation, and 3) market as well as technological knowledge acquisition and emphasis on business model innovation.

The analysis reported in Table 23 shows that the joint interaction of executives' acquisition of market knowledge and their emphasis on business model innovation (i.e. M-E) partially mediates the relationship between both executives' intuitive and analytic style and the growth of the firm. However, these effects are slightly stronger for intuitive executives under both conditions of low and high dynamism.

Four conclusions derive from this finding. First, this interaction cannot fully explain how the acquisition of knowledge (market and technological) and innovative choices (i.e. emphasis on business model innovation) transfer the impact of cognitive styles to the the

growth of the firm. Therefore, it is possible that additional variables of mechanisms are in place as well. This finding points to a need for further investigation which will be discussed in the next chapter. Second, the perception of dynamism does not significantly impact this intervening mechanism. Thus, this partially mediated relationship is not moderated. Therefore the assumption of moderated mediation is not met in this case. Third, this interaction plays a more important role for intuitive executives. This shows that market and technological knowledge acquisition is more strongly related to the emphasis on business model innovation when executives are intuitive. Therefore, this mechanism could be a way to further clarify and address recent calls for a deeper understanding of the differences between intuitive and analytic executives in the strategic cognition literature (Narayanan et al., 2011).

Finally, the results of this intervening mechanism are consistent with and offer additional support for the key premise of the resource-based and particularly dynamic capability views predicting that the acquisition of knowledge elevates the executives' capacity to make innovative choices (Barney et al., 2011) such as those pertinent to innovative ways of orchestrating resources (i.e. adopting new business models) (Katkalo et al., 2010; Teece, 2010). Therefore, inclusion of this mediating factor could offer deeper insights into the micro-foundations of dynamic capabilities (Teece, 2007) and growth of the firm (Wright and Stigliani, 2012) by identifying a mechanism that captures a possible previously overlooked link between executives' cognition (i.e. the dual view of cognitive style) and the growth of their firm.

Additionally, as shown in Table 23, it was found that the joint impact of the market and technological knowledge acquisition of executives and their emphasis on business model innovation fully mediates the direct relationship between their cognitive style and the growth of the firm for both styles and under both conditions of low and high dynamism with one exception. The results suggest that this intervention is partial, not full, for intuitive executives under conditions of low dynamism (Table 23). This exception suggests that under conditions of low dynamism the tested interaction loses its full potential. There are two explanations for this exception.

The first scenario is that, since intuitive executives tend to acquire less knowledge under conditions of low dynamism, the mediating power of this joint impact cannot be fully detected in the model. The second possibility derives from the strength of the direct

positive relationship between intuitive style and growth of the firm. As Table 23 exhibits, this relationship is stronger than the one for the analytic style of executives under both conditions of low and high dynamism. Therefore it seems reasonable to argue that this difference can explain why this particular intervening mechanism fully mediates the weaker path between the analytic style of executives and the growth of the firm while it only partially mediates the stronger path between the intuitive style of executives and the growth of the firm.

The remaining fully mediated paths offer valuable insights and can be broadly explained from the perspective of strategic leadership. This perspective, as discussed earlier, attributes the growth of the firm to the choices that their executives make (Hambrick and Mason, 1984). It is also argued that choices targeted as innovative moves (e.g. BMI) are largely contingent on the current knowledge of executives (Marvel, 2012). So, the interaction between knowledge and choice is at the heart of this perspective. In light of this understanding and based on this finding it seems logical to state that without this fully mediated intervening mechanism one would be likely to arrive at different conclusions about the role of the cognitive style of executives in the growth of the firm. Furthermore, this finding underlines a new interpretation of the relationships proposed in Figure 7.

These findings in general imply that the joint effect of executives' acquisition of market and technological knowledge and their emphasis on business model innovation creates a virtuous intervening mechanism which acts as a conduit between executives' cognitive style and the growth of the firm. This explanation is consistent with the strategic leadership theory and the shift from the resource possession to the resource management view in the strategic management literature. This literature suggests that executives' cognitive style influences the growth of their firm by impacting how they use resources in creative fashions to create value (Wang et al., 2012; Wright and Stigliani, 2012). In this study the joint effect of knowledge acquisition and emphasis on business model innovation is a resource configuration mechanism in which knowledge of markets and technologies is used in adopting new ways of utilizing resources (i.e. a business model) (Zott and Amit, 2010; Teece, 2007).

Additionally, these findings offer new evidence in support of the view that executives' cognitive style could influence firm-level outcomes (e.g. growth) through various intervening mechanisms (Wright and Stigliani, 2012). In this study at least one of the executives' practices that are oriented towards the pursuit of growth was captured. Although it did not provide a fine-grained analysis of the process of how it occurs, this study represents an important step in offering an explanation for why some firms are more likely than others to grow.

Finally, this moderated mediated joint interaction provides valuable evidence in favor of the contingency hypothesis in strategic management (Boyd, et al., 2011). Boyd et al. (2011:299) argued that future strategic management research is advanced by developing and testing multiple contingencies by using combined mediating and moderating interactions. The results show that the above joint interaction partially and fully mediates the relationship between executives' cognitive style and the growth of the firm, and the path coefficients varied when considering the role of perceived dynamism (Table 23). This suggests that these findings offer a more nuanced explanation of how the cognitive style of executives could lead to differential growth amongst firms. It also implies that moderation or mediation alone was insufficient to capture the nuance of the cognitive style-growth relationship from the view of dual information processing. This is because in strategic management literature, although direct effects are often very important, they are usually incapable of fully capturing the complexity of factors involved in executives-organization interactions (Boyd et al., 2011).

Therefore, it can be said that neglecting to incorporate such mechanisms undermines the ability to more fully understand how stylistic differences between executives make a difference in the way they lead growth of their firms. This also defends the need to further study these interactions. The next chapter addresses this issue.

6.2.7.4 An Additional Mediating Role of Emphasis on Business Model Innovation

An additional intervening mechanism was the way emphasis on business model innovation mediates the relationship between executives' acquisition of market and technological knowledge and growth of the firm. Analysis revealed that emphasis on business model innovation partially mediates the association between the acquisition of market knowledge and the growth of the firm under both conditions of low and high

dynamism. A similar observation was made for the association between executives' acquisition of technological knowledge and the growth of the firm (Table 24).

This evidence offers more support to the assertion that executives use their knowledge in making choices that are likely to increase the competitiveness of their firm by executing value-creating strategies (e.g. business model innovation as a growth-enabling choice) (Barney et al., 2011).

Two important theoretical implications germinate from the separate examination of paths linking market and technological knowledge to the growth of the firm. First, the existence of partially mediated paths suggests that relying on direct links between executives' knowledge acquisition and the growth of the firm (e.g. Chandler and Lyon, 2009) may not lead to a complete picture of how and why executives' knowledge asymmetries matter in the firm-level differences.

Second, it suggests that the market and technological knowledge acquisition of executives has a separate, indirect, and positive influence on the growth of the firm. This influence can be in the form of an increase in their capacity to detect and incorporate new business models in the strategies of the firm. Therefore, this evidence echoes the premise that knowledge asymmetries of executives are a key factor in the innovativeness of firms (Marvel, 2012). Hence, firms whose executives possess a richer market and technological knowledge repository are bestowed with a greater capacity to adapt to changing environments by adopting new business models.

6.3 Discussing Additional Interesting Quantitative Findings

It should also be stated at the outset that it could not be established whether the executives' knowledge acquisition drives or causes aspects of emphasis on business model innovation, or whether a reverse causal influence exists. Moreover, the same scenario exists for the causal link between growth and emphasis on BMI; that is, whether emphasis on BMI leads to growth, or firms which have recorded sustained growth tend to put more emphasis on BMI as arguments can be made for both kinds of relationship and also the rival models were shown to have an acceptable fit with the data. In addition, the data from the manufacturing sector are also inadequate to resolve the issue.

Furthermore, several interesting issues emerged from the analysis of covariates (control variables) that seem appropriate to discuss. First of all, the assessment of executives' demographics as a proxy of their cognition in strategic leadership (upper echelons research) led to a number of contradictory issues. For instance, it has been argued that executives' gender makes a difference in their innovative choice making (Shin and McClomb, 1998). This is rooted in the notion that male executives tend to be more autonomous, competitive, independent, ready for change and active than their female counterparts (Buttner and Rose, 1988). So, it is assumed that firms run by male executives tend to emphasize innovation more than those run by female executives. However, the results did not confirm this assertion and in fact no significant relationship was found between executives' gender and emphasis on BMI. Therefore, the picture of a BMI-emphasizing strategic leader that emerged from this study is gender-indifferent and therefore seems to be different from the dominant view in the literature.

There are two possible explanations for this finding. First, this non-significant relationship could have been caused by the sample size. Specifically, although the majority of respondents were male (88%), the overall sample size of 299 might not be sufficient to establish a statistically significant difference between male and female executives in the model. The second explanation is grounded in the context of the study. It is based on the notion that in developed economies such as Australia socio-cultural changes are increasingly against sexual stereotyping, which in return allows women to become executives and succeed at managerial levels (Daily et al., 1999). Furthermore, existing literature suggests that "both females and males possess the characteristics required for effective performance as managers" (Sexton and Bowman-Upton, 1990:29). Therefore, it is likely to be observed that gender does not play a significant role in the behavior of executives in this study.

Another finding concerns the executives' experience. Literature suggests that executives' experience is a key component of their existing knowledge base that is used in detecting new opportunities (Shane, 2000). This implies that executives with more general managerial and industrial experience exhibit a better ability to make sense of complex dynamic environments and detect potential opportunities for BMI. Despite this established notion, the results of this study show no significant difference in emphasis on BMI between more experienced and less experienced executives. This can perhaps be

attributed partially to the fact that in today's dynamic markets emphasis on BMI requires current market and technological knowledge (Burgers et al., 2008), which may marginalize or even obsolete the role and relevance of existing knowledge rooted in experience.

In regard to the executives' tenure, a surprisingly different finding was observed. Literature on the strategic leadership and management of small firms suggests that tenure curbs the innovative tendencies of executives (Miller, 1991; Nielsen, 2010). Tenure has been positively associated with rigidity and inertia which cause executives to become "stale in the saddle" (Miller, 1991). The findings tend to contradict this notion because the results of this study showed that executives' tenure is not correlated with their emphasis on BMI. This is not very unexpected because prior research on CEOs' tenure and firms' innovation is unequivocal. Some argue that tenure dampens innovation (Miller and Shamsie, 2001) and some provided evidence suggesting that tenure encourages innovativeness (Simsek, 2007). The important issue here is that previous studies have not paid attention to business model innovation and most of the existing research concerns the impact of CEOs' tenure on firms' overall innovativeness or product and process innovations (Miller, 1991; Miller and Shamsie, 2001; Simsek, 2007).

Findings regarding executives' age and education were, overall, consistent with the existing literature in strategic leadership. With respect to the executives' age, literature suggests that older executives tend to follow low-risk and low-growth strategies because they have less of the physical and mental stamina needed to grasp new ideas, process information, learn new behaviors, and implement innovative strategies (Barker III and Mueller, 2002). Thus, it was expected that younger executives place more emphasis on business model innovation than their older counterparts. The results were consistent with this prediction. It was found that the age of executives is negatively related to their emphasis on business model innovation.

In respect to the executives' education, strategic leadership literature assumes that education can be a proxy for cognitive complexity (Hitt and Tyler, 1991). This means that a high level of education is associated with a better ability to process information, discern patterns, discriminate stimuli, and make sense of dynamism and change, which increases the ability of executives to focus on strategic innovative movements (Barkema and Chvyrkov, 2002). In line with these arguments, it was found that executives' education is

positively correlated with their emphasis on BMI. This extends the boundaries of strategic leadership literature into the business model innovation field by providing new insights into the relationship between executives' education and their emphasis on business model innovation.

In addition to the findings about executives' characteristics, a number of issues emerged from the analysis of other control variables which seem appropriate to point out. First of all, research into strategic management and entrepreneurship suggests that environmental munificence is positively associated with the growth of the firm (Castrogiovanni, 1991). In particular, when executives perceive the environment as munificent they can both develop new capabilities more quickly and deploy their existing ones more easily to turn this positive aspect of the environment into profitable actions (Sirmon et al., 2007). This is particularly important for SMEs because they have less control over their environment and hence munificence in the form of perceived resourcefulness and less hostility has a significant positive impact on their growth (Bahadir et al., 2009). The findings of this study cast doubt on this argument as a negative correlation between executives' perceived munificence and the growth of their firm was observed. Therefore this study tends to reject the assumption that perceived munificence is associated with growth as previously documented by Bierly and Daly (2007) in a study of American manufacturing SMEs.

A possible explanation for this observation could be that although in strategic leadership literature the perception of the environment is more important than the actual environment, this is subject to psychological limitations and hence perceived high munificence does not necessarily mean that the environment is actually munificent (Miller et al., 2006). Therefore, it is possible to assume that a context that is perceived as benign (i.e. munificent) could be to some extent hostile. Furthermore, in small businesses the perception of hostility could trigger innovative actions (Plambeck, 2012). Hence, there could be a strong possibility that under conditions of low munificence executives try harder to govern growth by any means at their disposal. This is consistent with the observations of Covin and Slevin (1989) in small businesses suggesting that in less munificent contexts the tendency to be innovative increases as a way to trigger growth. This interaction was not examined in this research. In the next chapter, this issue will be discussed as a subject for further investigations.

Another interesting point about the perception of munificence concerns the degree of knowledge acquired by executives. Resource-based literature suggests that in munificent and less hostile environments executives have more capacity to acquire resources (Sirmon et al., 2007), but knowledge-based literature has not discussed this issue within the domain of knowledge acquisition. Extending this logic into KBV, executives can arguably acquire more knowledge in munificent environments but findings of this research suggest the opposite. It was observed, in the present research, that, in less munificent environments, executives tend to acquire more market and technological knowledge.

This finding can be discussed from the perspective of the size of the firm. Literature suggests that when executives of large firms perceive their environment as munificent they quickly increase their learning and acquisition of knowledge in order to develop new strategies to take advantage of opportunities and resources available in their environment swiftly (Goll and Rasheed, 2005). This is because large firms have more resources and abilities to take advantage of the environment (Plambeck, 2012). On the other hand, in resource-poor firms such as small enterprises (SMEs) the most important resource is knowledge of the environment (Macpherson and Holt, 2007). Therefore, when the environment becomes less munificent in terms of resources and opportunities, executives feel the pressure to learn more about the conditions in order to devise new ways of operating competitively under tough conditions. This increases their acquisition of knowledge. This argument is in accordance with the key thesis of absorptive capacity suggesting that the acquisition of knowledge is triggered by the perceived need for new knowledge and the availability of knowledge inside the firm (Zahra and George, 2002). Accordingly, due to the resource deprivation and lack of internal knowledge creation ability small firm executives rely heavily on external knowledge as a key resource to compete and grow. Therefore, when acquisition of other resources becomes difficult (i.e. less munificence), reliance on external knowledge increases, and so does its acquisition.

It is believed that this finding adds to and extends both RBV and small business literature by: 1) empirically supporting the notion that the acquisition of knowledge as a resource is influenced by executives' perception of environmental munificence, and 2) showing that small firms behave differently in this context in that executives of these firms acquire more knowledge in less munificent environments. It should be noted that, as

the results of the analysis in Chapter five showed, this explanation applies for both market and technological knowledge.

In respect of the family ownership, two interesting findings were observed. First, literature offers inconsistent evidence on the growth of family versus non-family firms. Some research suggests that family businesses under the leadership of the owner can boost their market share and sales better than non-family firms (Minichilli, Corbetta, and MacMillan, 2010). This stream uses RBV and argues that family businesses can develop a unique set of resources and capabilities due to their history, heritage, and family structure, which is an advantage over non-family firms (Minichilli et al., 2010). On the other hand, the second explanation stems from agency theory which purports that concentrated ownership increases agency costs and conflict which in return reduces growth performance (Smith, 2008), and similarly, due to agency conflicts and the overriding need to retain control of the firm for the family, family businesses do not consider growth as a primary objective (Smith, 2008). Therefore they tend to grow, in general, less than non-family firms.

With regard to the emphasis on innovation and the influence of family ownership, literature offers two contrasting views. On the one hand, some argue that in dynamic environments emphasizing business-level changes such as business model innovation requires fast and flexible assessment of options, and decision-making which is carried out in family businesses is easier than in non-family firms due to their concentrated communications as well as built-in behavioral practices (i.e. familiness) (Minichilli et al., 2010). On the other hand, some posit that family firms are resistant to change and strategic innovations due to their stickiness to family values, history, established family business vision, and style of production, marketing, etc. (Smith, 2008; Minichilli et al., 2010). Given these two views, it was found that, in terms of emphasis on BMI, family businesses are not different from non-family manufacturing firms (i.e. no statistically significant correlation between family ownership and emphasis on BMI was observed). This provides further evidence for the assertion that family ownership does not always make a difference in the choices that executives make and their subsequent firm-level outcomes such as growth.

The findings from the analysis of the control variables can be concluded by explaining the impacts of firms' age and size. In Chapter four it was indicated that the study is controlled for the role of these variables in both executives' emphasis on BMI and the growth of the firm.

In respect of the former, a commonly agreed contention is that larger firms are better able to introduce product and process innovation because of the resourcefulness and ability to spread risk and costs (Damanpour, 2009), while their firm-level innovations such as business model reinvention is dampened by their bureaucratic and hierarchical nature (Afuah, 2009). This is even more important for effective adoption of innovative business models due to the size and complexity of their business models (Johnson et al., 2008). On the other hand, smaller firms tend to be more creative, flexible, and capable of turning new business model ideas into market performance with less development costs (Chesbrough, 2010). So, in general, the size of the firm does matter in executives' emphasis on BMI. The findings of the present study supported this postulation. It was found that the size of the firm is negatively related to the executives' emphasis on BMI. That is, in sum, smaller Australian manufacturing firms tend to place more emphasis on business model innovation than do larger ones.

Moving from BMI to growth, it was noted that growth rate is proportional to the size of the firm. But in general, literature holds that the growth rate of larger firms is greater than that of smaller firms simply because they have more resource slack (Penrose, 1959). It was also discussed that Gibrat's law holds that growth rate is independent of the size of the firm. This law has been violated by many studies in numerous contexts including the small manufacturing sector (Petrunia, 2008).

Furthermore, recent observations showed that some particular types of small firms such as high-growth ventures and born-global firms grow more than large firms in an industry through leveraging knowledge assets and networks (Hamilton, 2012). So, in sum, the association between the size of the firm and its growth remains largely unclear (Uhlaner et al., 2012). This study also intensifies this claim because no statistically significant association between the size of the firm and growth was found in this survey of Australia manufacturing SMEs. This calls for further investigation which will be discussed in the next chapter.

Regarding the age of a firm, literature points out that many arguments pertinent to the behavior of the firm are common with those of the size of the firm and its behavior because it is generally assumed that firms grow as they age (McKelvie and Wiklund, 2010). Therefore, in principle, larger firms are generally older and younger firms are smaller. In light of that, it has been argued that younger firms in general have developed fewer routines and their executives are less accustomed to the existing business model. Therefore, they are not likely to suffer from the cognitive inertia involved in leading business model innovation and have a greater capacity to develop the new routines and capabilities required for getting new business models to succeed in the markets (Zott and Amit, 2007, 2008).

So, it is to be expected that younger firms experience a smoother transition from an existing to a new business model than older firms. This reasoning leads to the expectation that the executives of older firms are less prone to emphasizing BMI than those of younger firms. The findings of this study, however, did not support this claim. In fact, no significant correlation between the age of the firms and their executives' emphasis on BMI was found. This could perhaps be explained by the fact that in the present study all executives, regardless of the age of their firms, tend to emphasize BMI, and this precluded a statistical correlation between firms' age and executives' emphasis on BMI. As will be explained in the next chapter, future studies can further examine these issues.

Similarly, literature suggests that older established firms (i.e. incumbents) tend to show a higher growth rate because they have accumulated more knowledge and resources, gained legitimacy, and developed various capabilities (Penrose, 1959). Despite this reasoning, there are some exceptions to this logic: for instance, start-ups (firms less than five years old) grow fast, which can be explained by stage theory which argues that the early stages of business establishment are usually characterized by rapid and high growth (Phelps et al., 2007).

In addition, born-global firms are young small firms that focus on sales and grow rapidly into international markets within three to five years of their establishment (Sepulveda and Gabrielsson, 2013). And finally there are gazelles, which are small firms that grow rapidly (Fischer and Reuber, 2003). In this study, start-ups were excluded and born-global firms and gazelles were not distinguished from other firms in the study. Due to this complexity in types of firms, previous research seeking the relationship between

the age of the firm and its growth resulted in inconclusive findings (e.g. Yasuda, 2005; Hamilton, 2012; Coad and Tamvada, 2012). So, in the sample of small firms in the present study a correlation between growth rate and age was sought. The results were consistent with the recent work of Hamilton (2011) on small firms in New Zealand indicating that the age of the firm does not have any bearing on the growth of the firm.

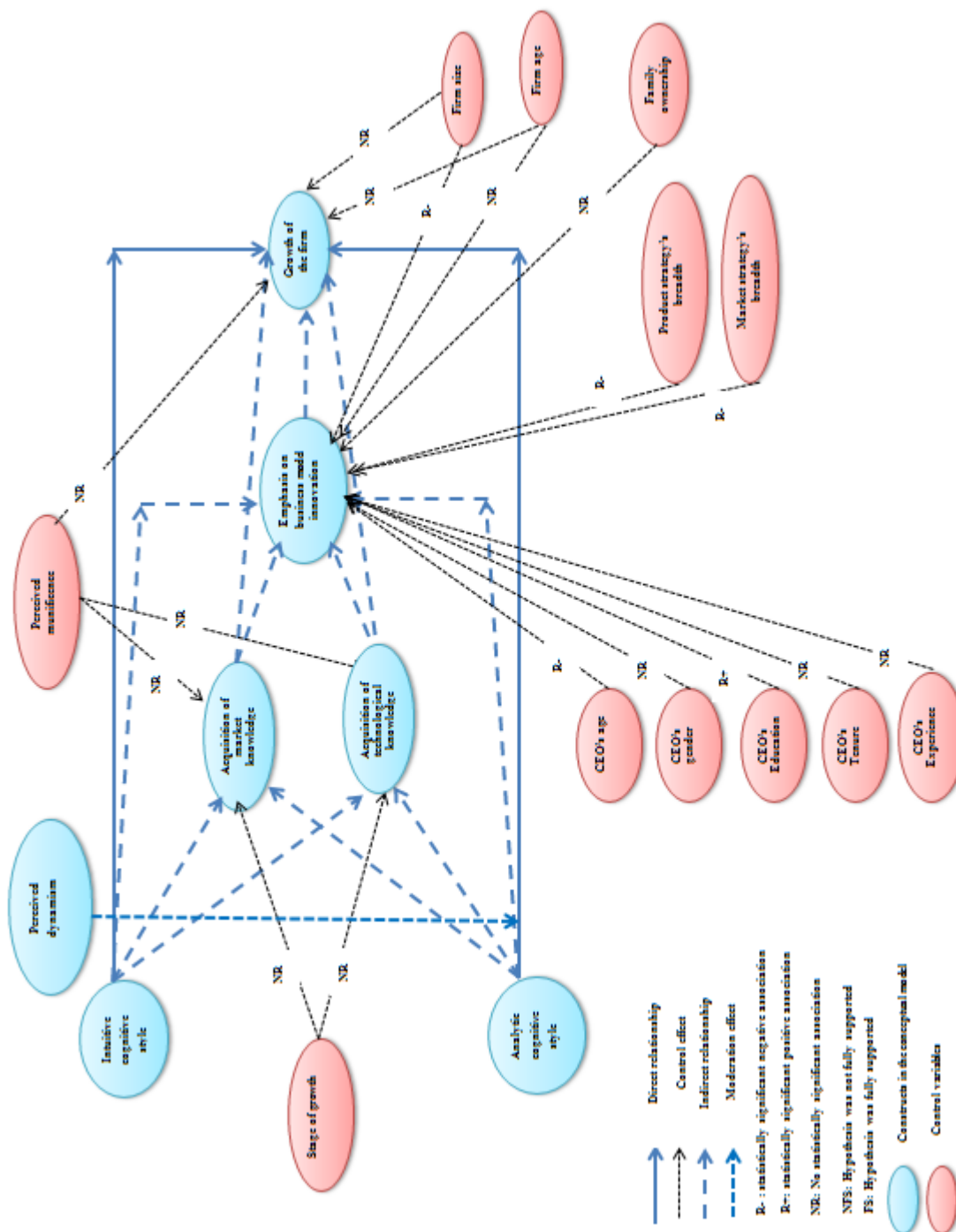


Figure 21: Control Variables and their Influences on Research Variables

In summary, the analysis of the control variables results in several interesting findings as explained. However, despite these issues it should be noted that the amount of variance explained by these factors is small, as illustrated in Chapter five. This, on the one hand, suggests that the paths proposed and tested in the model are not biased by the influences of the control variables and on the other hand raises the possibility that non-significant

variance created by the control variables could be partly caused by the sample size or the nature of the moderated-mediated model. Hence, a different arrangement of variables and bigger sample size may lead to different findings. Therefore, this issue must be taken into consideration when using these findings.

6.4 Discussing Additional Interesting Qualitative Findings

The qualitative section sought to piece together the facts obtained from the interviews into a richer understanding of the hypotheses. So it was not designed to develop a new framework, nor was it to propose new causations between the variables. Rather, executives from different firms were invited and interviewed in the hope of providing a better understanding of the hypothesized associations and to explore additional aspects of the research model. The analysis both led to corroborating evidence for some of the hypotheses as discussed and shed light on some additional interesting issues which will be discussed in this section.

6.4.1 Discussing Modes of Knowledge Acquisition

It was argued and empirically supported that market and technological knowledge are two distinctive types of knowledge (Burgers et al., 2008; Sullivan and Marvel, 2011a). It was also shown that these two play a complementary role in the behavior of a firm. During the qualitative analysis a new theme was observed that would extend and enrich the understanding of the interaction between market and technological knowledge.

It was found that two interactive modes can be assigned to the way executives acquire market and technological knowledge. These two can be termed “knowledge about” and “knowledge from.” The former denotes “the context of information” and the latter indicates “the source of information.” Accordingly, executives can acquire “market knowledge about technologies,” “market knowledge from technologies,” “technological knowledge about markets,” and “technological knowledge from markets.” To discuss these modes the following matrix (Table 40) is proposed.

Table 40: A Matrix for Knowledge About and From

	Market	Technologies
Market knowledge about	-	1
Technological knowledge about	4	-
Market knowledge from	-	2
Technological knowledge from	3	-

Cell number one indicates that executives can acquire market knowledge about technologies. This knowledge can be used to commercialize a technology. More specifically, this knowledge can be about ways to commercialize different aspects of technologies such as new production methods, processes, raw material, etc. (Kotabe et al., 2011). In the data it was found that executives acquire market knowledge about a wide variety of technological issues to develop new business models. This observation is particularly congruent with Chesbrough and Rosenbloom (2002) who showed that market knowledge about technologies is converted into business models that commercialize new technologies.

Cell number two illustrates another interaction suggesting that executives can acquire market knowledge from technologies. This is important in that the current convention holds that market knowledge is basically acquired through orientation towards and interactions with markets (Slater and Narver, 1995; Morgan and Berthon, 2008). It was, however, found that executives can obtain important market insight from technologies. For instance, they can learn about customers' trends and changes based on technological advancements. This issue has been implicitly addressed in the literature but this finding enables this study to explain this interaction more explicitly.

The third cell sheds light on the observation that executives can also acquire technological knowledge from markets. This means that understanding markets could enhance and add to the technological understanding of executives. An important simplification of this finding is that exposure to markets can lead to technological breakthroughs, which is opposite to the common understanding of technological progress rooted in research and development (R&D) (Cuervo-Cazurra and Un, 2010). In light of this, it also has contextual significance and relevance because it emerged from a study on

executives of small businesses which are characterized by a lack of investment in R&D (Abeson and Taku, 2009).

The last cell, cell number 4, indicates that executives can also acquire technological knowledge about markets. This means that an executive can understand how a technology performs in a market or how a market responds to a specific technological change. For instance, executives can learn how a specific machinery, raw material, or methods of production enhance their market performance. This resembles acquisition of market knowledge about technologies and implies that both markets and technologies are intertwined and cannot be separated and distinguished in the actions of executives.

A potential explanation for the occurrence or existence of these interactions is the fungible and tacit nature of knowledge acquired by executives. As discussed in Chapter two, market knowledge is about how markets work and technological knowledge is about how products and production methods work. Literature suggests that although these two are distinct, they have common dimensions (Sullivan and Marvel, 2011a; Burgers et al., 2008). For instance, technological knowledge may have potential demand side application (Marvel and Lumpkin, 2007). Furthermore, when these types of knowledge are acquired by executives they become a part of executives' overall knowledge repository. This repository contains tacit knowledge which cannot be fully codified and transferred to another person. It is also subjective, which could be interpreted in different ways as executives interact with their business and learn new practices (Penrose, 1959). In addition to that, market and technological knowledge are separate objects of perception (Burgers et al., 2008). Bounded rationality principle suggests that executives rely on heuristics and tend to develop different perceptions to bridge different issues such as the perception of markets and technologies in order to simplify their learning and decision-making.

These mechanisms suggest that when these two sources of knowledge are acquired and interact in the mind of executives they could result in different interpretations. For instance, one executive could find something interesting about customers when assessing features of a product (i.e. market knowledge from technological knowledge) or something interesting about a new production method by observing the way customers' needs change (i.e. technological knowledge from market knowledge).

This reasoning is consistent with the research in human capital. It suggests that new knowledge interacts with the existing knowledge and experience and is interpreted based on contextual needs to enable the achievement of various goals (Marvel and Lumpkin, 2007; Hatch and Dyer, 2004). An important implication of these findings is that the interactions between market and technological knowledge can be explained in four different modes and these four can be used in developing and adopting new business models. Based on this reasoning, the previously proposed causal links can be extended conceptually to accommodate these four modes. Figure 22 offers a schematic view of this conceptual extension.

Finally, it should be noted that this inductive extension is based on a very limited number of interviews and hence lack methodological rigor criteria such as rich data, theoretical saturation, and grounded theorization, which are required for a reliable qualitative theoretical extension and development (e.g. Hensman and Sadler-Smith, 2011; Bluhm et al., 2011). This shortcoming can be justified by the fact that the primary purpose of the qualitative phase of this study was confirmatory not exploratory and hence the design and conduct of the qualitative section do not support qualitative theory development methodology. Therefore, although these findings may seem interesting they are limited to the context of this study and their generalization and interpretation must be made with extra caution.

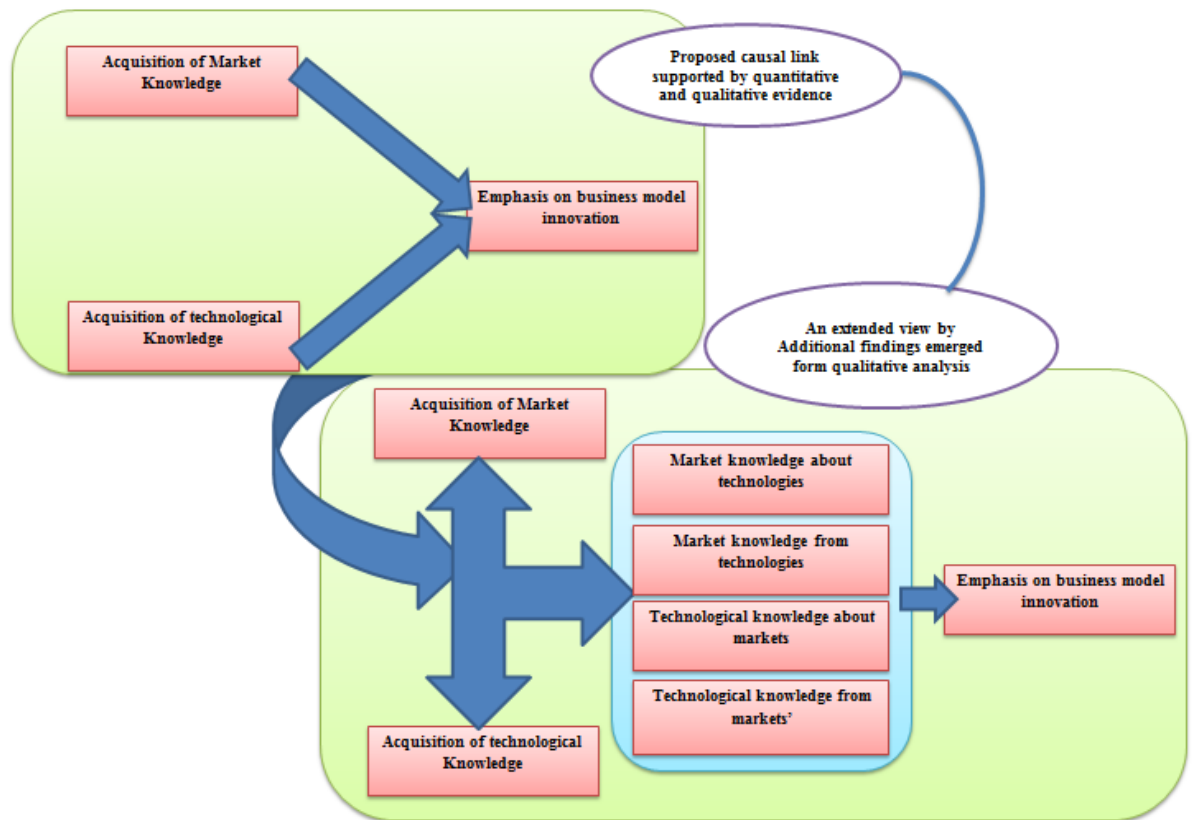


Figure 22: Illustrating Knowledge About and From Interactions in the Research Rationale

6.4.2 Discussing Pre- and Post-Ideation Knowledge Acquisition

It was argued and empirically supported that executives' acquisition of market and technological knowledge influences their emphasis on business model innovation. A related theme that emerged during the qualitative analysis extended this association. It was observed that executives' acquisition of knowledge is related to two phases of business model innovation which can be called "pre-ideation" and "post-ideation."

In the pre-ideation phase knowledge is acquired to evaluate the new business model or shape the idea that defines it. In the post-ideation phase the market and technological knowledge are sought to reduce the uncertainty involved in the enactment of the new business model or enhance transition to the new business models and make it succeed in the marketplace.

This finding can be explained from both entrepreneurship and knowledge-based literature. According to the effectuation theory in entrepreneurship, in small businesses adoption of a new business model takes place through effectuating the behaviors of executives (Chesbrough, 2010). In effectuation, an innovative idea, such as a new

business model, is not clearly envisaged, rather it is conjectured up (Morris et al., 2005). More specifically, executives' emphasis on a new business model begins with a generalized aspiration and then environmental knowledge (e.g. market and technological) is increasingly sought to form and assess different ideas and gain control over the uncertainty involved in enacting or operationalizing the idea that could work best (Perry et al., 2012). During this process executives seek different sources of knowledge to adjust their cognitive frame in order to identify the best business model and enhance the transition of their firm to it (Chesbrough, 2010). This view could explain the associations of pre-business model ideation and post-business model ideation with the market and the technological knowledge acquisition explored in the findings. Furthermore, this is consistent with George and Bock's (2011) argument that in a small business the business models are gradually adopted to enact an opportunity.

Therefore, executives' emphasis on new business models may represent their aspiration which is translated into a new idea by engaging in knowledge acquisition and is enacted by the accumulation and deployment of resources. In order to illustrate how this finding extends the causal link examined previously, a schematic conceptualization of this explanation is presented in Figure 23.

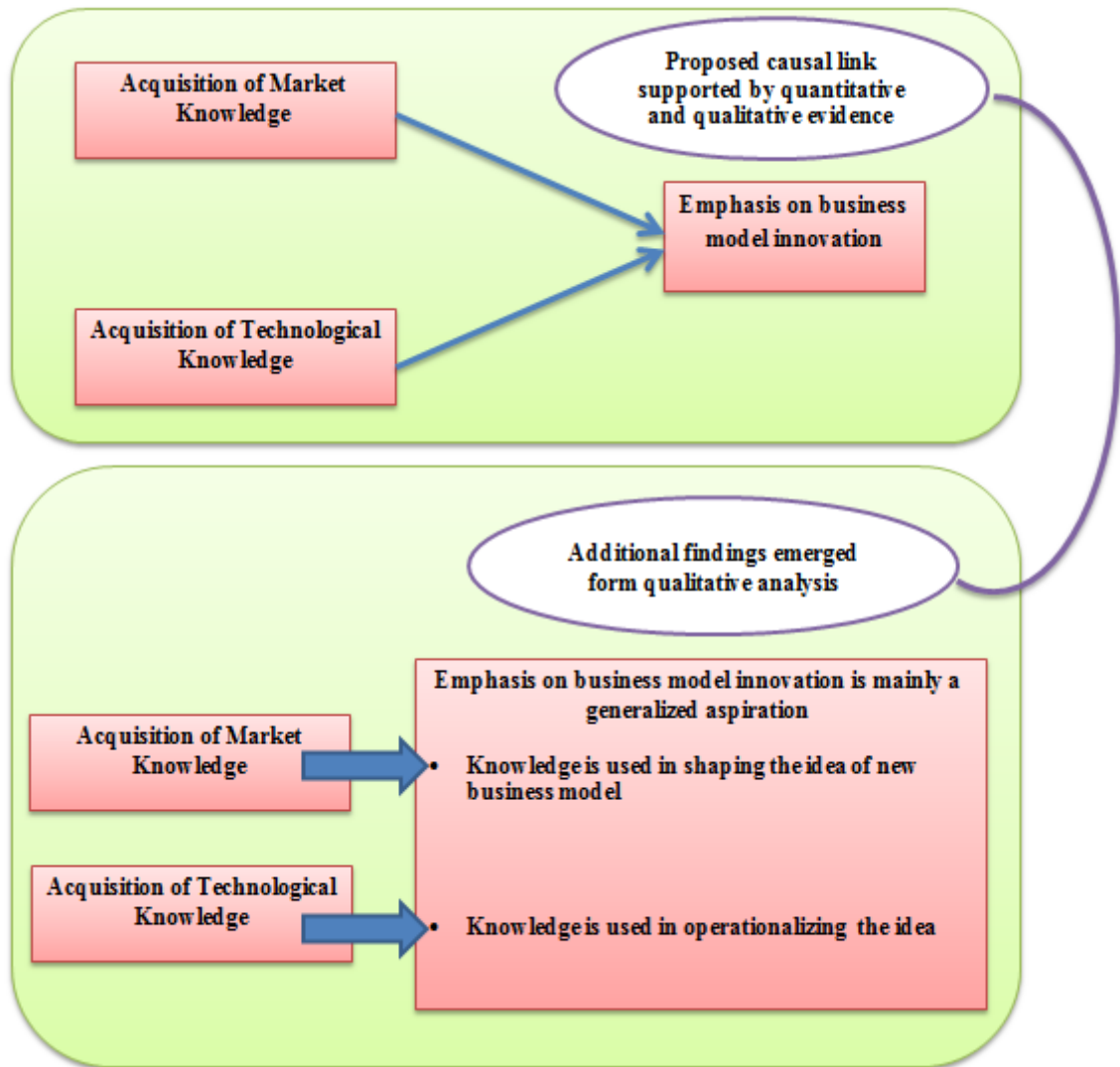


Figure 23: Illustrating Emergent Themes of Post- and Pre-BMI Ideation Acquisition of Knowledge

The second explanation for the above finding is rooted in the knowledge-based view. According to the knowledge-based view, executives constantly seek knowledge to choose and execute value-creating strategies (Barney et al., 2011). Business model innovation is a value-creating strategy that has the potential to create lasting competitive advantage (Morris et al., 2013). It is, however, accompanied by uncertainty and unpredictable outcomes and brings about numerous opportunity costs (Desyllas and Sako, 2013). Therefore, knowledge as a resource is extensively sought and used by executives in both evaluating different options to choose the business model that fits the firm's competencies and capabilities (Berghman et al. 2012) and executing it by formulating and performing the required activities using the firm's existing and new resources (Sirmon et al., 2007).

Therefore, although the literature warrants the link between executives' acquisition of market and technological knowledge and their emphasis on business model innovation by suggesting that knowledge brings the capacity to innovate (Marvel, 2012), this association is more than meets the eye.

The finding explained in this section, for instance, suggests that knowledge is used in shaping and enacting the business model idea. In light of the above explanations, this finding is significant in that it shows that executives' emphasis on new business models as a strategic choice can be broken down into: 1) an emphasis on shaping the right idea (contemplating new business models) emerging from market and technological knowledge, and 2) enacting it by using existing and new resources.

This decomposition extends the view of the link between executives' acquisition of knowledge and the strategic choice of business model innovation by illuminating two possible ways in which this link functions and reinforces the previous finding that in small businesses, such as Australian small manufacturing firms, executives do not confine their firms to one business model but by emphasizing new business models they engage in a constant evaluation and execution of ideas that promise new value logics.

In light of the above, it should be noted that this exploratory approach is limited in scope and conceptualization because it is based on a simple thematic analysis of five interviews. Hence, it is neither generalizable nor grounded. Therefore, caution must be exercised when using this additional finding.

6.4.3 Discussing Heterogeneity in Forms of Business Model Innovation

The final interesting finding that emerged from the analysis of interviews suggests that business model innovation can take different forms. A theme that emerged from the analysis of interviews indicates that executives tend to see business model innovation as a way to challenge established rules in their industries and markets. Hence, it is not a specific strategic action but a managerial philosophy or logic. Therefore, emphasis on business model innovation reflects a tendency to become and stay different. An implication of this finding is that emphasis on business model innovation may lead to the development of different innovative business models.

This finding is consistent with the core logic of differentiation in strategic management and perhaps could explain the related finding that firms with an emphasis on business model innovation were found to archive better competitive growth. According to Porter (1996), strategy is all about being and becoming different. Doing something different or doing things differently. Applying this logic to business model innovation gives rise to the view of business model innovation as a development of different business models, business models which enable the firm to do things differently or do different things (Matzler et al., 2013).

The analysis of interviews showed that executives have different views of what their business model is and what innovative business models they can develop from their current business model by emphasizing business model innovation. This finding is important and adds to the previous findings in the sense that , an emphasis on business model innovation is different from both business model innovation and innovative business models. This insight helps us clarify the notion of emphasis on business model innovation. It was shows that this phenomenon is influenced by executives' acquisition of knowledge and also influences the growth of the firm through resulting innovative business models (Figure 24).

Specifically, synthesizing this argument with the literature on business models (Zott et al., 2011; George and Bock, 2011) suggests that “emphasis on business model innovation” is a tendency or business orientation towards engagement in “business model innovation” as a process and “innovative business models” are the results of this process (Zott and Amit, 2007; Aspara et al., 2010; Chatterjee, 2013). Synthesizing this argument with previous findings indicates that fostering business model innovation as a strategic philosophy is highly likely to lead to desirable growth outcomes. This conclusion is in line with the argument put forward by Rosenbusch et al. (2011:441-442) that: “fostering an innovation orientation has more positive effects on firm performance than creating an innovation process. Because by focusing only on one innovative offering executives could miss important dimensions which are essential for realizing the value that innovation can provide for their firms.”

Thus, it seems reasonable to argue that executives of Australian small manufacturing firms develop a strong tendency towards business model innovation and this may lead to the development of different innovative business models which positively impact the

growth of their firms. Based on this explanation, the below conceptual figure (Figure 24) has been developed to summarize this finding.

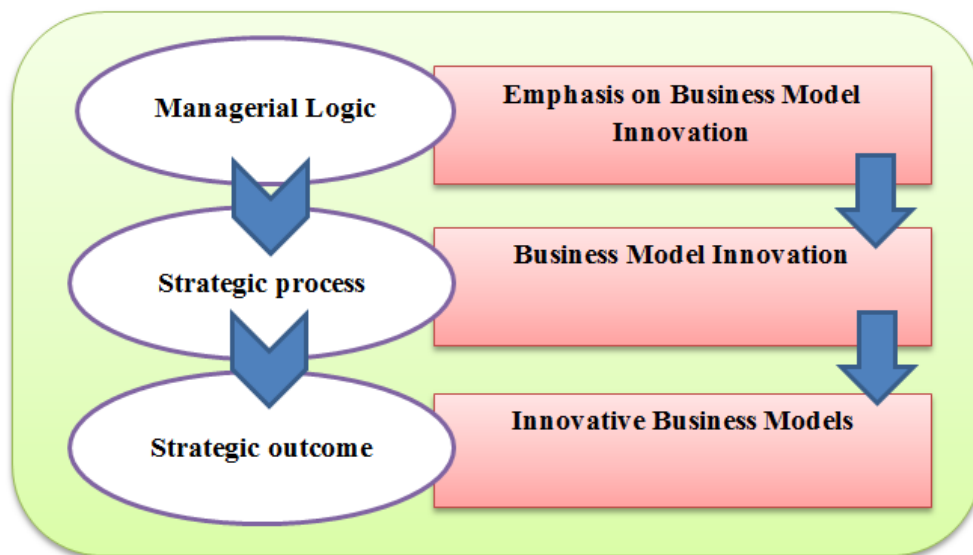


Figure 24: Illustrating how Emphasis on BMI Could Lead to Different Innovative Business Models

6.5 Discussing Contextual Relevance of the Findings

In addition to the above theoretical explanations, the context of the study also provides reasons to reach at similar conclusions. Australian small businesses have been under intense domestic and international competition. From the domestic perspective, the Australian manufacturing sector is under increasing pressure due to softening of domestic demand, rising input costs, the small size of the domestic market, and the penetration of competitive products from low-cost economies such as India and China (Australian Business Foundation report, 2011). This makes manufacturing more reliant on adopting new business models and know-how (Australian Business Foundation report, 2011). Consequently a positive relationship between adoption of business model innovation and firm growth can be envisioned.

Similarly, the study setting offers reasons for supporting the associations between executives' market and technological knowledge and growth of the firm and also emphasis on business model innovation. An entrepreneurial market-based advanced economy (Parker, 2001) business environment in Australia is complex and dynamic. Consequently, continuous learning about the markets and technologies is a fundamental task of executives in Australian small manufacturing firms (Terziovski, 2002,2010).

Without acquiring knowledge about markets and technologies, managers not only lose sight of opportunities required for innovation and growth but also lose the capacity of dealing with threats and respond effectively to domestic and international competitive forces.

Finally and with respect to the direct and indirect roles of executives' cognitive styles in enhancing innovation and growth, the study of Crossland and Hambrick, (2011) shows that Australian executives enjoy a high degree of discretion which allows them to have an important impact on the strategies and performance of their firms. This latitude of action also enables Australian executives to convert their cognitive tendencies into strategic goals, actions and outcomes in an easier fashion compared to executives in other countries such as Korea or India where institutional forces limit the capacity of managers (Crossland and Hambrick, 2011).

In light of this argument, the findings of this study are important as they offer new insights into the way executives of Australian small manufacturing firms lead the growth of their firm. The managerial implications derived from these findings will be discussed in the next Chapter.

From the broader international perspective, it is known that the Australian manufacturing sector has become integrated with the global value chain which makes it both prone to global fluctuations and vulnerable to changes in the world manufacturing landscape such as the rise of low-cost economies and the rising Australian dollar, narrowing profit margins, and increasing social and environmental regulations affecting export and production (Australian Business Foundation report, 2011). Furthermore, Australia is an innovation-driven economy with an increasing competitiveness in the global landscape (Schwab and Sala-i-Martin, 2012). This point further underscores the importance of the findings of this study and suggests that they have international importance and relevance.

6.6 Summary of the Chapter

This chapter discussed and elaborated the key findings of this research based on the results of qualitative and quantitative analysis as reported in the previous chapter. This discussion was organized into three sections. The first section synthesized and discussed the key findings of the research related to the research hypotheses. The second section discussed additional interesting quantitative findings derived from the analysis of the control variables, and the last section threw light on the additional qualitative findings of the study that emerged from the qualitative analysis. Based on these findings, the next chapter discusses the key theoretical and practical implications of the study and present limitations and a number of directions for future research.

-CHAPTER SEVEN-

-Conclusion-

7.1 Introduction

This chapter is the concluding part of this research. It shows how qualitative and quantitative analyses have addressed the research questions, and explains how the objectives of the research have been met. Accordingly, implications for research (theoretical contributions and extensions) as well as managerial practice will be discussed. The chapter will then finish by discussing the limitations of the research and proposing some suggestions for future research.

7.2 Addressing the Research Questions

This section briefly illustrates how the findings as discussed in the previous chapter address the research questions proposed in Chapter one. Two questions were stated. The first question was about the role of executives' dual information processing (i.e. duality of cognitive style) and the growth of their firms, and the second question addressed the intervening role of executives' knowledge acquisition and their emphasis on new business models in the link between cognitive style and the consequent growth outcome of their respective firm. Both questions incorporated the role of environmental dynamism into the causal links.

7.2.1 Answering Research Question One

In regard to the first question, the quantitative analysis reported in Chapters five and six suggests that the duality of executives' cognitive style matters in the growth of their firm, particularly in the face of dynamism. It was found that the cognitive style of executives has contemporaneous effects on the growth outcomes of their firms. Empirical evidence showed that in more dynamic contexts intuitive executives lead their firms towards growth better than their analytic counterparts. On the other hand, analytic executives achieve better growth outcomes under more stable circumstances. In addition, without considering dynamism, the differences between analytic and intuitive executives

are not very discernible. These findings concur with the predictions of dual information-processing theory (Hodgkinson et al., 2009a, b).

Qualitative evidence also lent further support to these assertions. In particular, it was observed that when executives perceive their business environment as dynamic and fast-changing they tend to rely and act on their intuitions. Therefore, executives with a natural intuitive style act more effectively than their analytic counterparts. For instance, an analytic executive expressed that: “I have intuitions but I don’t act on them even though I know they might help me in choosing the right way.” While an intuitive executive said that: “My intuitions are very important in my administration; sometimes when I feel a great deal of uncertainty they show me the right move and they proved to be very effective in the way I have led my firm” (Appendix 60).

7.2.2 Answering Research Question Two

With regard to the second question, it was found that executives’ duality of cognitive style makes a difference in their acquisition of market and technological knowledge. More specifically, structural equation modeling showed that intuitive executives tend to acquire more knowledge in the face of dynamism and analytic executives are more successful in the knowledge acquisition task in more stable contexts. This was consistent with theoretical predictions as explained in Chapter six.

Another interaction was proposed between executives’ knowledge acquisition and the emphasis that they place on adopting new business models or alternatively business model innovation. It is important to note that it was proposed and tested that both market and technological knowledge contribute to the choice of business model innovation. Qualitative evidence supported the idea that executives acquire market and technological knowledge from both markets and technologies and this combination enables them to detect new business models and plan to lead their firm to have a competitive transition from existing new business models to the new one and achieve aspired growth outcomes.

Additionally, qualitative and quantitative evidence provided support for the speculation that emphasis on business model innovation (adopting new business models) is an important driver of growth. In other words, firms whose executives place more emphasis on business model innovation exhibit better growth outcomes.

To conclude, it was proposed theoretically and tested empirically that executives' cognitive style plays a significant role in their knowledge acquisition and this acquisition of knowledge brings about the capacity to adopt new business models. These interactions occur in the face of dynamism and act as an intervening mechanism in the relationships between executives' cognitive style and the growth of their firms.

7.3 Theoretical Contributions and their Implications

This study draws attention to the key theoretical implications of this research based on the contributions as briefly explained in Chapter one and in the discussions of Chapter six. In keeping with that, this section follows the suggestions of Bergh (2003). Bergh argues that the content of theoretical contributions in a research must be properly explained and evaluated. Therefore, this section explains and justifies the significance of contributions on the basis of the findings of this study.

7.3.1 Contributions to the Growth Literature

Wiklund et al. (2009) argue that the growth of the firm can be explained from different perspectives; however, theory development in the growth of SMEs has suffered from a lack of conversation between these perspectives. This study addressed this central issue by proposing and testing a framework that integrates insights from a strategic cognition perspective (i.e. CEOs' cognitive style from a dual-system perspective), resource-based view (i.e. CEOs' acquisition of knowledge as a strategic resource), and strategic decision-making or alternatively strategic choice view (i.e. CEOs' emphasis on business model innovation as a strategic choice). This orchestration of variables has an important implication for the growth literature. It can accordingly be said that, in line with Wiklund et al. (2009), the understanding of the underlying intervening mechanisms of the growth of a firm even in small businesses—as a compact and relatively simpler system of activities—requires insights from different views.

Furthermore, the key thesis of this research was a quest for an explanation of why CEOs' cognitive style may matter in the growth of the firm. It therefore responds to calls for more research at the micro-level, one that primarily concerns executives' cognition and agency (i.e. engagement of executives in different courses of action) and its impacts on the firm-level outcomes (e.g. growth) (e.g. Baer et al., 2013); by linking the dual-system view of the cognitive style to the executives' knowledge acquisition and their

tendency to choose BMI, this study developed and tested a micro-level framework which could enrich research in the micro-foundation of growth.

The implication of this approach for the literature on the micro-foundation of growth is that the interactions at the micro-level offer mechanisms that enhance growth of the firm in direct and indirect ways. These mechanisms can be tested effectively on small firms. This is because, size of small firms and the pivotal role of their CEOs in managing their growth provide a litmus test for examining the link between micro-mechanisms and firm-level outcomes (Lubatkin et al., 2006). Furthermore, this multi-theoretical view added to and extended several fields of research which will be explained in the following sections.

7.3.2 Contribution to the Resource-Based View

One of the key theoretical contributions and implications of this research is pertinent to the resource-based view of the firm (RBV) and stems from a contribution to the notion of acquisition of resources. In RBV, executives' knowledge is a key strategic resource of the firm which is an essential input into strategy formulation and implementation (Barney et al., 2011). RBV, however, takes the existence of this resource for granted and in fact it assumes that resources are given (Barney and Clark, 2007). Therefore, recent reviews of this literature have called for research on the mechanisms of resource acquisition in the firm (Wernerfelt, 2011; Maritan and Peteraf, 2011). Knowledge acquisition in this regard is a phenomenon that leads to the formation of executives' knowledge base (Nag and Gioia, 2012).

In this study the role of executives' cognitive style from a dual-system view was examined in this context and it was found that this cognitive attribute plays an important role in executives' acquisition of market and technological knowledge. It was also observed that perceived dynamism moderates the intensity of knowledge acquisition in that, in perceived high dynamism, an intuitive system acquires more knowledge than an analytic system. Therefore, this study added to the understanding of resource acquisition as a less explored strand of research in RBV and implies that the acquisition of knowledge by executives is directly influenced by the interactions between the duality of their cognitive style and environmental conditions. Furthermore, this finding implied that the joint effects of cognitive style and perceived dynamism influence resource heterogeneity at executive level and by implication at firm level and could offer an explanation for the asymmetries in the human capital of executives and their potential

impacts on the competitive success (i.e. growth) of the firms (Coff and Kryscynski, 2011).

More specifically, this research provided further support for the claim that in SMEs knowledge acquisition is largely dependent on the cognitive capacity of management (Thorpe et al., 2005). The empirical findings of this research are markedly in favor of the fact that SMEs whose executives (CEOs) have acquired more market and technological knowledge, as both a strategic resource and a component of their general human capital, have achieved higher growth.

7.3.3 Contribution to the Strategic Cognition Literature

The contributions of this research to the strategic cognition literature can be explained in two ways. First, although cognitive style has been studied extensively in the strategic cognitive view (Armstrong et al., 2012a), the role of the dual-system perspective in this context had been conspicuously neglected (Chaston and Sadler-Smith, 2012). So, this study enriched this literature by providing new insights into the role of executives' cognitive style from the dual-system view. It particularly showed that the duality of cognitive style makes a difference in the growth mechanism under different dynamism. An important implication derived from this finding is that a dual view of cognitive style provides richer and more accurate understandings of the link between executives' cognition and their behavior in a firm. Therefore, in accordance with theoretical expectations, a dual view has the potential to inform the behavior of executives better than the traditional unitary view as it distinguishes between two different cognitive mechanisms and their subsequent behaviors (Hodgkinson and Healey, 2008, 2011). Hence, as the proposed framework and empirical findings of this research suggest taking a dual view, the behaviors of executives can be explained and related to their cognitive preferences with more clarity and less ambiguity.

Secondly, Narayanan et al. (2011) argue that strategic cognition literature has been slow to realize the full potential of executives' intuition and its difference with rationality (analytic style). This study contributed to this domain of inquiry by showing that executives' intuitive and cognitive styles are two different styles which impose different influences on executives' choice making (i.e. emphasis on business model innovation). However, contrary to expectations, the assumption that perceived dynamism differentiates these influences did not hold in this study. This finding was discussed in

Chapter six and implies a need for further investigation which will be addressed later in this chapter.

7.3.4 Contribution to the Business Model Literature

Business model innovation has recently surfaced in the strategy and entrepreneurship literature as a unique unit of analysis and a separate field of research in need of more focused research (Zott et al., 2011; Spieth et al., 2013). In this regard, the strategic leadership perspective or upper echelons theory claims that the behaviors of the firm are a reflection of the choices that its executives make (Finkelstein et al., 2009). An extension of this view is executives' strategic entrepreneurial mindset which suggests that executives in the 21st century must be receptive to new business models or willing and able to make choices that take advantage of new business models (Hitt et al., 2011). Both theoretical and empirical research in this field are insufficient (George and Bock, 2011; Casadesus-Masanell and Zhu, 2012). Hence, by focusing on the interactions between executives' cognitive style and their acquisition of knowledge as drivers of their business model innovation choice, this study advanced the understandings of the strategic leaders' choice of new business models.

An important implication of this finding is that the power of reliance on intuition has both direct and indirect effects on the executives' choice of new business models. It both empowers individuals' acquisition of new knowledge to detect and assess new business model ideas and engenders an inherent preference for challenging the status quo and deviates from strategic conformity. This is particularly important in dynamic contexts where continuous business model innovation is a must, and yet strategic leaders avoid that because they are trapped in cognitive inertia. This evidence implies that emphasis on new business models is contingent upon a concomitant consideration of both executives' cognition and their perceived environmental dynamism. As was discussed in Chapter six, this finding broadens the business model literature and implies a contingency view of business model innovation. It also moves beyond the isolated consideration of the simple impact of a business model on firm-level outcomes (e.g. Aspara et al., 2010; Zott et al., 2007) by developing a more complicated view of the factors involved in this choice and its outcome.

Furthermore, the existing literature on this context is dominated by case studies of large firms (Morris et al., 2013). Hence, a large-scale survey on small manufacturing firms offers new insights into the business model innovation literature. Accordingly, in line with theoretical predictions, emphasis on BMI was strongly correlated with growth implying that business model innovation can be regarded as an important growth strategy. This extends the business model innovation literature into small business literature and presents new evidence in support of the assumption that BMI enhances competitive growth of the firm regardless of its size (Zott et al., 2011; Trimi and Berbegal-Mirabent, 2012).

7.3.5 Contribution to the Small Business Literature

Growth of the firm continues to be one of the centers of attention in the small business literature (Davidsson et al., 2010). This literature suggests that small businesses tend to grow organically by creating innovative ways of using their limited resources (McKelvie and Wiklund, 2010; Macpherson and Holt, 2007). However, theory building and testing in this context has been slow (Wiklund et al., 2009) and therefore using theories from other contexts such as large firms is a promising way of advancing small business growth literature (Tan et al., 2009).

Furthermore, previous research has not established a conclusive link between CEOs' attributes and the growth of the firm (Tomczyk et al., 2013), leaving a gap in the understanding of the role of executives' cognition and their choice making (Wright and Stigliani, 2012). This study addressed these gaps in several ways.

First, Penrose (1959) argued that growth is driven by executives' knowledge but this speculation was originally intended for large firms. This study extended this assumption to the small business literature and showed that the acquisition of markets and technological knowledge by CEOs of small manufacturing firms has a positive direct and indirect influence on their growth. Thus, it was implied that Penrose's assumption holds in the small business context as well. Furthermore, it showed that this knowledge asymmetry can be explained by executives' different cognitive style and it also explains the differences in their emphasis on adopting new ways of combining their resources (i.e. business model innovation) to enhance organic growth.

Finally, this research was conducted in the context of Australian manufacturing small businesses (SMEs). This allows this study to enrich the currently limited literature on the growth of Australian manufacturing SMEs by showing that, although the Australian manufacturing sector is in decline (Australian Business Foundation report, 2011), there are small businesses which achieve competitive growth by incorporating new business models into their strategies and their CEOs' knowledge acquisition and cognitive style play significant roles in this context.

7.3.6 Contributions of Additional Findings

As was explained in Chapter six, the analysis of the control variables and interviews with CEOs led to a few additional findings, which offer a more nuanced understanding of the causal paths and enrich the above-mentioned contributions to different bodies of literature. For instance, extending the literature on the antecedents of business model innovation it was found that the emphasis on business model innovation is unrelated to a number of factors such as a firm's age, family ownership, and also CEOs' gender, tenure, and experience. However, CEOs' education is positively related to this strategy and CEOs' age, firm size, and the breadth of product market strategies are negatively related to the choice of this strategy.

Enriching research on the growth of small manufacturing firms, it was found that a firm's age, size, and environmental munificence are not related to its growth. Finally, offering additional insights into the acquisition of knowledge analysis revealed that the stage of growth of the firm and environmental munificence are unrelated to the executives' acquisition of market and technological knowledge. On the other hand, the objective of the qualitative phase was only to complete and corroborate the quantitative analysis; some additional interesting findings emerged from the analysis. These were limited to a few interviews and analytical methods but can be summarized as follows.

First of all, it was observed that executives acquire market and technological knowledge in two distinctive forms, namely "knowledge about" markets and technologies and "knowledge from" markets and technologies. This "about" and "from" have not been discussed explicitly in the literature. In particular, it was found that the executives' overall market and technological knowledge is a combination of knowledge about and knowledge from markets and technologies. Interaction between these two forms (about

and from) and types (market and technological) offers additional insights into executives' knowledge acquisitions and their roles in executives' subsequent behavior.

Secondly, it was found that executives acquired market and technological knowledge related to the emphasis on BMI in two ways. First, knowledge acquisition is associated with new business model ideation. This can be called pre-ideation knowledge acquisition, whereas, in the second form, the new knowledge is used to reduce the uncertainties involved in implementing new business models. Hence, it is associated with the execution of business models and accordingly can be called post-ideation knowledge acquisition. It was also beyond the scope of this study to examine the differences and similarities between these two phases of business model innovation and the role of market and technological knowledge in their formation and enactment.

Finally, it was found that executives have different perceptions of new business models and adoption of new business models. It was particularly observed that new business models can take different forms. A central implication of this finding is that business model innovation is different from strategies of the firm, and in fact, emphasis on BMI embedded in the business strategy of the firm could lead to different innovative business models that enhance the growth of the firm.

7.4 Practical/Managerial Implications

A better understanding of the factors fostering individuals to drive growth is a central issue for executives. In particular, it is evident that the allure of choosing an appropriate growth strategy appears to lead to something of a paradox for executives. On the one hand, they see their firms as a resource-deprived entity that is unable to invest in resource-driven expensive market-expanding strategies, and on the other hand they see their firms as a flexible entity able to respond quickly to innovative strategies.

As the extant managerial literature points out, especially in the small business context, characteristics of executives cannot be dissociated from the behavior and performance of their firms. Characteristics, however, only lead to results if actions are taken. In particular, in small firms (fewer than 100 employees and in some classifications fewer than 200 employees) a single executive, who is most likely the owner, managing director, or main shareholder of the firm, makes the key choices. These executives, known as

“strategic leaders,” continuously strive to phase in their personal characteristics with those of their firms. This mechanism causes them to act based on their characteristics.

This study points to several implications based on this logic for executives of small firms and aims to assist them in making choices that enable them to navigate their growth in a better direction given their resource liabilities. These implications spring from a personal characteristic known as “cognitive style” that is relatively stable and persistent over time. It can therefore lead to different identifiable behaviors in executives that occur over time in different contexts. Hence, this study was able to offer a set of general insights into the managerial behaviors and decision-making of executives which could be useful for leading the growth of their firm.

First of all, the role of cognitive attributes of executives is critical for explaining organizational behaviors. Particularly in small businesses, firm-level outcomes such as growth can be seen because of the enactment of the executives’ behaviors and their strategic actions— actions related to firms’ strategies—such as the acquisition of knowledge and choices of business model for their firm. In light of this notion, a number of managerial implications stem from this research. They will be presented in this section in the hope that executives will find them useful inputs in their decision-making and growth-driving behavior.

From the finding that CEOs’ cognitive style relates to the way they nurture growth through the acquisition of knowledge, two issues relevant for executives’ growth practice can be highlighted. First of all, it was empirically supported that executives who acquire more market knowledge gain a superior capacity to exercise business model innovation choice. This capacity can be attributed to the fact that market knowledge brings about the ability to make sense of market changes and detect distant and close as well as existing and emerging trends in markets that can be exploited by investing in new business models.

From a similar standpoint, it was also found that executives who develop technological knowledge asymmetries over their counterparts would concurrently gain a capacity to assess technological underpinning of business model innovation and hence become more inclined toward adopting new business models.

From these findings it can be inferred that executives who continuously acquire market and technological knowledge become more innovation-oriented and subsequently entrepreneurial in today's changing markets. This attribute would grant them the capability to manage the growth of their respective firm in a more competitive manner.

An important takeaway for executives is that as the findings of this research indicate, managers of firms operating in dynamic environments should invest more in the acquisition of both market and technological knowledge. These two types are equally important and jointly contribute to the business model innovation and growth of the firm. Therefore myopic knowledge acquisition in the form of underemphasizing the acquisition of market or technological knowledge in favor of the other type may not be conducive to effective business model innovation or growth outcomes.

Furthermore, from the finding that intuitive executives acquire more knowledge in the face of dynamism, it is speculated that the selection of an intuitive CEO for manufacturing firms operating in highly dynamic environments will hardly ever be dysfunctional. More importantly, although some may think that intuition and analysis are unitary and one is either intuitive or analytic and this style is out of his or her control, following the dual-system thinking the findings of this study confirmed that intuition and analysis stem from two systems and hence their power can be managed. In light of this, since validated interview and questionnaire instruments are readily available, assessing a candidate's reliance on intuition can be done easily. Therefore, this implication does not necessarily mean that analytic CEOs in dynamic contexts are not able to drive growth; instead recent research suggests that reliance on intuition can be trained through metacognitive training (Hodgkinson and Healey, 2011). It remains to be seen, of course, whether this training will pay off in the short term or improvements in the executives' ability to take advantage of their intuitive power will materialize in the long run.

Therefore, it cannot be inferred that intuitive CEOs are superior over analytic ones, but in accordance with other studies on cognitive style and personality-job fit literature (e.g. Brigham et al., 2007) it can be suggested that in driving growth, intuition is a key tool for managers which must be capitalized on because it facilitates knowledge acquisition and improves emphasis on BMI.

Moreover, as far as the CEOs' demographics are concerned, some general implications can be made as research has revealed that CEOs' education is positively related to their emphasis on business model innovation. Therefore CEOs with higher educational levels and perhaps business-related degrees can be assumed to have developed a complex cognitive mechanism that allows them to detect opportunities for new business models. Therefore education and higher degree studies such as business courses can be assumed to be effective tools in improving executives' innovative orientation.

Moving from personal attributes to strategic choices, observation revealed that emphasis on business model innovation is conducive to growth. This finding can be of significant value for executives. This means that strategic conformity (i.e. following established rules of business in an industry) as a strategic mindset followed by SMEs, because of their liabilities, can be challenged by executives through more emphasis on business model innovation. Evidence found in this study attests to the fact that those CEOs who deviate from strategic conformity logic observe better growth prospects.

Finally, although it might be intuitively assumed that the effect of this strategic mindset varies across firms in different environments, and for instance non-technology firms need not emphasize BMI as much as high-tech firms do, there is a general positive effect of business model innovation on the growth prospects of firms across the contexts. In other words, based on this study's findings and previous research, it appears relatively safe to say that SMEs could boost their growth and competitiveness by placing more emphasis on business model innovation.

7.5 Limitation of the Research

As with all empirical research there are a number of limitations associated with this study and outside of the control of the researcher. It is believed that the findings presented in Chapter five and discussed in Chapter six are robust, in that a number of steps were undertaken to mitigate concerns about informant bias, non-response bias, common-method variance, and measurement error. It was shown that none of these steps suggested a serious bias to the research results. However, I am mindful that there are facets of my research design that are likely to limit the extent to which full confidence can be placed in the results. These limits are acceptable and will be discussed in detail in this section in the hope that future research can overcome them.

First, on the basis of the role of executives' knowledge asymmetry, one can make assumptions concerning the unobserved nature of the exact market and technological knowledge acquired by executives and its role in their emphasis on business model innovation. This research shares this limitation with the vast majority of research in the micro-foundation of choice (Foss, 2011).

In addition, this study was limited to the cognitive style as a predictor of executives' knowledge acquisition. The reason for this limitation was twofold: first to explore a previously unexplored causation in the micro-foundation of strategic leaders' absorptive capacity, and second to contain variables in a conceptual framework that fits into the strategic leadership paradigm (cognition-choice-consequence) (Hambrick and Mason, 1984). However, the notion of executives' knowledge acquisition can be more complicated. This limitation can be addressed in future studies which will be discussed in the next section. The exclusive focus on the Australian small manufacturing sector is a limitation, given the role of SMEs in other sectors, and a more explicit incorporation of the nature of executives' cognitive functioning in future studies may provide a better understanding of the role of executives' cognitive style in their growth-driving actions.

Another limitation of this study is pertinent to the longitudinal versus cross-sectional assessment of a firm's growth. Following the argument of Davidsson et al. (2010), growth is essentially a process of change in amount over time, and since inference of causality can only be made when there is a temporal ordering of events, cross-sectional research may be problematic in assessing the growth of the firm. This issue was partially addressed by asking executives about their growth over the past two years due to limitations in data availability and the time constraints of the research project. So it can be suggested that future research can address this limitation by employing longitudinal and objective data using firms' reports or longitudinal industrial databases.

Finally, because the design of this research, consistent with the conventional research into strategy and entrepreneurship (Easterby-Smith et al., 2002, 2008), does not involve the manipulation of variables, but rather contemporaneous effects of salient attributes, it cannot unequivocally examine and explain cause-effect relationships or rule out the alternative explanation that the BMI choice observed in the sample firm is the result of executives' acquired knowledge. Similarly, the measured growth cannot be solely a result of BMI. Hence, future studies can develop more detailed models and experiments to

establish and test cause-effect relationships about the antecedents and consequences of executives' emphasis on BMI.

7.6 Suggestions for Further Research

This section presents several directions for future research. Firstly, it was theorized and tested that a dual cognitive style makes a difference in executives' knowledge acquisition, however knowledge acquisition is a complex phenomenon that might be influenced by many psychological factors such as self-regulation (e.g. Chiaburu, 2010) and metacognition (e.g. Haynie et al., 2012) as well as the social capital of the executives (depth and breadth of their contacts, information channels, and networks) (e.g. Sullivan and Marvel, 2010a, b). These could impact executives' intensity of information search and speed as well as the magnitude of their knowledge acquisition. So, future studies could complement the findings of this study by developing more fine-grained models using other social and psychological factors that focus primarily on the executives' knowledge acquisition by incorporating other psychological factors.

It was shown that the degree of emphasis on business model innovation could be associated with differential firm growth; however, the way in which business model innovations influence firm growth, that is the internal processes of growth affected by business model innovation, remain largely unexplored (Zott et al. 2011). Further, the question of which aspects of business models will be more dramatically innovated and how they will be linked to growth is another potential area of research. Research can address this issue by examining how a new business model increases a firm's market share or sale. Process studies and longitudinal case studies can be used to examine this issue (e.g. Aspara et al., 2011a, b).

Like many other studies on SMEs, it remains an interesting empirical issue to examine whether the findings of this research can be generalized to larger firms (Lubatkin et al., 2006). As argued by Lubatkin et al. (2006), unlike SMEs, the performance outcomes of large firms tend to derive from a wider spectrum of ecological factors extraneous to executives (CEOs). These may include multiple product lines and markets, as well as a more complex organizational structure and multiple business models. This opens up new research opportunities for replicating the proposed model at business unit level with caution about specific markets and product lines. As far as this replication is concerned, it should be noticed that the role and impact of executives in large firms are confounded by

the control of the board of directors and simultaneous feedbacks from capital markets and a wide variety of stakeholders (Lubatkin et al., 2006). This implies that future research on large firms applying this model needs to pay attention to these factors and incorporate them into the proposed model. For instance, the role of a board of directors in the knowledge acquisition of executives and their choice of emphasis on BMI and its subsequent impact on sales or market share growth could be a potential model worth investigating.

Having said that, there are reasons to assume that the small business context remains a fruitful area for further research. As discussed in Chapter four, this study is on the SME sector, however firms with fewer than five employees, known as “micro-enterprises,” and also firms with 100-200 employees, known as “medium enterprises,” were excluded to attain a specific population. Although these types of enterprise fall under the umbrella concept of SMEs, scholars have tended to study them separately, mainly due to their different behavior and structure caused by their size differences (Chaston and Sadler-Smith, 2012; Liberman-Yaconi, Hooper, and Hutchings, 2010). Therefore, further research can be undertaken into these two types of firms (micro and medium) by replicating the model proposed in this research.

The reverse causality between growth and BMI is also a potential area of research. Research in innovation and technological change shows that growing firms which have accumulated profit after their growth could use this financial slack in experimenting new business models (e.g. Chesbrough and Rosenbloom, 2002; Sinfield et al., 2012). Based on this logic, future research can address the association between growth and emphasis on BMI to complement the findings of this study.

In addition, it should be noticed that, as with almost any other human characteristic, very high levels of reliance on intuition and analysis can be “too much of a good thing” and interfere with effective performance. This reasoning is consistent with the recent assertion of Hodgkinson and Healey (2011) that effective executives attempt to balance intuition and analysis in the face of dynamism. Examining this issue was not within the scope of this research and hence can be addressed in future studies. The notions of metacognition and cognitive self-regulation and self-monitoring (Haynie et al., 2012) offer a starting point for such investigations.

Furthermore, there may be a question over whether the findings of this study are specific to the Australian small manufacturing firms or if they are more universal. With regard to this question, it can be argued that the constructs and theoretical development in this research are not country- and sector-specific, and as explained in Chapters three and four they have been applied in other contexts in different settings. So, despite this logic, further research aimed at assessing whether these findings are due to idiosyncrasies in the research context is recommended. Accordingly, to test this issue, complement this study, and detect its generalizability, future research can take two possible routes: 1) replicate the model developed and tested in this study in other contexts such as mining, service, and retailing, or 2) replicate the model in other economies. In this respect three contexts seem to be promising: 1) other developed economies such as New Zealand, Singapore, Hong Kong, the UK, the US, etc., 2) emerging economies such as India, Russia, Brazil, China, and South Africa, and 3) developing economies that are striving to boost the competitiveness of their SMEs such as Malaysia, Thailand, Indonesia, etc.

Moreover, as discussed in sections 6.2.1 and 6.2.3, future research might extend the current study by assessing the intervening role of innovation implementation in the relationship between BMI and growth. It could be that, factors involved in the implementation of business model innovation such as leadership, organizational structure, innovation climate, employees' learning and environmental conditions (Jayanthi, and Sinh, 1998; Klein, and Sorra, 1996; McAdam, et al. 2010; Liao, and Rice, 2010) serve to blunt the growth potential benefits of a strategic emphasis on BMI. Future research could investigate this proposition to add to the findings of this study.

Finally, although this research generated evidence to support the theoretical speculations proposed in Chapter three suggesting that cognitive duality can partially explain growth heterogeneity through both direct and indirect correlations and also led to the assumption that a firm's size, age, and stage of growth are not correlated with BMI and growth, literature shows that there could be reason to suspect that these findings can be challenged by studies from other contexts. Hence, like any other scientific inquiry, the findings of this study are subject to falsification or refutability (Popper, 1959, 1963). Therefore, both replication and new theoretical development in these areas are strongly recommended.

7.7 Summary of the Chapter

This chapter was the concluding part of this thesis. It briefly reviewed the key findings of the research and discussed how the research questions have been addressed using a systematic combination of quantitative and qualitative analyses. Then, the implications of the research for theory and practice were explained, limitations were discussed, and some areas for future research were suggested.

References

- Abdelgawad, S. G., Zahra, S. A., Svejenova, S., & Sapienza, H. J. (2013). Strategic Leadership and Entrepreneurial Capability for Game Change. *Journal of Leadership & Organizational Studies*. In press.
- Abebe, M. A. (2008). The Effect of Top Management Team Demographic Composition and CEO Power on Corporate Turnaround Performance under Environmental Stability and Turbulence. Doctor of Philosophy in Business Administration, Southern Illinois University Carbondale, Unpublished Thesis.
- Abell, D. (1980). *Defining the Business: The Starting Point of Strategic Planning*. Englewood Cliffs, New Jersey: Prentice Hall.
- Abella, P., Felin, T., & Foss, N. (2008). Building Micro-foundations for the Routines, Capabilities, and Performance Links. *Managerial And Decision Economics* 29, 489–502
- Abeson, F., & Taku, M. A. (2009). Knowledge source and small business competitiveness. *Competitiveness Review: An International Business Journal*, 19(2), 88-95.
- ABS. (2008). *Year Book Australia: A Comprehensive Source of Information about Australia*. (ABS Catalogue No. 1301.0). Canberra: Australian Bureau of Statistics.
- ABS. (2010). Counts of Australian businesses, including entries and exits. Australian bureau of statistics, Report No: 8165.0, released 21 october, 2010, www.abs.gov.au (Retrieved 15 september, 2011).
- ABS. (2011). *Australian Industry*. Australian Bureau Of Statistics, Report No: 8155.0, Released 23 june, 2011, www.abs.gov.au (Retrieved 15 september, 2011).
- Acedo, F. J. & Florin, F.J. (2007). Understanding the risk perception of strategic opportunities: A tripartite model. *Strategic Change*, 16(1), 97-116.
- Acedo, F. J. & Galan, J. L. (2011). Export stimuli revisited: The influence of the characteristics of managerial decision makers on international behaviour. *International Small Business Journal*, 29(6), 648–670.
- Achrol, R. S., & Kotler, P. (2012). Frontiers of the marketing paradigm in the third millennium. *Journal of the Academy of Marketing Science*, 40(1), 35-52.
- Achtenhagen, L., Naldi, L., & Melin, L. (2010). "Business Growth"-Do Practitioners and Scholars Really Talk About the Same Thing? *Entrepreneurship Theory and Practice*, 34(2), 289-316.
- Achtenhagen, L., Melin, L., & Naldi, L. (2013). Dynamics of Business Models – Strategizing, Critical Capabilities and Activities for Sustained Value Creation. *Long Range Planning*. In Press doi: 10.1016/j.lrp.2013.04.002

- Ackoff, R. L. (1989). From data to wisdom. *Journal of Applied Systems Analysis*, 16(1), 3–9.
- Acs, Z. J., & Audretsch, D. B. (1989). Entrepreneurial Strategy and the Presence of Small Firms. *Small Business Economics*, 1(3), 193-213.
- Adler, P. S., Goldoftas, B., & Levine, D. I. (1999). Flexibility Versus Efficiency? A Case Study of Model Changeovers in the Toyota Production System. *Organization Science*, 10(1), 43-68.
- Adner, R., & Helfat, C. E. (2003). Corporate Effects and Dynamic Managerial Capabilities. *Strategic Management Journal*, 24(10, Special Issue: Why Is There a Resource-Based View? Toward a Theory of Competitive Heterogeneity), 1011-1025.
- Aerts, W., Campenhout, G. V., & Van Caneghem, T. (2008). Clustering In Dividends: Do Managers Rely On Cognitive Reference Points? *Journal Of Economic Psychology*, 29(3), 276-284.
- Afuah, A. (2009). *Strategic Innovation New Game Strategies for Competitive Advantage*. New York, NY: Routledge
- Agor, W. H. (1984). *Intuitive management*. Englewood Cliffs, NJ: Prentice Hall.
- Agor, W. H. (1986). The logic of intuition: How top executives make important decisions. *Organizational Dynamics*, 14(3), 5-18.
- Aguilar, F. (1967). *Scanning the Business Environment*. New York: Macmillan.
- Aguinis, H. (1995). Statistical power problems with moderated multiple regression in management research. *Journal of Management*, 21(6), 1141-1158.
- Aguinis, H. (2002). Estimation of Interaction Effects in Organization Studies. *Organizational Research Methods*, 5(3), 207-211.
- Aguinis, H., Pierce, C. A., Bosco, F. A. & Muslin, I. S. (2009) First Decade Of Organizational Research Methods Trends In Design, Measurement, And Data-Analysis Topics *Organizational Research Methods*, 12(1), 69-112.
- Akinci, C., & Sadler-Smith, E. (2011). Intuition in Management Research: A Historical Review. *International Journal of Management Reviews*, 14(1), 104-122.
- Akinci, C., & Sadler-Smith, E. (2013). Assessing Individual Differences in Experiential (Intuitive) and Rational (Analytical) Cognitive Styles. *International Journal of Selection and Assessment*, In Press.
- Alavi, M. & Leidner, D. E. (2001) Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. *MIS Quarterly*, 25(1), 107-136.
- Al-Debe, M. M., & Avison, D. (2010). Developing a unified framework of the business model concept. *European Journal of Information Systems*, 19(3), 359-376.

Aldrich, H. (1979). *Organizations and Environments*. Englewood Cliffs, NJ: Prentice-Hall.

Alessandr, T. M., Tong, T. W., & Reuer, J. J. (2012). Firm Heterogeneity In Growth Option Value: The Role Of Managerial Incentives. *Strategic Management Journal*, In Press.

Al-Laham, A., Tzabbar, D. & Amburgey, T. L. (2011) The Dynamics Of Knowledge Stocks And Knowledge Flows: Innovation Consequences Of Recruitment And Collaboration In Biotech. *Industrial & Corporate Change*, 20(2), 555-583.

Allinson, C. W. & Hayes, J. (1996). The Cognitive Style Index: A Measure Of Intuition-Analysis For Organizational Research. *Journal Of Management Studies*, 33(1), 119-135.

Allinson, C. W., & Hayes, J. (2000). Cross-national differences in cognitive style: implications for management. *International Journal of Human Resource Management*, 11(1), 161-170.

Allinson, C. W., Armstrong, S. J., & Hayes, J. (2001). The effects of cognitive style on leader-member exchange: a study of manager-subordinate dyads. *Journal of Occupational and Organisational Psychology*, 74(2), 201-220.

Allinson, C. W., Chell, E., & Hayes, J. (2000). Intuition and entrepreneurial Behavior. *European Journal of Work and Organizational Psychology*, 9(1), 31-43.

Allinson, C., & Hayes, J. (2012). *The Cognitive Style Index: Technical Manual and User Guide*. London, UK: Pearson Education.

Allinson, C.W. and Hayes, J. (1996). The Cognitive Style Index: a measure of intuition-analysis for organizational research. *Journal of Management Studies*, 33(1), 119-135.

Allinson, W., Chell, E., & Hayes, J. (2000). Intuition and entrepreneurial behaviour. *European Journal of Work and Organizational Psychology*, 9(1), 31-43.

Allport, G.W. (1937). *Personality: A Psychological Interpretation*. New York: Holt.

Alpar, P. & Spitzer, D. (1989) Response behaviors of entrepreneurs in a mail survey. *Entrepreneurship Theory and Practice*, 14(1), 31-44.

Alvarez, S. A., & Barney, J. B. (2007). Discovery And Creation: Alternative Theories Of Entrepreneurial Action. *Strategic Entrepreneurship Journal*, 1(1), 11-26.

Alvarez, S. A., & Busenitz, L. W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, 27(6), 755-775.

Alvesson, M. (2003). Beyond Neopositivists, Romantics, and Localists: A Reflexive Approach to Interviews in Organizational Research. *Academy of Management Review*, 28(1), 13-33.

Ambrosini, V., & Bowman, C. (2001). Tacit Knowledge: Some Suggestions for Operationalization. *Journal of Management Studies*, 38(6), 811-829.

Amit, R. & Schoemaker, P. (1993) Strategic Assets And Organizational Rent. *Strategic Management Journal*, 14(1), 33-46.

Amit, R. & Zott, C. (2001) Value Creation In E-Business. *Strategic Management Journal*, 22(6-7), 493-520.

Amit, R., & Zott, C. (2012). Creating Value through Business Model Innovation. *MIT Sloan management review*, 53(3), 41-49.

Anderson, B. S., & Eshima, Y. (2013). The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs. *Journal of Business Venturing*, 28(3), 413-429.

Anderson, B. S., Covin, J. G., & Slevin, D. P. (2009). Understanding The Relationship Between Entrepreneurial Orientation And Strategic Learning Capability: An Empirical Investigation. *Strategic Entrepreneurship Journal*, 3(3), 218-240.

Anderson, C. R., & Paine, F. T. (1975). Managerial Perceptions and Strategic Behavior. *Academy of Management Journal*, 18(4), 811-823.

Anderson, J. C. & Gerbing, D. W. (1988) Structural Equation Modeling In Practice: A Review And Recommended Two-Step Approach. *Psychological Bulletin*, 103(3), 411-423.

Anderson, J. C., Gerbing, D. W., & Hunter, J. E. (1987). On the Assessment of Unidimensional Measurement: Internal and External Consistency, and Overall Consistency Criteria. *Journal of Marketing Research*, 24(4), 432-437.

Anderson, J., & Markides, C. (2007). Strategic Innovation at the Base of the Pyramid. *MIT Sloan Management Review*, 49(1), 83-88.

Anderson, N., De Dreu, C. K. W., & Nijstad, B. A. (2004). The Routinization Of Innovation Research: A Constructively Critical Review Of The State-Of-The-Science. *Journal of Organizational Behavior*, 25(2), 147-173.

Andrew, S. & Halcomb, E. J. (2009) *Mixed Methods Research For Nursing And The Health Sciences*, Oxford UK, Wiley-Blackwell.

Andrews, K. R. (1971) *The Concept Of Corporate Strategy*, Homewood, Il, Irwin.

Ansoff, H. I. (1980). Strategic Issue Management. *Strategic Management Journal*, 2(1), 131-148.

Antonelli, C. (2007). Technological knowledge as an essential facility. *Journal of Evolutionary Economics*, 17(4), 451-471.

Antony, S., & Santhanam, R. (2007). Could the use of a knowledge-based system lead to implicit learning? *Decision Support Systems*, 43(1), 141-151.

Aragón-Sánchez, A., & Sánchez-Marín, G. (2005). Strategic Orientation, Management Characteristics, and Performance: A Study of Spanish SMEs. *Journal of Small Business Management*, 43(3), 287-308.

Arbuckle, J. L. (2011). IBM® SPSS® Amos™ 20 User's Guide. USA: Amos Development Corporation.

Arend, R. J. (2004). The Definition of Strategic Liabilities, and their Impact on Firm Performance. *Journal of Management Studies*, 41(6), 1003-1027.

Arend, R. J., & Chen, Y. (2012). Entrepreneurship as dynamic, complex, disequilibrium: A focus that benefits strategic organization. *Strategic Organization*, 10(1), 85–95.

Argote, L. & Greve, H. R. (2007) A Behavioral Theory Of The Firm-40 Years And Counting: Introduction And Impact. *Organization Science*, 18(3), 337-349.

Argote, L. (2011) Organizational Learning Research: Past, Present and Future. *Management Learning*, 42(4), 439–446.

Argote, L., & Ingram, P. (2000). Knowledge Transfer: A Basis for Competitive Advantage in Firms. *Organizational Behavior and Human Decision Processes*, 82(1), 150-169.

Armstrong, J. S., & Overton, T. S. (1977). Estimating Nonresponse Bias in Mail Surveys. *Journal of Marketing Research*, 14(3), 396-402.

Armstrong, S. J. & Hird, A. (2009) Cognitive Style and Entrepreneurial Drive Of New And Mature Business Owner-Managers. *Journal Of Business And Psychology*, 24(4), 419-430.

Armstrong, S. J. & Mahmud, A. (2008) Experiential Learning And The Acquisition Of Managerial Tacit Knowledge. *Academy Of Management Learning & Education*, 7(2), 189 -208.

Armstrong, S. J., & Hird, A. (2009). Cognitive Style and Entrepreneurial Drive of New and Mature Business Owner-Managers. *Journal of Business and Psychology*, 24(4), 419-430.

Armstrong, S. J., Cools, E. & Sadler-Smith, E. (2012) Role of Cognitive Styles in Business And Management: Reviewing 40 Years Of Research. *International Journal Of Management Reviews*, 14(3), 238–262.

Armstrong, S. J., Peterson, E. R., & Rayner, S. G. (2012). Understanding and defining cognitive style and learning style: a Delphi study in the context of educational psychology. *Educational Studies*, 38(4), 449-455.

Armstrong, S., & Overton, T. (1977). Estimating non-response in mailed surveys. *Journal of Marketing Research*, 14(3), 396-402.

Arrow, K. J. (1962) Economic Welfare And The Allocation Of Resources For Invention. In Nelson, R. R. (Ed.) *The Rate And Direction Of Inventive Activity: Economic And Social Factors*. Princeton, Princeton University Press.

Ashill, N. J., & Jobber, D. (2010). Measuring State, Effect, and Response Uncertainty: Theoretical Construct Development and Empirical Validation. *Journal of Management*, 36(5), 1278-1308.

Aspara, J., & Tikkanen, H. (2013). Creating novel consumer value vs. capturing value: Strategic emphases and financial performance implications. *Journal of Business Research*, 66(5), 593-602.

Aspara, J., Hietanen, J., & Tikkanen, H. (2010). Business model innovation vs. replication: financial performance implications of strategic emphases. *Journal of Strategic Marketing*, 18(1), 39 -56.

Aspara, J., Lamberg, J.-A., Laukia, A., & Tikkanen, H. (2011 a). Corporate Business Model Transformation and Inter-Organizational Cognition: The Case of Nokia. *Long Range Planning*. In Press

Aspara, J., Lamberg, J.-A., Laukia, A., & Tikkanen, H. (2011 b). Strategic management of business model transformation: lessons from Nokia. *Management Decision* 49(4), 622-647.

Atinc, G., Simmering, M. J. & Kroll, M. J. (2012) Control Variable Use And Reporting In Macro And Micro Management Research. *Organizational Research Methods*, 15(1),57-74.

Audretsch, D. B., Klomp, L., Santarelli, E., & Thurik, A. A. R. (2004). Gibrat's Law: Are The Services Different? *Review Of Industrial Organization*, 24(3), 301-324.

Auerbach, C. F., & Silverstein, L. B. (2003). *Qualitative Data: An Introduction To Coding And Analysis*. New York: New York University Press.

Augier, M. & Sarasvathy, S. D. (2004) Integrating Evolution, Cognition And Design: Extending Simonian Perspectives To Strategic Organization. *Strategic Organization*, 2(2), 169–204.

Augier, M. & Teece, D. J. (2007) Dynamic Capabilities and Multinational Enterprise: Penrosean Insights And Omissions. *Management International Review*, 47(2), 175-192.

Augier, M. & Teece, D. J. (2009) Dynamic Capabilities and the Role of Managers in Business Strategy And Economic Performance. *Organization Science*, 20(2), 410-421.

Augier, M. (2004) March'ing Towards “A Behavioral Theory Of The Firm”: James G. March And The Early Evolution Of Behavioral Organization Theory. *Management Decision*, 42(10), 1257 - 1268.

Auster, E., & Choo, C. W. (1994). How Senior Managers Acquire And Use Information In Environmental Scanning. *Information Processing & Management*, 30(5), 607-618.

Australian Business Foundation. (2011). *Manufacturing futures*. Sydney, Australia: Australian Business Foundation for the NSW.

Autio, E., Sapienza, H. J., & Almeida, J. G. (2000). Effects of Age at Entry, Knowledge Intensity, and Imitability on International Growth. *Academy of Management Journal*, 43(5), 909-924.

Aydinonat, N. E. (2010) Neuroeconomics: More Than Inspiration, Less Than Revolution *Journal Of Economic Methodology*, 17(2), 159 - 169.

Ayres, L. (2008). Thematic Coding And Analysis. In L. M. Given (Ed.), *The SAGE encyclopedia of qualitative research methods* (Vol. 1&2, pp. 867-868). Thousand Oaks: Sage.

Baer, M., Dirks, K. T., & Nickerson, J. A. (2013). Microfoundations of Strategic Problem Formulation. *Strategic Management Journal*, 34(2), 197-214.

Bagozzi, R. P. (2007) On the Meaning of Formative Measurement and How It Differs From Reflective Measurement: Comment on Howell, Breivik, and Wilcox (2007) *Psychological Methods*, 12(2), 229-237.

Bagozzi, R. P., Baumgartner, H., & Yi, Y. (1992). State versus Action Orientation and the Theory of Reasoned Action: An Application to Coupon Usage. *Journal of Consumer Research*, 18(3), 505-518.

Bahadir, S. C., Bharadwaj, S., & Parzen, M. (2009). A meta-analysis of the determinants of organic sales growth. *International Journal of Research in Marketing*, 26(4), 263-275.

Bain, J. S. (1968) *Industrial Organization*. New York: John Wiley.

Baker, T., & Nelson, R. E. (2005). Creating Something from Nothing: Resource Construction through Entrepreneurial Bricolage. *Administrative Science Quarterly*, 50(3), 329-366.

Baker, T., & Pollock, T. G. (2007). Making the marriage work: the benefits of strategy's takeover of entrepreneurship for strategic organization. *Strategic Organization*, 5(3), 297-312.

Balnaves, M., & Caputi, P. (2001). *Introduction to Quantitative Research Methods: An Investigative Approach*. Thousand Oaks, CA: Sage.

Bansal, P. T., & Corley, K. (2011). The Coming Of Age For Qualitative Research: Embracing The Diversity Of Qualitative Methods. *Academy Of Management Journal*, 54(2), 233-237.

Barbosa, S. D., Gerhardt, M. W., & Kickul, J. R. (2007). The Role of Cognitive Style and Risk Preference on Entrepreneurial Self-Efficacy and Entrepreneurial Intentions. *Journal of Leadership and Organizational Studies*, 13(4), 86-104.

Barkema, H., & Chvyrkov, O. (2002). What Sort of Top Management Team is Needed at the Helm of Internationally Diversified Firms? In M. A. Hitt, R. D. Ireland, S. M. Camp & D. L. Sexton (Eds.), *Strategic Entrepreneurship: Creating a New Mindset* (pp. 292-309). New York: Wiley-Blackwell.

Barker III, V. L., & Mueller, G. C. (2002). CEO Characteristics and Firm R&D Spending. *Management Science*, 48(6), 782-801.

Barnard, I. C. (1938) *The Functions Of The Executive*. Cambridge, Ma: Harvard University Press.

Barnette, J. L., & Williams, L. J. (2005). Structural Equation Modeling: An Introduction to Basic Techniques and Advanced Issues. In R. A. Swanson & E. F. Holton III (Eds.),

Research In Organizations: Foundations and Methods of Inquiry (pp. 143-160). San Francisco, California: Berrett-Koehler Publishers.

Barney, J. (1991) Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120.

Barney, J. B. & Clark, D. N. (2007) *Resource-Based Theory: Creating and Sustaining Advantage*, New York, NY, Oxford University Press.

Barney, J. B. & Hansen, M. H. (1994) Trustworthiness As A Source Of Competitive Advantage. *Strategic Management Journal*, 15(S1), 175-190.

Barney, J. B. (1986a) Organizational Culture: Can It Be A Source Of Sustained Competitive Advantage? *Academy Of Management Review*, 11(3), 656-665.

Barney, J. B. (1986b). Strategic Factor Markets: Expectations, Luck, and Business Strategy. *Management Science*, 32(10), 1231-1241.

Barney, J. B. (1989). Asset Stock and Sustained Competitive Advantage: A Comment. *Management Science*, 35(12), 1511-1513.

Barney, J. B. (2001) Is The Resource-Based "View" A Useful Perspective For Strategic Management Research? Yes. *Academy Of Management Review*, 26(1), 41-56.

Barney, J., Ketchen, D. J. & Wright, M. (2011) The Future Of Resource-Based Theory: Revitalization Or Decline? *Journal Of Management*, 37(5), 1299-1315.

Barney, J., Wright, M. & David J. Ketchen, J. (2001) The Resource-Based View Of The Firm: Ten Years After 1991. *Journal Of Management*, 27(6), 625-641.

Baron, D. P. (1995). Integrated strategy: Market and nonmarket components. *California Management Review*, 37(2), 47-65.

Baron, R. A., & Tang, J. (2011). The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism *Journal of Business Venturing*, 26(1), 49-60.

Baron, R. A., & Ward, T. B. (2004). Expanding Entrepreneurial Cognition's Toolbox: Potential Contributions from the Field of Cognitive Science. *Entrepreneurship Theory and Practice*, 28(6), 553-573.

Barreto, I. (2010). Dynamic Capabilities: A Review of Past Research and an Agenda for the Future. *Journal of Management*, 36(1), 256-280.

Barrett, L. F., Tugade, M. M., & Engle, R. W. (2004). Individual differences in working memory capacity and dual-process theories of the mind. *Psychological Bulletin*, 130(4), 553-573.

Barringer, B. R., & Jones, F. F. (2004). Achieving rapid growth: revisiting the managerial capacity problem. *Journal of Developmental Entrepreneurship*, 9(1), 73-86.

- Barringer, B. R., Jones, F. F., & Neubaum, D. O. (2005). A quantitative content analysis of the characteristics of rapid-growth firms and their founders. *Journal of Business Venturing*, 20(5), 663-687.
- Bartholomew, S., & Smith, A. D. (2006). Improving Survey Response Rates from Chief Executive Officers in Small Firms: The Importance of Social Networks. *Entrepreneurship Theory and Practice*, 30(1), 83-96.
- Bartunek, J. M. (1984). Changing interpretive schemes and organizational restructuring: The example of a religious order. *Administrative Science Quarterly*, 29(3), 355-372.
- Basu, A., & Goswami, A. (1999). Determinants of South Asian Entrepreneurial Growth in Britain: A Multivariate Analysis *Small Business Economics* 13(1), 57-70.
- Batjargal, B., & Liu, M. (2004). Entrepreneurs' access to private equity in China: The role of social capital. *Organization Science*, 15(2), 159-172.
- Baum, J. R. & Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89(4), 587-598.
- Baum, J. R., Locke, E. A. & Kirkpatrick, S. A. (1998). A longitudinal study of the relation of vision and vision communication to venture growth and performance. *Journal of Applied Psychology*, 83(1), 43-54.
- Baumol, W. J. (1962). On the Theory of Expansion of the Firm. *American Economic Review*, 52(5), 1078-1087.
- Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13(4), 544-559.
- Bazeley, P. (2009). Integrating Data Analyses In Mixed Methods Research. *Journal Of Mixed Methods Research*, 3(3), 203-207.
- Bazeley, P. and L. Richards (2000). *The NVivo Qualitative Project Book*. London, SAGE.
- Becker, G. S. (1964). *Human Capital*. Chicago, USA: University of Chicago Press.
- Becker, M. C. (2001). Managing Dispersed Knowledge: Organizational Problems, Managerial Strategies, and Their Effectiveness. *Journal of Management Studies*, 38(7), 1037-1051.
- Becker, M. C. (2005). A framework for applying organizational routines in empirical research: linking antecedents, characteristics and performance outcomes of recurrent interaction patterns. *Industrial & Corporate Change*, 14(5), 817-846
- Becker, T. E. (2005). Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational Research Methods*, 8(3), 274-289.

Becker, W. J., Cropanzano, R. & Sanfey, A. G. (2011) Organizational Neuroscience: Taking Organizational Theory Inside The Neural Black Box. *Journal Of Management*, 37(4), 933-961.

Bednar, M. K., & Westphal, J. D. (2006). Surveying the Corporate Elite: Theoretical and Practical Guidance on Improving Response Rates and Response Quality in Top Management Survey Questionnaires. In D. J. Ketchen & D. D. Bergh (Eds.), *Research Methodology in Strategy and Management* (Vol. 3, Pp. 37-55). Amsterdam, the Netherlands: Elsevier Ltd.

Behling, O., & Eckel, N. L. (1991). Making sense out of intuition. *academy of management Executive*, 5(1), 46-54.

Bell, D. (1982). Regret in decision-making under uncertainty. *Operations Research*, 30(5), 961-981.

Bellaïche, J. (2010). On the path-dependence of economic growth. *Journal of Mathematical Economics*, 46(2), 163-178.

Belotti, C., & Tunalv, C. (1999). Acquisition of technological knowledge in small and medium-sized manufacturing companies in Sweden. *International Journal of Technology Management* 18(3/4), 353-371.

Bem, D. J. (1995). Writing a review article for *Psychological Bulletin*. . *Psychological Bulletin*, 118(2), 172-177.

Benaquisto, L. (2008a). Codes And Coding. In L. M. Given (Ed.), *The SAGE Encyclopedia Of Qualitative Research Methods* (Vol. 1&2, Pp. 85-88). Thousand Oaks: Sage.

Benaquisto, L. (2008b). Coding Frame. In L. M. Given (Ed.), *The SAGE Encyclopedia Of Qualitative Research Methods* (Vol. 1&2, Pp. 88-89). Thousand Oaks: Sage.

Bentzen, J., Madsen, E. S., & Smith, V. (2011). Do firms' growth rates depend on firm size? *Small Business Economics*, 39(4), 937-947.

Berg, B. L. (1995). *Qualitative research methods for the social sciences* (2nd ed). Boston: Allyn and Bacon.

Bergh, D. D. (1998). Product-Market Uncertainty, Portfolio Restructuring, and Performance: An Information-processing and Resource-Based View. *Journal of Management*, 24(2), 135-155.

Bergh, D. D. (2003). Thinking Strategically about Contribution. *Academy of Management Journal*, 46(2), 135-136.

Bergh, D. D., Hanke, R., Balkundi, P., Brown, M., & Chen, X. (2004). An Assessment of Research Designs in strategic management research: the frequency of threats to internal validity. In J. David J. Ketchen & D. D. Bergh (Eds.), *research methodology in strategy and management* (Vol. 4, pp. 347-463). Amsterdam: Elsevier.

Berghman, L., Matthyssens, P., & Vandenbempt, K. (2012). Value innovation, deliberate learning mechanisms and information from supply chain partners. *Industrial Marketing Management*, 41(1), 27-39.

Bergué, C. D. (2010). Brain and human behavior in organizations: A field of neuro-organizational behavior. In A. A. Stanton, M. Day & I. M. Welpé (Eds.), *Neuroeconomics and the firm* (pp. 289-304). Northampton, MA: Edward Elgar.

Berman, S. J., Kesterson-Townes, L., Marshall, A., & Srivathsa, R. (2012). How cloud computing enables process and business model innovation. *Strategy & Leadership*, 40(4), 27 - 35.

Bettis, R. A., & Hitt, M. A. (1995). The New Competitive Landscape. *Strategic Management Journal*, 16(S1), 7-19.

Bettis, R. A., & Prahalad, C. K. (1995). The Dominant Logic: Retrospective and Extension. *Strategic Management Journal*, 16(1), 5-14.

Betz, F. (2003). *Managing Technological Innovation: Competitive Advantage from Change*. New York: John Wiley & Sons.

Bharadwaj, S., Clark, T., & Kulviwat, S. (2005). Marketing, Market Growth, an Endogenous Growth Theory: Inquiry into the Causes of Market Growth. *Journal of the Academy of Marketing Science*, 33(3), 347-359.

Bierly, P. E., & Daly, P. S. (2007). Alternative Knowledge Strategies, Competitive Environment, and Organizational Performance in Small Manufacturing Firms. *Entrepreneurship: Theory & Practice*, 31(4), 493-516.

Bierly, P., & Chakrabarti, A. (1996). Generic Knowledge Strategies in the U.S. Pharmaceutical Industry *Strategic Management Journal*, 17(1), 123-135.

Bingham, C. B., Eisenhardt, K. M., & Furr, N. R. (2007). What Makes A Process A Capability? Heuristics, Strategy, And Effective Capture Of Opportunities. *Strategic Entrepreneurship Journal*, 1(1), 27-47.

Birley, S., & Westhead, P. (1990). Growth and Performance Contrasts between 'Types' of Small Firms *Strategic Management Journal*, 11(7), 535-557.

Bitektine, A. (2008). Prospective Case Study Design Qualitative Method for Deductive Theory Testing. *Organizational Research Methods*, 11(1), 160-180.

Björkdahl, J. (2009). Technology cross-fertilization and the business model: The case of integrating ICTs in mechanical engineering products. *Research Policy*, 38(9), 1468-1477.

Blalock, H. M. (1982) *Conceptualization and Measurement in the Social Sciences*. Beverly Hills, CA: Sage.

Blaylock, B. K., & Rees, L. P. (1984). Cognitive Style And The Usefulness Of Information. *Decision Sciences*, 15(1), 74-91.

Bloor, M. and F. Wood (2006). *Keywords in Qualitative Methods: A Vocabulary of Research Concepts*, Thousand Oaks, Sage.

Bluedorn, A. C., Johnson, R. A., Cartwright, D. K., & Barringer, B. R. (1994). The Interface and Convergence of the Strategic Management and Organizational Environment Domains. *Journal of Management*, 20(2), 201-262.

Bluhm, D. J., Harman, W., Lee, T. W., & Mitchell, T. R. (2010). Qualitative Research in Management: A Decade of Progress. *Journal of Management Studies*, 48(8), 1866–1891.

Boal, K. B., & Hooijberg, R. (2000). Strategic leadership research: Moving on. *Leadership Quarterly*, 11(4), 515-549.

Bock, A. J., Opsahl, T., George, G., & Gann, D. M. (2012). The Effects of Culture and Structure on Strategic Flexibility during Business Model Innovation. *Journal of Management Studies*, 49(2), 279-305.

Boettke, P., & Leeson, P. (2002). The Austrian School of Economics: 1950-2000. In W. Samuels, J. Biddle & J. B. Davis (Eds.), *Blackwell Companion to the History of Economic Thought* (pp. 445-453). Oxford: Basil Blackwell.

Boone, C., Brabander, B. D., & Witteloostuun, A. A. (1996). CEO Locus of Control and Small Firm Performance: An Integrative Framework and Empirical Test. *Journal Of Management Studies*, 33(5). 667-700

Bornemann, M. (2009) Performance Implications Of The Business Model And The Moderating Effects Of The Environment. *Academy Of Management Best Paper Proceedings*.

Bougon, M., Weick, K., & Binkhorst, D. (1977). Cognition in Organizations: An Analysis of the Utrecht Jazz Orchestra. *Administrative Science Quarterly*, 22(4), 606-639.

Bourgeois, L. J., III, & Eisenhardt, K. M. (1988). Strategic decision processes in high velocity environments: four cases in the microcomputer industry. *Management Science*, 34(7). 816-835

Bower, J. L., & Christensen, C. M. (1995). Disruptive Technologies - Catching the Wave. *Harvard Business Review*, 73(1), 43-53.

Bowman, C. & Ambrosini, V. (2000a) Strategy From An Individual Perspective. *European Management Journal*, 18(2), 207–215.

Bowman, C., & Ambrosini, V. (2000b). Value Creation versus Value Capture: Towards a Coherent Definition of Value in Strategy. *British Journal of Management*, 11(1), 1–15.

Bowonder, B., & Mastakar, N. (2005). Strategic business leadership through innovation and globalisation: a case study of Ranbaxy Limited. *International Journal of Technology Management*, 32(1-2), 176-198.

Bowonder, B., Thomas, M. T., Rokkam, V. M., & Rokkam, A. (2003). Managing strategic innovation: an analysis of Dr. Reddy's Laboratories. *International Journal of Technology Management*, 25(3-4), 247-267.

Boyd, B. K., & Fulk, J. (1996). Executive scanning and perceived uncertainty: A multidimensional model. *Journal of Management*, 22(1), 1-21.

Boyd, B. K., & Gove, S. (2006). Managerial Constraint: The Intersection Between Organizational Task Environment and Discretion. In D. J. Ketchen & D. D. Bergh (Eds.), *Research Methodology in Strategy and Management* (Vol. 3, pp. 57-95): Emerald Group Publishing Limited.

Boyd, B. K., Dess, G. G., & Rasheed, A. M. A. (1993). Divergence between Archival and Perceptual Measures of the Environment: Causes and Consequences. *Academy of Management Review*, 18(2), 204-226.

Boyd, B. K., Takacs Haynes, K., Hitt, M. A., Bergh, D. D., & Ketchen, D. J. (2011). Contingency Hypotheses in Strategic Management Research: Use, Disuse, or Misuse? *Journal of Management*, 38(1), 278-313.

Boynton, A. C., Gales, L. M., & Blackburn, R. S. (1993). Managerial search activity: The impact of perceived role uncertainty and role threat. *Journal of Management*, 19(4), 725-747.

Brace, I. (2008) *Questionnaire Design: second edition*, London, Kogan Page,

Bradley, S. W., Wiklund, J., & Shepherd, D. A. (2011). Swinging a double-edged sword: The effect of slack on entrepreneurial management and growth. *Journal of Business Venturing*, 26(5), 537-554.

Brandenburgear, A., & Stuart, H. (1996). Value-Based business Strategy. *Journal of Economics & Management Strategy*, 5(1), 5-24.

Braunsberger, K., Gates, R. & Ortinau, D. J. (2005). Prospective Respondent Integrity Behavior In Replying To Direct Mail Questionnaires: A Contributor In Overestimating Non-Response Rates *Journal Of Business Research*, 58(3), 260-267.

Breaugh, J. A. (2008). Important Considerations In Using Statistical Procedures To Control For Nuisance Variables In Non-Experimental Studies. *Human Resource Management Review*, 18(4), 282-293.

Brettel, M., Greve, G. I., & Flatten., T. C. (2011). Giving up linearity: absorptive capacity and performance. *Journal of Managerial Issues* 23(2), 164-189.

Brettel, M., Strese, S., & Flatten, T. C. (2012). Improving the performance of business models with relationship marketing efforts – An entrepreneurial perspective *European Management Journal*, 30(2), 85-98.

Brewerton, P., & Millward, L. (2001). *Organizational Research Methods: A Guide For Students And Researchers*. Thousand Oaks, CA: Sage.

Brigham, K. H. & Mitchell, R. K. (2010). Cognitive misfit and firm growth in technology-oriented SMEs. *International Journal of Technology Management*, 52(1), 4-25.

Brigham, K. H. & Sorenson, R. (2008). Cognitive style differences of novice serial and portfolio entrepreneurs: A two-sample test. *Frontiers of Entrepreneurship Research*, 28(1), 1-15.

Brigham, K. H., & Sorenson, R. L. (2008). Cognitive Style Differences Of Novice Serial And Portfolio Entrepreneurs: A Two-Sample Test. *Frontiers of Entrepreneurship Research*, 28(6), Available at: <http://digitalknowledge.babson.edu/fer/vol28/iss26/23>

Brigham, K. H., De Castro, J. O., & Shepherd, D. A. (2007). A Person-Organization Fit Model of Owner-Managers' Cognitive Style and Organizational Demands. *Entrepreneurship Theory and Practice*, 31(1), 29-51.

Bromiley, P. (1991). Testing a Causal Model of Corporate Risk Taking and Performance *Academy of Management Journal*, 34(1), 37-59.

Bromiley, P., & Papenhausen, C. (2003). Assumptions of Rationality and Equilibrium in Strategy Research: The Limits of Traditional Economic Analysis. *Strategic Organization*, 1(4), 413-437.

Brouthers, K. D., Andriessen, F., & Nicolaes, I. (1998). Driving blind: Strategic decision making in small companies. *Long Range Planning*, 31(1), 130-138.

Brown, R. & Brignall, S. (2007) Reflections on the use of a dual-methodology research design to evaluate accounting and management practice in UK university central administrative services. *Management Accounting Research*, 18(1), 32-48.

Brunninge, O., Nordqvist, M., & Wiklund, J. (2007). Corporate Governance and Strategic Change in SMEs: The Effects of Ownership, Board Composition and Top Management Teams. *Small Business Economics*, 29(3), 295-308.

Brush, C. G., Greene, P. G., Hart, M. M., & Haller, H. S. (2001). From Initial Idea to Unique Advantage: The Entrepreneurial Challenge of Constructing a Resource Base. *Academy of Management Executive*, 15(1), 64-80.

Bryman, A. (2004) *Social Research Methods*. Second Edition. London: Oxford University Press.

Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*, 1(1), 8-22.

Bryman, A., & Cassell, C. (2006). The researcher interview: a reflexive perspective. *Qualitative Research in Organizations and Management: An International Journal*, 1(1), 41-55.

Bucherer, E., Eisert, U., & Gassmann, O. (2012). Towards Systematic Business Model Innovation: Lessons from Product Innovation Management. *Creativity and Innovation Management*, 21(2), 183-198.

Buckley, M. R., Cote, J. A., & Comstock., S. M. (1990). Measurement errors in behavioral sciences: The case of personality-attitude research. *Educational Psychology Measurement* 50(3), 447-474.

Buckley, P. J., & Casson, M. (2007). Edith Penrose's Theory Of The Growth Of The Firm And The Strategic Management Of Multinational Enterprises. *Management International Review*, 47(2), 151-173.

Buisson, B., & Silberzahn, P. (2010). Blue Ocean Or Fast-Second Innovation? A Four-Breakthrough Model To Explain Successful Market Domination. *International Journal Of Innovation Management*, 14(3), 359-378.

Burgers, J. H., Van Den Bosch, F. A. J. & Volberda, H. W. (2008) Why New Business Development Projects Fail: Coping With The Differences Of Technological Versus Market Knowledge. *Long Range Planning* 41(1), 55-73.

Burgoyne, J. (2008), Critical Realism, in Richard Thorpe & Robin Holt (eds), *The Sage Dictionary of Qualitative Management Research*, SAGE Publications, London, UK

Burke, A., Stel, A. v., & Thurik, R. (2009). Blue Ocean versus Competitive Strategy: Theory and Evidence. Report Series Research In Management, (ERS-2009-030-ORG). Erasmus Research Institute of Management (ERIM), Erasmus Universiteit ,Rotterdam, The Netherlands.

Burke, L. A., & Miller, M. K. (1999). Taking the Mystery out of Intuitive Decision Making *Academy of Management Executive*, 13(4), 91-99.

Burkell, J. (2003). The Dilemma of Survey Nonresponse. *Library & Information Science Research*, 25(3), 239-263.

Burns, W. C. (1996) Content Validity, Face Validity, And Quantitative Face Validity. In R. Barrett (Ed.), *Fair Employment Strategies In Human Resource Management* (Pp. 38-46). Westport, Ct: Quorum Books.

Busenitz, L. W. & Barney, J. B. (1997) Differences Between Entrepreneurs And Managers In Large Organizations: Biases And Heuristics In Strategic Decision-Making. *Journal Of Business Venturing*, 12(1), 9-30.

Busenitz, L. W., West III, G. P., Shepherd, D., Nelson, T., Chandler, G. N., & Zacharakis, A. (2003). Entrepreneurship Research in Emergence: Past Trends and Future Directions. *Journal of Management*, 29(3), 285–308.

Butler, R. (2002). Decision making. In A. Sorge (Ed.), *Organization* (pp. 224-251). London, UK: Thomson Learning.

Butterfield, K. D., Trevino, L. K. and Ball, G. A. (1996) Punishment from the manager's perspective: A grounded investigation and inductive model. *Academy of Management Journal* 39(6), 1479–1512.

Buttner, H., & Rosen, B. (1988). Bank loan officers' perceptions of the characteristics of men, women and successful entrepreneurs. *Journal of Business Venturing*, 3(3), 249-258.

Buyl, T., Boone, C., Hendriks, W., & Matthyssens, P. (2011). Top Management Team Functional Diversity and Firm Performance: The Moderating Role of CEO Characteristics, *Journal of Management Studies*, 48(1), 151-177.

Byrd, T. A., Cossick, K. L., & Zmud, R. W. (1992). A Synthesis of Research on Requirements Analysis and Knowledge Acquisition Techniques. *MIS Quarterly*, 16(1), 117-138.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: basic concepts, applications and programming* (2 ed.). New Jersey: Lawrence Erlbaum.

Calantone, R., & Rubera, G. (2012). When Should RD&E and Marketing Collaborate? The Moderating Role of Exploration–Exploitation and Environmental Uncertainty. *Journal of product innovation management*, 29(1), 144–157.

Caldart, A. A., & Ricart, J. E. (2004). Corporate strategy revisited: a view from complexity theory. *European Management Review*, 1(1), 96-104.

Cameron, R., & Molina-Azorin, J. F. (2010). The Use Of Mixed Methods Across Seven Business And Management Fields 10th IFSAM World Congress International Federation Of Scholarly Associations Of Management July 8 -10, Paris, France, 2010.

Cameron, R., & Molina-Azorin, J. F. (2011). The Acceptance Of Mixed Methods In Business And Management Research. *International Journal Of Organizational Analysis*, 19(3), 256 - 271.

Camisón, C., & Villar-López, A. (2010). Effect of SMEs' International Experience on Foreign Intensity and Economic Performance: The Mediating Role of Internationally Exploitable Assets and Competitive Strategy. *Journal of Small Business Management*, 48(2), 116-151.

Campbell, D. T. & Fiske, D. W. (1959) Convergent and discriminant validation by the multi-method matrix. *Psychological Bulletin*, 56(2), 81-105.

Caneghem, T. V. (2002). Earnings Management Induced by Cognitive Reference Points. *The British Accounting Review*, 34(2), 167-178.

Cantwell, J. (2002). Innovation, profits and growth: Penrose and Schumpeter'. In C. Pitelis (Ed.), *The growth of the firm; The legacy of Edith Penrose* (pp. 215-248). Oxford: Oxford University Press.

Cao, Q., Simsek, Z. & Zhang, H. (2010) Modeling The Joint Impact Of The CEO And The TMT On Organizational Ambidexterity. *Journal of Management Studies*, 47(7), 1272-1296.

Capelleras, J.-L., Greene, F. J., Kantis, H., & Rabetino, R. (2010). Venture Creation Speed and Subsequent Growth: Evidence from South America. *Journal of Small Business Management* 48(3), 302-324.

Capon, N., Farley, J. U., & Hoenig, S. (1990). Determinants of Financial Performance: A Meta-Analysis. *Management Science*, 36(10), 1143-1159.

Capron, L., & Mitchell, W. (2012). *Build, Borrow, or Buy: Solving the Growth Dilemma*. Boston, MA: Harvard Business Press.

Carande, C., & Anzevino, A. (2010). Beyond Turbulent Times: Transforming Banking Business Models. *Bank Accounting & Finance*, 23(5), 37-40.

Carayannopoulos, S., & Auster, E. R. (2010). External knowledge sourcing in biotechnology through acquisition versus alliance: A KBV approach. *Research policy*, 39(2), 254-267.

Carlson, K. D. & Herdman, A. O. (2012) Understanding The Impact Of Convergent Validity On Research Results. *Organizational Research Methods*, 15(1),17-32.

Carman, J. M., & Langeard, E. (1980). Growth strategies for service firms. *Strategic Management Journal*, 1(1), 7-22.

Carolis, D. M. D., & Saparito, P. (2006). Social Capital, Cognition, and Entrepreneurial Opportunities: A Theoretical Framework. *Entrepreneurship: Theory & Practice*, 30(1), 41-56.

Carpenter, M. A., & Golden, B. R. (1997). Perceived Managerial Discretion: A Study of Cause and Effect. *Strategic Management Journal*, 18(3), 187-206.

Casadesus-Masanell, R. & Ricart, J. E. (2010) From Strategy To Business Models And Onto Tactics. *Long Range Planning*, 43(2-3), 195-215.

Casadesus-Masanell, R. & Ricart, J. E. (2011) How To Design A Winning Business Model. *Harvard Business Review*, 89(1/2), 100-107.

Casadesus-Masanell, R., & Zhu, F. (2012). Business Model Innovation and Competitive Imitation: the case of sponsor-based business models. *Strategic Management Journal*, In press.

Casciaro, T., & Piskorski, M. J. (2005). Power Imbalance, Mutual Dependence, and Constraint Absorption: A Closer Look at Resource Dependence Theory. *Administrative Science Quarterly*, 50(2), 167-199.

Cascio, W. F. & Aguinis, H. (2008) Research in industrial and organizational psychology from 1963 to 2007: changes, choices, and trends. *Journal of Applied Psychology*, 93(5), 1062-1081.

Casillas, J. C., Moreno, A. M., & Barbero, J. L. (2010). A Configurational Approach of the Relationship Between Entrepreneurial Orientation and Growth of Family Firms. *Family Business Review*, 23(1), 27-44.

Cassell, C., & Symon, G. (2004). *Essential Guide To Qualitative Methods In Organizational Research*. London: Sage Publications.

Casselman, R. M., & Samson, D. (2007). Aligning Knowledge Strategy and Knowledge Capabilities. *Technology Analysis & Strategic Management*, 19(1), 69-81.

Castanias, R. P., & Helfat, C. E. (1991). Managerial Resources and Rents. *Journal of Management*, 17(1), 155-171.

Castanias, R. P., & Helfat, C. E. (2001). The managerial rents model: Theory and empirical analysis. *Journal of Management* 27(6), 661–678.

Castellacci, F. (2008). Technological paradigms, regimes and trajectories: Manufacturing and service industries in a new taxonomy of sectoral patterns of innovation. *Research Policy*, 37(6-7), 978–994.

Castro, F. G., Kellison, J. G., Boyd, S. J. & Kopak, A. (2010) A Methodology For Conducting Integrative Mixed Methods Research And Data Analyses. *Journal Of Mixed Methods Research*, 4(4) 342–360.

Castrogiovanni, G. J. (1991). Environmental Munificence: A Theoretical Assessment. *Academy of Management Review*, 16(3), 542-565.

Cavalcante, S., Kesting, P., & Ulhoi, J. (2011). Business model dynamics and innovation: (re)establishing the missing linkages. *Management Decision*, 49(7-8), 1327-1342.

Cavazos, D. E., Patel, P., & Wales, W. (2012). Mitigating environmental effects on new venture growth: The critical role of stakeholder integration across buyer and supplier groups. *Journal of Business Research*, In Press.

Caza, A. (2012). Typology of the Eight Domains of Discretion in Organizations. *Journal Of Management Studies*, 49(1), 144-177.

Cerni, T., Curtis, G. J., & Colmar, S. H. (2012). Cognitive-experiential self-theory and conflict-handling styles: Rational and constructive experiential systems are related to the integrating and compromising conflict-handling styles. *International Journal of Conflict Management*, 23(4), 362-381.

Chakraborty, I., Hu, P. J.-H., & Cui, D. (2008). Examining The Effects Of Cognitive Style In Individuals' Technology Use Decision Making. *Decision Support Systems*, 45(2), 228-241.

Chakravarthy, B. S. & Doz, Y. (1992) Strategy Process Research: Focusing On Corporate Self-Renewal. *Strategic Management Journal*, 13(1), 5-14.

Chan, D. L. H., & Soong, S. C. (2011). Strategic repositioning in a dynamic environment. *Library Management* 32(1/2), 22-36.

Chandler, G. N. & Lyon, D. W. (2001) Issues of Research Design and Construct Measurement in Entrepreneurship Research: The Past Decade. *Entrepreneurship: Theory & Practice*, 25(4), 101-114.

Chandler, G. N. & Lyon, D. W. (2009) Involvement In Knowledge-Acquisition Activities By Venture Team Members And Venture Performance. *Entrepreneurship Theory And Practice*, 33(3), 571-592,

Chandler, G. N., & Hanks, S. H. (1993). Measuring the performance of emerging businesses: a validation study. *Journal of Business Venturing*, 8(3), 391-408.

Chandler, G. N., & Lyon, D. W. (2001). Issues of research design and construct measurement in entrepreneurship research: The past decade. *Entrepreneurship Theory and Practice*, 25(4), 101-113.

Chandler, G. N., McKelvie, A., & Davidsson, P. (2009). Asset specificity and behavioral uncertainty as moderators of the sales growth — Employment growth relationship in emerging ventures. *Journal of Business Venturing*, 24(4), 373-387.

Charitou, C. D., & Markides, C. C. (2003). Responses to disruptive strategic innovation. *MIT Sloan Management Review*, 44(2), 55-63.

Charlton, B. G., & Andras, P. (2003). What is management and what do managers do? A systems theory account. *Philosophy of Management*, 3(1), 1-15.

Chaston, I. & Sadler-Smith, E. (2012) Entrepreneurial Cognition, Entrepreneurial Orientation and Firm Capability in the Creative Industries, *British Journal of Management*, 23(3), 415–432.

Chatterjee, S. (2013). Simple Rules for Designing Business Models. *California Management Review*, 55(2), 97-124.

Chattopadhyay, P., Glick, W. H., Miller, C. C., & Huber, G. P. (1999). Determinants of Executive Beliefs: Comparing Functional Conditioning and Social Influence. *Strategic Management Journal*, 20(8), 763-789.

Chen, M.-J., & Hambrick, D. C. (1995). Speed, Stealth, and Selective Attack: How Small Firms Differ from Large Firms in Competitive Behavior. *Academy of Management Journal*, 38(2), 453-482.

Chen, Y.-C., Li, P.-C., & Evans, K. R. (2012). Effects of interaction and entrepreneurial orientation on organizational performance: Insights into market driven and market driving. *Industrial Marketing Management*, In Press.

Chesbrough, H. (2007). Business model innovation: it's not just about technology anymore. *Strategy & Leadership*, 35(6), 12-17.

Chesbrough, H. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, 43(2-3), 354-363.

Chesbrough, H., & Schwartz, K. (2007). Innovating business models with co-development partnerships. *Research-Technology Management*, 50(1), 55-59.

Chi, T. (1994). Trading in Strategic Resources: Necessary Conditions, Transaction Cost Problems, and Choice of Exchange Structure. *Strategic Management Journal*, 15(4), 271-290.

Chiaburu, D. S. (2010). Chief executives, self-regulation and strategic orientation: A theoretical model. *European Management Journal*, 28(6), 467- 478.

Child, J. (1972) Organizational Structure, Environments And Performance: The Role Of Strategic Choice. *Sociology*, 6(1), 1-22.

Child, J. (1973). Strategies of Control and Organizational Behavior. *Administrative Science Quarterly*, 18(1), 1-17.

Child, J. (1974) Managerial And Organizational Factors Associated With Company Performance--Part I. *Journal Of Management Studies*, 11(3), 175-189.

Child, J. (1975) Managerial And Organizational Factors Associated With Company Performance--Part II, A Contingency Analysis. *Journal Of Management Studies*, 12(1-2), 12-27,

Child, J. (1997). Strategic choice in the analysis of action, structure, organizations and environment: Retrospect and prospect. *Organization Studies*, 18(1), 43-76.

Chinna, K., Karuthan, K., & Yuen, C. W. (2013). *Statistical Analysis Using SPSS*. Kuala Lumpur, Malaysia: Pearson.

Chirico, F. (2008). Knowledge Accumulation in Family Firms : Evidence from Four Case Studies. *International Small Business Journal*, 26(4), 433-462.

Choo, C. W., & Bontis, N. (2002). Knowledge, Intellectual Capital, and Strategy: Themes and Tensions. In C. W. Choo & N. Bontis (Eds.), *The Strategic Management of Intellectual Capital and Organizational Knowledge* (pp. 3-22). New York: Oxford University Press.

Choudhury, V., & Sampler, J. L. (1997). Information Specificity and Environmental Scanning: An Economic Perspective. *MIS Quarterly*, 21(1), 25-53.

Chrisman, J.J., Chua, J.H., & Sharma, P. (2003). Current trends and future directions in family business management studies: Toward a theory of the family firm. 2003 Coleman White Paper Series.

Christensen, C. R., Andrews, K. R. & Bower, J. L. (1978) *Business Policy*, Homewood, IL: Richard D. Irwin, Inc.

Chua, A. (2002). Taxonomy of Organizational Knowledge. *Singapore Management Review*, 24(2), 69-76.

Churchill Jr, G. A. (1979) A Paradigm For Developing Better Measures Of Marketing Constructs. *Journal Of Marketing Research*, 16(1), 64-73.

Churchill, N. C., & Lewis, V. L. (1983). The five stages of small business growth. *Harvard Business Review*, 61(3), 30-40.

Cillo, P. (2005). Fostering Market Knowledge Use in Innovation. *European Management Journal*, 23(4), 404-412.

Clarysse, B., Bruneel, J., & Wright, M. (2011). Explaining growth paths of young technology-based firms: structuring resource portfolios in different competitive environments. *Strategic Entrepreneurship Journal*, 5(2), 137-157.

Clarysse, B., Wright, M., & Van de Velde, E. (2010). Entrepreneurial Origin, Technological Knowledge, and the Growth of Spin-Off Companies. *Journal of Management Studies*, 48(6), 1420-1442.

Clewley, N., Chen, S. Y., & Liu, X. (2010). Cognitive styles and search engine preferences: Field dependence/independence vs holism/serialism. *Journal of Documentation*, 66(4), 585 - 603.

Coad, A., & Tamvada, J. P. (2012). Firm growth and barriers to growth among small firms in India. *Small Business Economics*, 39(2), 383-400.

Coase, R. H. (1937) The Nature of the Firm. *Economica*, 4, 386-405.

Coenders, G., & Saris, W. E. (2000). Testing nested additive, multiplicative, and general multitrait-multimethod models. *Structural Equation Modeling*, 7(2), 219-250.

Coff, R., & Kryscynski, D. (2011). Drilling for Micro-Foundations of Human Capital-Based Competitive Advantages. *Journal Of Management* 37(5), 1429-1443.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2 ed.). London: Lawrence Erlbaum Associates.

Cohen, J. (1983). The cost of dichotomization. *Applied Psychological Measurement*, 7(3), 249-253.

Cohen, J., & Cohen, P. (1983). Missing data. In J. Cohen & P. Cohen (Eds.), *Applied multiple regression: Correlation analysis for the behavioral sciences* (pp. 275-300). Hillsdale, NJ: Erlbaum.

Cohen, M. D., & Bacdayan, P. (1994). Organizational Routines Are Stored As Procedural Memory: Evidence from a Laboratory Study. *Organization Science*, 5(4), 554-568.

Cohen, W. M. & Levinthal, D. A. (1990) Absorptive Capacity: A New Perspective On Learning And Innovation. *Administrative Science Quarterly*, 35(1), 128-152.

Coleman, J. S. (1990). *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.

Collinson, S., & Wilson, D. C. (2006). Inertia in Japanese Organizations: Knowledge Management Routines and Failure to Innovate *Organization Studies*, 27(9), 1359–1387.

Collis, D. J. (1994) Research Note: How Valuable Are Organizational Capabilities? *Strategic Management Journal*, 15(S1), 143-152.

Comes, S., & Berniker, L. (2008). Business Model Innovation. In D. Pantaleo & N. Pal (Eds.), *From Strategy to Execution: Turning Accelerated Global Change Into Opportunity* (pp. 65-86). New York: Springer.

Connell, C. M. (2009). Method, Structure and Argument in Edith Penrose's Theory of Growth. *Review of Political Economy*, 21(4), 549-566.

Conner, K. R. (1991). A Historical Comparison of Resource-Based Theory and Five Schools of Thought Within Industrial Organization Economics: Do We Have a New Theory of the Firm? *Journal of Management*, 17(1), 121-154.

Conner, K. R., & Prahalad, C. K. (1996). A Resource-Based Theory of the Firm: Knowledge versus Opportunism. *Organization Science*, 7(5), 477-501.

Conner, K. R., & Prahalad, C. K. (2002). A Resource-Based Theory of the Firm: Knowledge versus Opportunism. In C. W. Choo & N. Bontis (Eds.), *The Strategic Management of Intellectual Capital and Organizational Knowledge* (pp. 103-132). New York, NY: Oxford University Press.

Cools, E., & Van den Broeck, H. (2007a). Development and Validation of the Cognitive Style Indicator. *Journal of Psychology*, 141(4), 359-387.

Cools, E., & Van den Broeck, H. (2007b). The hunt for the heffalump continues: can trait and cognitive characteristics predict entrepreneurial orientation? . *Journal of Small Business Strategy*, 18(2), 23-41.

Cools, E., & Van den Broeck, H. (2008). Cognitive styles and managerial behaviour: a qualitative study. *Education + Training*, 50(2), 103-114.

Cools, E., Van den Broeck, H., & Bouckennooghe, D. (2009). Cognitive styles and person–environment fit: investigating the consequences of cognitive (mis)fit. *European Journal of Work and Organisational Psychology*, 18(2), 167-198.

Cooper, A. C., Folta, T. B., & Woo, C. (1995). Entrepreneurial Information Search. *Journal of Business Venturing*, 10(2), 107-120.

Cooper, A. C., Willard, G. E., & Woo, C. Y. (1986). Strategies of high-performing small and new firms: a reexamination of the niche concept. *Journal of Business Venturing*, 1(3), 247-260.

Cooper-Thomas, H. D., & Wright, S. (2013). Person-environment misfit: the neglected role of social context. *Journal of Managerial Psychology*, 28(1), 21-37.

Cope, J. (2005). Toward a Dynamic Learning Perspective of Entrepreneurship. *Entrepreneurship Theory and Practice*, 29(4), 373-397.

Corbett, A. C. (2005). Experiential Learning within the Process of Opportunity Identification and Exploitation. *Entrepreneurship: Theory and Practice*, 29(4), 473-491.

Corbett, A. C. (2007). Learning asymmetries and the discovery of entrepreneurial opportunities. *Journal of Business Venturing*, 22(1), 97-118.

Coriat, B. (2000). The ‘Abominable Ohno Production System’: Competences, Monitoring, and Routines in Japanese Production Systems. In G. Dosi, R. R. Nelson & S. G. Winter (Eds.), *The Nature and Dynamics of Organizational Capabilities* (pp. 213-244). New York: Oxford University Press.

- Corten, I. W., Saris, W. E., Coenders, G., van der Veld, W., Aalberts, C. E., & Kornelis, C. (2002). Fit of different models for multitrait-multimethod experiments. *Structural Equation Modeling*, 9(2), 213-232.
- Costanzo, L. A., & Tzoumpa, V. (2009). The role of middle managers in enabling foresight. In L. A. Costanzo & R. B. MacKay (Eds.), *Handbook of Research on Strategy and Foresight* (pp. 277-296). Northampton, MA, USA: Edward Elgar.
- Cousins, P. D., Lawson, B., Petersen, K. J., & Handfield, R. B. (2011). Breakthrough Scanning, Supplier Knowledge Exchange, and New Product Development Performance. *Journal Of Product Innovation Management*, 28(6), 930-942.
- Covin, J. G., & Slevin, D. (1989). Strategic Management Of Small Firms In Hostile And Benign Environments. *Strategic Management Journal*, 10(1), 75-87.
- Covin, J. G., Green, K. M., & Slevin, D. P. (2006). Strategic process effects on the entrepreneurial orientation-sales growth rate relationship. *Entrepreneurship Theory and Practice*, 30(1), 57-81.
- Covin, J. G., Slevin, D. P., & Covin, T. J. (1990). Content And Performance of Growth-Seeking Strategies: A Comparison of Small Firms in High- and Low technology Industries. *Journal of Business Venturing*, 5(6), 391-412.
- Cox, J. W. & Hassard, J. (2005) Triangulation In Organizational Research: A Re-Presentation Organization, 12(1), 109-133.
- Cox, J. W., & Hassard, J. (2007). Ties to the Past in Organization Research: A Comparative Analysis of Retrospective Methods. *Organization*, 14(4), 475-497.
- Coyne, I. T. (1997). Sampling In Qualitative Research. Purposeful And Theoretical Sampling; Merging Or Clear Boundaries? *Journal Of Advanced Nursing*, 26(3), 623-630.
- Crampton, S. M., & Wagner, I. J. A. (1994). Percept-percept inflation in microorganizational research: An investigation of prevalence and effect. *Journal Of Applied Psychology*, 79(1), 67-76.
- Creswell, J. W. (2003) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks
- Creswell, J. W. (2007). *Qualitative Inquiry And Research Design: Choosing Among Five Approaches* (2 ed.). Thousand Oaks, California: Sage Publications.
- Creswell, J. W., & Clark, P.V. L. (2007). *Designing And Conducting Mixed Methods Research*. Thousand Oaks, CA: SAGE.
- Creswell, J. W., & Creswell, J. D. (2005). Mixed Methods Research: Developments, Debates, and Dilemmas. In R. A. Swanson & E. F. Holton III (Eds.), *Research In Organizations: Foundations and Methods of Inquiry* (pp. 315-350). San Francisco, California: Berrett-Koehler Publishers.
- Cronbach, L. J., (1951). Coefficient alpha and the internal structure of tests. *Psychometrika* 16 (3), 297–334.

Crook, T. R., Ketchen, D. J., Combs, J. G. & Todd, S. Y. (2008) Strategic Resources And Performance: A Meta-Analysis. *Strategic Management Journal*, 29(11), 1141–1154.

Crossan, M. M., & Apaydin, M. (2010). A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature. *Journal of Management Studies*, 47(6), 1154-1191.

Crossan, M. M., Lane, H. W., & White, R. E. (1999). An Organizational Learning Framework: From Intuition To Institution *Academy Of Management Review*, 24(3), 522-537.

Crossland, C., & Hambrick, D. C. (2011). Differences in managerial discretion across countries: how nation-level institutions affect the degree to which CEOs matter. *Strategic Management Journal*, 32(8), 797-819.

Cuervo-Cazurra, A., & Un, C. A. (2010). Why Some Firms Never Invest In Formal R&D. *Strategic Management Journal*, 31(7), 759-779.

Curran, J., & Blackburn, R. (2001). *Researching the Small Enterprise*. London: SAGE Publications

Curseu, P. L., Vermeulen, P. A. M., & Bakker, R. M. (2008). The psychology of entrepreneurial strategic decisions. In P. A. M. Vermeulen & P. L. Curseu (Eds.), *Entrepreneurial Strategic Decision-Making: A Cognitive Perspective* (pp. 41-67). Massachusetts, USA: Edward Elgar.

Cycyota, C. S. & Harrison, D. A. (2006). What (not) to expect when surveying executives: A meta-analysis of top manager response rates and techniques over time. *Organizational Research Methods*, 9(1), 133-160.

Cyert, R. & March, J. G. (1963) *A Behavioral Theory Of The Firm*, Prentice Hall, Englewood Cliffs.

Daft, R. L. & Weick, K. E. (1984) Toward A Model Of Organizations As Interpretation Systems. *Academy Of Management Review*, 9(2), 284-295.

Daft, R. L., Sormunen, J., & Parks, D. (1988). Chief Executive Scanning, Environmental Characteristics, And Company Performance: An Empirical Study. *Strategic Management Journal*, 9(1), 123-139.

Daily, C. M., Certo, S. T., & Dalton, D. R. (1999). A decade of corporate women: Some progress in the boardroom, none in the executive suit. *Strategic Management Journal*, 20(1), 93-99.

Damanpour, F. (2009). An integration of research findings of effects of firm size and market competition on product and process innovations. *British Journal of Management*, 21(4), 996-1010.

D'Amboise, G., & Muldowney, M. (1988). Management Theory for Small Business: Attempts and Requirements. *Academy of Management Review*, 13(2), 226-240.

Dane, E., & Pratt, M. G. (2007). Exploring Intuition And Its Role In Managerial Decision Making. *Academy Of Management Review*, 32(1), 33-54.

Dane, E., Baer, M., Pratt, M. G., & Oldham, G. R. (2011). Rational Versus Intuitive Problem Solving: How Thinking “Off the Beaten Path” Can Stimulate Creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 5(1), 3-12.

Danes, J. E., & Mann, K. (1984). Unidimensional Measurement and Structural Equation Models with Latent Variables. *Journal of Business Research*, 12(3), 337-352.

Danneels, E. (2008). Organizational Antecedents Of Second-Order Competences. *Strategic Management Journal*, 29(5), 519-543.

Danneels, E. (2012). Second-order competences and Schumpeterian rents. *Strategic Entrepreneurship Journal*, 6(1), 42-58.

Danneels, E. (2010). Trying To Become A Different Type Of Company: Dynamic Capability At Smith Corona. *Strategic Management Journal*, 31(1), 1–31.

Davenport, T. & Prusak, L. (1998) *Working Knowledge*. Cambridge, Ma: Harvard Business School Press.

Davey, A. & Savla, J. (2010) *Statistical Power Analysis With Missing Data A Structural Equation Modeling Approach*. New York, NY, Routledge.

Davidsson, P. (1989 a). Continued Entrepreneurship and Small Firm Growth. Doctoral thesis, Stockholm School of Economics, Sweden.

Davidsson, P. (1989b). Entrepreneurship and after? A study of growth willingness in small firms. *Journal of Business Venturing*, 4(3), 211-226.

Davidsson, P. (1991). Continued entrepreneurship: Ability, need, and opportunity as determinants of small firm growth *Journal of Business Venturing*, 6(6), 405-429.

Davidsson, P., Achtenhagen, L., & Naldi, L. (2007). What Do We Know About Small Firm Growth? In S. Parker (Ed.), *The Life Cycle of Entrepreneurial Ventures* (Vol. 3, pp. 361-398): Springer US.

Davidsson, P., Achtenhagen, L., & Naldi, L. (2010). Small firm growth. *Foundations and Trends in Entrepreneurship*, 6(2), 69-166.

Davidsson, P., Delmar, F., & Wiklund, J. (2002). Entrepreneurship as growth; growth as entrepreneurship. In M. A. Hitt, R. D. Ireland, S. M. Camp & D. L. Sexton (Eds.), *Strategic entrepreneurship: Creating a new mindset* (pp. 328-342). Oxford, U.K.: Blackwell Publishing.

Davidsson, P., Steffens, P., & Fitzsimmons, J. (2009). Growing profitable or growing from profits: Putting the horse in front of the cart? *Journal of Business Venturing*, 24(4), 388-406.

Davies, A., Frederiksen, L., & Hartmann, A. (2010). The Road To Replication: Transformation Of The Highways Agencies In England And The Netherlands. Paper

Presented At The Opening Up Innovation: Strategy, Organization And Technology, Imperial College London Business School,

Davis, J. P., Eisenhardt, K. M., & Bingham, C. B. (2009). Optimal Structure, Market Dynamism, and the Strategy of Simple Rules. *Administrative Science Quarterly*, 54(3), 413-452.

Davison, M. L., Kwak, N., Seo, Y. S., & Choi, J. (2002). Using Hierarchical Linear Models to Examine Moderator Effects: Person-by-Organization Interactions. *Organizational Research Methods*, 5(3), 231-254.

Dawes, J. (2008). Do data characteristics change according to the number of scale points used? *International Journal of Market Research*, 50(1), 61-77.

Dayan, M., & Di Benedetto, C. A. (2011). Team intuition as a continuum construct and new product creativity: The role of environmental turbulence, team experience, and stress. *Research Policy*, 40(2), 276-286.

Dayan, M., & Elbanna, S. (2011). Antecedents of Team Intuition and Its Impact on the Success of New Product Development Projects. *Journal of Product Innovation Management*, 28(S1), 159–174.

De Clercq, D., & Dimov, D. (2008). Internal Knowledge Development and External Knowledge Access in Venture Capital Investment Performance. *Journal of Management Studies*, 45(3), 585-612.

De Clercq, D., Lim, D. S. K., & Oh, C. H. (2013). Individual-Level Resources and New Business Activity: The Contingent Role of Institutional Context. *Entrepreneurship Theory and Practice*, 37(2), 303-330.

De Clercq, D., Sapienza, H. J., Yavuz, R. I., & Zhou, L. (2012). Learning and knowledge in early internationalization research: Past accomplishments and future directions. *Journal of Business Venturing*, 27(1), 143-165.

de Holan, P. M., & Phillips, N. (2004). Remembrance of Things Past? The Dynamics of Organizational Forgetting. *Management Science*, 50(11), 1603-1613.

de Jong, J. P. J. (2013). The Decision to Exploit Opportunities for Innovation: A Study of High-Tech Small-Business Owners . *Entrepreneurship theory and practice*, 37(2), 281–301

De Luca, L. M., & Atuahene-Gima, K. (2007). Market Knowledge Dimensions and Cross-Functional Collaboration: Examining the Different Routes to Product Innovation Performance. *Journal of Marketing*, 71(1), 95-112.

Dean, T. J., Brown, R. L., & Bamford, C. E. (1998). Differences in Large and Small Firm Responses to Environmental Context: Strategic Implications from a Comparative Analysis of Business Formations. *Strategic Management Journal*, 19(8), 709-728.

Decarolis, D. M., & Deeds, D. L. (1999). The Impact of Stocks and Flows of Organizational Knowledge on Firm Performance: An Empirical Investigation of the Biotechnology Industry. *Strategic Management Journal*, 20(10), 953-968.

Deephouse, D. L. (1999). To be different, or to be the same? It's a question (and theory) of strategic balance. *Strategic Management Journal*, 20(2), 147-166.

Delgado-Garcia, J. B., & Fuente-Sabate, J. M. D. L. (2010). How Do CEO Emotions Matter? Impact Of CEO Affective Traits On Strategic and Performance Conformity in the Spanish Banking Industry. *Strategic Management Journal*, 31(5), 562–574.

Delmar, F. (1997). Measuring growth: Methodological considerations and empirical results. In R. Donckels & A. Miettinen (Eds.), *Entrepreneurship and SME research: On its way to the new millennium* (pp. 199-216). Aldershot, U.K: Ashgate.

Delmar, F., & Wiklund, J. (2008). The effect of small business managers' growth motivation on firm growth: A longitudinal study. *Entrepreneurship Theory and Practice*, 32(3), 437-457.

Delmar, F., Davidsson, P., & Gartner, W. B. (2003). Arriving at the high-growth firm. *Journal of Business Venturing*, 18(2), 189-216.

Delmar, F., Wennberg, K., & Hellerstedt, K. (2011). Endogenous Growth through Knowledge Spillovers In *Entrepreneurship: An Empirical Test*. *Strategic Entrepreneurship Journal*, 5(3), 199-226.

Demarest, M. (1997). Understanding Knowledge Management. *Long Range Planning*, 30(3), 374-384.

Demil, B. T. & Lecocq, X. (2010) Business Model Evolution: In Search Of Dynamic Consistency. *Long Range Planning*, 43(2-3), 227-246.

Demsetz, H. (1988). The Theory of the Firm Revisited. *Journal of Law, Economics and Organization*, 4(1), 141-161.

Denzin, N. K. (1978). Triangulation. In N. K. Denzin (Ed.), *The research act: An introduction to sociological methods*. New York: McGraw-Hill.

Denzin, N. K., & Lincoln, Y. S. (1998). *The Landscape of Qualitative Research: Theories and Issues*. Thousand Oaks, California: SAGE Publications,.

Dess, G. G., & Beard, D. W. (1984). Dimensions of Organizational Task Environments. *Administrative Science Quarterly*, 29(1), 52-73.

Dess, G. G., Pinkham, B. C., & Yang, H. (2011). Entrepreneurial Orientation: Assessing the Construct's Validity and Addressing Some of Its Implications for Research in the Areas of Family Business and Organizational Learning *Entrepreneurship theory and practice*, 35(5), 1077-1090.

Dess, G., & Robinson Jr., R. (1984). Measuring organizational performance in the absence of objective measures: the case of the privately-held firm and conglomerate business unit. *Strategic Management Journal*, 5(3), 265-273.

Desyllas, P., & Sako, M. (2013). Profiting from business model innovation: Evidence from Pay-As-You-Drive auto insurance. *Research Policy*, 42(1),101-116.

Dewald, J., & Bowen, F. (2010). Storm Clouds and Silver Linings: Responding to Disruptive Innovations Through Cognitive Resilience. *Entrepreneurship Theory and Practice*, 34(1), 197-218.

Diamantopoulos, A. & Siguaw, J. A. (2006) Formative Versus Reflective Indicators in Organizational Measure Development: A Comparison and Empirical Illustration. *British Journal of Management*, 17(4), 263-282.

Diamantopoulos, A., Riefler, P. & Roth, K. P. (2008) Advancing formative measurement models. *Journal of Business Research*, 61(12), 1203-1218.

Díaz-Díaz, N. L., Aguiar-Díaz, I., & Saá-Pérez, P. D. (2008). The effect of technological knowledge assets on performance: The innovative choice in Spanish firms. *Research Policy*, 37(12), 1515-1529

Dickinson, Q. T. (2000). Can You Patent Your Business Model? *Harvard business review*, 78(4), 16.

Dickson, V. V., Lee, C. S., & Riegel, a. B. (2011). How Do Cognitive Function and Knowledge Affect Heart Failure Self-Care? *Journal of Mixed Methods Research*, 5(2), 167- 189.

Dierickx, I., & Cool, K. (1989). Asset Stock Accumulation And Sustainability Of Competitive Advantage. *Management Science*, 35(12), 1504-1511.

Dill, W. R. (1958). Environment as an influence on managerial autonomy. *Administrative Science Quarterly*, 2(4), 409-443.

Dill, W. R. (1962). The impact of environment on organizational development. In S. Mailick & E. Van Ness (Eds.), *Concepts and Issues in Administrative Behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Dillman, D. A. (2007). *Mail and internet surveys: the tailored design method* (2 ed.). New Jersey: Wiley and Sons.

DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review*, 48(2), 147-160.

Dimov, D. (2007). From Opportunity Insight to Opportunity Intention: The Importance of Person-Situation Learning Match. *Entrepreneurship Theory And Practice*, 31(4), 561-583.

Dimov, D. (2011). Grappling With the Unbearable Elusiveness of Entrepreneurial Opportunities. *Entrepreneurship theory and practice*, 35(1), 57-81.

Dobbs, M., & Hamilton, R. T. (2007). Small business growth: recent evidence and new directions. *International Journal of Entrepreneurial Behavior & Research*, 13(5), 296 - 322.

Doganova, L., & Eyquem-Renault, M. (2009). What do business models do? Innovation devices in technology entrepreneurship. *Research Policy* 38(10), 1559–1570.

Dollinger, M. J. (1984). Environmental Boundary Spanning and Information Processing Effects on Organizational Performance. *Academy of Management Journal*, 27(2), 351-368.

Dong, L., Neufeld, D. J., & Higgins, C. (2008). Testing Klein and Sorra's innovation implementation model: An empirical examination. *Journal of Engineering and Technology Management*, 25(4), 237-255.

Doorewaard, H., & Benschop, Y. (2003). HRM and organizational change: an emotional endeavor. *Journal of Organizational Change Management*, 16(3), 272 - 286.

Dosi, G. (1982). Technological paradigms and technological trajectories : A suggested interpretation of the determinants and directions of technical change. *Research Policy*, 11(3), 147-162.

Dosi, G., & Marengo, L. (2007). On the Evolutionary and Behavioral Theories of Organizations: A Tentative Roadmap. *Organization Science*, 18(3), 491-502.

Doty, D. H. & Glick, W. H. (1998) Common Methods Bias: Does Common Methods Variance Really Bias Results? *Organizational Research Methods*, 1(4), 374-406.

Downey, H. K., Hellriegel, D., & Slocum, J. W. (1975). Environmental uncertainty: The construct and its application. *Administrative Science Quarterly*, 20(4), 613-629.

Doyle, L., Brady, A.-M. & Byrne, G. (2009) An Overview Of Mixed Methods Research. *Journal Of Research In Nursing*, 14(2), 175-185.

Doyle, W., Fisher, R. & Young, J. D. (2002). Entrepreneurs: relationships between cognitive style and entrepreneurial drive. *Journal of Small Business and Entrepreneurship*, 16(1), 2-20.

Doz, Y. L., & Kosonen, M. (2010). Embedding Strategic Agility A Leadership Agenda for Accelerating Business Model Renewal. *Long Range Planning*, 43(2-3), 370-382.

Drew, S., & West, D. (2002). Design and competitive advantage: Strategies for market acceptance. *Journal of General Management*, 28(2), 58-74.

Drucker, P. F. (1994). The Theory of the Business. *Harvard Business Review*, 72(5), 95-104.

Duchesneau, D., & Gartner, W. (1990). A profile of new venture success and failure in an emerging industry. *Journal Business Venturing*, 5(5), 297-312.

Dul, J., & Hak, T. (2008). *Case Study Methodology in Business Research*. Barlington, MA: Elsevier Ltd.

Duncan, R. B. (1972). Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly*, 17(3), 313-327.

Dundon, T., & Ryan, P. (2010). Interviewing Reluctant Respondents: Strikes, Henchmen, and Gaelic Games. *Organizational Research Methods*, 13(3), 562-581

- Durand, R. (2006). *Organizational evolution and strategic management*. London: SAGE.
- Durant-Law, G. (2005) Soft systems methodology and grounded theory combined – a knowledge management research approach? . *act KM Online Journal of Knowledge Management*, 2(1),12-23
- Dures, E., Rumsey, N., Morris, M. & Gleeson, K. (2011) Mixed Methods In Health Psychology: Theoretical And Practical Considerations Of The Third Paradigm. *Journal Of Health Psychology*, 16(2), 332-341.
- Duriau, V. J., Reger, R. K., & Pfarrer, M. D. (2007). A Content Analysis of the Content Analysis Literature in Organization Studies Research Themes, Data Sources, and Methodological Refinements. *Organizational Research Methods*, 10(1), 5-34.
- Dutta, D. K., & Thornhill, S. (2008). The evolution of growth intentions: Toward a cognition-based model. *Journal of Business Venturing*, 23(3), 307-332.
- Dutton, J. E., & Jackson, S. E. (1987). Categorizing Strategic Issues: Links to Organizational Action. *Academy of Management Review*, 12(1), 76-90.
- Dutton, J. E., Fahey, L., & Narayanan, V. K. (1983). Toward Understanding Strategic Issue Diagnosis *Strategic Management Journal*, 4(4), 307-323.
- Dyer, J. H., & Hatch, N. W. (2006). Relation-Specific Capabilities And Barriers To Knowledge Transfers: Creating Advantage Through Network Relationships. *Strategic Management Journal*, 27(8), 701-719.
- Easterby-Smith, M., Li, S., & Bartunek, J. (2009) Research Methods For Organizational Learning: The Transatlantic Gap. *Management Learning*, 40(4), 439-447.
- Easterby-Smith, M., Lyles, M. A., & Peteraf, M. A. (2009). Dynamic Capabilities: Current Debates and Future Directions. *British Journal of Management*, 20(special issue on dynamic capabilities), S1–S8.
- Easterby-Smith, M., R. Thorpe, and A. Lowe. (2002) *Management Research an Introduction*. Thousand Oaks: Sage Publications.
- Easterby-Smith, M., Thorpe, R. & Jackson, P. (2008) *Management Research*. London: Sage.
- Ebben, J. J., & Johnson, A. C. (2005). Efficiency, Flexibility, Or Both? Evidence Linking Strategy To Performance In Small Firms. *Strategic Management Journal*, 26(13), 1249–1259.
- Eckhardt, J. T., & Shane, S. (2010). An Update to the Individual-Opportunity Nexus. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction* (2 ed., Vol. 5, pp. 47-77). New York Springer.
- Eddleston, K. A., Kellermanns, F. W., Floyd, S. W., Crittenden, V. L., & Crittenden, W. F. (2013). Planning for Growth: Life Stage Differences in Family Firms. *Entrepreneurship Theory and Practice*, In press.

Edmondson, A. C. & McManus, S. E. (2007) Methodological Fit In Management Field Research. *Academy Of Management Review*, 32(4), 1155–1179.

Edwards, J. R. & Bagozzi, R. P. (2000) On the Nature and Direction Of Relationship Between Constructs And Measures. *Psychological Methods*, 5(2), 155-174.

Edwards, J. R. (2011) The Fallacy Of Formative Measurement. *Organizational Research Methods*, 14(2), 370-388.

Eggers, J. P., & Kaplan, S. (2013). Cognition and Capabilities. *The Academy of Management Annals*, 7(1), 293-338.

Eisenhardt, K. M. & Zbaracki, M. J. (1992) Strategic Decision-Making. *Strategic Management Journal*, 13(1), 17-37.

Eisenhardt, K. M. (1989). Building Theories From Case Study Research. *Academy Of Management Review* 14(4), 532-550.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building From Cases: Opportunities And Challenges. *Academy Of Management Journal*, 50(1), 25–32.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic Capabilities: What Are They? *Strategic Management Journal*, 21, (10/11), 1105-1121.

Eisenhardt, K. M., & Martin, J. A. (2003). Dynamic Capabilities: What Are They? In C. E. Helfat (Ed.), *The SMS Blackwell Handbook of Organizational Capabilities: Emergence, Development and Change* (pp. 341-363). Oxford, UK: Wiley-Blackwell.

Eisenhardt, K. M., & Santos, F. M. (2002). Knowledge-based view: a new theory of strategy? In A. Pettigrew, H. Thomas & R. Whittington (Eds.), *Handbook of Strategy and Management* (pp. 139-164). London: Sage.

Eisenhardt, K. M., & Schoonhoven, C. B. (1990). Organizational growth: linking founding team, strategy, environment, and growth among U.S. Semiconductor ventures ,1978–1988. *Administrative Science Quarterly*, 35(3), 504-529.

Eisenhardt, K. M., Furr, N. R., & Bingham, C. B. (2010). Microfoundations of performance: balancing efficiency and flexibility in dynamic environments. *Organization Science*, 21(6), 1263-1276.

Eisenhardt, K., & Bourgeois, I. L. (1988). Politics Of Strategic Decision Making In High-Velocity: Toward A Midrange Theory. *Academy of Management Journal*, 31(4), 737-770.

Eisenhower, D., Mathiowetz, N. A. & Morganstern, D. (1991) Recall Error: Sources And Bias Reduction Techniques. In P.P. Biemer, R.M. Groves, L.E. Lyberg, N.A. Mathiowetz, & S. Sudman (Eds.), *Measurement Errors In Surveys* (Pp. 127–144). New York: Wiley.

Eitam, B., Hassin, R. R., & Schul, Y. (2008). Non-conscious goal pursuit in novel environments: The case of implicit learning. *Psychological Science*, 19(2), 261-267.

Elbanna, S. & Child, J. (2007a) Influences On Strategic Decision Effectiveness: Development And Test Of An Integrative Model. *Strategic Management Journal*, 28(4), 431-453.

Elbanna, S. & Child, J. (2007b) The Influence Of Decision, Environmental And Firm Characteristics On The Rationality Of Strategic Decision-Making. *Journal Of Management Studies*, 44(4), 561-591.

Elbanna, S., Ali, A. J., & Dayan, M. (2011). Conflict in strategic decision making: do the setting and environment matter?. *International Journal of Conflict Management*, 22(3), 278 - 299.

Elbanna, S., Child, J., & Dayan, M. (2013). A Model of Antecedents and Consequences of Intuition in Strategic Decision-making: Evidence from Egypt. *Long Range Planning*. In press.

Elenkov, D. S. (1997). Strategic Uncertainty and Environmental Scanning: The Case for Institutional Influences on Scanning Behavior. *Strategic Management Journal*, 18(4), 287-302.

Emery, F., & Trist, E. (1965). The causal texture of organizational environments. *Human Relations*, 18(1), 21-31.

Enderwick, P. (2011). Acquiring overseas market knowledge: a comparison of strategies of expatriate and immigrant employees. *Journal of Asia Business Studies*, 5(1), 77-97.

Enkel, E., & Mezger, F. (2013). Imitation Processes and Their Application for Business Model Innovation: An Explorative Study. *International Journal of Innovation Management*, 17(01), 1340005.

Enos, M. D., Kehrhahn, M. T., & Bell, A. (2003). Informal learning and the transfer of learning: How managers develop proficiency. *Human Resource Development Quarterly*, 14(4), 369-387,.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist*, 49(8), 709-724.

Epstein, S., & Pacini, R. (1999). some basic issues regarding dual-processing theories form perspective of cognitive-experiential self-theory. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 462-482). New York, N.Y.: Guildford Press.

Epstein, S., Lipson, A., Holstein, C., & Huh, E. (1992). Irrational reactions to negative outcomes: Evidence for two conceptual systems. *Journal of Personality and Social Psychology*, 62(2), 328-339.

Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual Differences in Intuitive-Experiential and Analytical-Rational Thinking Styles. *Journal of Personality and Social Psychology*, 71(2), 390-405.

Erdogan, B. Z. & Baker, M. J. (2002) Increasing Mail Survey Response Rates From An Industrial Population: A Cost-Effectiveness Analysis Of Four Follow-Up Techniques. *Industrial Marketing Management*, 31(1), 65-73.

Evans, J. S. B. T. (2003). In two minds: dual-process accounts of reasoning. *Trends in Cognitive Sciences*, 7(10), 454-459.

Evans, J. S. B. T. (2008). Dual-processing accounts of reasoning, judgment and social cognition. *Annual Review of Psychology*, 59, 255-278.

Fairchild, A. J., & MacKinnon, D. P. (2009). A General Model for Testing Mediation and Moderation Effects. *Prevention Science* 10(2), 87-99.

Faria, A. J. & Dickinson, J. R. (1992) Mail Survey Response, Speed, And Cost. *Industrial Marketing Management*, 21(1), 51-60.

Favaro, K., Meer, D., & Sharma, S. (2012). Creating an Organic Growth Machine. *Harvard Business Review*, 90(5), 96-106.

Feilzer, M. Y. (2010) Doing Mixed Methods Research Pragmatically: Implications For The Rediscovery Of Pragmatism As A Research Paradigm. *Journal Of Mixed Methods Research*, 4(1), 6-16.

Felin, T. & Hesterly, W. S. (2007) The Knowledge-Based View, Nested Heterogeneity, And New Value Creation: Philosophical Considerations On The Locus Of Knowledge. *Academy Of Management Review*, 32(1), 195-218.

Felin, T., & Foss, N. J. (2005). Strategic organization: a field in search of micro-foundations. *Strategic Organization*, 3(4), 441-455.

Felin, T., & Foss, N. J. (2009). Organizational routines and capabilities: Historical drift and a course-correction toward micro-foundations. *Scandinavian Journal of Management*, 25(2), 157-167.

Felin, T., & Hesterly, W. S. (2007). The Knowledge-Based View, Nested Heterogeneity, And New Value Creation: Philosophical Considerations On The Locus Of Knowledge. *Academy Of Management Review*, 32(1), 195-218.

Field, A. P. (2000). *Discovering Statistics using SPSS for Windows*. Thousand Oaks: Sage.

Fiet, J. O. (2007). A Prescriptive Analysis of Search and Discovery. *Journal of Management Studies*, 44(4), 592-611.

Finkelstein, S., Hambrick, D. C., & Cannella, A. A. (2009). *Strategic leadership*. New York: Oxford University Press.

Fiol, C. M. (1991) Managing Culture As A Competitive Resource: An Identity-Based View Of Sustainable Competitive Advantage. *Journal of Management*, 17(1), 191-211.

Firmin, M. W. (2008). Themes. In L. M. Given (Ed.), *The SAGE encyclopedia of qualitative research methods* (Vol. 1&2, pp. 868-869). Thousand Oaks: Sage.

Fischer, E., & Reuber, A. R. (2003). Support for Rapid-Growth Firms: A Comparison of the Views of Founders, Government Policymakers, and Private Sector Resource Providers. *Journal of Small Business Management*, 41(4), 346-365.

Fisher, C. (2007), *Researching and Writing a Dissertation: A Guidebook for Business Students*, Second edition Pearson Education Limited.

Flaherty, M. T. (2000). Limited Inquiry and Intelligent Adaptation in Semiconductor. In G. Dosi, R. R. Nelson & S. G. Winter (Eds.), *The Nature and Dynamics of Organizational Capabilities* (pp. 99-123). New York: Oxford University Press.

Flamholtz, E. G., & Aksehirli, Z. (2000). Organizational Success And Failure: An Empirical Test Of A Holistic Model. *European Management Journal*, 18(5), 488-498.

Flamholtz, E., & Lacey, J. (1981). *Personnel Management: Human Capital Theory and Human Resource Accounting*. UCLA, Los Angeles, CA: Institute of Industrial Relations.

Flatten, T. C., Engelen, A., Zahra, S. A. & Brettel, M. (2011) A Measure Of Absorptive Capacity: Scale Development And Validation. *European Management Journal*, 29(1), 98-116.

Fletcher, M., & Harris, S. (2012). Knowledge acquisition for the internationalization of the smaller firm: Content and sources. *International Business Review*, 21(4), 631-647.

Fombrun, C. J., & Wally, S. (1989). Structuring small firms for rapid growth. *Journal of Business Venturing*, 4(2), 107-122.

Forbes, D. P. (2005). Managerial Determinants of Decision Speed in New Ventures. *Strategic Management Journal*, 26(4), 355-366.

Ford, N., Wilson, T. D., Foster, A., Ellis, D., & Spink, A. (2002). Information Seeking and Mediated Searching: Part 4. Cognitive Styles In Information Seeking. *Journal of the American Society for Information Science and Technology*, 53(9), 728-735.

Fornell, C. & Larcker, D. (1981) Evaluating Structural Equation Models With Unobservable Variables And Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.

Fornell, C. and F. Bookstein, (1982) Two structural equation models: Lisrel and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*, 19(4), 440-452.

Fornell, C., & Larcker, C. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(3), 382-388.

Foss, N. J. (1996a). Knowledge-based Approaches to the Theory of the Firm: Some Critical Comments. *Organization Science*, 7(5), 470-476.

Foss, N. J. (1996b) More Critical Comments On Knowledge-Based Theories Of The Firm. *Organization Science*, 7(6), 519-523.

Foss, N. J. (2000). Equilibrium vs. evolution in the resource based perspective: The conflicting legacies of Demsetz and Penrose. In N. J. Foss & P. L. Robertson (Eds.), *Resources, Technology and Strategy Explorations in the resource-based perspective* (pp. 11-29). London, UK: Routledge.

Foss, N. J. (2005). *Strategy, Economic Organization and the Knowledge Economy: The Coordination of Firms and Resources*. New York: Oxford University Press.

Foss, N. J. (2009) Alternative Research Strategies In The Knowledge Movement: From Macro Bias To Microfoundations And Multi-Level Explanation. *European Management Review*, 6(1), 16-28.

Foss, N. J. (2010). Micro-foundations for management research: What, why, and whither?. *Cuadernos de Economía y Dirección de la Empresa*, 42(1), 11-34.

Foss, N. J. (2011). Why Micro-Foundations for Resource-Based Theory Are Needed and What They May Look Like. *Journal of Management* 37(5), 1413-1428

Foss, N. J., & Robertson, P. L. (Eds.). (2000). *Resources, Technology and Strategy: Explorations in the resource-based perspective*. London: Routledge.

Foss, N. J., Husted, K., & Michailova, S. (2010). Governing Knowledge Sharing in Organizations: Levels of Analysis, Governance Mechanisms, and Research Directions. *Journal of Management Studies*, 47(3), 455-482.

Foss, N. J., Klein, P. G., Kor, Y. Y., & Mahoney, J. T. (2008). Entrepreneurship, Subjectivism, and the Resource-Based View: Toward A New Synthesis. *Strategic Entrepreneurship Journal*, 2(1), 73-94.

Foxall, G. R., Payne, A. F., & Walters, D. A. (1992). Adaptive-innovative cognitive styles of Australian managers. *Australian Psychologist*, 27(2), 118-122.

Franco, L. A., Meadows, M., & Armstrong, S. J. (2013). Exploring individual differences in scenario planning workshops: A cognitive style framework. *Technological Forecasting and Social Change*, 80(4), 723-734.

Franke, G. R., Preacher, K. J. & Rigdon, E. E. (2008) Proportional structural effects of formative indicators. *Journal of Business Research*, 61(12), 1229-1237.

Fransman, M. (1994). Information, Knowledge, Vision and Theories of the Firm. *Industrial & Corporate Change*, 3(3), 703-757.

Freel, M. S., & Robson, P. J. A. (2004). Small firm innovation, growth and performance: Evidence from Scotland and Northern England. *International Small Business Journal*, 22(6), 561-575.

Freeze, R. D. & Raschke, R. L. (2007) An Assessment Of Formative And Reflective Constructs In Is Research Proceedings of the 15th European Conference on Information Systems ECIS2007 June 79, 2007, St Gallen Switzerland, 1481-1492.

Frensch, P., & Runger, D. (2003). Implicit learning. *Current Directions in Psychological Science*, 12(1), 13-18.

Friedlander, F., & Pickle, H. (1968). Components of Effectiveness in Small Organizations. *Administrative Science Quarterly*, 13(2), 289-304.

Friesl, M. (2012). Knowledge Acquisition Strategies and Company Performance in Young High Technology Companies. *British Journal of Management*, 23(3), 325-343.

Fuller, T., & Moran, P. (2001). Small enterprises as complex adaptive systems: a methodological question? *Entrepreneurship & Regional Development: An International Journal*, , 13(1), 47 - 63.

Furrer, O., Thomas, H. & Goussevskaia, A. (2008) The Structure And Evolution Of The Strategic Management Field: A Content Analysis Of 26 Years Of Strategic Management Research. *International Journal Of Management Reviews*, 10(1), 1–23.

Gaimon, C. (2008). The Management of Technology: A Production and Operations Management Perspective. *Production and Operations Management*, 17(1), 1-11.

Galbraith, J. R. (1973). *Designing Complex Organizations*. Reading, MA: Addison-Wesley.

Galbraith, J. R. (1974). Organization design: An information processing view. *Interfaces*, 4(3), 28-36.

Galema, R., Lensink, R., & Mersland, R. (2012). Do Powerful CEOs Determine Microfinance Performance? *Journal of Management Studies*, 49(4), 718-742.

Gallén, T. (2006). Managers and strategic decisions: does the cognitive style matter? *Journal of Management Development*, 25(2), 118–133.

Galton, F. (1883). *Inquiries into Human Faculty and Its Development*. London: Macmillan.

Gambardella, A., & McGahan, A. M. (2010). Business-Model Innovation: General Purpose Technologies and their Implications for Industry Structure. *Long Range Planning*, 43(2-3), 262-271

Gander, J. P. (2010). The Managerial Limit To The Growth Of Firms Revisited. *Managerial And Decision Economics*, 31(8), 549-555.

Gao, Y. & Riley, M. (2010) Knowledge And Identity: A Review. *International Journal Of Management Reviews*, 12(3), 317-334.

Garbuio, M., King, A. W. & Lovallo, D. (2011) Looking Inside: Psychological Influences On Structuring A Firm's Portfolio Of Resources. *Journal Of Management*, 37(5), 1444-1463

Gardner, W. L., & Martinko, M. J. (1996). Using the Myers-Briggs Type Indicator to Study Managers: A Literature Review and Research Agenda. *Journal of Management*, 22(1), 45-82.

Garg, V. K., Walters, B. A., & Priem, R. L. (2003). Chief executive scanning emphases, environmental dynamism, and manufacturing firm performance. *Strategic Management Journal*, 24(8), 725-744.

Garud, R., & Karnøe, P. (2001). Path creation as a process of mindful deviation. In R. Garud & P. Karnøe (Eds.), *Path Dependence and Path Creation* (pp. 1-38). Mahwah, N.J: Lawrence Earlbaum.

Garud, R., Kumaraswamy, A., & Karnøe, P. (2010). Path Dependence or Path Creation? *Journal of Management Studies*, 47(4), 760-774.

Garud, R., Tuertscher, P., & Van de Ven, A. H. (2013). Perspectives on Innovation Processes. *The Academy of Management Annals*, 1-49.

Garver, M. S. & Mentzer, J. T. (1999) Logistics research methods: Employing structural equation modeling to test for construct validity. *Journal of Business Logistics*, 20(1), 33-57.

Gatignon, H. (2003) *Statistical Analysis of Management Data*. Kluwer: Boston, MA.

Gatignon, H., Tushman, M., Smith, W. & Anderson, P. (2002) A Structural Approach To Assessing Innovation: Construct Development Of Innovation Locus, Type And Characteristics. *Management Science*, 48(9), 1103-1122.

Gatrell, C. (2009). Safeguarding subjects? A reflexive appraisal of researcher accountability in qualitative interviews. *Qualitative Research in Organizations and Management: An International Journal* 4(2), 110-122.

Gavetti, G. (2012) Toward A Behavioral Theory Of Strategy. *Organization Science*, 23(1), 267-285.

Gavetti, G., & Rivkin, J. W. (2007). On the Origin of Strategy: Action and Cognition over Time. *Organization Science*, 18(3), 420-439.

Gawronski, B., & Creighton, L. A. (2012). Dual-Process Theories. In D. E. Carlston (Ed.), *The Oxford handbook of social cognition* (pp. In Press). New York: Oxford University Press.

George, G. & Bock, A. J. (2011) The Business Model In Practice And Its Implications For Entrepreneurship Research. *Entrepreneurship Theory and Practice*, 35(1), 83-111.

George, G., Mcgahan, A. M., & Prabhu, J. (2012). Innovation For Inclusive Growth: Towards A Theoretical Framework And A Research Agenda1. *Journal of Management Studies*, 49(4), 661-683.

Georgopoulos, B. S., & Tannenbaum, A. S. (1957). A Study of Organizational Effectiveness. *American Sociological Review*, 22(5), 534-540.

Gephart, J. R. P. (1993). The Textual Approach: Risk and Blame in Disaster Sensemaking. *Academy of Management Journal*, 36(6), 1465-1514.

Gerbing, D. W., & Anderson, J. C. (1988). An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment. *Journal of Marketing Research*, 25(2), 186-192.

Gerbing, D. W., & Anderson, J. C. (1992). Monte Carlo evaluations of goodness of fit indices for structural equation models. *Sociological Methods and Research*, 21(2), 132-160.

Geroski, P. (1998). Thinking creatively about your market: crisps, perfume and business strategy. *Business Strategy Review*, 9(2), 1-10.

Gersick, C. J. G. (1991). Revolutionary Change Theories: A Multilevel Exploration of the Punctuated Equilibrium Paradigm. *Academy of Management Review*, 16(1), 10-36.

Ghemawat, P. (1991) *Commitment: The Dynamic Of Strategy*, New York: Free Press.

Ghemawat, P., & Levinthal, D. (2008). Choice interactions and business strategy. *Management Science*, 54(9), 1638-1651.

Gibcus, P., Vermeulen, P. A. M., & Radulova, E. (2008). The decision-making entrepreneur: a literature review. In P. A. M. Vermeulen & P. L. Curseu (Eds.), *Entrepreneurial Strategic Decision-Making: A Cognitive Perspective* (pp. 11-40). Massachusetts, USA: Edward Elgar.

Gibrat, R. (1931). *Les Inegalites Economiques*. Librairie du Recueil Sirey. Paris.

Gibson, C. B. (2001). From knowledge accumulation to accommodation: cycles of collective cognition in work groups. *Journal of Organizational Behavior*, 22(2), 121-134.

Gielnik, M. M., Zacher, H., & Frese, M. (2012). Focus on opportunities as a mediator of the relationship between business owners' age and venture growth. *Journal of Business Venturing*, 27(1), 127-142.

Gilbert, C. G. (2005). Unbundling the Structure of Inertia: Resource versus Routine Rigidity. *Academy Of Management Journal* 48(5), 741-763.

Gill, J. & Johnson, P. (2002) *Research Methods For Managers: Third Edition*, London, SAGE.

Gillham, B. (2005). *Research Interviewing: The Range Of Techniques*. New York: McGraw-Hill Education.

Gilmore, T. N., & Kazanjian, R. K. (1989). Clarifying decision making in high-growth ventures: The use of responsibility charting. *Journal of Business Venturing*, 4(1), 69-83.

Ginn, C. W., & Sexton, D. L. (1990). A comparison of the personality type dimensions of the 1987 Inc. 500 company founders/CEOs with those of slower-growth firms. *Journal of Business Venturing*, 5(5), 313-326.

Glöckner, A., & Witteman, C. (2010). Beyond dual-process models: A categorization of processes underlying intuitive judgment and decision making. *Thinking & Reasoning*, 16(1), 1-25.

- Gnatzy, T., & Moser, R. (2012). Scenario development for an evolving health insurance industry in rural India: INPUT for business model innovation. *Technological Forecasting and Social Change*, 79(4), 688-699.
- Goddard, J., Birkinshaw, J., & Eccles, T. (2012). Uncommon Sense: How to Turn Distinctive Beliefs Into Action. *MIT Sloan Management Review*, 53(3), 33-39.
- Goddard, J., Wilson, J., & Blon, P. (2002). Panel Test Of Gibrat's Law For Japanese Manufacturing. *International Journal Of Industrial Organization*, 20(3), 415-433.
- Godfrey-Smith, P. (2002). Environmental Complexity and the Evolution of Cognition. In R. Sternberg & J. Kaufman (Eds.), *The Evolution of Intelligence* (pp. 233-249). Mahwah: Lawrence Erlbaum.
- Goel, V. (1992). A Comparison of Well-structured and Ill-structured Task Environments and Problem Spaces. *Proceedings of the Fourteenth Annual Conference of the Cognitive Science Society Hillsdale, NJ: Erlbaum*.
- Goel, V., & Pirolli, P. (1992). The structure of design problem spaces. *Cognitive Science*, 16(3), 395-429.
- Golden, B. R. (1992) The Past Is The Past--Or Is It? The Use Of Retrospective Accounts As Indicators Of Past Strategy. *Academy Of Management Journal*, 35(4), 848-860.
- Goldszmidt, R. G. B., Brito, L. A. L. & Vasconcelos, F. C. D. (2011) Country Effect On Firm Performance: A Multilevel Approach. *Journal Of Business Research*, 64(3), 273-279.
- Goll, I., & Rasheed, A. A. (2005). The Relationships between Top Management Demographic Characteristics, Rational Decision Making, Environmental Munificence, and Firm Performance. *Organization Studies*, 26(7), 999-1023.
- Golmore, F. G. (1971). Formulating strategy in smaller companies. *Harvard Business Review*, 49(3), 71-81.
- Govindarajan, V., & Trimble, C. (2004). Strategic innovation and the science of learning. *Sloan Management Review*, 45(2), 67-75.
- Govindarajan, V., & Trimble, C. (2005a). Building breakthrough businesses within established organizations. *Harvard Business Review*, 83(5), 58-68.
- Govindarajan, V., & Trimble, C. (2005b). Organizational DNA for Strategic Innovation. *California Management Review*, 47(3), 47-75.
- Govindarajan, V., & Trimble, C. (2011). The CEO's Role In Business Model Reinvention. *Harvard Business Review*, 89(1/2), 108-114.
- Granstrand, O. (1998). Towards a theory of the technology-based firm. *Research Policy*, 27(5), 465-489.
- Grant, R. M. (1988). On 'Dominant Logic', Relatedness and the Link between Diversity and Performance. *Strategic Management Journal*, 9(6), 639-642.

Grant, R. M. (1991) The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California management review*, 33(3),114-135.

Grant, R. M. (1996) Toward A Knowledge-Based Theory Of The Firm. *Strategic Management Journal*, 17(S1), 109-122.

Grant, R. M. (1997). The knowledge-based view of the firm: implications for management practice. *Long Range Planning*, 30(3), 450-454.

Grant, R. M. (2002). The Knowledge-Based View of the Firm. In C. W. Choo & N. Bontis (Eds.), *The Strategic Management of Intellectual Capital and Organizational Knowledge* (pp. 133-148). New York, N.Y.: Oxford University Press.

Grant, R. M., & Baden-Fuller, C. (2004). A knowledge accessing theory of strategic alliances. *Journal of Management Studies*, 41(1), 61-84.

Greckhamer, T., & Mossholder, K. W. (2011). Qualitative Comparative Analysis and Strategic Management Research: Current State and Future Prospects. In D. Ketchen Jr. & D. Bergh (Eds.), *Research Methodology in Strategy and Management: Volume 6 - Building Methodological Bridges* (pp. 259 - 288). Oxford: Elsevier.

Green, E. J., & Redmond, G. H. (1957). Comments on a General Theory of Administration. *Administrative Science Quarterly*, 2(2), 235-243.

Green, K. M., Covin, J. G., & Slevin, D. P. (2008). Exploring the relationship between strategic reactivity and entrepreneurial orientation: The role of structure-style fit. *Journal of Business Venturing*, 23(3), 356-383.

Greening, D. W., Barringer, B. R., & Macy, G. (1996). A Qualitative Study of Managerial Challenges Facing Small Business Geographic Expansion. *Journal of Business Venturing* 11(4), 233-256

Greer, T. V., Chuchinprakam, N., & Seshadri, S. (2000). Likelihood of participating in mail survey research: Business respondents' perspective. *Industrial Marketing Management*, 29(2), 97-109.

Greiner, L. E. (1972). Evolution and revolution as organizations grow. *Harvard Business Review*, 50(4), 37-50.

Greve, H. R., & Taylor, A. (2000). Innovations as Catalysts for Organizational Change: Shifts in Organizational Cognition and Search. *Administrative Science Quarterly*, 45(1), 54-80.

Grewal, R., Cote, J. A., & Baumgartner, H. (2004). Multicollinearity and Measurement Error in Structural Equation Models: Implications for Theory Testing. *Marketing Science*, 23(4), 519-529.

Groves, K. S., Vance, C. M., Choi, D. Y. & Mendez, J. L. (2008) An Examination Of The Nonlinear Thinking Style Profile Stereotype Of Successful Entrepreneurs. *Journal Of Enterprising Culture*, 16(2), 133-159.

Groves, K., Vance, C., & Choi, D. (2011). Examining Entrepreneurial Cognition: An Occupational Analysis of Balanced Linear and Nonlinear Thinking and Entrepreneurship Success. *Journal of Small Business Management*, 49(3), 438-466.

Groves, K., Vance, C., & Paik, Y. (2008). Linking Linear/Nonlinear Thinking Style Balance and Managerial Ethical Decision-Making. *Journal of Business Ethics* 80(2), 305-325.

Gruber, M. (2010). Exploring the Origins of Organizational Paths: Empirical Evidence From Newly Founded Firms. *Journal of Management*, 36(5), 1143-1167.

Gundry, L. K., & Welsch, H. P. (2001). The Ambitious Entrepreneur: High Growth Strategies Of Women-Owned Enterprises. *Journal of Business Venturing*, 16(5), 453-470.

Gunzel, F., & Holm, A. B. (2013). One Size Does Not Fit All — Understanding the Front-End and Back-End of Business Model Innovation. *International Journal of Innovation Management*, 17(01), 1340002.

Guo, C. (2001). A Review on Consumer External Search: Amount and Determinants. *Journal of Business and Psychology*, 15(3), 505-519.

Gupta, A. K., & Govindarajan, V. (2000). Knowledge Flows within Multinational Corporations. *Strategic Management Journal*, 21(4), 473-496.

Haase, H., & Franco, M. (2011). Information sources for environmental scanning: do industry and firm size matter? *Management Decision*, 49(10), 1642-1657.

Habtay, S. R. (2012). A Firm-Level Analysis on the Relative Difference between Technology-Driven and Market-Driven Disruptive Business Model Innovations. *Creativity and Innovation Management*, 21(3), 290-303.

Hair, J., Black, B., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate Data Analysis* (6 ed.). Upper Saddle River, NJ: Prentice-Hall.

Håkanson, L. (2010) The Firm As An Epistemic Community: The Knowledge-Based View Revisited. *Industrial & Corporate Change*, 19(6), 1801-1828.

Hakonsson, D. D., Burton, R. M., Obel, B., & Lauridsen, J. T. (2012). Strategy Implementation Requires the Right Executive Style: Evidence from Danish SMEs. *Long Range Planning*, 45(2-3), 182-208.

Hall, M. (2008). CAQDAS : Computer -Aided Qualitative Data Analysis. In R. Thorpe & R. Holt (Eds.), *The Sage Dictionary Of Qualitative Management Research* (Pp. 36-38). Thousand Oak: Sage.

Hall, R. (1992) The Strategic Analysis Of Intangible Resources *Strategic Management Journal*, 13(2), 135-144.

Hall, R. (1993) A Framework Linking Intangible Resources And Capabilities To Sustainable Competitive Advantage *Strategic Management Journal*, 14(8), 607–618.

Hambrick, D. (1981). Specialization Of Environmental Scanning Activities Among Upper Level Executives. *Journal Of Management Studies*, 18(1), 299-320.

Hambrick, D. C. & Mason, P. A. (1984) Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review*, 9(2), 193-206.

Hambrick, D. C. (1981). Specialization Of Environmental Scanning Activities Among Upper Level Executives. *Journal of Management Studies*, 18(3), 299-320.

Hambrick, D. C. (1982). Environmental Scanning and Organizational Strategy. *Strategic Management Journal*, 3(2), 159-174.

Hambrick, D. C. (1989). Putting Top Managers Back in the Strategy Picture. *Strategic Management Journal*, 10(Special Issue: Strategic Leaders and Leadership (Summer, 1989)), 5-15.

Hambrick, D. C. (1994). Top management groups: A conceptual integration and reconsideration of the “team” label. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 16, pp. 171- 213). Greenwich, CT: JAI Press.

Hambrick, D. C. (2007). Upper Echelons Theory: An Update. *Academy Of Management Review*, 32(2), 334–343.

Hambrick, D. C., & Crozier, L. M. (1985). Stumblers And Stars In The Management Of Rapid Growth. *Journal Of Business Venturing* 1(1), 31-45.

Hambrick, D. C., & Finkelstein, S. (1987). Managerial discretion: A bridge between polar views of organizational outcomes. In B. M. Staw & L. L. Cummings (Eds.), *Research in Organizational Behavior* (Vol. 9, pp. 369-406). Greenwich, CT: JAI.

Hambrick, D. C., Finkelstein, S., & Mooney, A. C. (2005). Executive Job Demands: New Insights For Explaining Strategic Decisions And Leader Behaviors. *Academy of Management Review*, 30(3), 472-491.

Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. (1993). Top Executive Commitment to the Status Quo: Some Tests of Its Determinants. *Strategic Management Journal*, 14(5), 401-418.

Hamel, G. (1996). Strategy as revolution. *Harvard Business Review*, 74(4), 69-71.

Hamel, G. (1998). Strategy innovation and the quest for value. *Sloan Management Review*, 39(2), 7-14.

Hamel, G. (2000). *Leading the revolution*. Cambridge, MA: Harvard University Press.

Hamel, G., & Getz, G. (2004). Funding Growth in an Age of Austerity. *Harvard Business Review*, 82(7/8), 76-84.

Hamel, G., & Välikangas, L. (2003). The Quest for Resilience. *Harvard Business Review*, 81(9), 52-63.

Hamelin, A. (2013). Influence of family ownership on small business growth. Evidence from French SMEs. *Small Business Economics*, In press.

Hamilton, R. T. (2012). How firms grow and the influence of size and age. *International Small Business Journal*, 30(6), 611-621.

Hanks, S. H., Watson, C. J., Jansen, E., & Chandler, G. N. (1993). Tightening the life-cycle construct: a taxonomic study of growth stage configurations in high-technology organizations. *Entrepreneurship Theory and Practice*, 18(2), 5-29.

Hannan, M. T., & Freeman, J. (1977). The Population Ecology of Organizations. *American Journal of Sociology*, 82(5), 929-964.

Hansen, M. H., Perry, L. T., & Reese, C. S. (2004). A Bayesian operationalization of the resource based view. *Strategic Management Journal*, 25(13), 1279-1295.

Hansen, M. T., Nohria, N., & Tierney, T. (1999). What's Your Strategy For Managing Knowledge? *Harvard Business Review*, 77(2), 106-116.

Hanson, W. E., Creswell, J. W., Clark, V. L. P., Petska, K. S. & Creswell, J. D. (2005) Mixed Methods Research Designs In Counseling Psychology. *Journal Of Counseling Psychology*, 52(2), 224-235.

Hardin, A. M., Chang, J. C.-J. & Fuller, M. A. (2008) Formative vs. Reflective Measurement: Comment on Marakas, Johnson, and Clay (2007). *Journal of the Association for Information Systems*, 9(9), 519-534.

Harlow, L. (2005). *The Essence of Multivariate Thinking: Basic Themes and Methods*. New York: Routledge.

Harman, H. (1967) *Modern Factor Analysis*. Chicago, University Of Chicago Press.

Harrington, R. J., & Kendall, K. W. (2005). How certain are you Measuring Environmental Dynamism and Complexity? A Multitrait-Multimethod Approach. *Journal of Hospitality & Tourism Research*, 29(2), 245-275.

Harris, R. D. (2004) Organizational Task Environments: An Evaluation Of Convergent And Discriminant Validity. *Journal Of Management Studies*, 41(5), 857-882.

Harrison, J., Hitt, M., Hoskisson, R. & Ireland, D. (1991) Synergies and Post Acquisition Performance: Differences Versus Similarities In Resource Allocations. *Journal Of Management*, 17(1), 173-190.

Harrits, G. S. (2011) More Than Method?: A Discussion Of Paradigm Differences Within Mixed Methods Research. *Journal of Mixed Methods Research*, 5(2), 150-166.

Hart, S. (1995) A Natural Resource-Based View Of The Firm. *Academy Of Management Review*, 20(4), 986-1014.

Hart, S. L. & Dowell, G. (2011) A Natural-Resource-Based View Of The Firm: Fifteen Years After. *Journal Of Management*, 37(5), 1464-1479

- Hartigan, J. A., & Wong, M. A. (1979). A K-means clustering algorithm. *Applied Statistics*, 28(1), 100-108.
- Harvey, C., & Denton, J. (1999). To come of age: the antecedents of organizational learning. *Journal of Management Studies*, 36(7), 897-918.
- Hashai, N., Asmussen, C., Benito, G. R., & Petersen, B. (2010). Technological Knowledge Intensity and Entry Mode Diversity. *Management International Review*, 50(6), 659-681.
- Hatch, N. W., & Dyer, J. H. (2004). Human Capital and Learning as a Source of Sustainable Competitive Advantage. *Strategic Management Journal*, 25(12), 1155-1178.
- Hau, L. N. & Evangelista, F. (2007) Acquiring Tacit And Explicit Marketing Knowledge From Foreign Partners In IJVs. *Journal Of Business Research*, 60(11), 1152-1165.
- Hayek, F. (1945). The Use of Knowledge in Society, *American Economic Review* 35(4), 519-530.
- Hayek, F.A., (1937), *Economics and Knowledge*, *Econometrica*, 4(1), 33-54
- Hayes, J., & Allinson, C. W. (1994). Cognitive Style And Its Relevance For Management Practice. *British Journal of Management*, 5(1), 53-71.
- Hayes, J., & Allinson, C. W. (1998). Cognitive Style and the Theory and Practice of Individual and Collective Learning in Organizations. *human relations*, 51(7), 847-871.
- Hayes, J., Allinson, C. W., & Armstrong, S. J. (2004). Intuition, women managers and gendered stereotypes. *Personnel Review*, 33(4), 403-417.
- Haynie, J. M., Shepherd, D. A., & Patzelt, H. (2012). Cognitive Adaptability and an Entrepreneurial Task: The Role of Metacognitive Ability and Feedback. *Entrepreneurship Theory and Practice*, 36(2), 237-265.
- Hayton, J. C., George, G. & Zahra, S. A. (2002) National Culture And Entrepreneurship: A Review Of Behavioral Research. *Entrepreneurship Theory And Practice*, 26(1), 33-53.
- Heath, C., Larrick, R. P., & Wu, G. (1999). Goals as Reference Points. *Cognitive Psychology*, 38(1), 79-109.
- Heavey, C., Simsek, Z., Roche, F., & Kelly, A. (2009). Decision Comprehensiveness and Corporate Entrepreneurship: The Moderating Role of Managerial Uncertainty Preferences and Environmental Dynamism. *Journal of Management Studies*, 46(8), 1289-1314.
- Hecker, A. (2012). Knowledge Beyond the Individual? Making Sense of a Notion of Collective Knowledge in Organization Theory. *Organization Studies*, 33(3), 423-445.
- Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., & Winter, S. G. (2007). *Dynamic Capabilities: Understanding Strategic Change In Organizations*. Malden, Ma: Blackwell Publishing.

Henderson, R. (1995). Entrepreneurship and dynamic capitalism. The economics of business firm formation and growth - Kirchoff, BA. *Small Business Economics*, 7(6), 481-482.

Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: the reconfiguration of existing product technology and the failure of established firms. *Administrative Science Quarterly*, 35(1), 9-30.

Heneman, H. G. (1974). Comparisons of self- and superior ratings of managerial performance *Journal of Applied Psychology*, 59(5), 638-642.

Henley, A. B., Shook, C. L., & Peterson, M. (2006). The Presence of Equivalent Models in Strategic Management Research Using Structural Equation Modeling: Assessing and Addressing the Problem. *Organizational Research Methods*, 9(4), 516-535.

Hensman, A., & Sadler-Smith, E. (2011). Intuitive decision making in banking and finance. *European Management Journal*, 29(1), 51-66.

Hilbert, M. (2012). Toward a Synthesis of Cognitive Biases: How Noisy Information Processing Can Bias Human Decision Making. *Psychological Bulletin*, 138(2), 211–237.

Hill, C. W. L. & Jones, G. R. (2010) *Strategic Management: An Integrated Approach: 9th Edition*, South-Western Cengage Learning.

Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource Dependence Theory: A Review. *Journal of Management*, 35(6), 1404-1427.

Hindle, K. (2004). Choosing Qualitative Methods for Entrepreneurial Cognition Research: A Canonical Development Approach. *Entrepreneurship Theory and Practice* 28(6), 575-607.

Hippel, E. V. (1994). Sticky Information’’ and the Locus of Problem Solving: Implications for Innovation. *Management Science*, 40(4), 429-439.

Hitt, M. A. (1988). The Measuring of Organizational Effectiveness: Multiple Domains and Constituencies. *Management International Review*, 28(2), 28-40.

Hitt, M. A., & Tyler, B. B. (1991). Strategic Decision Models: Integrating Different Perspectives. *Strategic Management Journal*, 12(5), 327-351.

Hitt, M. A., Beamish, P. W., Jackson, S. E. & Mathieu, J. E. (2007) Building Theoretical And Empirical Bridges Across Levels: Multilevel Research In Management. *Academy Of Management Journal*, 50(6), 1385–1399.

Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (1990). Mergers and Acquisitions and Managerial Commitment to Innovation in M-Form Firms. *Strategic Management Journal*, 11(1), 29-47.

Hitt, M. A., Ireland, R. D., & Lee, H.-u. (2000). Technological learning, knowledge management, firm growth and performance: an introductory essay. *Journal of Engineering and Technology Management*, 17(3-4), 231–246.

Hitt, M. A., Ireland, R. D., Camp, S. M., & Sexton, D. L. (2002). Strategic Entrepreneurship: Integrating Entrepreneurial and Strategic Management Perspectives. In M. A. Hitt, R. D. Ireland, S. M. Camp & D. L. Sexton (Eds.), *Strategic Entrepreneurship: Creating a New Mindset* (Strategic Management Society Series) (pp. 1-18). New York, NY: Wiley-Blackwell.

Hitt, M. A., Ireland, R. D., Sirmon, D. G., & Trahms, C. A. (2011). Strategic Entrepreneurship: Creating Value for Individuals, Organizations, and Society. *Academy of Management Perspectives*, 25(2), 57-76.

Hitt, M. A., K.Boyd, B. & Li, D. (2004) The State Of Strategic Management Research And A Vision Of The Future. In David J. Ketchen, J. & Bergh, D. D. (Eds.) *Research Methodology In Strategy And Management*, (Vol. 1, pp. 1-31) . Amsterdam, Elsevier.

Hitt, M. A., Keats, B. W., & DeMarie, S. M. (1998). Navigating in the New Competitive Landscape: Building Strategic Flexibility and Competitive Advantage in the 21st Century. *Academy of Management Executive* 12(4), 22-42.

Hmieleski, K. M., & Ensley, M. D. (2007). A contextual examination of new venture performance: entrepreneur leadership behavior, top management team heterogeneity, and environmental dynamism. *Journal of Organizational Behavior* 28(7), 865–889.

Hodgkinson, G. P. & Clarke, I. (2007) Conceptual Note: Exploring The Cognitive Significance Of Organizational Strategizing: A Dual-Process Framework And Research Agenda. *Human Relations*, 60(1), 243-255.

Hodgkinson, G. P. & Healey, M. P. (2008) Cognition In Organizations. *Annual Review Of Psychology*, 59, 387-441.

Hodgkinson, G. P. (1997). Cognitive Inertia in a Turbulent Market: The Case of UK Residential Estate Agents. *Journal of Management Studies*, 34(6), 921-945.

Hodgkinson, G. P., & Clarke, I. (2007). Exploring the cognitive significance of organizational strategizing: A dual-process framework and research agenda. *Human Relations*, 60(1), 243-255.

Hodgkinson, G. P., & Healey, M. P. (2011). Psychological foundations of dynamic capabilities: reflexion and reflection in strategic management. *Strategic Management Journal*, 32(13), 1500-1516.

Hodgkinson, G. P., & Johnson, G. (1994). Exploring The Mental Models Of Competitive Strategists: The Case For A Processual Approach. *Journal Of Management Studies*, 31(4), 525-552,.

Hodgkinson, G. P., & Sadler-Smith, E. (2003). Complex or unitary? A critique and empirical re-assessment of the Allinson-Hayes Cognitive Style Index. *Journal of Occupational and Organizational Psychology*, 76(2), 243-268.

Hodgkinson, G. P., & Sparrow, P. R. (2002). *The Competent Organization: A Psychological Analysis of the Strategic Management Process*. Buckingham, UK: Open Univ. Press.

- Hodgkinson, G. P., Langan-Fox, J., & Sadler-Smith, E. (2008). Intuition: A fundamental bridging construct in the behavioural sciences. *British Journal of Psychology*, 99(1), 1-27.
- Hodgkinson, G. P., Sadler-Smith, E., Burke, L. A., Claxton, G., & Sparrow, P. R. (2009). Intuition in Organizations: Implications for Strategic Management. *Long Range Planning*, 42(3), 277-297.
- Hodgkinson, G. P., Sadler-Smith, E., Sinclair, M. & Ashkanasy, N. M. (2009) More Than Meets The Eye? Intuition And Analysis Revisited. *Personality And Individual Differences*, 47, 342-346.
- Hoe, S. L. (2008) Issues and Procedures In Adopting Structural Equation Modeling Technique. *Journal Of Applied Quantitative Methods*, 3(1), 76-83.
- Hofer, C. W. & Schendel, D. (1978) *Strategy Formulation: Analytical Concepts*, St, Paul, MN: West.
- Holcomb, T. R., Ireland, R. D., Holmes Jr., R. M., & Hitt, M. A. (2009). Architecture of Entrepreneurial Learning: Exploring the Link among Heuristics, Knowledge, and Action. *Entrepreneurship Theory and Practice*, 33(1), 167-192.
- Holloway, S. S., & Sebastiao, H. J. (2010). The Role of Business Model Innovation in the Emergence of Markets: A Missing Dimension of Entrepreneurial Strategy? *Journal of Strategic Innovation and Sustainability*, 6(4), 86-101.
- Hotho, J. J., Becker-Ritterspach, F., & Saka-Helmhout, A. (2012). Enriching Absorptive Capacity through Social Interaction. *British Journal of Management*, 23(3), 383-401.
- Hough, J. R., & Ogilvie, D. (2005). An Empirical Test of Cognitive Style and Strategic Decision Outcomes. *Journal of Management Studies*, 42(2), 417-448.
- Hough, J. R., & White, M. A. (2004). Scanning actions and environmental dynamism: Gathering information for strategic decision making. *Management Decision*, 42(6), 781 - 793.
- Howell, R. D., Breivik, E. & Wilcox, J. B. (2007) Is Formative Measurement Really Measurement? Reply to Bollen (2007) and Bagozzi (2007) *Psychological Methods*, 12(2), 238-245.
- Hsu, C.-C., & Pereira, A. (2008). Internationalization and performance: The moderating effects of organizational learning. *Omega*, 36(2), 188 - 205.
- Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55.
- Huber, G. P. & Power, D. J. (1985) Retrospective Reports Of Strategic-Level Managers: Guidelines For Increasing Their Accuracy *Strategic Management Journal*, 6(2), 171-180.
- Huber, G. P. (1991) Organizational Learning: The Contributing Processes And The Literatures. *Organization Science*, 2(1), 88-115.

Huber, G. P., & Power, D. J. (1985). Retrospective Reports of Strategic-Level Managers: Guidelines for Increasing Their Accuracy. *Strategic Management Journal*, 6(2), 171-180.

Hughes, M., Hughesw, P., & Morganz, R. E. (2007). Exploitative Learning and Entrepreneurial Orientation Alignment in Emerging Young Firms: Implications for Market and Response Performance. *British Journal of Management*, 18(4), 359-375.

Hugo, O., & Garnsey, E. (2005). Problem-solving and competence creation in the early development of new firms. *Managerial and Decision Economics*, 26(2), 139-148.

Hulland, J. (1999) Use Of Partial Least Squares (PLS) In Strategic Management Research: A Review Of Four Recent Studies. *Strategic Management Journal*, 20(2), 195-204.

Hult, G. T. M., Ketchen Jr., D. J., Cui, A. S., Prud'homme, A. M., Seggie, S. H., Stanko, M. A., .Cavusgil, S. T. (2006). An Assessment of the Use Of Structural Equation Modeling In International Business Research. In J. David J. Ketchen & D. D. Bergh (Eds.), *Research Methodology in Strategy And Management*, Volume 3, (Pp. 385-415). Amsterdam: Elsevier.

Hung, K.-P., & Chiang, Y.-H. (2010). Open innovation proclivity, entrepreneurial orientation, and perceived firm performance. *International Journal of Technology Management*, 52(3-4), 257-274.

Hunt, S. D. (1995). The resource-advantage theory of competition: toward explaining productivity and economic growth. *Journal of Management Inquiry*, 4(4), 317-332.

Hunt, S. D. (2002a). *Foundations of Marketing Theory: Toward A General Theory of Marketing*. Armoak, New York, NY: M. E. Sharpe.

Hunt, S. D. (2002b). Resource-advantage theory and Austrian economics: toward an Austrian theory of competition? In N. J. Foss & P. G. Klein (Eds.), *Entrepreneurship and the Firm: Austrian Perspectives on Economic Organization* (pp. 248-272). Cheltenham, UK: Edward Elgar.

Hunt, S. D., & Derozier, C. (2004). The normative imperatives of business and marketing strategy: grounding strategy in resource-advantage theory. *Journal of business and industrial marketing* 19(1), 5-22.

Hunt, S. D., & Lambe, C. J. (2000). Marketing's contribution to business strategy: market orientation, relationship marketing and resource advantage theory. *International Journal of Management Reviews*, 2(1), 17-43.

Hurley, A. E., Scanduar, T., Schriesheim, C. A., Brannick, M. T., Seers, A., Vendenberg, R. J. & Williams, L. J. (1997) *Exploratory And Confirmatory Factor Analysis: Guidelines, Issues And Alternatives*. *Journal Of Organizational Behavior*, 18(6), 667-683.

Hutchings, A. (2012). Computer security threats faced by small businesses in Australia. Australia's national research and knowledge centre on crime and justice Retrieved on 10th June, 2012 from http://www.aic.gov.au/documents/F/1/0/%7BF1072721-F83E-4D19-9100-95E539507A70%7Dtandi433_001.pdf.

Hyman, M. R., & Sierra, J. J. (2012). Adjusting self-reported attitudinal data for mischievous respondents. *International Journal of Market Research*, 54(1), 129-145.

Iederan, O. C., Curseu, P. L., Vermeulen, P. A. M., & Geurts, J. L. A. (2011). Cognitive representations of institutional change Similarities and dissimilarities in the cognitive schema of entrepreneurs. *Journal of Organizational Change Management*, 24(1), 9-28.

Ijiri, Y., & Simon, H. A. (1967). A Model of Business Firm Growth. *Econometrica*, 35(2), 348-355.

Industry Innovation Council. (2011). Trends in manufacturing to 2020: A fore sighting discussion paper. Canberra, ACT, Australia.

Inkpen, A. (1998). Learning, knowledge acquisition, and strategic alliances. *European Management Journal*, 16(2), 223-229.

Ireland, R. D., & Hitt, M. A. (1999). Achieving and Maintaining Strategic Competitiveness in the 21st Century: The Role of Strategic Leadership, Part II. *Academy of Management Executive*, 13(1), 43-57.

Ireland, R. D., & Hitt, M. A. (2005). Achieving and maintaining strategic competitiveness in the 21st century: The role of strategic leadership. *Academy of Management Executive*, 19(4), 63-77.

Ireland, R. D., Hitt, M. A., Camp, S. M., & Sexton, D. L. (2001). Integrating Entrepreneurship and Strategic Management Actions to Create Firm Wealth. *Academy of Management Executive*, 15(1), 49-63.

Ireland, R. D., Webb, J. W., & Coombs, J. E. (2005). Theory And Methodology In Entrepreneurship Research. In D. J. Ketchen Jr. & D. D. Bergh (Eds.), *Research Methodology In Strategy And Management*, Volume 2, (Pp. 111-141). Oxford, UK: Elsevier.

Isaack, T. S. (1981). Intuition: needed in managing the small business. *Journal of Small Business Management*, 19(1), 74-76.

Ivan T, R., & Makin, P. J. (1986). Management Selection In Britain: A Survey And Critique. *Journal of Occupational Psychology*, 59(1), 45-57.

Jaccard, J., & Wan, C. (1996). LISREL analyses of interaction effects in multiple regression. Newbury Park: Sage.

Jackson, D. (2003). Revisiting sample size and number of parameter estimates: Some support for the N:q hypothesis. *Structural Equation Modeling*, 10(1), 128-141.

Jacobides, M., & Sidney, W. (2005). The Co-Evolution of Capabilities and Transaction Costs: Explaining The Institutional Structure Of Production. *Strategic Management Journal*, 26(5), 395-413.

Jacobs, C. D., & Heracleous, L. (2005). Answers for questions to come: reflective dialogue as an enabler of strategic innovation. *Journal of Organizational Change Management*, 18(4), 338-352.

Jacobson, R. (1992). The "Austrian" School of Strategy. *Academy of Management Review*, 17(4), 782-807.

James, W. (1890). *The Principles of Psychology*. London: Macmillan.

Jankowicz, A. D., & Hisrich, R. D. (1987). Intuition in Small Business Lending Decisions. *Journal of Small Business Management*, 25(1), 45-52

Jarillo, J. C. (1989). Entrepreneurship and growth: the strategic use of external resources. *Journal of Business Venturing*, 4(2), 133-147.

Jaworski, B., Kohli, A. K., & Sahay, A. (2000). Market-Driven Versus Market-Driving. *Journal of The Academy Of Marketing Science*, 28(1), 45-54.

Jayanthi, S., & Sinh, K. K. (1998). Innovation implementation in high technology manufacturing: A chaos-theoretic empirical analysis. *Journal of Operations Management*, 16, 471-494.

Jette, D. U., Bacon, K., Batty, C., Carlson, M., Ferland, A., Hemingway, R. D., Volk, D. (2003). Evidence-Based Practice: Beliefs, Attitudes, Knowledge, and Behaviors of Physical Therapists. *Physical Therapy*, 89(3), 786-805.

Jick, T. D. (1979) Mixing Qualitative And Quantitative Methods: Triangulation In Action. *Administrative Science Quarterly*, 24(4), 602-611.

Jobber, D. & O'Reilly, D. (1998) Industrial Mail Surveys: A Methodological Update. *Industrial Marketing Management*, 27(2), 95-107.

Johnson, B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33(7), 14-26.

Johnson, M. W. (2010). The Time Has Come for Business Model Innovation. *Leader to Leader*, 57(Summer), 6-10.

Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing Your Business Model. (cover story). *Harvard Business Review*, 86(12), 50-59.

Johnson, P. & Dubereley, J. (2000) *understanding management research: an introduction to epistemology* London, SAGE.

Johnson, P., & Harris, D. (2002). qualitative and quantiative issues in research design. In D. Partington (Ed.), *Essential Skills for Management research* (pp. 99-116). Thousand Oaks: Sage.

Johnson-Bey, C., Golm, N., & Thomas, J. (2012). Business Model Innovation Challenges. *Research Technology Management*, 55(6), 60-61.

Johnston, M., Gilmore, A., & Carson, D. (2008). Dealing with environmental uncertainty: The value of scenario planning for small to medium-sized enterprises (SMEs). *European Journal of Marketing*, 42(11/12), 1170 - 1178.

- Jones, G., & Miskell, P. (2007). Acquisitions and firm growth: Creating Unilever's ice cream and tea business. *Business History*, 49(1), 8-28.
- Jones, O., Macpherson, A., Thorpe, R., & Ghecham, A. (2007). The evolution of business knowledge in SMEs: conceptualizing strategic space. *Strategic Change*, 16(6), 281–294.
- Jordan, J. & Jones, P. (1997) Assessing Your Company's Knowledge Management Style. *Long Range Planning*, 30(3), 392-398.
- Jöreskog, K. G., & Yang, F. (1996). Nonlinear structural equation models: The Kenny-Judd model with interaction effects. In G. A. Marcoulides & R. E. Schumacker (Eds.), *Advanced structural equation modeling* (pp. 57-88). Hillsdale, NJ: Lawrence Erlbaum.
- Joshi, A. W., & Sharma, S. (2004). Customer Knowledge Development: Antecedents and Impact on New Product Performance. *Journal of Marketing*, 68(4), 47-59.
- Jovanovic, B. (1982). Selection and the Evolution of Industry. *Econometrica*, 50(3), 649-670.
- Judge, W. Q., & Zeithaml, C. P. (1992). Institutional and Strategic Choice Perspectives on Board Involvement in the Strategic Decision-Process. *Academy Of Management Journal*, 35(4), 766-794.
- Jugdev, K., & Thomas, J. (2002). Project Management Maturity Models: The Silver Bullets of Competitive Advantage? *Project Management Journal*, 33(4), 4-14.
- Julien, H. (2008). Content Analysis. In L. M. Given (Ed.), *The SAGE encyclopedia of qualitative research methods* (Vol. 1&2, pp. 120-121). Thousand Oaks: Sage.
- Jun, S. H., & Vogt, C. (2013). Travel Information Processing Applying a Dual-Process Model. *Annals of Tourism Research*, 40, 191-212.
- Jung, C. G. (1923). *Psychological Types*, New York, New York, Pantheon Books.
- Kagan, J., & Kogan, N. (1970). Individual variation in cognitive processes. In P. H. Mussen (Ed.), *Carmichael's manual of child psychology* (pp. 1273-1365). New York: Wiley.
- Kagan, J., (1965). Individual differences in the resolution of response uncertainty. *Journal of Personality and Social Psychology* 2(1), 154–160.
- Kahneman D & Tversky, A. (1979) Prospect Theory - Analysis Of Decision Under Risk. *Econometrica* 47(2), 263-291.
- Kahneman, D. (1973). *Attention and Effort*. Englewood Cliffs, NJ: Prentice-Hall.
- Kahneman, D. (2003). A perspective on judgment and choice: Mapping bounded rationality. *The American Psychologist*, 58(9), 697–720.
- Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review*, 80(2), 237-251.

Kahneman, D., Lovallo, D. & Sibony, O. (2011). Before You Make That Big Decision. *Harvard Business Review*, 89(1), 50-60.

Kang, S.-C., & Snell, S. A. (2009). Intellectual Capital Architectures and Ambidextrous Learning: A Framework for Human Resource Management. *Journal of Management Studies*, 46(1), 65-92.

Kaplan, D. (1995). Statistical power in structural equation modeling. In R. H. Hoyle (Ed.), *Structural Equation Modeling: Concepts, Issues, and Applications* (pp. 100-117). Newbury Park, CA: Sage.

Kaplan, D. (1996, September 18). Statistical Power in Structural Equation Models Retrieved 1 October 2012, from <http://www2.gsu.edu/~mkteer/power.html#refs>

Kaplan, S. (2011) Research In Cognition And Strategy: Reflections On Two Decades Of Progress And A Look To The Future. *Journal Of Management Studies*, 48(3), 665-695.

Kaplan, S., Schenkel, A., Krogh, G. v., & Weber, C. (2001). Knowledge-Based Theories of the Firm in Strategic Management: A Review and Extension. MIT Sloan working papers, (4216-01).

Karim, S., & Mitchell, W. (2000). Path-Dependent and Path-Breaking Change: Reconfiguring Business Resources Following Acquisitions in the U.S. Medical Sector, 1978-1995 *Strategic Management Journal*, 21(10/11), 1061-1081.

Katkalo, V. S., Pitelis, C. N., & Teece, D. J. (2010). Introduction: On the nature and scope of dynamic capabilities. *Industrial and Corporate Change*, 19(4), 1175–1186.

Kaufman, S. B., DeYoung, C. G., Gray, J. R., Jiménez, L., Brown, J., & Mackintosh, N. (2010). Implicit learning as an ability. *Cognition*, 116(3), 321-340.

Kazanjian, R. K. & Drazin, R. (1989) An Empirical Test Of A Stage Of Growth Progression Model. *Management Science*, 35(12), 1489-1503.

Kazanjian, R. K. & Drazin, R. (1990) A stage-contingent model of design and growth for technology based new ventures *Journal of Business Venturing*, 5(3), 137-150.

Kazanjian, R. K. (1988). Relation of Dominant Problems to Stages of Growth in Technology Based New Ventures. *Academy of Management Journal*, 31(2), 257-279.

Kazanjian, R. K., & Drazin, R. (1989). An Empirical Test of a Stage of Growth Progression Model. *Management Science*, 35(12), 1489-1503.

Kearney, E., Gebert, D., & Voelpel, S. C. (2009). When And How Diversity Benefits Teams: The Importance Of Team Members' Need For Cognition. *Academy Of Management Journal* 52(3), 581–598.

Keegan, W. J. (1974). Multinational Scanning: A Study Of The Information Sources Utilized By Headquarters Executives In Multinational Companies. *Administrative Science Quarterly*, 19(3), 411-421.

- Kefalas, A., & Schoderbek, P. P. (1973). Scanning The Business Environment: Some Empirical Results. *Decision Sciences*, 4(1), 63-74.
- Keh, H. T., Foo, M. D., & Lim, B. C. (2002). Opportunity Evaluation under Risky Conditions: The Cognitive Processes of Entrepreneurs. *Entrepreneurship Theory and Practice*, 27(2), 125-148.
- Kellermanns, F. W., Walter, J., Lechner, C., & Floyd, S. W. (2005). The lack of consensus about strategic consensus: Advancing theory and research. *Journal of Management*, 31(5), 719-737.
- Kelly, G. (1955) *The Psychology Of Personal Constructs*, Norton, New York, NY.
- Kelmar, J. H., & Wingham, D. L. W. (1995). Determining the Relevant Factors in the Success Strategies of Small Enterprises. *Journal of Entrepreneurship*, 4(2), 215-235.
- Key, S. (2002). Perceived Managerial Discretion: An Analysis Of Individual Ethical Intentions. *Journal of Managerial Issues*, 14(2), 218-233.
- Khandwalla, P. N. (1976) Some top management styles, their context and performance, *Organization and Administrative Sciences*, 7(4), 21-51.
- Khatri, N., & Ng, H. A. (2000). The Role of Intuition in Strategic Decision Making. *Human Relations*, 53(1), 57-86.
- Kickul, J., Gundry, L. K., Barbosa, S. D., & Whitcanack, L. (2009). Intuition Versus Analysis? Testing Differential Models of Cognitive Style on Entrepreneurial Self-Efficacy and the New Venture Creation Process. *Entrepreneurship Theory and Practice*, 33(2), 439-453.
- Kim, J., & Courtne, J. F. (1988). A survey of knowledge acquisition techniques and their relevance to managerial problem domains. *Decision Support Systems*, 4(3), 269-284.
- Kim, K. H. (2005). The Relation Among Fit Indexes, Power, and Sample Size in Structural Equation Modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, 12(3), 368-390.
- Kim, N., Im, S., & Slater, S. F. (2013). Impact of Knowledge Type and Strategic Orientation on New Product Creativity and Advantage in High-Technology Firms. *Journal of Product Innovation Management*, 30(1), 136-153.
- Kim, S. S., & Gelfand, M. J. (2003). The influence of ethnic identity on perceptions of organizational recruitment. *Journal of Vocational Behavior*, 63(3), 396-416.
- Kim, W. C., & Mauborgne, R. (1997). Value Innovation: The Strategic Logic of High Growth. *Harvard Business Review*, 75(1), 103-112.
- Kim, W. C., & Mauborgne, R. (1999a). Creating New Market Space. *Harvard Business Review*, 77(1), 83-93.
- Kim, W. C., & Mauborgne, R. (1999b). Strategy, Value Innovation And The Knowledge Economy. *Sloan Management Review*, 40(3), 41-53.

Kim, W. C., & Mauborgne, R. (2004). Blue Ocean Strategy. *Harvard Business Review*, 82(10), 76-84.

Kim, W. C., & Mauborgne, R. (2005a). Blue Ocean Strategy: from theory to practice. *California Management Review*, 47(3), 105-121.

Kim, W. C., & Mauborgne, R. (2005b). Value Innovation: A Leap into the Blue Ocean. *Journal of Business Strategy*, 26(4), 22-28.

King, B. L. (2008). Strategizing at Leading Venture Capital Firms: of Planning, Opportunism and Deliberate Emergence. *Long Range Planning*, 41(3), 345-366.

Kirton, M. J. (1976). Adaptors And Innovators: A Description And Measure. *Journal of Applied Psychology*, 61(5), 622-669.

Kirton, M. J. (1984). Adaptors And Innovators: Why New Initiatives Get Blocked. *Long Range Planning*, 17(2), 137-143.

Kirton, M. J. (Ed.). (1994). Adaptors and innovators: Styles of creativity and problem solving (2 ed.). London: Routledge.

Kirzner, I. M. (1997). Entrepreneurial discovery and the competitive market process: an Austrian perspective. *Journal of Economic Literature*, 35(1), 60-85.

Klein, J. H. (1994). Cognitive Processes and Operational Research: A Human Information Processing Perspective, *Journal of the Operational Research Society*, 45(8), 855-866.

Klein, K. J. & Kozlowski, S. W. J. (2000) From Micro To Meso: Critical Steps In Conceptualizing And Conducting Multilevel Research. *Organizational Research Methods*, 3(3), 211-236.

Klein, K. I., & Sorra, J. S. (1996). The Challenge of Innovation Implementation. *Academy of Management Review*, 21(4), 1055-1080.

Klein, N. H., & Ogilthorpe, J. E. (1987). Cognitive Reference Points In Consumer Decision Making. In M. Wallendorf & P. Anderson (Eds.), *Advances in Consumer Research* (Vol. 14, pp. 183-187). Provo, UT: Association for Consumer Research.

Klein, P. G. (2012). Entrepreneurship, strategy and organization: lessons for public policy. In T. Kalling (Ed.), *New Crafoord Lecturers Series: Strategy and Entrepreneurship* (pp. 79-110). Lund, Sweden: Lund University Press.

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling* (3 ed.). New York, NY: Guilford Press.

Knight, F. H. (1921) *Risk, Uncertainty And Profit*. New York: Harper & Row.

Knight, F. H. (1965) *Risk, Uncertainty And Profit* (Reprint And Extension), New York: Harper & Row.

Knockaert, M., Foo, M. D., Erikson, T., Huyghe, A., & Vandenbroucke, E. (2011). Determinants Of Entrepreneurial Growth Intentions. A Cognitive Style Perspective. *Frontiers of Entrepreneurship Research*, 31(4), Article 14, Available At: <http://digitalknowledge.babson.edu/fer/vol31/iss14/14>.

Knockaert, M., Ucbasaran, D., Wright, M., & Clarysse, B. (2011). The Relationship Between Knowledge Transfer, Top Management Team Composition, and Performance: The Case of Science-Based Entrepreneurial Firms. *Entrepreneurship theory and practice*, 35(4), 777-803.

Knoppen, D., Sáenz, M. J., & Johnston, D. A. (2011). Innovations in a relational context: Mechanisms to connect learning processes of absorptive capacity. *Management Learning*, 42(4), 419-438.

Knott, A. M., Bryce, D. J., & Posen, H. E. (2003). On the Strategic Accumulation of Intangible Assets. *Organization Science*, 14(2), 192-207.

Knudsen, T. (2008). Organizational routines in evolutionary theory. In M. C. Becker (Ed.), *Handbook of Organizational Routines* (pp. 125-151). Cheltenham, UK: Edward Elgar.

Kogut, B. & Zander, U. (1992) Knowledge Of The Firm, Combinative Capabilities, And The Replication Of Technology. *Organization Science*, 3(3), 383-397.

Kogut, B., & Zander, U. (1996). What Firms Do? Coordination, Identity, and Learning. *Organization Science*, 7(5), 502-518.

Kolvereid, L., & Bullvåg, E. (1996). Growth Intentions and Actual Growth: The Impact of Entrepreneurial Choice. *Journal of Enterprising Culture*, 4(1), 1-17.

Kor, Y. Y. & Mahoney, J. T. (2004) Edith Penrose's (1959) Contributions to the Resource-based View of Strategic Management, *Journal of Management Studies*, 41(1), 183-191.

Kor, Y. Y. (2003). Experience-Based Top Management Team Competence and Sustained Growth. *Organization Science*, 14(6), 707-719.

Kor, Y. Y., & Mesko, A. (2013). Dynamic Managerial Capabilities: Configuration And Orchestration Of Top Executives' Capabilities And The Firm's Dominant Logic. *Strategic Management Journal*, 34(2), 233-244.

Kor, Y. Y., Mahoney, J. T., & Michael, S. C. (2007). Resources, Capabilities and Entrepreneurial Perceptions. *Journal of Management Studies*, 44(7), 1187-1212.

Korth, S. J. (2000). Single and double loop learning: exploring potential influence of cognitive style. *Organization Development Journal*, 18(1), 87-98.

Kostova, T., Roth, K., & Dacin, M. T. (2008). Institutional theory in the study of multinational corporations: A critique and new directions. *Academy of Management Review* 33(4), 994-1006.

- Kotabe, M., Jiang, C. X., & Murray, J. Y. (2011). Managerial ties, knowledge acquisition, realized absorptive capacity and new product market performance of emerging multinational companies: A case of China. *Journal of World Business*, 46(2), 166-176.
- Kozan, M. K., Oksoy, D., & Ozsoy, O. (2012). Owner sacrifice and small business growth. *Journal of World Business*, 47(3), 409-419.
- Kozhevnikov, M. (2007). Cognitive Styles in the Context of Modern Psychology: Toward an Integrated Framework of Cognitive Style. *Psychological Bulletin*, 133(3), 464 - 481.
- Kraaijenbrink, J., Spender, J.-C., & Groen, A. J. (2010). The Resource-Based View: A Review and Assessment of Its Critiques. *Journal of Management*, 36(1), 349-372.
- Krause, D. R., Scannell, T. V., & Calantone, R. J. (2000). A Structural Analysis of the Effectiveness of Buying Firms' Strategies to Improve Supplier Performance. *Decision Sciences*, 31(1), 33-55.
- Kreiser, P. M., Marino, L. D., Dickson, P. & Weaver, K. M. (2010) Cultural Influences On Entrepreneurial Orientation: The Impact Of National Culture On Risk Taking And Proactiveness In SMEs. *Entrepreneurship Theory And Practice*, 34(5), 959-984.
- Kriauciunas, A., Parmigiani, A. & Rivera-Santos, A. M. (2011) Leaving Our Comfort Zone: Integrating Established Practices With Unique Adaptations To Conduct Survey-Based Strategy Research In Nontraditional Contexts. *Strategic Management Journal*, 32(9), 994-1010.
- Krinsky, R. J., & Jenkins, A. C. (1997). When worlds collide: the uneasy fusion of strategy and innovation. *Strategy & Leadership*, 25(4), 36-41.
- Krippendorff, K. (2004) *Content Analysis: An Introduction To Its Methodology*: Second Edition, Thousand Oaks, Sage.
- Krippendorff, K., & Bock, M. A. (Eds.). (2008). *The Content Analysis Reader*. Thousand Oaks, CA: SAGE.
- Kroth, P. J., McPherson, L., Leverence, R., Pace, W., Daniels, E., Rhyne, R. L., & Williams, R. L. (2009). Combining Web-Based and Mail Surveys Improves Response Rates: A PBRN Study From PRIME Net. *Annals of family medicine*, 7(3), 245-248.
- Krueger Jr., N. F., & Day, M. (2010). Looking Forward, Looking Backward: From Entrepreneurial Cognition to Neuroentrepreneurship In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction* (2 ed., pp. 321-357). New York: Springer.
- Kubes, M. (1992). Cognitive style and interpersonal behaviour: The Kirton Adaption-Innovation and Schutz's FIRO-B inventories. *Psychology, Journal of Human Behavior*, 29(1), 33-38.
- Kubeš, M. (1998). Adaptors and innovators in Slovakia: cognitive style and social culture. *European Journal of Personality*, 12(3), 187-198.

Kumar, N., Scheer, L., & Kotler, P. (2000). From Market Driven to Market Driving. *European Management Journal*, 18(2), 129-142.

Kuo, F.-Y. (1998). Managerial intuition and the development of executive support systems. *Decision Support Systems* 24(2), 89-103.

Kuratko, D. F. (2010). Corporate Entrepreneurship: An Introduction and Research Review In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction* (2 ed., pp. 129-164). New York: Springer.

Lacity, M. C., & Janson, M. A. (1994). Understanding Qualitative Data: A Framework of Text Analysis Methods. *Journal of Management Information Systems*, 11(2), 137-155.

Lakshman, C., & Parente, R. C. (2008). Supplier-focused knowledge management in the automobile industry and its implications for product performance. *Journal of Management Studies*, 45(2), 317–342.

Lam, A. (2001). Tacit Knowledge, Organizational Learning and Societal Institutions: An Integrated Framework. *Organization Studies*, 21(3), 487-513.

Lamberg, J.-A., & Tikkanen, H. (2006). Changing sources of competitive advantage: cognition and path dependence in the Finnish retail industry 1945–1995. *Industrial and Corporate Change*, 15(5), 811-846.

Lamberg, J.-A., Tikkanen, H., Nokelainen, T., & Suur-Inkeroinen, H. (2009). Competitive Dynamics, Strategic Consistency, and Organizational Survival. *Strategic Management Journal*, 30(1), 45–60.

Lambert, S. C., & Davidson, R. A. (2012). Applications of the business model in studies of enterprise success, innovation and classification: An analysis of empirical research from 1996 to 2010. *European Management Journal*. In press.

Landström, H., Harirchi, G., & Åström, F. (2012). Entrepreneurship: Exploring the knowledge base. *Research Policy*, 41(7), 1154-1181.

Lane, P. J., & Lubatkin, M. (1998). Relative Absorptive Capacity And Interorganizational Learning. *Strategic Management Journal*, 19(5), 461-477.

Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: A critical review and rejuvenation of the construct. *Academy of Management Review*, 31(4), 833-863.

Lane, P. J., Koka, B., & Pathak, S. (2002). A Thematic Analysis And Critical Assessment Of Absorptive Capacity Research *Academy Of Management Proceedings* M1-M6.

Lane, P. J., Salk, J. E., & Lyles, M. A. (2001). Absorptive Capacity, Learning And Performance In International Joint Ventures. *Strategic Management Journal*, 22(12), 1139-1161.

Lank, A. G., & Lank, E. A. (1995). Legitimizing the gut feel: the role of intuition in business. *Journal of Managerial Psychology*, 10(5), 18-23.

Larrañeta, B., Zahra, S. A., & González, J. L. G. (2013). Strategic repertoire variety and new venture growth: The moderating effects of origin and industry dynamism. *Strategic Management Journal*, In press.

Lawrence, P. R., & Lorsch, J. W. (1967). *Organization and Environment*. Boston. Working paper. Harvard University Graduate School of Business Administration Division of Research.

Lazaric, N. (2008). Routines and routinization: an exploration of some micro-cognitive foundations. In M. C. Becker (Ed.), *Handbook of Organizational Routines* (pp. 205-227). Cheltenham, UK: Edward Elgar.

Lazerson, M. H. (1988). Organizational Growth of Small Firms: An Outcome of Markets and Hierarchies? *American Sociological Review*, 53(3), 330-342.

Lazonick, W., & Tulum, O. (2011). US biopharmaceutical finance and the sustainability of the biotech business model. *Research Policy*, 40(9), 1170-1187.

Lechner, C., & Floyd, S. W. (2007). Searching, Processing, Codifying and Practicing Key Learning Activities in Exploratory Initiatives. *Long Range Planning*, 40(1), 9-29.

Lecocq, X., Demil, B., & Ventura, J. (2010). Business Models as a Research Program in Strategic Management: An Appraisal based on Lakatos. *M@n@gement*, 13(4), 214-225.

Lee, J. S. K. (1991). Quantitative Versus Qualitative Research Methods Two Approaches To Organization Studies. *Asia Pacific Journal Of Management*, 9(1), 87-94.

Lee, N., & Chamberlain, L. (2007). Neuroimaging And Psychophysiological Measurement In Organizational Research: An Agenda For Research In Organizational Cognitive Neuroscience. *Annals of the New York Academy of Sciences*, 1118(1), 18-42.

Lee, S., Kim, B. G., & Kim, H. (2012). An Integrated View of Knowledge Management for Performance. *journal of knowledge management*, in press.

Lefebvre, L. A., Mason, R., & Lefebvre, E. (1997). The influence prism in SMEs: The power of CEO's perceptions on technology policy and its organizational impacts. *Management Science*, 43(6), 856-879.

Lehmann, D. R. (1988). An Alternative Procedure for Assessing Convergent and Discriminant Validity. *Applied Psychological Measurement*, 12(4), 411-423.

Leitch, C., Hill, F., & Neergaard, H. (2010). Entrepreneurial and Business Growth and the Quest for a "Comprehensive Theory": Tilting at Windmills? *Entrepreneurship Theory and Practice*, 34(2), 249-260.

Lenz, R. T., & Engledow, J. L. (1986). Environmental Analysis: The Applicability of Current Theory. *Strategic Management Journal*, 7(4), 329-346.

Lepak, D. P., Smith, K. G., & Taylor, M. S. (2007). Value Creation and Value Capture: A Multilevel Perspective. *Academy Of Management Review*, 32(1), 180-194.

- Levie, J., & Lichtenstein, B. B. (2008). From “Stages” of Business Growth to a Dynamic States Model of Entrepreneurial Growth and Change. Working Paper, (WP08-02). Hunter Centre for Entrepreneurship, University of Strathclyde United Kingdom.
- Levinthal, D. A. (1997). Adaptation on Rugged Landscapes, *Management Science*, 43(7), 934-950.
- Levinthal, D. A., & March, J. G. (1993). The Myopia of Learning. *Strategic Management Journal*, 14(S1), 95-112.
- Levinthal, D. A., & Warglien, M. (1999). Landscape Design: Designing for Local Action in Complex Worlds. *Organization Science*, 10(3), 342-357.
- Levinthal, D., & Myatt, J. (1994). Co-Evolution of Capabilities and Industry: The Evolution of Mutual Fund Processing. *Strategic Management Journal*, 15(S1), 45-62.
- Levitt, B. & March, J. (1988) Organizational Learning. *Annual Review Of Sociology*, 14, 319-340.
- Leybourne, S., & Sadler-Smith, E. (2006). The role of intuition and improvisation in project management. *International Journal of Project Management* 24(6), 483-492.
- Leyshon, A. (1982). The UK Government Small Business Model-a Review. *International Small Business Journal*, 1(1), 58-66.
- Liao, T.-S., & Rice, J. (2010). Innovation investments, market engagement and financial performance: A study among Australian manufacturing SMEs. *Research Policy*, 39(1), 117-125.
- Li, T., & Calantone, R. J. (1998). The Impact of Market Knowledge Competence on New Product Advantage: Conceptualization and Empirical Examination. *Journal of Marketing*, 62(4), 13-29.
- Li, Y., Liu, Y. & Liu, H. (2011) Co-opetition, distributor’s entrepreneurial orientation and manufacturer’s knowledge acquisition: Evidence from China. *Journal of Operations Management*, 29(1-2), 128-142.
- Li, Y., Wei, Z., & Liu, Y. (2010). Strategic Orientations, Knowledge Acquisition, and Firm Performance: The Perspective of the Vendor in Cross-Border Outsourcing. *Journal of Management Studies*, 47(8), 1457-1482.
- Liberman-Yaconi, L., Hooper, T., & Hutchings, K. (2010). Toward a Model of Understanding Strategic Decision-Making in Micro-Firms: Exploring the Australian Information Technology Sector. *Journal of Small Business Management* 48(1), 70–95.
- Lichtenthaler, U. (2009). Absorptive Capacity, Environmental Turbulence, and The Complementarity Of Organizational Learning Processes. *Academy Of Management Journal*, 52(4), 822–846.
- Lichtenthaler, U., & Lichtenthaler, E. (2009). A Capability-Based Framework For Open Innovation: Complementing Absorptive Capacity. *Journal Of Management Studies*, 46(8), 1315–1338.

- Lieberman, M. D. (2000). Intuition: A Social Cognitive Neuroscience Approach. *Psychological Bulletin*, 126(1), 109-137.
- Lieberman, M. D. (2007) Social Cognitive Neuroscience. A Review Of Core Processes. *Annual Review Of Psychology*, 58, 259-289.
- Liebeskind, J. P. (1996) Knowledge, Strategy, And The Theory Of The Firm *Strategic Management Journal*, 17(1), 93-107.
- Lindblom, A., Olkkonen, R., & Mitronen, L. (2008). Cognitive styles of contractually integrated retail entrepreneurs: a survey study. *International Journal of Retail & Distribution Management*, 36(6), 518-532.
- Lindenberg, S., & Foss, N. J. (2011). Managing Joint Production Motivation: The Role of Goal Framing and Governance Mechanisms. *Academy of Management Review*, 36(3), 500-525.
- Linder, C., & Seidenstricker, S. (2012). Pushing new technologies through business model innovation, *international journal of Technology Marketing*, 7(3), 231-241.
- Lindgardt, Z., Reeves, M., Stalk, G., & Deimler, M. (2009). business model innovation: when the game gets tough, change the game Boston Consulting Group Publications December.
- Lindgren, P. (2012). Business Model Innovation Leadership: How Do SME's Strategically Lead Business Model Innovation? *International Journal of Business and Management*, 7(14), 53-66
- Lindič, J., Bavdaž, M., & Kovačič, H. (2012). Higher growth through the Blue Ocean Strategy: Implications for economic policy. *Research Policy*, 41(5), 928-938.
- Lindow, C. M., Stubner, S., & Wulf, T. (2010). Strategic fit within family firms: The role of family influence and the effect on performance, *Journal of Family Business Strategy*, 1(1), 167-178.
- Ling, Y., Simsek, Z., Lubatkin, M. H., & Veiga, J. F. (2008a). The Impact of Transformational CEOs on the Performance of Small- to Medium-Sized Firms: Does Organizational Context Matter? *Journal of Applied Psychology* 93(4), 923-934.
- Ling, Y., Simsek, Z., Lubatkin, M. H., & Veiga, J. F. (2008b). Transformational Leadership's Role In Promoting Corporate Entrepreneurship: Examining The CEO-TMT Interface. *Academy of Management Journal*, 51(3), 557-576.
- Ling, Y.-H. (2012). The Influence Of Intellectual Capital On Organizational Performance—Knowledge Management As Moderator. *Asia Pacific Journal of Management*, In Press.
- Liou, Y. I., & Nunamaker, J., Jay F. . (1993). An investigation into knowledge acquisition using a group decision support system, *Information & Management*, 24(3), 121-132.

- Lippman, S. A. & Rumelt, R. P. (1982) Uncertain Imitability: An Analysis Of Interfirm Differences In Efficiency Under Competition. *Bell Journal Of Economics*, 13(2), 418-438.
- Lipshitz, R., & Shulimovitz, N. (2007). Intuition and emotion in bank loan officers' credit decisions. *Journal of Cognitive Engineering and Decision Making* 1(2), 212-233.
- Litchfield, E. H. (1956). Notes on a General Theory of Administration. *Administrative Science Quarterly*, 1(1), 3-29.
- Littunen, H., & Tohmo, T. (2003). The High Growth in New Metal-Based Manufacturing and Business Service Firms in Finland. *Small Business Economics*, 21(2), 187-200.
- Lockett, A. (2005). Edith Penrose's Legacy to the Resource-Based View. *Managerial and Decision Economics*, 26, 83-98.
- Lockett, A., & Thompson, S. (2004). Edith Penrose's Contributions to the Resource-based View: An Alternative Perspective. *Journal of Management Studies*, 41(1), 193-203.
- Lockett, A., Thompson, S., & Morgenstern, U. (2009). The development of the resource-based view of the firm: A critical appraisal, *International Journal of Management Reviews*, 11(1), 9-28.
- Lockett, A., Wiklund, J., Davidsson, P., & Girma, S. (2011). Organic and Acquisitive Growth: Re-examining, Testing and Extending Penrose's Growth Theory. *Journal of Management Studies*, 48(1), 48-74.
- Loo, I. D. & Lowe, A. (2011) Mixed methods research: don't – "just do it". *Qualitative Research in Accounting & Management*, 8(1), 22-38.
- Lord, R. G., & Emrich, C. G. (2001). Thinking outside the Box by Looking Inside The Box: Extending The Cognitive Revolution In Leadership Research. *Leadership Quarterly*, 11(4), 551-579.
- Lord, R. G., & Maher, K. J. (1990). Alternative Information-Processing Models and Their Implications for Theory, Research, and Practice. *Academy of Management Review*, 15(1), 9-28.
- Lounsbury, M. & Glynn, M.A. (2001). Cultural entrepreneurship: Stories, legitimacy, and the acquisition of resources. *Strategic Management Journal*, 22(6/7), 545.
- Lovaglio, D., & Kahneman, D. (2003). Delusions of Success. *Harvard Business Review*, 81(7), 56-63.
- Lovaglio, D., Viguerie, P., Uhlaner, R., & Horn, J. (2007). Deals Without Delusions. *Harvard Business Review*, 85(12), 92-99.
- Low, M. B. (2001) The Adolescence Of Entrepreneurship Research: Specification Of Purpose. *Entrepreneurship Theory And Practice*, 25(4), 17-25.
- Low, M. B., & MacMillan, I. C. (1988). Entrepreneurship: Past Research and Future Challenges. *Journal of Management*, 14(2), 139-161.

- Lower, M. D. (1987). The Concept of Technology within the Institutional Perspective. *Journal of Economic Issues*, 21(3), 1147-1176.
- Lozier, G. G., & Chittipeddi, K. (1986). Issues Management in Strategic Planning. *Research in Higher Education*, 24(1), 3-14.
- Lubatkin, M. H., Simsek, Z., Ling, Y. & Veiga, J. F. (2006) Ambidexterity and Performance in Small- to Medium-Sized Firms: The Pivotal Role of Top Management Team Behavioral Integration. *Journal of Management*, 32(5), 646-672.
- Lubit, R. (2001). The keys to sustainable competitive advantage: Tacit knowledge and knowledge management. *Organizational Dynamics*, 29(4), 164-178.
- Luhmann, N. (1995). *Social Systems*. Stanford, CA, USA: Stanford University Press.
- Luo, Y., Sun, J., & Wang, S. L. (2011). Emerging Economy Copycats: Capability, Environment, and Strategy. *Academy of Management Perspective*, 25(4), 37-56.
- Lybaert, N. (1998). The information use in a SME: Its importance and some elements of influence. *Small Business Economics*, 10(2), 171-191
- Maccallum, R. & Browne, M. W. (1993) The Use Of Causal Indicators In Covariance Structure Models: Some Practical Issues. *Psychological Bulletin*, 114(3), 533-541.
- MacCallum, R. C., Browne, M. W. & Cai, L. (2006) Testing Differences Between Nested Covariance Structure Models: Power Analysis And Null Hypotheses. *Psychological Methods*, 11(1), 19-35.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power Analysis and Determination of Sample Size for Covariance Structure Modeling. *Psychological Methods*, 1(2), 130-149.
- MacCallum, R. C., Wegener, D. T., Uchino, B. N., & Fabrigar, L. R. (1993). The Problem of Equivalent Models in Applications of Covariance Structure Analysis. *Psychological Bulletin*, 114(1), 185-199.
- Machlup, F. (1980) *Knowledge: Its Creation, Distribution, And Economic Significance*, Vol. 1. Princeton University Press, Princeton, NJ.
- Mackenzie, S. B., Podsakoff, P. M. & Jarvis, C. B. (2005) The Problem Of Measurement Model Misspecification In Behavioral And Organizational Research And Some Recommended Solutions. *Journal Of Applied Psychology*, 90(4), 710-730.
- Mackenzie, S. B., Podsakoff, P. M. & Podsakoff, N. P. (2011) Construct Measurement And Validation Procedures In MIS And Behavioral Research: Integrating New And Existing Techniques. *MIS Quarterly*, 35(2), 293-334.
- Mackey, A. (2008). The effect of CEOs on firm performance. *Strategic Management Journal*, 29(12), 1357-1367.
- Macmillan, H., & Tampoe, M. (2001). *Strategic Management: Process, Content, and Implementation*. Oxford, UK: Oxford University Press.

Macpherson, A. & Holt, R. (2007) Knowledge, Learning and Small Firm Growth: A Systematic Review Of The Evidence. *Research Policy*, 36(2), 172–192.

Madhavan, R., & Grover, R. (1998). From Embedded Knowledge to Embodied Knowledge: New Product Development as Knowledge Management. *Journal of Marketing*, 62(1), 1-12.

Maggitti, P. G., Smith, K. G., & Katila, R. (2013). The complex search process of invention. *Research Policy*, 42(1), 90-100

Magnan, M., & St-Onge, S. (2005). The Impact of Profit Sharing on the Performance of Financial Services Firms. *Journal of Management Studies*, 42(4), 761-791.

Mahoney, J. T. & Pandian, J. R. (1992) The Resource-Based View Within The Conversation Of Strategic Management. *Strategic Management Journal*, 13(5), 363-380.

Mahoney, J. T. (1995). The management of resources and the resource of management. *Journal of Business Research*, 33(2), 91-101.

Mahoney, J. T. (2004). *Economic Foundations of Strategy: Foundations for Organizational Science*. Thousand Oaks, CA: Sage.

Mahoney, J. T., & Michael, S. C. (2005). A Subjectivist Theory of Entrepreneurship. In S. A. Alvarez, R. Agarwal & O. Sorenson (Eds.), *Handbook Of Entrepreneurship Research: Interdisciplinary Perspectives* (Pp. 33-64). New York: Springer.

Majumdar, S. (2008). Modeling Growth Strategy in Small Entrepreneurial Business Organizations *The Journal of Entrepreneurship*, 17(2), 157-168.

Majumdar, S. (2010). 'How do they plan for growth in auto component business?' - A study on small foundries of western India. *Journal of Business Venturing*, 25(3), 274-289.

Makadok, R. (2001) A Pointed Commentary On Priem And Butler. *Academy Of Management Review*, 26(4), 498-499.

Makadok, R. (2011). The Four Theories of Profit and Their Joint Effects *Journal Of Management*, 37(5), 1316-1334

Makadok, R., & B. Barney, J. (2001). Strategic Factor Market Intelligence: An Application of Information Economics to Strategy Formulation and Competitor Intelligence. *Management Science*, 47(12), 1621–1638.

Makadok, R., & Coff, R. (2002). The Theory of Value and the Value of Theory: Breaking New Ground versus Reinventing the Wheel. *Academy of Management Review*, 27(1), 10-13.

Makinen, H. (2005). Product Design as a Core Competence in A Design-Oriented Industry. In R. Sanchez & A. Heene (Eds.), *Advances In Applied Business Strategy: Competence Perspectives On Resources, Stakeholders And Renewal* (Vol. 9, Pp. 103-126). Sussex, UK: Emerald Publishing.

- Malerba, F., & Orsenigo, L. (1993). Technological regimes and sectoral patterns of innovative activities. *Industrial and Corporate Change*, 8(1), 81-117.
- Malhotra, N. K., Kim, S. S., & Patil, A. (2006). Common Method Variance in IS Research: A Comparison of Alternative Approaches and a Reanalysis of Past Research. *Management Science*, 52(12), 1865-1883.
- Manfreda, K. L., Bosnjak, M., Berzelak, J., Haas, I., & Vehovar, V. (2008). Web surveys versus other survey modes. *International Journal of Market Research*, 50(1), 79-104.
- Mangematin, V. (2000). Competing Business Models in the French Biotech Industry. *Economics of Science, Technology and Innovation*, 21(1), 181-204.
- Manral, L. (2011). Managerial cognition as bases of innovation in organization. *Management Research Review*, 34(5), 576-594.
- Marcel, J. J., Barr, P. S., & Duhaime, I. M. (2011). The Influence of Executive Cognition on Competitive Dynamics. *Strategic Management Journal*, 32(2), 115-138.
- March, J. G. & Simon, H. A. (1958) *Organizations*. New York: Wiley.
- March, J. G. (1991) Exploration And Exploitation In Organizational Learning. *Organization Science*, 2(1), 71-87.
- March, J. G. (1996) Continuity And Change In Theories Of Organizational Action. *Administrative Science Quarterly*, 41(2), 278-287.
- March, J.G., and H. Simon. (1958). *Organizations*. Wiley, New York, NY.
- Mariani, M. M. (2007). Coopetition as an Emergent Strategy: Empirical Evidence from an Italian Consortium of Opera Houses. *International Studies of Management and Organization*, 37(2), 97 - 126.
- Marinova, D. (2004). Actualizing Innovation Effort: The Impact of Market Knowledge Diffusion in a Dynamic System of Competition. *Journal of Marketing*, 68(3), 1-20.
- Maritan, C. A. & Peteraf, M. A. (2011) Building A Bridge Between Resource Acquisition And Resource Accumulation. *Journal Of Management*, 37(5), 1374-1389
- Markides, and Oyon, (2010). What to Do Against Disruptive Business Models (When and How to Play Two Games at Once). *MIT Sloan Management Review*, 51(4), 25-32.
- Markides, C. (1997). Strategic innovation. *Sloan Management Review*, 38(3), 9-23.
- Markides, C. (1999). Strategic Innovation in Established Companies, *Sloan Management Review*, 39(3), 31-42.
- Markides, C. C. (1999). A dynamic view of strategy. *Sloan Management Review*, 40(3), 55-63.
- Markides, C. C., & Anderson, J. (2006). Creativity is not enough: ICT-enabled strategic innovation. *European Journal of Innovation Management*, 9(2), 129-148.

Markides, C. C., & Geroski, P. A. (2005). *Fast Second: How Smart Companies Bypass Radical Innovation to Enter and Dominate New Markets*. New Jersey, USA: Jossey-Bass.

Markides, C. C., & Oyon, D. (2010). What to Do Against Disruptive Business Models (When and How to Play Two Games at Once). *MIT Sloan Management Review*, 51(4), 25-32.

Markides, C., & Charitou, C. D. (2004). Competing with dual business models: A contingency approach *Academy of Management Executive*, 18(3), 22-36.

Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: the effect of sample size. *Psychological Bulletin*, 103(3), 391-410.

Marsh, H. W., Hau, K.-T., & Wen, Z. (2004). In Search of Golden Rules: Comment on Hypothesis-Testing Approaches to Setting Cutoff Values for Fit Indexes and Dangers in Overgeneralizing Hu and Bentler's (1999) Findings. *Structural Equation Modeling*, 11(3), 320-341.

Marshall, M. N. (1996). Sampling For Qualitative Research. *Family Practice*, 13(6), 522-525.

Marta, J., Singhapakdi, A. & Kraft, K. (2008) Personal Characteristics Underlying Ethical Decisions In Marketing Situations: A Survey Of Small Business Managers. *Journal Of Small Business Management*, 46(4), 589-606.

Martín-De Castro, G., Delgado-Verde, M., Navas-López, J. E., & López-Sáez, P. (2011). Towards An Intellectual Capital-Based View of The Firm. *Journal of Business Ethics*, 98(4), 649-662.

Martín-Peña, M. L., & Díaz-Garrido, E. (2008). A taxonomy of manufacturing strategies in Spanish companies. *International Journal of Operations & Production Management*, 28(5), 455 - 477.

Martinsons, M. G. (1993). Strategic innovation: a lifeboat for planning in turbulent waters. *Management Decisions*, 31(8), 4-11.

Martz Jr., W. B., & Shepherd, M. M. (2003). Testing for the Transfer of Tacit Knowledge: Making a Case for Implicit Learning. *Decision Sciences: Journal of Innovative Education*, 1(1), 41-56.

Marvel, M. (2012). Knowledge Acquisition Asymmetries and Innovation Radicalness. *Journal of Small Business Management*, 50(3), 447-468.

Marvel, M. R., & Lumpkin, G. T. (2007). Technology Entrepreneurs' Human Capital and Its Effects on Innovation Radicalness. *Entrepreneurship theory and practice*, 31(6), 807–828.

Mason, K., & Spring, M. (2011). The sites and practices of business models. *Industrial Marketing Management*, 40(6), 1032-1041.

- Massini, S., Lewin, A. Y., Numagami, T., & Pettigrew, A. M. (2002). The evolution of organizational routines among large Western and Japanese firms. *Research Policy*, 31(8-9), 1333-1348.
- Mathews, J. A. (2003). Competitive dynamics and economic learning: an extended resource-based view. *Industrial and Corporate Change*, 12(1), 115-145.
- Mathews, J. A. (2010). Lachmannian Insights into Strategic Entrepreneurship: Resources, Activities and Routines in a Disequilibrium World. *Organization Studies*, 31(2), 219-244.
- Mathieu, J. E. & Chen, G. (2011) The Etiology Of The Multilevel Paradigm In Management Research. *Journal Of Management*, 37(2), 610-641.
- Mathieu, J. E., & Taylor, S. R. (2006). Clarifying conditions and decision points for mediational type inferences in organizational behavior. *Journal of Organizational Behavior*, 27(8), 1031-1056.
- Mathieu, J. E., DeShon, R. P., & Bergh, D. D. (2008). Mediational Inferences in Organizational Research: Then, Now, and Beyond. *Organizational Research Methods*, 11(2), 203-223.
- Matthyssens, P., Vandenbempt, K., & Berghman, L. (2006). Value innovation in business markets: Breaking the industry recipe. *Industrial Marketing Management*, 35(6), 751-761.
- Matthyssens, P., Vandenbempt, K., & Berghman, L. (2008). Value innovation in the functional foods industry: Deviations from the industry recipe. *British Food Journal*, 110(1), 144 -155.
- Matusik, S. F., & Hill, C. W. L. (1998). The Utilization of Contingent Work, Knowledge Creation, and Competitive Advantage. *Academy of Management Review*, 23(4), 680-697.
- Matzler, K., Bailom, F., & Mooradian, T. A. (2007). Intuitive Decision Making. *MIT Sloan Management Review*, 49(1), 13-15.
- Matzler, K., Bailom, F., von den Eichen, S. F., & Kohler, T. (2013). Business Model Innovation: Coffee Triumphs for Nespresso. *Journal of Business Strategy*, In press.
- May, R. C., Stewart, J. W. H., & Sweo, R. (2000). Environmental Scanning Behavior In A Transitional Economy: Evidence From Russia. *Academy Of Management Journal*, 43(3), 403-427.
- McAdam, R., Moffett, S., Hazlett, S. A., & Shevlin, M. (2010). Developing a model of innovation implementation for UK SMEs: A path analysis and explanatory case analysis. *International Small Business Journal*, 28(3), 195-214.
- McArthur, A. W., & Nystrom, P. C. (1991). Environmental dynamism, complexity, and munificence as moderators of strategy-performance relationships. *Journal of Business Research*, 23(4), 349-361.
- McClellan, S. (1976). Some Models for Company Growth. *Journal of the Royal Statistical Society*, 139(4), 501-507.

- McDonald, R. P., & Ho, M.-H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, 7(1), 64-82.
- McEvily, S. K., & Chakravarthy, B. (2002). The Persistence of Knowledge-Based Advantage: An Empirical Test for Product Performance and Technological Knowledge. *Strategic Management Journal*, 23(4), 285-305.
- McGee, J. (2005). Business Model. In M. J. McGee (Ed.), *The Blackwell Encyclopedia Of Management: Strategic Management* (2 Ed., Pp. 23-25). Oxford, UK: Blackwell Publishing.
- McGee, J. E. & Sawyerr, O. (2003) Uncertainty And Information Search Activities: A Study Of Owner-Managers Of Small High-Technology Manufacturing Firms. *Journal Of Small Business Management*, 41(4), 385-401.
- McGrath, F., & Parkes, C. (2007). Cognitive style fit and effective knowledge reuse international journal of Knowledge Management Studies, 1(3/4), 484-496
- McKelvie, A., & Wiklund, J. (2010). Advancing Firm Growth Research: A Focus on Growth Mode Instead of Growth Rate. *Entrepreneurship Theory and Practice*, 34(2), 261-288.
- McKelvie, A., Haynie, J. M., & Gustavsson, V. (2011). Unpacking the uncertainty construct: Implications for entrepreneurial action. *Journal of Business Venturing*, 26(3), 273-292.
- McKinley, W. (2011). Organizational Contexts for Environmental Construction and Objectification Activity. *Journal of Management Studies*, 48(4), 804-828.
- McLachlan, G., & Krishnan, T. (1996). *The EM Algorithm and Extensions*. New York: John Wiley & Sons.
- McNamara, P., Peck, S. I., & Sasson, A. (2012). Competing Business Models, Value Creation and Appropriation in English Football. *Long Range Planning*, In Press.
- McQuitty, S. (2004). Statistical power and structural equation models in business research *Journal of Business Research*, 57(2), 175-183.
- McWilliams, A. & Smart, D. L. (1993) Efficiency V. Structure-Conduct-Performance: Implications For Strategy Research And Practice. *Journal Of Management*, 19(1), 63-78.
- Meade, A. W., & Craig, S. B. (2012). Identifying Careless Responses in Survey Data. *Psychological Methods*, 17(3), 437-455.
- Medsker, G., J, Williams, L. J., & Holahan, P. J. (1994). A review of current practices for evaluating causal models in organizational behavior and human resources management research. *Journal of Management*, 20(2), 439-464.
- Meeus, M., Oerlemans, L., & Hage, J. (2001). Patterns of interactive learning in a high-tech region. *Organization Studies*, 22(1), 145-174.

Meier, M. (2011) Knowledge Management in Strategic Alliances: A Review of Empirical Evidence. *International Journal of Management Reviews*, 13(1),1-23.

Meneely, J. and Portillo, M. (2005). The adaptable mind in design: relating personality, cognitive style, and creative performance. *Creativity Research Journal*, 17(2-3), 155–166.

Menon, A., Bharadwaj, S.G., Howell, R., (1996). The quality and effectiveness of marketing strategy: effects of functional and dysfunctional conflict in intraorganizational relationships. *Journal of the Academy of Marketing Science*, 24(4), 299–313.

Menon, T., & Pfeffer, J. (2003). Valuing Internal vs. External Knowledge: Explaining the Preference for Outsiders. *Management Science*, 49(4), 497-513.

Menon, T., Thompson, L., & Choi, H.-S. (2006). Tainted Knowledge vs. Tempting Knowledge: People Avoid Knowledge from Internal Rivals and Seek Knowledge from External Rivals. *Management Science*, 52(8), 1129-1144.

Merrilees, B., Rundle-Thiele, S., & Lye, A. (2011). Marketing capabilities: Antecedents and implications for B2B SME performance. *Industrial Marketing Management*, 40(3), 368-375.

Messick, S. (1976). Personality consistencies in cognition and creativity. In S. Messick (Ed.), *Individuality in learning* (pp. 4-23). San Francisco: Jossey-Bass.

Metcalfe, J. S., & James, A. (2000). Knowledge and capabilities: A new view of the firm. In N. J. Foss & P. L. Robertson (Eds.), *Resources, Technology and Strategy Explorations in the resource-based perspective* (pp. 31-51). London, UK: Routledge.

Meyer, G. D., Neck, H. M., & Meeks, M. D. (2002). The Entrepreneurship-Strategic Management Interface. In M. A. Hitt, R. D. Ireland, S. M. Camp & D. L. Sexton (Eds.), *Strategic Entrepreneurship: Creating a New Mindset* (Strategic Management Society Series) (pp. 18-46). New York, NY: Wiley-Blackwell.

Mezias, S. J., & Glynn, M. A. (1993). The three faces of corporate renewal: institution, revolution, and evolution. *Strategic Management Journal*, 14(1), 77-101.

Migiro, S. O., & Magangi, B. A. (2011). Mixed methods: A review of literature and the future of the new research paradigm *African Journal of Business Management*, 5(10), 3757-3764.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook* (2 ed.). Thousand Oaks, California: Sage.

Miles, R. E., & Snow, C. C. (1978). *Organizational strategy, structure, and process*. New York: McGraw-Hill.

Miles, R. E., Snow, C. C., & Pfeffer, J. (1974). Organization-Environment: Concepts And Issues. *Industrial Relations*, 13(3), 244-264.

Miles, R. E., Snow, C. C., Meye, A. D., & Coleman, H. J. (1978). Organizational Strategy, Structure, and Process. *Academy of Management Review*, 3(3), 546-562.

- Miller, C. (2008). Decisional comprehensiveness and firm performance: toward a more complete understanding. *Journal of Behavioral Decision Making*, 21(5), 598-620.
- Miller, C. C., & Ireland, R. D. (2005). Intuition in strategic decision making: Friend or foe in the fast-paced 21st century? *Academy of Management Executive*, 19(1), 19-30.
- Miller, C. C., Ogilvie, D. T., & Glick, W. H. (2006). Assessing The External Environment: An Enrichment Of The Archival Tradition. In D. J. Ketchen Jr. & D. D. Bergh (Eds.), *Research Methodology In Strategy And Management* (Vol. 3, Pp. 97-122). Oxford: Elsevier.
- Miller, C. C., Washburn, N. T., & Glick, W. H. (2012). The Myth of Firm Performance. *Organization Science*, In Press.
- Miller, C., Cardinal, L., & Glick, W. (1997). Retrospective reports in organizational research: a re-examination of recent evidence. *Academy of Management Journal*, 40(1), 189-204.
- Miller, D. & Dröge, C. (1986) Psychological And Traditional Determinants Of Structure. *Administrative Science Quarterly*, 31(4), 539-560,
- Miller, D. (1991). Stale in the saddle: CEO tenure and the match between organization and environment. *Management Science*, 37(1), 34-52.
- Miller, D. (1992). Environmental Fit versus Internal Fit *Organization Science*, 3(2), 159-178.
- Miller, D. (1994). What Happens After Success: The Perils Of Excellence. *Journal of Management Studies*, 31(3), 325-368.
- Miller, D. (1996). A Preliminary Typology of Organizational Learning: Synthesizing the Literature. *Journal of Management*, 22(3), 485-505.
- Miller, D., & Friesen, P. (1984). *Organizations: A Quantum View*. Englewood Cliffs, NJ: Prentice-Hall.
- Miller, D., & Friesen, P. H. (1982). Innovation in conservative and entrepreneurial firms: two models of strategic momentum. *Strategic Management Journal*, 3(1), 1-25.
- Miller, D., & Friesen, P. H. (1983). Strategy-making and environment: the third link. *Strategic Management Journal*, 4(3), 221-235.
- Miller, D., & Shamsie, J. (1996). The Resource-Based View of the Firm in Two Environments: The Hollywood Film Studios from 1936 to 1965. *Academy of Management Journal*, 39(3), 519-543.
- Miller, D., & Shamsie, J. (2001). Learning across the life cycle: Experimentation and performance among the Hollywood studio heads. *Strategic Management Journal*, 22(8), 725-745.
- Miller, D., & Toulouse, J. M. (1986). Chief executive Personality and corporate strategy and structure in small firms. *Management Science*, 32(11), 1389-1409.

Miller, D., Droge, C. & Toulouse, J.-M. (1988) Strategic Process And Content As Mediators Between Organizational Context And Structure. *Academy Of Management Journal*, 31(3), 544-569.

Miller, K. D. (2002) Knowledge Inventories And Managerial Myopia. *Strategic Management Journal*, 23(8), 689-706.

Miller, T. L., Triana, M. d. C., Reutzel, C. R., & Certo, S. T. (2007). Mediation In Strategic Management Research: Conceptual Beginnings, Current Application, And Future Recommendations. In J. D. J. Ketchen. & D. D. Bergh. (Eds.), *Research Methodology In Strategy And Management*. (Vol. 4, pp. 295-318). Amsterdam: Elsevier.

Milliken, F. J. (1987). Three types of uncertainty about the environment: State, effect and response uncertainty. *Academy of Management Review*, 12(1), 133-143.

Mina, A., Ramlogan, R., Tampubolon, G., & Metcalfe, J. S. (2007). Mapping evolutionary trajectories: Applications to the growth and transformation of medical knowledge. *Research Policy*, 36(5), 789-806.

Miner, J. B. (1990). Entrepreneurs, High Growth Entrepreneurs, And Managers: Contrasting And Overlapping Motivational Patters. *Journal of Business Venturing*, 5(4), 221-234.

Minichilli, A., Corbetta, G., & MacMillan, I. C. (2010). Top Management Teams in Family-Controlled Companies: ‘Familianness’, ‘Faultlines’, and Their Impact on Financial Performance. *Journal of Management Studies* 47(2), 205-222.

Minniti, A. (2011). Knowledge appropriability, firm size, and growth. *Journal of Macroeconomics*, 33(3), 438-454.

Mintzberg, H., & Waters, J. A. (1985). Of Strategies, Deliberate and Emergent *Strategic Management Journal*, 6(3), 257-272.

Mishina, Y., Pollock, T. G., & Porac, J. F. (2004). Are More Resources Always Better For Growth? Resource Stickiness in Market and Product Expansion. *Strategic Management Journal*, 25(12), 1179-1197.

Mitchell, D. W., & Coles, C. B. (2004 a). Business model innovation breakthrough moves *journal of Business strategy*, 25(1), 16-26.

Mitchell, D. W., & Coles, C. B. (2004 b). Establishing a continuing business model innovation process *Journal of Business strategy*, 25(3), 39-49.

Mitchell, D., & Coles, C. (2003). The ultimate competitive advantage of business model innovation *journal of business strategy* 24(5), 15-21.

Mitchell, J. R., Friga, P. N. & Mitchell, R. K. (2005) Untangling the Intuition Mess: Intuition as a Construct in Entrepreneurship Research. *Entrepreneurship theory and practice*, 29(6), 653-679.

Mitchell, J. R., Friga, P. N., & Mitchell, R. K. (2005). Untangling the Intuition Mess: Intuition as a Construct in Entrepreneurship Research. *Entrepreneurship theory and practice*, 29(6), 653-679.

Mitchell, J. R., Shepherd, D. A., & Sharfman, M. P. (2011). Erratic strategic decisions: when and why managers are inconsistent in strategic decision making. *Strategic Management Journal*, 32(7), 683-704.

Mitchell, R. K., Busenitz, L. W., Bird, B., Gaglio, C. M., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The Central Question in Entrepreneurial Cognition Research *Entrepreneurship Theory and Practice*, 31(1), 1-27.

Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2002). Toward a Theory of Entrepreneurial Cognition: Rethinking the People Side of Entrepreneurship Research. *Entrepreneurship: Theory & Practice*, 27(2), 93-104.

Mitroff, I. I., & Kilmann, R. H. (1976). Qualitative versus Quantitative Analysis for Management Science: Different Forms for Different Psychological Types. *Interfaces*, 6(2), 17-27.

Mizik, N., & Jacobson, R. (2003). Trading Off Between Value Creation and Value Appropriation: The Financial Implications of Shifts in Strategic Emphasis. *Journal of Marketing*, 67(1), 63-76.

Molina-Azorn, J. F. (2007). Mixed Methods In Strategy Research: Applications And Implications In The Resource-Based View. In J. Ketchen, David J. & D. D. Bergh (Eds.), *Research Methodology In Strategy And Management*, Volume 4, (Pp. 37-73). Oxford,UK: Elsevier.

Molina-Azorin, J. F. (2012). Mixed Methods Research in Strategic Management: Impact and Applications. *Organizational Research Methods*, 15(1),33-56.

Molina-Azorn, J. f. (2011). The Use and Added Value of Mixed Methods in Management Research. *Journal of Mixed Methods Research*, 5(1), 7-24.

Molina-Azorín, J., & Cameron, R. (2010). The Application of Mixed Methods in Organizational Research: A Literature Review. *The Electronic Journal of Business Research Methods*, 8(2), 95-105.

Molina-Morales, F. X., García-Villaverde, P. M., & Parra-Requena, G. (2012). Geographical and cognitive proximity effects on innovation performance in SMEs: a way through knowledge acquisition. *International Entrepreneurial Management Journal*, In press.

Molloy, J. C., Chadwick, C., Ployhart, R. E. & Golden, S. J. (2011) Making Intangibles “Tangible” In Tests Of Resource-Based Theory: A Multidisciplinary Construct Validation Approach. *Journal Of Management*, 37(5), 1496-1518.

Molloy, J. C., Ployhart, R. E. & Wright, P. M. (2010) The Myth Of “The” Micro–Macro Divide: Bridging System-Level And Disciplinary Divides. *Journal of Management*, 37(2), 581-609.

Mom, T. J. M., Van Den Bosch, F. A. J., & Volberda, H. W. (2007). Investigating Managers' Exploration and Exploitation Activities: The Influence of Top-Down, Bottom-Up, and Horizontal Knowledge Inflows. *Journal of Management Studies*, 44(6), 910-931.

Monge, P. R. (1990). Theoretical and Analytical Issues in Studying Organizational Processes. *Organization Science*, 1(4), 406-430.

Moran-Ellis, J., Alexander, V. D., Cronin, A., Dickinson, M., Fielding, J. & Sleney, J. (2006) Triangulation And Integration: Processes, Claims And Implications. *Qualitative Research*, 6(1), 45-59.

Moreno, A. M., & Casillas, J. C. (2007). High-growth SMEs versus non-high growth SMEs: a discriminant analysis. *Entrepreneurship & Regional Development: An International Journal*, 19(1), 69-88.

Moreno, A. M., & Casillas, J. C. (2008). Entrepreneurial Orientation and Growth of SMEs: A Causal Model. *Entrepreneurship: Theory and Practice*, 32(3), 507-528.

Morgan, D. L. (2007) Paradigms Lost And Pragmatism Regained Methodological Implications Of Combining Qualitative And Quantitative Methods. *Journal of Mixed Methods Research*, 1(1), 48-76.

Morgan, R. E., & Berthon, P. (2008). Market Orientation, Generative Learning, Innovation Strategy and Business Performance Inter-Relationships in Bioscience Firms *Journal of Management Studies*, 45(8), 1329-1353.

Morris, M. H., Miyasaki, N. N., Watters, C. E., & Coombes, S. M. (2006). The Dilemma of Growth: Understanding Venture Size Choices of Women Entrepreneurs. *Journal of Small Business Management*, 44(2), 221-244.

Morris, M. H., Shirokova, G., & Shatalov, A. (2013). The Business Model and Firm Performance: The Case of Russian Food Service Ventures. *Journal of Small Business Management*, 51(1), 46-65.

Morris, M., Schindehutte, M. & Allen, J. (2005) The Entrepreneur's Business Model: Toward A Unified Perspective. *Journal Of Business Research*, 58(6), 726– 735.

Morrison, A., Breen, J., & Ali, S. (2003). Small business growth: Intention, ability, and opportunity. *Journal of Small Business Management*, 41(4), 417-425.

Morroni, M. (2006) *Knowledge, Scale And Transactions In The Theory Of The Firm*, New York, NY, Cambridge University Press.

Mosakowski, E. (2002). Overcoming Resource Disadvantages in Entrepreneurial Firms: When Less Is More. In M. A. Hitt, R. D. Ireland, S. M. Camp & D. L. Sexton (Eds.), *Strategic Entrepreneurship: Creating a New Mindset* (Strategic Management Society Series) (pp. 107-130). New York, NY: Wiley-Blackwell.

Mudd, S. (1995). Kirton Adaption-Innovation Theory: Organizational Implications. *Technovation*, 15(3), 165-175.

Mullen, M. R., Budeva, D. G. & Doney, P. M. (2009) Research Methods in the Leading Small Business–Entrepreneurship Journals: A Critical Review with Recommendations for Future Research. *Journal of Small Business Management*, 47(3), 287-307.

Muller, D., Judd, C. & Yzerbyt, V. (2005) When Moderation Is Mediated And Mediation Is Moderated. *Journal Of Personality And Social Psychology*, 89(6), 852-863.

Munˆoz-Doyague, M.F., González-Álvarez, N. and Nieto, M. (2008). An examination of individual factors and employees' creativity: the case of Spain. *Creativity Research Journal*, 20(1), 21–33.

Murmann, J. P. (2003). *Knowledge and Competitive Advantage The Coevolution of Firms, Technology, and National Institutions*. Cambridge, UK: Cambridge University Press.

Murphy, G. B., Trailer, J. W., & Hill, R. C. (1996). Measuring Performance in Entrepreneurship Research. *Journal of Business Research*, 36(1), 15-23.

Murphy, J. P. (1990). *Pragmatism: From Peirce To Davidson*. Boulder, Co: Westview.

Murphy, K. R. (2009) Validity, Validation and Values. *The Academy of Management Annals*, 3, 421 – 461.

Murray, F., & Tripsas, M. (2004). The exploratory processes of entrepreneurial firms: the role of purposeful experimentation. *Business Strategy over the Industry Life Cycle*, 21, 45-75.

Muthén, L. K., & Muthén, B. O. (2012). *Mplus User's Guide* (7 ed.). Los Angeles, CA: Muthén & Muthén.

Myers, I. B. (1962). *The Myers Briggs Type Indicator*. Palo Alto, CA: Consulting Psychologists Press.

Myers, I.B. (1962). *Manual: The Myers Briggs Type Indicator*. Palo Alto, CA: Consulting Psychologist Press.

Myers, I.B., McCaulley, M.H., Quenk, N.L. and Hammer, A.L. (2003). *MBTI Manual: A Guide to the Development and Use of the Myers–Briggs Type Indicator*. Palo Alto, CA: Consulting Psychologists Press.

Nadkarni, S., & Barr, P. S. (2008). Environmental Context, Managerial Cognition and Strategic Action: An Integrated View. *Strategic Management Journal* 29(12), 1395-1427.

Nadkarni, S., & Herrmann, P. (2010). CEO Personality, Strategic Flexibility, And Firm Performance: The Case Of The Indian Business Process Outsourcing Industry. *Academy Of Management Journal*, 53(5), 1050-1073.

Nadkarni, S., & Narayanan, V. K. (2007). Strategic Schemas, Strategic Flexibility, and Firm Performance: The Moderating Role Of Industry Clockspeed. *Strategic Management Journal*, 28(3), 243–270.

Nag, R., & Gioia, D. A. (2012). From Common to Uncommon Knowledge: Foundations of Firm-Specific Use of Knowledge as a Resource. *Academy of Management Journal*, 55(2), 421-457.

Narayanan, V. K., Zane, L. J. & Kemmerer, B. (2011) The Cognitive Perspective In Strategy: An Integrative Review. *Journal Of Management* 37(1), 305-351.

Narver, J. C., S. F. Slater. (1990). The effect of market orientation on business profitability. *Journal of Marketing*, 54(1), 20–35.

Ndofor, H. A., Sirmon, D. G., & He, X. (2011). Firm Resources, Competitive Actions And Performance: Investigating A Mediated Model With Evidence From The In-Vitro Diagnostics Industry. *Strategic Management Journal*. 32(6),640-657.

Neill, S., & York, J. L. (2012). The entrepreneurial perceptions of strategy makers: Constructing an exploratory path in the pursuit of radical growth. *Journal Of Business Research*, 65(7),1003-1009.

Nelson, R. R. & Winter, S. G. (1982) *An Evolutionary Theory Of Economic Change*, Harvard University Press, Cambridge, Ma.

Nelson, R. R. (1991). Why Do Firms Differ, and How Does it Matter? *Strategic Management Journal*, 12 (S1), 61-74.

Nelson, R. R., & Winter, S. G. (1973). Toward an Evolutionary Theory of Economic Capabilities. *The American Economic Review*, 63(2;Papers and Proceedings of the Eighty-fifth Annual Meeting of the American Economic Association (May, 1973)), 440-449.

Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*: Harvard University Press, Cambridge, MA.

Nesterkin, D. A., & Ganster, D. C. (2012). The Effects of Nonresponse Rates on Group-Level Correlations. *Journal of Management*, In press.

Neuendorf, K. A. (2002). *The Content Analysis Guidebook*. Thousand Oaks: SAGE.

Newbert, S. L. (2007) Empirical Research On The Resource-Based View Of The Firm: An Assessment And Suggestions For Future Research. *Strategic Management Journal*, 28(2), 121–146.

Newbert, S. L. (2008). Value, rareness, competitive advantage, and performance: a conceptual-level empirical investigation of the resource-based view of the firm. *Strategic Management Journal*, 29(7), 745–768.

Neys, W. D. (2006). Dual Processing in Reasoning Two Systems but One Reasoner. *Psychological Science*, 17(5), 428-433.

Ng, B.-K., Chandran, V. G. R., & Kanagasundram, T. (2012). Technological knowledge, learning and linkages in the wooden furniture industry in Malaysia: a spatial innovation perspective. *Asian Journal of Technology Innovation*, 20(2), 187-200.

- Ng, K. Y., Ang, S., & Chan, K. Y. (2008). Personality and leader effectiveness: a moderated mediation model of leadership self-efficacy, job demands, and job autonomy. *Journal of Applied Psychology*, 93(4), 733-743.
- Nicholls-Nixon, C. L., Cooper, A. C., & Woo, C. Y. (2000). Strategic experimentation: Understanding change and performance in new ventures. *Journal of Business Venturing* 15(5-6), 493-521.
- Nickerson, J. A. & Zenger, T. R. (2004) A Knowledge-Based Theory Of The Firm—The Problem-Solving Perspective. *Organization Science*, 15(6), 617-632.
- Nielsen, S. (2010) Top Management Team Diversity: A Review Of Theories And Methodologies. *International Journal Of Management Reviews*, 12(3), 301-316.
- Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: holistic versus analytic cognition. *Psychological Review*, 108(2), 291-310.
- Nonaka, I. & Takeuchi, H. (1995) *The Knowledge-Creating Company: How Japanese Companies Create The Dynamics Of Innovation*, New York, Oxford University Press.
- Nonaka, I. (1991) The Knowledge-Creating Company. *Harvard Business Review*, 69(1), 96-104
- Nonaka, I. (1994) A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.
- Nonaka, I., & Takeuchi, H. (2011). The Wise Leader. *Harvard Business Review*, 89(5), 58-67.
- Nonaka, I., & Von Krogh, G. (2009). Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory. *Organization Science*, 20(3), 635-652.
- Nonaka, I., Reinmoeller, P., & Senoo, D. (1998). The ‘ART’ of Knowledge: Systems to Capitalize on Market Knowledge. *European Management Journal*, 16(6), 673-684.
- Nonaka, I., Toyama, R., & Byosi re, P. (2001). A theory of organizational knowledge creation: Understanding the dynamic process of creating knowledge. In M. Dierkes, A. B. Antel, J. Child & I. Nonaka (Eds.), *Handbook of organizational learning and knowledge* (pp. 491-517). Oxford, UK: Oxford University Press.
- Nooteboom, B. (2009). *A Cognitive Theory of the Firm Learning, Governance and Dynamic Capabilities*. Cheltenham, UK: Edward Elgar Publishing.
- Norburn, D. (1989). The chief executive: A breed apart. *Strategic Management Journal*, 10(1), 1-15.
- Normann, R., & Ram rez, R. (1993). From value chain to value constellation: Designing interactive strategy. *Harvard Business Review*, 71(4), 65-77.

Novak, T. P., & Hoffman, D. L. (2009). The Fit of Thinking Style and Situation: New Measures of Situation-Specific Experiential and Rational Cognition. *Journal of Consumer Research*, 36(1), 56-72.

Nunnally, J. (1967) *Psychometric Methods*. New York: McGraw-Hill.

Nunnally, J. C. (1978) *Psychometric Theory* (2nd Edition). New York: McGraw-Hill.

Nutt, P. C. (2002). Making Strategic Choices. *Journal of Management Studies*, 39(1), 67-96.

OECD. (2011). *Technology Intensity Definition* OECD Directorate for Science, Technology and Industry ISIC REV. 3 Paris: Economic Analysis and Statistics Division, OECD.

Olson, B. J., Parayitam, S., & Bao, Y. (2007). Strategic Decision Making: The Effects of Cognitive Diversity, Conflict, and Trust on Decision Outcomes. *Journal of Management*, 33 (2), 196-222.

Olsson, O., & Frey, B. S. (2002). Entrepreneurship as Recombinant Growth Small Business Economics, 19(2), 69-80.

Onwuegbuzie, A. J. & Collins, K. M. T. (2007) A Typology Of Mixed Methods Sampling Designs In Social Science Research. *The Qualitative Report*, 12(2), 281-316.

Oppenheim, A. N. (2001). *Questionnaire Design, Interviewing And Attitude Measurement* (7 ed.). London, UK: Continuum.

Orlikowski, W. J. (1992). The Duality of Technology: Rethinking the Concept of Technology in Organizations. *Organization Science*, 3(3), 398-427.

Osborne, J. D., Stubbart, C. I., & Ramaprasad, A. (2001). Strategic Groups And Competitive Enactment: A Study Of Dynamic Relationships between mental modal And Performance. *Strategic Management Journal*, 22(5), 435-454.

Özbilgin, M. (2011). Continuity and change: improving our service to the BJM community and moving towards contextual studies of management. *British Journal of Management*, 22(1), 1-3.

Ozer, M. (2011). A Moderated Mediation Model of the Relationship Between Organizational Citizenship Behaviors and Job Performance. *Journal of Applied Psychology*, 96(6), 1328-1336.

Pacini, R., & Epstein, S. (1999). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. *Journal of Personality and Social Psychology*, 76(6), 972-987.

Papadakis, V. M., Lioukas, S. and Chambers, D. (1998), Strategic decision-making: the role of management and context. *Strategic Management Journal*, 19(2), 115-147.

Parackal, M. (2003) *Internet-Based & Mail Survey : A Hybrid Probabilistic Survey Approach*, Department Of Marketing, University Of Otago, Duniden, New Zealand.

Parikh, J., Neubauer, F., & Lank, A. G. (1994). *Intuition: The New Frontier of Management*. Oxford: Blackwell.

Park, B. I. (2010). What matters to managerial knowledge acquisition in international joint ventures? High knowledge acquirers versus low knowledge acquirers. *Asia Pacific journal of management* 27(1), 55-79.

Parker, R. (2001). The Myth of the Entrepreneurial Economy. *Work, Employment & Society*, 15(2), 239-253.

Park, K. M. (2007). Antecedents of Convergence and Divergence in Strategic Positioning: The Effects of Performance and Aspiration on the Direction of Strategic Change. *Organization Science*, 18(3), 386-402.

Park, S. (2011). The effects of entry timing and business model innovation on performance: the case of the global MP3 player market. *Asian Journal of Technology Innovation*, 19(1), 133-147.

Park, Y., Shin, J., & Kim, T. (2009). Firm size, age, industrial networking, and growth: a case of the Korean manufacturing industry. *Small Business Economics*, 35(2), 153-168.

Parvinen, P., Aspara, J., Hietanen, J., & Kajalo, S. (2011). Awareness, Action And Context-Specificity Of Blue Ocean Practices In Sales Management. *Management Decision*, 49(7-8), 1218-1234.

Patterson, A., Quinn, L., & Baron, S. (2012). The power of intuitive thinking: a devalued heuristic of strategic marketing. *Journal of Strategic Marketing*, 20(1), 35-44.

Patzelt, H., Knyphausen-Aufse, D. Z. & Nikolw, P. (2008) Top Management Teams, Business Models, And Performance Of Biotechnology Ventures: An Upper Echelon Perspective. *British Journal Of Management*, 19(3), 205–221.

Payne, J. W., & Bettman, J. R. (2004). Walking with the Scarecrow: The Information-processing Approach to Decision Research. In D. J. Koehler & N. Harvey (Eds.), *Blackwell Handbook of Judgment and Decision Making* (pp. 110-132). Carlton, Victoria , Australia: Blackwell Publishing.

Pelham, A. M., & Wilson, D. T. (1995). A Longitudinal Study of the Impact of Market Structure, Firm Structure, Strategy, and Market Orientation Culture on Dimensions of Small-Firm Performance. *Journal of the Academy of Marketing Science*, 24(1), 27-43.

Pennycook, G., Cheyne, J. A., Seli, P., Koehler, D. J., & Fugelsang, J. A. (2012). Analytic cognitive style predicts religious and paranormal belief. *Cognition*, 123(3), 335-346.

Penrose, E. T. (1952). Biological analogies in the theory of the firm. *American Economic Review*, 42, 804-819.

Penrose, E. T. (1955). Research on the business firm: limits to the growth and size of firms. *American Economic Review*, 45(2), 531-543.

Penrose, E.T. (1959) *The Theory of the Growth of the Firm*. Oxford: Blackwell.

Penrose, E. T. (1960). The growth of the firm. A case study: the Hercules Powder Company. *Business History Review*, 34(1), 1-23.

Penrose, E. T. (1995). *The Theory of the Growth of the Firm* (3ed.). Oxford, UK: Oxford University Press.

Perkmann, M., & Spicer, A. (2010). What are business models? Developing a theory of performative representations. In N. Phillips, G. Sewell & D. Griffiths (Eds.), *Research in the Sociology of Organizations: Technology and Organization* (Essays in Honour of Joan Woodward) (Vol. 29, pp. 265-275): Emerald Group Publishing Limited.

Perry, J. T., Chandler, G. N., & Markova, G. (2012). Entrepreneurial Effectuation: A Review and Suggestions for Future Research. *Entrepreneurship Theory and Practice*, 36(4), 837-861.

Peteraf, M. A. (1992) A Review Of Ghemawat's Commitment: The Dynamic Of Strategy. *Journal Of Economics & Management Strategy*, 1(3), 575-582.

Peteraf, M. A. (1993) The Cornerstones Of Competitive Advantage: A Resource-Based View. *Strategic Management Journal*, 14(3), 179-191.

Peteraf, M. A., & Bergen, M. E. (2003). Scanning Dynamic Competitive Landscapes: A Market-Based and Resource-Based Framework. *Strategic Management Journal*, 24(10), 1027-1041.

Peteraf, M., & Reed, R. (2007). Managerial discretion and internal alignment under regulatory constraints and change. *Strategic Management Journal*, 28(11), 1089-1112.

Peterson, E. R., Rayner, S. G., & Armstrong, S. J. (2009). Researching the psychology of cognitive style and learning style: Is there really a future? *Learning and Individual Differences*, 19(4), 518-523.

Peterson, R. A. (2005). Response construction in consumer behavior research. *Journal of Business Research*, 58(3), 348-353.

Petrunia, R. (2008). Does Gibrat's Law Hold? Evidence From Canadian Retail And Manufacturing Firms *Small Business Economics*, 30(2), 201-214.

Petter, S., Straub, D. & Rai, A. (2007) Specifying Formative Constructs In Information Systems Research. *MIS Quarterly*, 31(4), 623-656.

Pettigrew, A. M. (1992). On studying managerial elites. *Strategic Management Journal*, 13(S2), 163-182.

Pfeffer, J. & Salancik, G. R. (1978) *The External Control of Organizations: A Resource Dependence Perspective*. . New York, NY, Harper and Row.

Phelan, S. E. & Lewin, P. (2000) Arriving At A Strategic Theory Of The Firm. *International Journal Of Management Reviews*, 2(4), 305-323.

Phelps, R., Adams, R., & Bessant, J. (2007). Life Cycles of Growing Organizations: A Review With Implications For Knowledge And Learning. *International Journal of Management Reviews*, 9(1), 1-30.

Phillips, B. D., & Kirchhoff, B. A. (1989). Formation, growth and survival; small firm dynamics in the US economy. *Small Business Economics*, 1(1), 65-74.

Phillips, L. D. (2011). What is strategy? *Journal of the Operational Research Society*, 62(5), 926-929.

Pierce, L., Boerner, C. S. & Teece, D. J. (2008) Dynamic Capabilities, Competence And The Behavioral Theory Of The Firm. In Teece, D. (Ed.) *Technological Know-How, Organizational Capabilities, And Strategic Management Business Strategy And Enterprise Development In Competitive Environments*. World Scientific Publishing Co.

Ping Jr., R. A. (2004) On Assuring Valid Measures For Theoretical Models Using Survey Data. *Journal Of Business Research*, 57(2), 125-141.

Piperopoulos, P. (2010). Tacit Knowledge and Emotional Intelligence: The ‘Intangible’ Values of SMEs. *Strategic change*, 19(1), 125–139.

Pissarides, F. (1999). Is lack of funds the main obstacle to growth? EBRD’s experience with small- and medium sized businesses in Central and Eastern Europe. *Journal of Business Venturing*, 14(5-6), 519-539.

Pitelis, C. (2005) Edith Penrose, Organizational Economics and Business Strategy: An Assessment and Extension. *Managerial and Decision Economics*, 26(1), 67–82.

Pitelis, C. (2009). Edith Penrose's ‘The Theory of the Growth of the Firm’ Fifty Years Later. Working Paper Series: Judge Business School and Queens’ College, University of Cambridge, Cambridge, UK.

Pitelis, C. N. & Teece, D. J. (2009) The (new) nature and essence of the firm”. *European Management Review*, 6(1), 5-15.

Pitelis, C. N. (2007). A Behavioral Resource-Based View of the Firm: The Synergy of Cyert and March (1963) and Penrose (1959). *Organization Science*, 18(3), 478-490.

Pitt, M., & Clarke, K. (1999). Competing on Competence: A Knowledge Perspective on the Management of Strategic Innovation Technology Analysis & Strategic Management, 11(3), 301-316.

Plambeck, N. (2012). The development of new products: The role of firm context and managerial cognition. *Journal of Business Venturing*, 27(6), 607-621.

Plambeck, N., & Weber, K. (2010). When The Glass Is Half Full And Half Empty: CEOs’ Ambivalent Interpretations Of Strategic Issues. *Strategic Management Journal*, 31(7), 689–710.

Plé, L., Lecocq, X., & Angot, J. (2010). Customer-Integrated Business Models : A Theoretical Framework. *M@n@gement*, 13(4), 226-265.

Podsakoff, N. P., Shen, W. & Podsakoff, P. M. (2006) The Role Of Formative Measurement Models In Strategic Management Research: Review, Critique, And Implications For Future Research. In David J. Ketchen, J. & Bergh, D. D. (Eds.) *Research Methodology In Strategy And Management*, Volume 3, . Amsterdam, Elsevier.

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531-544.

Pohle, G., & Chapman, M. (2006). IBM's global CEO report 2006: business model innovation matters. *Strategy & Leadership*, 34(5), 34-40.

Polanyi, M. (1962) *Personal Knowledge: Toward a Post- Critical Philosophy*, New York. Harper Torchbooks

Polanyi, M. (1967) *The Tacit Dimension*, Routledge And Keon Paul, London.

Porac, J. F., Thomas, H., & Baden-Fuller, C. (1989). Competitive groups as cognitive communities: The case of Scottish knitwear manufacturers, *Journal of Management Studies*, 26(4),397–416.

Porac, J. F., Thomas, H., & Baden-Fuller, C. (2011). Competitive Groups as Cognitive Communities: The Case of Scottish Knitwear Manufacturers Revisited. *Journal of Management Studies*, 48(3), 646-664.

Porter, M. (1985). Technology and competitive advantage *Journal of Business Strategy*, 5(3), 60-78.

Porter, M. E. (1979) How Competitive Forces Shape Strategy. *Harvard Business Review*, 57(2), 137-145.

Porter, M. E. (1981) The Contributions Of Industrial Organization To Strategic Management. *Academy Of Management Review*, 6(4), 609-620.

Porter, M. E. (1985) *Competitive Advantage: Creating And Sustaining Superior Performance*. Free Press, New York.

Porter, M. E. (1991). Towards a Dynamic Theory of Strategy. *Strategic Management Journal*, 12(Special Issue: Fundamental Research Issues in Strategy and Economics), 95-117.

Porter, M. E. (1996). What is Strategy? *Harvard Business Review*, 74(6), 61-78.

Porter, M. E. (2001) *Strategy And The Internet*. *Harvard Business Review*, 79(3), 62-78.

Porter, M. E., (1980) *Competitive Strategy: Techniques For Analyzing Industries And Competitors*. Free Press, New York.

Potter, J. (2008). Naturalistic Data. In L. M. Given (Ed.), *The SAGE Encyclopedia Of Qualitative Research Methods* (Vol. 1&2, Pp. 546-547). Thousand Oaks: Sage.

Powell, W. W. (1998). Learning from collaboration: Knowledge and networks in the biotechnology and pharmaceutical industries. *California Management Review*, 40(3), 228-240.

Powell, W. W., & Colyvas, J. A. (2008). Microfoundations of institutional theory In R. Greenwood, C. Oliver, K. Sahlin & R. Suddaby (Eds.), *The Sage Handbook of Organizational Institutionalism* (pp. 276-298). London, UK: Sage.

Prahalad, C. K. (2004). The Blinders of Dominant Logic. *Long Range Planning*, 37(2), 171-179.

Prahalad, C. K., & Bettis, R. A. (1986). The Dominant Logic: A New Linkage between Diversity and Performance. *Strategic Management Journal*, 7(6), 485-501.

Pratt, J. (1980). The effects of personality on a subject's information process: A comment. *The Accounting Review*, 55(3), 501-506.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions. *Multivariate Behavioral Research*, 42(1), 185-227.

Premkumar, G., Ramamurthy, K., & Saunders, C. S. (2005). Information processing view of organizations: An exploratory examination of fit in the context of interorganizational relationships. *Journal of Management Information Systems*, 22(1), 257-294.

Presutti, M., Boari, C. & Majocchi, A. (2011) The Importance Of Proximity For The Start-Ups' Knowledge Acquisition And Exploitation. *Journal Of Small Business Management*, 49(3), 361-389.

Pretz, J. E., Totz, K. S., & Kaufman, S. B. (2010). The effects of mood, cognitive style, and cognitive ability on implicit learning. *Learning and Individual Differences*, 20(3), 215-219.

Previde, G. P., & Carli, M. (1987). Adaption-Innovation Typology And Right-Left Hemispheric Preferences. *Personality and Individual Differences*, 8(5), 681-686.

Priem, R. L. (1994). Executive Judgment, Organizational Congruence, and Firm Performance. *Organization Science*, 5(3), 421-437.

Priem, R. L., & Butler, J. E. (2001). Is The Resource-Based "View" A Useful Perspective For Strategic Management Research? *Academy Of Management Review*, 26(1), 22-40.

Puccio, G.J., Treffinger, D.J. and Talbot, R.J. (1995). Exploratory examination of relationships between creativity styles and creative processes. *Creativity Research Journal*, 8(2), 157-172.

Rajagopalan, N., & Finkelstein, S. (1992). Effects of Strategic Orientation and Environmental Change On Senior Management Reward Systems. *Strategic Management Journal*, 13(S1), 127-142.

Rayner, S., & Riding, R. (1997). Towards a categorisation of cognitive styles and learning styles. *Educational Psychology*, 17(1), 5-28.

Raynor, M. E. (2007). *The Strategy Paradox: Why Committing to Success Leads to Failure (And What to do About It)*. New York: Crown Business.

Real, J. C., Roldán, J. L., & Leal, A. (2012). From Entrepreneurial Orientation and Learning Orientation to Business Performance: Analysing the Mediating Role of Organizational Learning and the Moderating Effects of Organizational Size. *British Journal of Management*, In press.

Reber, A. S. (1967). Implicit learning of artificial grammars. *Journal of Verbal Learning and Verbal Behavior*, 6(6), 855-863.

Reckwitz, A. (2002). Toward a Theory of Social Practices: A Development in Culturalist Theorizing. *European Journal of Social Theory*, 5(2), 243-263.

Reed, K. K., Lubatkin, M., & Srinivasan, N. (2006). Proposing and Testing an Intellectual Capital-Based View of the Firm. *Journal of Management Studies*, 43(4), 867-893.

Reeves, M., & Deimler, M. (2011). Adaptability: The New Competitive Advantage. *Harvard business review*, 89(7/8), 134-141.

Reinartz, W., Haenlein, M. & Henseler, J. (2009) An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*, 26(4), 332-344.

Reinhard, M., & Sporer, S. (2008). Verbal and nonverbal behavior as a basis for credibility attribution: The impact of task involvement and cognitive capacity. *Journal of Experimental Social Psychology*, 44(3), 477-488.

Rerup, C., & Feldman, M. S. (2011). Routines as A Source Of Change In Organizational Schemata: The Role Of Trial-And-Error Learning. *Academy of Management Journal*, 54(3), 577-610.

Revilla, E., Prieto, I. M., & Prado, a. B. R. (2010). Knowledge Strategy: Its Relationship to Environmental Dynamism and Complexity in Product Development. *Knowledge and Process Management*, 17(1), 36-47.

Rhoads, K., Townsend, D., & Busenitz, L. (2011). Novel Business Models and Radical Technologies Under Capital Constraints: Complements Or Liabilities? *Frontiers of Entrepreneurship Research*, 31(12), Article 3, Available at: <http://digitalknowledge.babson.edu/fer/vol31/iss12/33>.

Ricardo, D. (1817). *Principles of Political Economy and Taxation*. London, U.K.: Murray.

Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring Organizational Performance: Towards Methodological Best Practice. *Journal of Management*, 35(3), 718-804.

Richards, L. (1999). *Using NVivo in Qualitative Research*. London, SAGE Publications.

- Roberts, G., Fletcher, J. M., Stuebing, K. K., Barth, A. E., & Vaughn, S. (2013). Treatment effects for adolescent struggling readers: An application of moderated mediation. *Learning and Individual Differences*, 23(1), 10-21.
- Roberts, P. W., & Eisenhardt, K. M. (2003). Austrian insights on strategic organization: from market insights to implications for firms. *Strategic Organization*, 1(3), 345-352.
- Roberts, P. W., Klepper, S., & Hayward, S. (2011). Founder backgrounds and the evolution of firm size. *Industrial and Corporate Change*, 20(6), 1515-1538.
- Robey, D., & Taggart, W. (1981). Measuring Managers' Minds: The Assessment of Style in Human Information Processing. *Academy of Management Review*, 6(3), 375-383.
- Robey, D., & Taggart, W. (1982). Human Information Processing in Information and Decision Support Systems. *MIS Quarterly*, 6(2), 61-73.
- Rocco, T. S., Bliss, L. A., Gallagher, S. & Pérez-Prado, A. (2003) Taking The Next Step: Mixed Methods Research In Organizational System. *Information Technology, Learning, And Performance Journal*, 21(1), 19-29.
- Rogelberg, S. G., Conway, J. M., Sederburg, M. E., Spitzmuller, C., Aziz, S., & Knight, W. E. (2003). Profiling Active And Passive Nonrespondents To An Organizational Survey, *Journal Of Applied Psychology*, 88(6), 1104-1114.
- Romer, P. M. (1987). Growth Based on Increasing Returns Due to Specialization. *American Economic Review*, 77(2), 56-62.
- Romer, P. M. (1994). The Origins of Endogenous Growth. *Journal of Economic Perspectives*, 8(1), 3-22.
- Rond, M. D., & Thietart, R.-A. (2007). Choice, Chance, and Inevitability in Strategy. *Strategic Management Journal*, 28(5), 535-551.
- Rosch, E. (1975). Cognitive reference points. *Cognitive Psychology*, 7(4), 532-547.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing* 26(4), 441-457.
- Rosier, E. R. (2011). Marketing strategy in a turbulent environment,. *Journal of Strategic Marketing*, 19(5), 413-419.
- Ross Jr., W. T., & Robertson, T. S. (1991). Information Processing and Innovative Choice. *Marketing Letters*, 2(2), 87-97.
- Roulston, K. J. (2008). Theoretical Memoing. In L. M. Given (Ed.), *The Sage Encyclopedia Of Qualitative Research Methods* (Vol. 1&2, Pp. 873-874). Thousand Oaks: Sage.
- Rouse, M. J., & Daellenbach, U. S. (1999). Rethinking Research Methods for the Resource-Based Perspective: Isolating Sources of Sustainable Competitive Advantage. *Strategic Management Journal*, 20(5), 487-494.

Rouse, M. J., & Daellenbach, U. S. (2002). More Thinking on Research Methods for the Resource-Based Perspective. *Strategic Management Journal*, 23(10), 963-967.

Rousseau, D. M. (2011). Reinforcing the Micro/Macro Bridge: Organizational Thinking and Pluralistic Vehicles. *Journal of Management*, 37(2), 429-442.

Rousseau, D. M., Manning, J. & Denyer, D. (2008) Evidence In Management And Organizational Science: Assembling The Field's Full Weight Of Scientific Knowledge Through Syntheses. *The Academy Of Management Annals*, 2, 475 — 515.

Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441-457.

Rowlinson, M., Booth, C., Clark, P., Delahaye, A., & Procter, S. (2010). Social Remembering and Organizational Memory. *Organization Studies*, 31(1), 69–87.

Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation Analysis in Social Psychology: Current Practices and New Recommendations. *Social and Personality Psychology Compass*, 5(6), 359-371.

Rugman, A. M. & Verbeke, A. (2002) Edith Penrose's Contribution To The Resource-Based View Of Strategic Management. *Strategic Management Journal*, 23(8), 769–780.

Rugman, A. M., & Verbeke, A. (2004). A Final Word On Edith Penrose. *Journal of Management Studies*, 41(1), 205-217.

Rumelt, R. (1984). Towards a Strategic Theory of the Firm. In R. Lamb (Ed.), *Competitive Strategic Management* (pp. 556-570). Englewood Cliffs, NJ: Prentice-Hall.

Rumelt, R. (1997). Towards A Strategic Theory of the Firm in N. J. Foss (Ed.), *Resources, Firms, and Strategies: A Reader in the Resource-Based Perspective* (pp. 131-145). Oxford, UK: Oxford University Press.

Rumelt, R. P., Schendel, D., & Teece, D. J. (1991). Strategic Management and Economics. *Strategic Management Journal*, 12(1), 5-29.

Russ-Eft, D., & Hoover, A. L. (2005). Experimental And Quasi-Experimental Designs. In R. A. Swanson & E. F. Holton Iii (Eds.), *Research In Organizations: Foundations And Methods Of Inquiry* (Pp. 75-96). San Francisco, California: Berrett-Koehler

Sabatier, V., Craig-Kennard, A., & Mangematin, V. (2012). When technological discontinuities and disruptive business models challenge dominant industry logics: Insights from the drugs industry. *Technological Forecasting and Social Change*, 79(5), 949-962.

Sabherwal, R., Hirschheim, R., & Goles, T. (2001). The Dynamics of Alignment: Insights from a Punctuated Equilibrium Model. *Organization Science*, 12(2), 179-197.

Sadler-Smith, E. (1999). Intuition-analysis cognitive style and learning preferences of business and management students A UK exploratory study. *Journal of Managerial Psychology*, 14(1), 26-38.

Sadler-Smith, E. (2004) Cognitive Style and the Management of Small and Medium-Sized Enterprises. *Organization Studies*, 25(2), 155-181.

Sadler-Smith, E. (2006) Intuition, Neuroscience, Decision Making And Learning. Some Personal Reflections Written Following The Meeting Of The Society For Organizational Learning-Uk At The London School Of Economics, June 23rd, 2006. Triarchy Press, 1-6.

Sadler-Smith, E., & Badger, B. (1998). Cognitive style, learning and innovation. *Technology Analysis & Strategic Management*, 10(2), 247-266.

Sadler-Smith, E., & Shefy, E. (2004). The Intuitive Executive: Understanding and Applying 'Gut Feel' in Decision-Making *Academy of Management Executive*, 18(4), 76-91.

Sadler-Smith, E., & Sparrow, P. R. (2008). Intuition in organizational decision making. In G. P. Hodgkinson & W. H. Starbuck (Eds.), *The Oxford Handbook of organizational decision making* (pp. 305-324). Oxford, New York: Oxford University Press.

Sadler-Smith, E., Allinson, C. W., & Hayes, J. (2000). Learning Preferences and Cognitive Style : Some Implications for Continuing Professional Development. *Management Learning*, 31(2), 239-256.

Sadler-Smith, E., Hodgkinson, G. P., & Sinclair, M. (2008). A matter of feeling? The role of intuition in entrepreneurial decision making and behaviour. In W. J. Zerbe, C. E. J. Hartel & N. M. Ashkanasy (Eds.), *Research on Emotion in Organizations: Emotions, Ethics and Decision Making* (Vol. 4, pp. 35-55). Bingley: Emerald Group Publishing.

Sadler-Smith, E., Spicer, D. P., & Chaston, I. (2001). Learning Orientations and Growth in Smaller Firms. *Long Range Planning*, 34(2), 139-158.

Sadler-Smith, E., Spicert, D. R., & Tsang, F. (2000). Validity of the Cognitive Style Index: Replication and Extension. *British Journal of Management*, 11(2), 175-181.

Salant, P., & Dillman, D. (1994). *How to Conduct Your Own Survey*. New York: Wiley.

Sale, J. E. M., Lohfeld, L. H. & Brazil, K. (2002) Revisiting the Quantitative-Qualitative Debate: Implications for Mixed-Methods Research. *Quality & Quantity*, 36(1), 43-53.

Salipante, P., Notz, W. & Bigelow, J. (1982) A matrix Approach To Literature Review. In B. M. Staw & L. L. Cummings (Eds.), *Research In Organizational Behavior* (Pp. 321-348). Greenwich, Ct: Jai Press.

Samuels, R. (2009). The Magical Number Two, Plus or Minus: Dual Process Theory as a Theory of Cognitive Kinds. In F. K. & J. Evans (Eds.), *In Two Minds: Dual Process and Beyond*. London, UK.

Sanchez, P., & Ricart, J. E. (2010). Business model innovation and sources of value creation in low-income markets. *European Management Review*, 7(3), 138-154.

Sandell, R. (2001). Organizational Growth and Ecological Constraints: The Growth of Social Movements in Sweden, 1881 to 1940. *American Sociological Review*, 66(5), 672-693.

Santos, F. M., & Eisenhardt, K. M. (2005). Organizational Boundaries And Theories Of Organization. *Organization Science*, 16(5), 491-508.

Santos, J., Spector, B., & Van Der Heyden, L. (2009). Toward a theory of business model innovation within incumbent firms. Working paper series, INSEAD. 2009/16/ST/TOM

Sapienza, H. J., Autio, E., George, G., & Zahra, S. (2006). A capabilities perspective on the effects of early internationalization on firm survival and growth. *Academy of Management Review*, 31(4), 914-933.

Saracho, O.N., (1998). Research directions for cognitive style and education. *International Journal of Educational Research* 29(3), 287–290.

Sarker, S., & Lee, A. S. (2002). Using a Positivist Case Research Methodology to Test Three Competing Theories-in-Use of Business Process Redesign. *Journal of the Association for Information Systems*, 2(1), 1-72.

Satorra, A., & Bentler, P. M. (1994). Corrections to test statistics and standard errors in covariance structure analysis. In A. von Eye & C. C. Clogg (Eds.), *Latent variables analysis: Applications for developmental research* (pp. 399-419). Thousand Oaks, CA: Sage.

Sauer, P. L., & Dick, A. (1993). Using Moderator Variables In Structural Equation Models. In L. McAlister & M. L. Rothschild (Eds.), *Advances in Consumer Research* (Vol. 20, pp. 636-640). Provo, UT: Association for Consumer Research.

Sauer, P. L., & Dick, A. (1993). Using Moderator Variables In Structural Equation Models. *Advances in Consumer Research*, 20(1), 636-640.

Sauermann, H., & Roach, M. (2013). Increasing web survey response rates in innovation research: An experimental study of static and dynamic contact design features. *Research Policy*, 42(1), 273-286.

Saunders, M., P. Lewis, and A. Thornhill. (2007) *Research Methods for Business Students*. Prentice Hall: London.

Scandura, T. A., & Williams, E. A. (2000). Research Methodology in Management: Current Practices, Trends, And Implications For Future Research. *Academy Of Management Journal*, 43(6), 1248-1264.

Scbindebutte, M., Morris, M. H., & Kocak, A. (2008). Understanding market-driving behavior: The role of entrepreneurship. *Journal of Small Business Management*, 46(1), 4-26.

Schafer, J. L., & Graham, J. W. (2002). Missing Data: Our View of the State of the Art. *Psychological Methods*, 7(1), 147–177.

Schaninger, C. M., & Sciglimpaglia, D. (1981). The Influence of Cognitive Personality Traits and Demographics on Consumer Information Acquisition. *Journal Of Consumer Research*, 8(2), 208-216.

Schildt, H. A., Maula, M. V. J., & Keil, T. (2005). Explorative and Exploitative Learning from External Corporate Ventures. *Entrepreneurship Theory and Practice*, 29(4), 493-515.

Schilke, O., & Goerzen, A. (2010). Alliance Management Capability: An Investigation of the Construct and Its Measurement. *Journal of Management*, 36(5), 1192-1219.

Schivardi, F., & Schneider, M. (2008). Strategic experimentation and disruptive technological change. *Review of Economic Dynamics*, 11(2), 386-412.

Schlegelmilch, B. B., Diamantopoulos, A., & Kreuz, P. (2003). Strategic innovation: the construct, its drivers and its strategic outcomes. *Journal of Strategic Marketing*, 11(2), 117-132.

Schmidt, T. (2010). Absorptive Capacity: One Size Fits All? A Firm-level Analysis of Absorptive Capacity for Different Kinds of Knowledge. *Managerial and Decision Economics*, 31(1), 1-18.

Schneider, S., & Spieth, P. (2013). Business Model Innovation: Towards an Integrated Future Research Agenda. *International Journal of Innovation Management*, 17(01), 1340001.

Schonlau, M., Fricker Jr, R. D. & Elliott, M. N. (2002) *Conducting Research Surveys Via E-Mail And The Web*, Santa Monica, California, RAND.

Schreyogg, G., & Sydow, J. (2010). Organizing for fluidity? Dilemmas of new organizational forms. *Organization Science*, 21(6), 1251-1262.

Schumacker, R. E., & Lomax, R. G. (2004). *A Beginner's Guide to Structural Equation Modeling* (2 ed.). New Jersey: Lawrence Erlbaum.

Schumpeter, J. A. (1934). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.

Schwab, D. P. (2005). *Research Methods for Organizational Studies* (2 Ed.). New Jersey: Lawrence Erlbaum.

Schwab, K., & Sala-i-Martin, X. (2012). *The Global Competitiveness Report 2012-2013*: World Economic Forum, Columbia University.

Schwenk, C. R. (1986) Information, Cognitive Biases, And Commitment To A Course Of Action *Academy Of Management Review*, 11(2), 298-310.

Schwenk, C. R. (1988) The Cognitive Perspective On Strategic Decision Making. *Journal Of Management Studies*, 25(1), 41-55.

Seddon, P. B., Lewis, G. P., Freeman, P., & Shanks, G. (2004). The Case for Viewing Business Models As Abstractions Of Strategy. *Communications of the Association for Information Systems*, 13, 427- 442.

Seger, C. A. (1994). Implicit Learning. *Psychological Bulletin*, 115(2), 163-196.

Seidman, I. (2006). *Interviewing As Qualitative Research: A Guide For Researchers In Education And The Social Sciences* (3 ed.). New York: Teachers College Press.

Seleim, A. A. S., & Khalil, O. E. M. (2011). Understanding the knowledge management-intellectual capital relationship: a two-way analysis. *Journal of Intellectual capital*, 12(4), 586-614.

Selznick, P. (1948). Foundations of the Theory of Organization. *American Sociological Review*, 13(1), 25-35.

Senior, C., Lee, N., & Butler, M. (2010). Organizational Cognitive Neuroscience. *Organization Science*, 22(3), 804-815.

Sepulveda, F., & Gabrielsson, M. (2013). Network development and firm growth: A resource-based study of B2B Born Globals. *Industrial Marketing Management*. doi: 10.1016/j.indmarman.2013.01.001

Serenko, A., Bontis, N., Booker, L., Sadeddin, K., & Hardie, T. (2008). A Scientometric Analysis Of Knowledge Management And Intellectual Capital Academic Literature (1994-2008). *Journal Of Knowledge Management*, 14(1), 3-23.

Sethi, S. P. (1979). A Conceptual Framework for Environmental Analysis of Social Issues and Evaluation of Business Response Patterns. *Academy of Management Review*, 4(1), 63-74.

Sexton, D. L. (1997). Entrepreneurship research needs and issues. In D. L. Sexton & R. W. Smilor (Eds.), *Entrepreneurship 2000* (pp. 401-408). Upstart Publishing Company: Chicago, IL.

Sexton, D. L., & Bowman-Upton, N. (1990). Female and male entrepreneurs: Psychological characteristics and their role in gender-related discrimination. *Journal of Business Venturing*, 5(1), 29-36.

Shams, S. M. R. (2012). Business management replication from established market to emerging market: An analysis of the Indian Premier League from the Bangladesh market perspective. *International Journal of Research Studies in Management*, 1(1), 47-58.

Shane, S. & Venkataraman, S. (2000) The Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, 25(1), 217-226.

Shane, S. (2000). Prior Knowledge and the Discovery of Entrepreneurial Opportunities. *Organization Science*, 11(4), 448-469.

Shane, S. A. (1996). Hybrid Organizational Arrangements and Their Implications for Firm Growth and Survival: A Study of New Franchisors. *Academy of Management Journal*, 39(1), 216-234.

Shanks, D. R. (2005). Implicit Learning. In K. Lamberts & R. L. Goldstone (Eds.), *Handbook of Cognition* (pp. 202-220). Thousand Oaks, CA: Sage.

Shapiro, S., & Spence, M. T. (1997). Managerial intuition: A conceptual and operational framework. *Business Horizons*, 40(1), 63-68.

Sharfman, M. P., & Dean Jr., J. W. (1991). Conceptualizing and Measuring the Organizational Environment: A Multidimensional Approach. *Journal of Management*, 17(4), 681-700.

Sheehan, N. T., & Foss, N. J. (2007). Enhancing the prescriptiveness of the resource-based view through Porterian activity analysis. *Management Decision*, 45(3), 450-461.

Shepherd, D., & Wiklund, J. (2009). Are We Comparing Apples With Apples or Apples With Oranges? Appropriateness of Knowledge Accumulation across Growth Studies. *Entrepreneurship: Theory and Practice*, 33(1), 105-123.

Sheskin, D. J. (2004). *Handbook of Parametric and Nonparametric Statistical Procedures* (3 ed.). Florida, USA: Chapman & Hall/CRC.

Shin, J., & McClomb, G. E. (1998). Top Executive Leadership and Organizational Innovation. *Administration in Social Work*, 22(3), 1-21.

Shook, C. L., Ketchen, D. J., Hult, G. T. M. & Kacmar, K. M. (2004) An assessment of the use of structural equation modeling in strategic management research. *Strategic Management Journal*, 25(4), 397-404.

Shrivastava, P., & Schneider, S. (1984). Organizational Frames of Reference. *Human Relations*, 37(10), 795-809.

Shu, C., Page, A. L., Gao, S., & Jiang, X. (2012). Managerial Ties and Firm Innovation: Is Knowledge Creation a Missing Link? *Journal Of Product Innovation Management*, 29(1), 125-143.

Siegel, D. S., & Renko, M. (2012). The role of market and technological knowledge in recognizing entrepreneurial opportunities. *Management Decision*, 50(5), 797-816.

Siegel, R., Siegel, E., & Macmillan, I. C. (1993). Characteristics distinguishing high-growth ventures. *Journal of Business Venturing*, 8(2), 169-180.

Siggelkow, N. (2002). Evolution toward Fit *Administrative Science Quarterly*, 47(1), 125-159.

Silk, R. D., Lintott, J. W., & Silk, C. M. (2011). *Managing Foundations and Charitable Trusts: Essential Knowledge, Tools, and Techniques for Donors and Advisors* New York, NY: John Wiley & Sons.

Simon, H. A. (1947) *Administrative Behavior: A Study Of Decision-Making Processes In Administrative Organization*. New York: Macmillan.

Simon, H. A. (1955). A behavioral model of rational choice. *Quarterly Journal of Economics*, 69(1), 99-118.

Simon, H. A. (1957) *Models Of Man: Social And Rational*. New York: Wiley.

Simon, H. A. (1961). *Administrative behavior* (2 ed.). New York: Macmillan.

Simon, H. A. (1973). The structure of ill structured problems. *Artificial Intelligence*, 4(3-4), 181-201.

Simon, H. A. (1978). Information processing theory of human problem solving *Handbook of learning and cognitive processes* (pp. 271-295). Oxford, England: Lawrence Erlbaum.

Simon, H. A. (1979). Rational decision-making in business organizations. *American Economic Review*, 69(4), 493-513.

Simon, H. A. (1983). *Reason in Human Affairs*. Stanford, CA: Stanford University Press.

Simon, H. A. (1987) Making Management Decisions: The Role Of Intuition And Emotion. *Academy Of Management Executive*, February, 1(1), 57-64.

Simon, H. A. (1991). Bounded Rationality And Organizational Learning. *Organization Science*, 2(1), 125-134.

Simon, M., Houghton, S. M., & Lumpkin, G. T. (2007). Making Lemonade Out Of Lemons: The Role Of Information Processing And Strategy In Managing “Misperceived” Start-Ups. In G. T. Lumpkin & J. A. Katz (Eds.), *Entrepreneurial Strategic Processes: Advances In Entrepreneurship, Firm Emergence And Growth* (Vol. 10, Pp. 131–157). San Diego, CA: Elsevier

Simsek, Z. & Heavey, C. (2011). The Mediating Role Of Knowledge-Based Capital For Corporate Entrepreneurship Effects On Performance: A Study Of Small To Medium-Sized Firms. *Strategic Entrepreneurship Journal*, 5(1), 81–100.

Simsek, Z. (2007). CEO Tenure And Organizational Performance: An Intervening Model. *Strategic Management Journal*, 28(6), 653–662.

Simsek, Z. & Veiga, J. F. (2001) A Primer On Internet Organizational Surveys. *Organizational Research Methods*, 4(3), 218-235.

Simsek, Z. & Veiga, J. F. (2000) The Electronic Survey Technique: An Integration And Assessment. *Organizational Research Methods*, 3(1), 93-115.

Simsek, Z., Heavey, C., & Veiga, J. J. F. (2010). The Impact Of CEO Core Self-Evaluation On The Firm’s Entrepreneurial Orientation. *Strategic Management Journal*, 31(1), 110–119.

Simsek, Z., Veiga, J. F., & Lubatkin, M. H. (2005). challenges and guidelines for conducting internet-based survey in strategic management research In J. David J. Ketchen & D. D. Bergh (Eds.), *research methodology in strategy and management* , Volume 2 (pp. 179,196). Amsterdam, Netherland: Elsevier.

Simsek, Z., Veiga, J. F., Lubatkin, M. H., & Dino, R. N. (2005). Modeling the Multilevel Determinants of Top Management Team Behavioral Integration. *Academy of Management Journal*, 48(1), 69-84.

Sinclair, M., & Ashkanasy, N. M. (2005). Intuition: Myth or a Decision-making Tool? *Management Learning*, 36(3), 1350-5076.

Sinfield, J. V., Calder, E., McConnell, B., & Colson, S. (2012). How to Identify New Business Models. *MIT Sloan Management Review*, 53(2), 85-90

Singh, J. V. & Lumsden, C. J. (1990) Theory and Research in Organizational Ecology. *Annual Review of Sociology*, 16, 161-195.

Singh, J., Hansen, M.T., Podolny, J., 2010. The world is not small for everyone: inequity in searching for knowledge in organizations. *Management Science* 56 (9), 1415–1438.

Sirmon, D. G., Hitt, M. A. & Ireland, R. D. (2007) Managing Firm Resources In Dynamic Environments To Create Value: Looking Inside The Black Box. *Academy Of Management Review*, 32(1), 273–292.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource Orchestration to Create Competitive Advantage: Breadth, Depth, and Life Cycle Effects. *Journal of Management* 37(5), 1390-1412.

Sivo, S. A., Fan, X. T., Witta, E. L. & Willse, J. T. (2006) The Search For ‘Optimal’ Cut Off Properties: Fit Index Criteria In Structural Equation Modeling. *The Journal Of Experimental Education*, 74(3), 267-289.

Slater, S. F., & Atuahence-Gima, K. (2004). conducting survey research in strategic management. In J. David J. Ketchen & D. D. Bergh (Eds.), *research methodology in strategy and management* (Vol. 1, pp. 227-249). Amsterdam: Elsevier.

Slater, S. F., & Narver, J. C. (1995). Market orientation and the learning organization. *Journal of Marketing*, 59(3), 63-74.

Slater, S. F., & Olson, E. M. (2000). Strategy Type and Performance: The Influence of Sales Force Management. *Strategic Management Journal*, 21(8), 813-829.

Slevin, D. P., & Covin, J. G. (1997). Strategy formation patterns, performance, and the significance of context. *Journal of Management*, 23(2), 189-209.

Slywotzky, A., & Wise, R. (2003). *How to Grow When Markets Don't*. New York: Time Warner.

Smallbone, D., Leig, R., & North, D. (1995). The characteristics and strategies of high growth SMEs. *International Journal of Entrepreneurial Behaviour & Research*, 1(3), 44-62.

Smircich, L., & Stubbart, C. (1985). Strategic Management in an Enacted World. *Academy of Management Review*, 10(4), 724-736.

Smith, E. R., & DeCoster, J. (1998). Knowledge acquisition, accessibility, and use in person perception and stereotyping: Simulation with a recurrent connectionist network. *Journal of Personality and Social Psychology*, 74(1), 21-35.

Smith, K. G., & Hitt, M. A. (2005). The Process of Developing Management Theory. In K. G. Smith & M. A. Hitt (Eds.), *Great Minds in Management: The Process Of Theory Development* (pp. 1-8). New York: Oxford University Press.

Smith, K. G., Mitchell, T. R., & Summer, C. (1985). Top Level Management Priorities In Different Stages of The Organization Life. *Academy Of Management Journal*, 28(4), 799-820.

Smith, M. (2008). Differences between family and non-family SMEs: A comparative study of Australia and Belgium. *Journal Of Management & Organization*, 14(1), 40-58.

Smith, W. K., & Lewis, M. W. (2011). Toward a Theory of Paradox: A Dynamic Equilibrium Model of Organizing. *Academy of Management Review*, 36(2), 381 - 403.

Sobh, R., & Perry, C. (2006). Research design and data analysis in realism research. *European Journal of Marketing*, 40(11/12), 1194-1209.

Song, M., Droge, C., Hanvanich, S., & Calantone, R. (2005). Marketing And Technology Resource Complementarity: An Analysis Of Their Interaction Effect In Two Environmental Contexts. *Strategic Management Journal*, 26(3), 259–276.

Song, M., Wang, T., & Parry, M. E. (2010). Do market information processes improve new venture performance? *Journal of Business Venturing*, 25(6), 556-568

Sonpar, K., & Golden-Biddle, K. (2008). Using Content Analysis To Elaborate Adolescent Theories Of Organization. *Organizational Research Methods*, 11(4), 795-814.

Sood, A., & Tellis, G. J. (2011). Demystifying Disruption: A New Model for Understanding and Predicting Disruptive Technologies. *Marketing Science* 30(2), 339-354.

Sosna, M., Trevinyo-Rodriguez, R. N., & Velamuri, S. R. (2010). Business Model Innovation through Trial-and-Error Learning The Naturhouse Case. *Long Range Planning*, 43(2-3), 383-407.

Souder, D., Simsek, Z., & Johnson, S. G. (2012). The differing effects of agent and founder CEOs on the firm's market expansion. *Strategic Management Journal*, 33(1), 23–41.

Specht, P. H. (1993). Munificence And Carrying Capacity Of The Environment And Organization Formation. *Entrepreneurship: Theory And Practice*, 17(2), 77-86.

Spector, Y. (2011). Theory of constraint methodology where the constraint is the business model. *International Journal of Production Research*, 49(11), 3387 - 3394.

Spender, J. C. (1989). *Industry Recipes: An Inquiry into the Nature And Source Of Managerial Judgment*. Cambridge, MA: Blackwell.

Spender, J.-C. & Grant, R. M. (1996) Knowledge And The Firm: Overview. *Strategic Management Journal*, 17(1), 5-9.

Spender, J.-C. (1989). *Industry Recipes*. Oxford, UK: Blackwell.

Spender, J.-C. (1994) Organizational Knowledge, Collective Practice And Penrose Rents. *International Business Review*, 3(4), 353-368.

Spender, J.-C. (1996a) Making Knowledge The Basis Of A Dynamic Theory Of The Firm. *Strategic Management Journal*, 17(1), 45-62.

Spender, J.-C. (1996b). Organizational knowledge, learning and memory: three concepts in search of a theory. *Journal of Organizational Change Management*, 9(1), 63 -78.

Spender, J.-C. (2001). Business Policy and Strategy as a Professional Field. In H. W. Volberda & T. Elfring (Eds.), *Rethinking Strategy* (pp. 26-40). Thousand Oaks, California: SAGE.

Spender, J.-C. (2002) Exploring Uncertainty and Emotion In The Knowledge-Based Theory Of The Firm. Working Paper Series, Open University Business School, Version 3.2, NY.

Spieth, P., Tidd, J. O. E., Matzler, K., Schneckenberg, D., & Vanhaverbeke, W. I. M. (2013). Special Issue on Business Model Innovation — Editorial Note. *International Journal of Innovation Management*, 17(01), 1302001.

Stabell, C. B., & Fjeldstad, Ø. D. (1998). Configuring Value for Competitive Advantage: On Chains, Shops, and Networks. *Strategic Management Journal*, 19(5), 413-437.

Stack, M., & Gartland, M. P. (2003). Path Creation, Path Dependency, and Alternative Theories of the Firm. *Journal of Economic Issues*, 37(2), 487-494.

Stahler, P. (2002). Business models as an unit of analysis for strategizing. Proceedings of the 1st international workshop on business models, Lausanne, Switzerland.

Staiton-Rogers, W. (2006) Logics of Inquiry. In Potter, S. *Doing Postgraduate Research*. Thousand Oaks: Sage Publication.

Stanworth, M. J. K., & Curran, J. (1976). Growth And The Small Firm - An Alternative View. *Journal of Management Studies*, 13(2), 95-110.

Staw, B. M., & Sz wajkowski, E. (1975). The scarcity-munificence component of organizational environments and the commission of illegal acts. *Administrative Science Quarterly*, 20(3), 345-354.

Steers, R. M. (1975). Problems in the measurement of organizational effectiveness. *Administrative Science Quarterly*, 20(4), 546-558.

Stefano, G. D., Peteraf, M., & Veronay, G. (2010). Dynamic capabilities deconstructed: a bibliographic investigation into the origins, development, and future directions of the research domain. *Industrial & Corporate Change*, 19(4), 1187–1204.

Stemler, S. (2001) An overview of content analysis. *Practical Assessment, Research & Evaluation*, 7, Retrieved September 1, 2011 from <http://PAREonline.net/getvn.asp?v=7&n=17> .

Stenholm, P. (2011). Innovative Behavior as a Moderator of Growth Intentions. *Journal Of Small Business Management*, 49(2), 233-251.

Sternberg, R.J. and Wagner, R.K. (1991). Mental Self Government Thinking Styles Inventory Manual., Office Of The Dean, Tufts University, Medford, Ma 02155.

Stewart, W. H., May, R. C., & Kalia, A. (2008). Environmental Perceptions And Scanning In The United States And India: Convergence In Entrepreneurial Information Seeking? . *Entrepreneurship Theory And Practice*, 32(1), 83-106.

Storey, D. J. (1994). *Understanding the Small Business Sector*. Routledge, London.

Strauss, A. L. (2003). *Qualitative Analysis For Social Scientists:14th Edition* ,Cambridge, Uk: Cambridge University Press.

Stuart, R., & Abetti, P. (1990). Impact of entrepreneurial and management experience on early performance. *Journal of Business Venturing*, 5(3), 151-162.

Stubbart, C. I. (1989) Managerial Cognition: A Missing Link In Strategic Management Research. *Journal Of Management Studies*, 26(4), 325-347.

Studdard, N. L., & Munchus, G. (2009). Entrepreneurial firms' acquisition of knowledge using proactive help-seeking behaviour. *International Journal of Entrepreneurial Behaviour & Research*, 15(3). 242-261

Su, Z., Li, J., Yang, Z., & Li, Y. (2011). Exploratory learning and exploitative learning in different organizational structures. *Asia Pacific journal of management*, 28(4), 697-714.

SubbaNarasimha, P. N. (2001). Salience of knowledge in a strategic theory of the firm. *Journal of Intellectual Capital*, 2(3), 215 -224.

Subramaniam, M., & Youndt, M. A. (2005). The Influence Of Intellectual Capital On The Types Of Innovative Capabilities. *Academy Of Management Journal*, 48(3), 450-463.

Sullivan, D., & Marvel, M. (2011a). How Entrepreneurs' Knowledge and Network Ties Relate to the Number of Employees in New SMEs. *Journal of Small Business Management*, 49(2), 185-206.

Sullivan, D. M. & Marvel, M. R. (2011b) Knowledge Acquisition, Network Reliance, And Early Stage Technology Venture Outcomes. *Journal Of Management Studies*, 48(6), 1169-1193,.

Sun, P. Y. T., & Anderson, M. H. (2010). An Examination of the Relationship Between Absorptive Capacity and Organizational Learning, and a Proposed Integration, *International Journal of Management Reviews*, 12(2),130-150.

Sutcliffe, K. M., & Weber, K. (2005). Executive Information Search, Perceptual Accuracy And Firm Performance. Working Papers, MIT Sloan School Of Management.

Sveiby, K.-E. (2001). a knowledge-based theory of the firm to guide in strategy formulation. *Journal of Intellectual capital*, 2(4), 344-358.

Svejenova, S., Planellas, M., & Vives, L. (2010). An Individual Business Model in the Making: a Chef's Quest for Creative Freedom. *Long Range Planning*, 43(2-3), 408-430.

Svetina, A. C., & Prodan, I. (2008). How Internal and External Sources of Knowledge Contribute to Firms' Innovation Performance. *Managing Global Transitions*, 6(3), 277-299.

Swanson, H. L., O'Connor, J. E., & Cooney, J. B. (1990). An Information Processing Analysis of Expert and Novice Teachers' Problem Solving. *American Educational Research Journal*, 27(3), 533-556

Sydow, J., Schreyögg, G., & Koch, J. (2005). Organizational Paths: Path Dependency and Beyond. Paper presented at the 21st EGOS Colloquium, Berlin, Germany.

Sydow, J., Schreyögg, G., & Koch, J. (2009). Organizational Path Dependence: Opening the Black Box. *Academy of Management Review*, 34(4), 689-709.

Szulanski, G. (2003). *Sticky Knowledge: Barriers to Knowing in the Firm*. London, UK: Sage.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics*. New York: Harper Collins.

Taggart, W., & Robey, D. (1981). Minds and Managers: On the Dual Nature of Human Information Processing and Management Reviewed *Academy of Management Review*, 6(2), 187-195.

Talke, K., Salomo, S., & Rost, K. (2010). How top management team diversity affects innovativeness and performance via the strategic choice to focus on innovation fields. *Research Policy*, 39(7), 907-918.

Tallman, S., & Chacar, A. S. (2011). Knowledge Accumulation and Dissemination in MNEs: A Practice-Based Framework. *Journal of Management Studies*, 48(2), 278-304.

Tan, D., & Mahoney, J. T. (2007). The dynamics of Japanese firm growth in U.S. Industries: The Penrose effect. *Management International Review*, 47(2), 259-279.

Tan, J., Fischer, E., Mitchell, R., & Phan, P. (2009). At the Center of the Action: Innovation and Technology Strategy Research in the Small. Business. *Journal of Small Business Management*, 47(3), 233-262.

Tang, J., & Murphy, P. J. (2012). Prior Knowledge and New Product and Service Introductions by Entrepreneurial Firms: The Mediating Role of Technological Innovation. *Journal of Small Business Management*, 50(1), 41-62.

Tang, Z., & Hull, C. (2012). An Investigation of Entrepreneurial Orientation, Perceived Environmental Hostility, and Strategy Application Among Chinese SMEs, *Journal of Small Business Management* 50(1), 132-158.

Tashakkori A. & C. Teddlie (2007) *Handbook Of Mixed Methods In Social And Behavioral Research*, Sage.

Tashakkori, A. & Teddlie, C. (2010) *SAGE Handbook Of Mixed Methods In Social And Behavioral Research (3rd Ed.)*. Thousand Oaks, Ca: Sage.

Taylor, B., Gilinsky, A., Hilmi, A., Hahn, D., & Grab, U. (1990). Strategy and Leadership in Growth Companies. *Long Range Planning*, 23(3), 66 -75.

Taylor, F. W. (1911). *The Principles of Scientific Management*. New York: Harper

Teddlie, C. & Tashakkori, A. (2009) *Foundations Of Mixed Methods Research. Integrating Quantitative And Qualitative Approaches In The Social And Behavioral Sciences*. Thousand Oaks, Ca: Sage.

Teece, D. (1996). Towards an economic theory of the multiproduct firm. In L. G. Putterman & R. Kroszner (Eds.), *The economic nature of the firm: a reader* (2 ed., pp. 175-192). Cambridge, UK: Cambridge University Press.

Teece, D. J. (1982) Towards An Economic Theory Of The Multiproduct Firm. *Journal of economic Behavior and Organization*, 3(1), 39-62.

Teece, D. J. (1996). Firm organization, industrial structure, and technological innovation. *Journal of Economic Behavior & Organization*, 31(2), 193-224.

Teece, D. J. (1998). Capturing value from knowledge assets: the new economy, markets for know-how, and intangible assets. *California Management Review*, 40(3), 55-79.

Teece, D. J. (2000). Toward an economic theory of the multiproduct firm. In J. A. C. Baum & F. Dobbin (Eds.), *Advances in Strategic Management: Economics Meets Sociology in Strategic Management: (Vol. 17, pp. 29-53)*. London, UK: Emerald Group Publishing Limited.

Teece, D. J. (2007). Explicating Dynamic Capabilities: The Nature and Micro foundations Of (Sustainable) Enterprise Performance. *Strategic Management Journal*, 28(12), 1319–1350.

Teece, D. J. (2009). *Dynamic Capabilities and Strategic Management: Organizing for Innovation and Growth*. Oxford, UK: Oxford University Press.

Teece, D. J. (2010) *Business Models, Business Strategy And Innovation*. *Long Range Planning*, 43(2-3), 172-194.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities And Strategic Management. *Strategic Management Journal*, 18(7), 509-533.

Teece, D.J. (1986), Profiting from technological innovation: implication for integration, collaboration, licensing and public policy, *Research Policy*, 15(6), 285–305.

Tell, J. (2012). Managerial strategies in small, fast-growing manufacturing firms. *Journal of Management Development*, 31(7), 700-710.

Terrett, A. (1998) *Knowledge Management And The Law Firm*. *Journal Of Knowledge Management*, 2(1), 67-76.

Terziovski, M. (2002). Achieving performance excellence through an integrated strategy of radical innovation and continuous improvement. *Measuring Business Excellence*, 6(2), 5 -14.

Terziovski, M. (2010) Innovation Practice and Its Performance Implications in Small and Medium Enterprises (SMEs) In the Manufacturing Sector: A Resource-Based View: Research Notes and Commentaries. *Strategic Management Journal*, 31(8), 892–902.

Therin, F. (2010). Learning for innovation in high-technology small firms. *International Journal of Technology Management*, 50(1), 64-79.

Thomas, J. B., & Reuben R. McDaniel, J. (1990). Interpreting Strategic Issues: Effects of Strategy and the Information-Processing Structure of Top Management Teams The *Academy of Management Journal*, 33(2), 286-306.

Thomas, J. B., Clark, S. M., & Gioia, D. A. (1993). Strategic Sensemaking And Organizational Performance: Linkages Among Scanning, Interpretation, Action, And Outcomes. *Academy Of Management Journal*, 36(2), 239-270.

Thomas, P. S. (1980). Environmental Scanning-The State Of The Art. *Long Range Planning*, 13(1), 20-28.

Thompson, D. (1980). Adaptors-innovators: A replication study of managers in Singapore and Malaysia. *Psychological Reports*, 47(4), 383-387.

Thompson, D. J. (1967). *Organizations in action*. New York, N.Y.: McGraw-Hill.

Thompson, J. D., & MacMillan, I. C. (2010). Business Models: Creating New Markets and Societal Wealth. *Long Range Planning*, 43(2-3), 291-307.

Thong, J., & Yap, C. (1995). CEO Characteristics, Organizational Characteristics And Information Technology: Adoption In Small Businesses. *Omega*, 23(4), 429-442.

Thorpe, R., Holt, R., Macpherson, A., & Pittaway, L. (2006). Using knowledge within small and medium-sized firms: A systematic review of the evidence. *International Journal of Management Reviews*, 7(4), 257–281.

Thrane, S., Blaabjerg, S., & Møller, R. H. (2010). Innovative path dependence: Making sense of product and service innovation in path dependent innovation processes. *Research Policy*, 39(7), 932-944.

Tikkanen, H., Lamberg, J.-A., Parvinen, P., & Kallunki, J.-P. (2005). Managerial cognition, action and the business model of the firm. *Management Decision* 43(6), 789-809.

Tollin, K. (2008). Mindsets in Marketing for Product Innovation: An Explorative Analysis of Chief Marketing Executives' Ideas and Beliefs about How to Increase Their Firms' Innovation Capability. *Journal of Strategic Marketing*, 16(5), 363-390.

Tomczyk, D., Lee, J., & Winslow, E. (2013). Entrepreneurs' Personal Values, Compensation, and High Growth Firm Performance. *Journal of Small Business Management*, 51(1), 66-82.

Tommaso, M. R. D., & Dubbini, S. (2000, August). Towards a theory of the small firm: theoretical aspects and some policy implications. *Restructuring and Competitiveness*

Network: Division of Production, Productivity and Management. N° E.00.II.G.86, United Nations, Santiago, Chile.

Tonge, R., Larsen, P. C., & Ito, M. (1998). Strategic Leadership in Super-Growth Companies- A Re-appraisal. *Long Range Planning*, 31(6), 838-847.

Topolinski, S., & Strack, F. (2009). The architecture of intuition: Fluency and affect determine intuitive judgments of semantic and visual coherence and judgments of grammaticality in artificial grammar learning. *Journal of Experimental Psychology: General*, 138(1), 39-63.

Treacy, M., & Wiersema, F. (1993). Customer Intimacy and Other Value Disciplines. *Harvard Business Review*, 71(1), 84-93.

Tribushinina, E. (2008). Cognitive reference points: Semantics beyond the prototypes in adjectives of space and colour. Utrecht, The Netherlands: LOT.

Trimi, S., & Berbegal-Mirabent, J. (2012). Business model innovation in entrepreneurship. *International Entrepreneurship and Management Journal*, 8(4), 449-465.

Tripsas, M., & Gavetti, G. (2000). Capabilities, Cognition, and Inertia: Evidence from Digital Imaging. *Strategic Management Journal*, 21(S1), 1147-1161.

Tsai, W. M.-H., MacMillan, I. C., & Low, M. B. (1991). Effects of strategy and environment on corporate venture success in industrial markets. *Journal of Business Venturing*, 6(1), 9-28.

Tsang, E. W. K. (2002) Acquiring Knowledge By Foreign Partners From International Joint Ventures In A Transition Economy: Learning-By-Doing And Learning Myopia. *Strategic Management Journal*, 23(9), 835–854.

Tsoukas, H. & Vladimirou, E. (2001) What Is Organizational Knowledge? *Journal Of Management Studies*, 38, 973-993.

Tsoukas, H. (1996) The Firm As A Distributed Knowledge System: A Constructionist Approach. *Strategic Management Journal*, 17(1), 11-25.

Tsoukas, H. (2005). *Complex Knowledge: Studies in Organizational Epistemology*. New York: Oxford University Press.

Tullett, A. D., & Davies, G. B. (1997). Cognitive Style And Affect: A Comparison Of The Kirton Adaption-Innovation And Schutz's Fundamental Interpersonal Relations Orientation-Behaviour Inventories (KAI and FIRO-B). *Personality and Individual Differences*, 23(3), 479-485.

Tung, R. L. (1979). Dimensions of organizational environments: An exploratory study of their impact on organization structure. *Academy of Management Journal*, 22(4), 672-693.

Turner, B. A. (1983). The Use Of Grounded Theory For The Qualitative Analysis Of Organizational Behavior. *Journal Of Management Studies*, 20(3), 333-348.

- Tushman, M. L., & Romanelli, E. (1985). Organizational evolution: a metamorphosis model of convergence and reorientation. In L. L. Cummings & B. M. Straw (Eds.), *Research in Organizational Behavior* (Vol. 7, pp. 171-222). Greenwich, CT: JAI Press.
- Tversky, A. & Kahneman, D. (1971) The Belief In The “Law Of Small Numbers. *Psychological Bulletin*, 76(2), 105-110.
- Tversky, A. & Kahneman, D. (1974) Judgment Under Uncertainty—Heuristics And Biases. *Science*, 185(4157), 1124-1131.
- Tversky, A. and D. Kahneman (1986), Rational choice and the framing of decisions, *Journal of Business*, 59 (4), 251–79.
- Tversky, A. and D.Kahneman (1992), Advances in prospect theory: cumulative representation of uncertainty, *Journal of Risk and Uncertainty*, 5 (4), 297–323.
- Uhlaner, L. M., Stel, A., Duplat, V., & Zhou, H. (2012). Disentangling the effects of organizational capabilities, innovation and firm size on SME sales growth. *Small Business Economics*. In press
- Urban, B. (2010). Cognitions and motivations for new venture creation decisions: linking expert scripts to self-efficacy, a South African study. *International Journal of Human Resource Management*, 21(9), 1512-1530.
- Vaghely, I. P., & Julien, P.-A. (2010). Are opportunities recognized or constructed? An information perspective on entrepreneurial opportunity identification. *Journal of Business Venturing*, 25(1), 73–86.
- Vakkari, P. (1999). Task complexity, problem structure and information actions: Integrating studies on information seeking and retrieval. *Information Processing & Management*, 35(6), 819-837.
- Van Burg, E., Podoynitsyna, K., Beck, L., & Lommelen, T. (2012). Directive Deficiencies: How Resource Constraints Direct Opportunity Identification in SMEs. *Journal of Product Innovation Management*, 29(6), 1000-1011.
- Van den Bos, K., & Maas, M. (2009). On the Psychology of the Belief in a Just World: Exploring Experiential and Rationalistic Paths to Victim Blaming. *Personality and Social Psychology Bulletin*, 35(12), 1567-1578.
- Van Ness Dearborn, G. (1916). Intuition. *Psychological Review*, 23(6), 465-483.
- Vance, C. M., Groves, K. S., Paik, Y., & Kindler, H. (2007). Understanding and Measuring Linear--NonLinear Thinking Style for Enhanced Management Education and Professional Practice. *Academy of Management Learning & Education*, 6(2), 167-185.
- Vance, C., Zell, D., & Groves, K. (2008). Considering individual linear/nonlinear thinking style and innovative corporate culture. *International Journal of Organizational Analysis*, 16(4), 232-248.

Vance, C.M., Groves, K.S., Paik, Y. and Kindler, H. (2007). Understanding and measuring linear and non-linear thinking style for enhanced management education and professional practice. *Academy of Management Learning and Education*, 6(2), 167–185.

Varadarajan, P. R. (1999) Strategy Content And Process Perspectives Revisited. *Journal Of The Academy Of Marketing Science* 27(1), 88-100.

Variyam, J. N., & Kraybill, D. S. (1993). Small Firms' Choice of Business Strategies. *Southern Economic Journal*, 60(1), 136-145.

Variyam, J. N., & Kraybill, D. S. (1994). Managerial Inputs and the Growth of Rural Small Firms *American Journal of Agricultural Economics*, 76(3), 568-575.

Vasarhelyi, M. A. (1977). Man-machine planning systems: A cognitive style examination of interactive decision making. *Journal of Accounting Research*, 15(1), 138-153.

Velamuri, V. K., Bansemir, B., Neyer, A.-K., & MöSlein, K. M. (2013). Product Service Systems as a Driver for Business Model Innovation: Lessons Learned from the Manufacturing Industry. *International Journal of Innovation Management*, 17(01), 1340004.

Venkatraman, N. & Tanriverdi, H. (2004) Reflecting " Knowledge" In Strategy Research: Conceptual Issues And Methodological Challenges. In David J. Ketchen, J. & Bergh, D. D. (Eds.) *Research Methodology In Strategy And Management* Amsterdam, Elsevier.

Venkatraman, N., & Prescott, J. E. (1990). Environment-strategy coalignment: an empirical test of its performance implications. *Strategic Management Journal*, 11(1), 1-23.

Venkatraman, N., & Ramanujam, V. (1986). Measurement of Business Performance in Strategy Research: A Comparison of Approaches. *Academy of Management Review*, 11(4), 801-814.

Venkatraman, N., & Tanriverdi, H. (2004). Reflecting “Knowledge” In Strategy Research: Conceptual Issues and Methodological Challenges. In J. David J. Ketchen & D. D. Bergh (Eds.), *Research Methodology In Strategy And Management* (Vol. 1, pp. 33-65). Amsterdam ,The Netherlands: Elsevier.

Venkitachalam, K., & Busch, P. (2013). Tacit Knowledge: Review And Possible Research Directions. *Journal of Knowledge Management*, In Press.

Vergne, J.-P., & Durand, R. (2010). The Missing Link Between the Theory and Empirics of Path Dependence: Conceptual Clarification, Testability Issue, and Methodological Implications. *Journal of Management Studies*, 47(4), 736-759.

Verheul, I., Uhlaner, L., & Thurik, R. (2005). Business accomplishments, gender and entrepreneurial self-image. *Journal of Business Venturing*, 20(4), 483-518.

Verona, G. (1999). A Resource-Based View of Product Development *Academy of Management Review*, 24(1), 132-142.

Veryzer, R. W., Jr. . (1995). The place of product design and aesthetics in consumer research. *Advances in Consumer Research*, 22(1), 641-645.

Voelpel, S. C., Leiboldb, M., & Tekieb, E. B. (2004). The wheel of business model reinvention: how to reshape your business model to leapfrog competitors. *Journal of Change Management*, 4(3), 259 -276.

Volberda, H. W., & Lewin, A. Y. (2003). Co-evolutionary Dynamics Within and Between Firms: From Evolution to Co-evolution. *Journal of Management Studies*, 40(8), 2111-2136.

Volberda, H. W., Foss, N. J., & Lyles, M. A. (2010). Absorbing the Concept of Absorptive Capacity: How to Realize Its Potential in the Organization Field. *Organization Science*, 21(4), 931-951.

von Bertalanfy, L. (1960). *General systems theory*. New York: George Braziller.

von Hayek, F. (1989). "Spontaneous (`Grown') Order and Organized (`Made') Order," in *Order-With or Without Design*. In N. Modlofsky (Ed.), (Vol. 1, pp. 101-123). London, UK: Center for Research into Communist Economies.

Von Krogh, G., Nonaka, I. & Rechsteiner, L. (2012) Leadership in Organizational Knowledge Creation: A Review and Framework. *Journal of Management Studies*, 49(1),240-277.

Wagner, J. (1992). Firm Size, Firm Growth, And Persistence Of Chance: Testing Gibrat's Law With Establishment Data From Lower Saxony, 1978--1989" *Small business Economics*, 4(2), 125-131.

Walsh, J. P. (1995) Managerial And Organizational Cognition: Notes From A Trip Down Memory Lane. *Organization Science*, 6(3), 280-321.

Walsh, J. P., & Ungson, G. R. (1991). Organizational Memory *Academy of Management Review*, 16(1), 57-91.

Walsh, V., Roy, R., & Bruce, M. (1988). Competitive by design. *Journal of Marketing Management*, 4(2), 201-216.

Walter, A., Auer, M., & Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing*, 21(4), 541-567.

Walters, B. A., & Priem, R. L. (1999). Business Strategy and CEO Intelligence Acquisition. *Competitive Intelligence Review*, 10(2), 15-22.

Walters, B. A., Kroll, M., & Wright, P. (2010). The Impact Of Tmt Board Member Control And Environment On Post-IPO Performance. *Academy Of Management Journal*, 53(3), 572-595.

Wang, H., Waldman, D. A., & Zhang, H. (2012). Strategic leadership across cultures: Current findings and future research directions. *Journal of World Business*, 47(4), 571-580.

- Ward, T. B. (2004). Cognition, creativity, and entrepreneurship. *Journal of Business Venturing*, 19(2), 173-188.
- Washburn, M., & Bromiley, P. (2012). Comparing Aspiration Models: The Role of Selective Attention. *Journal of Management Studies*, 49(5), 896-917.
- Watson, W., Stewart, H. W. Jr, & BarNir, A. (2003). The effects of human capital, organizational demography and interpersonal processes on venture partner perceptions of firm profit and growth. *Journal of Business Venturing*, 18(2), 145-164.
- Wayne, H. S. J., May, R. C., & Kalia, A. (2008). Environmental Perceptions and Scanning in the United States and India: Convergence in Entrepreneurial Information Seeking? *Entrepreneurship theory and practice*, 32(1), 83-106.
- Weber, R. (1990). *Basis content analysis* (2 ed.). Thousand Oaks, CA: Sage.
- Wegge, Jr., Roth, C., Neubach, B., Schmidt, K.-H., & Kanfer, R. (2008). Age and Gender Diversity as Determinants of Performance and Health in a Public Organization: The Role of Task Complexity and Group Size. *Journal of Applied Psychology* 93(6), 1301-1313.
- Weick, K. E. (1969). *The Social Psychology of Organizing*. MA: Addison-Wesley.
- Weick, K. E. (1995). *Sensemaking in Organizations*. Thousand Oaks, CA: Sage.
- Weinzimmer, L. G., Nystrom, P. C., & Freeman, S. J. (1998). Measuring Organizational Growth: Issues, Consequences and Guidelines. *Journal of Management*, 24(2), 235-262.
- Welsh, H., Gerald, H., & Hoy, F. (1995). Family impacts on emerging ventures in Poland. *Family Business Review*, 8(4), 293-300.
- Welsh, J. A., & White, J. F. (1981). A Small Business Is Not a Little Big Business. *Harvard Business Review* 59(4), 18-32.
- Wernerfelt, B. (1984) A Resource-Based View of the Firm. *Strategic Management Journal*, 5(2), 171-180.
- Wernerfelt, B. (2011) The Use Of Resources In Resource Acquisition. *Journal Of Management* , 37(5), 1369-1373
- Wertheimer, M. (1938). Numbers and numerical concepts in primitive peoples. In W. D. Ellis (Ed.), *A source book of Gestalt psychology*. New York: Brace, & Co.
- Westland, J. C. (2010) Lower Bounds On Sample Size In Structural Equation Modeling. *Electronic Commerce Research And Applications*, 9(6), 476-487.
- Weston, C., Gandell, T., Beauchamp, J., McAlpine, L., Wiseman, C., & Beauchamp, C. (2001). Analyzing Interview Data: The Development and Evolution of a Coding System. *Qualitative Sociology*, 24(3), 381-400.
- Whetten, D. A. (1987). Organizational growth and decline processes. *Annual Review of Sociology*, 13, 335-358.

White, J. C., Varadarajan, R., & Dacin, P. A. (2003). Market situation interpretation and response: The role of cognitive style, organizational culture and information use. *Journal of Marketing*, 67(3), 63-79.

Whitley, R. (1989). On The Nature of Managerial Tasks and Skills: Their Distinguishing Characteristics and Organization. *Journal of Management Studies*, 26(3), 209-224.

Wierenga, B. (2011) Managerial Decision Making In Marketing: The Next Research Frontier. *International Journal Of Research In Marketing*, 28(1), 89-101.

Wiig, K. M. (1997). Integrating Intellectual Capital and Knowledge Management. *Long Range Planning*, 30(3), 399-405.

Wiklund, J. (1999). The sustainability of the entrepreneurial orientation - performance relationship. *Entrepreneurship Theory & Practice*, 24(1), 37-48.

Wiklund, J., & Shepherd, D. (2003a). Aspiring for, and Achieving Growth: The Moderating Role of Resources and Opportunities. *Journal of Management Studies*, 40(8), 1919-1941.

Wiklund, J., & Shepherd, D. (2003b). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24(13), 1307-1314.

Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: a configurational approach. *Journal of Business Venturing*, 20(1), 71-91.

Wiklund, J., Davidsson, P., & Delmar, F. (2003). What Do They Think and Feel about Growth? An Expectancy-Value Approach to Small Business Managers' Attitudes Toward Growth. *entrepreneurship: theory and practice*, spring, 247-270.

Wiklund, J., Davidsson, P., Audretsch, D. B., & Karlsson, C. (2011). The Future of Entrepreneurship Research. *Entrepreneurship theory and practice*, 35(1), 1-9.

Wiklund, J., Patzelt, H., & Shepherd, D. A. (2009). Building an integrative model of small business growth. *Small Business Economics*, 32(4), 351-374.

Williams, L. J., Edwards, J. R., & Vandenberg, R. J. (2003). Recent Advances in Causal Modeling Methods for Organizational and Management Research. *Journal of Management*, 29(6), 903-936.

Williams, L. J., Gavin, M. B., & Hartman, N. S. (2004). Structural Equation Modeling Methods In Strategy Research: Applications And Issues. In J. D. J. Ketchen & D. D. Bergh (Eds.), *Research Methodology In Strategy And Management* (Vol. 1, pp. 303-346). Amsterdam: Elsevier.

Williams, L. J., Vandenberg, R. J. & Edwards, J. R. (2009) *Structural Equation Modeling in Management Research: A Guide for Improved Analysis*. The Academy of Management Annals, 3, 543 -604.

Williams, L. K., & McGuire, S. J. (2008). Economic creativity and innovation implementation: the entrepreneurial drivers of growth? Evidence from 63 countries. *Small Business Economics*, 34(4), 391-412.

Williamson, E. (1975) *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: The Free Press.

Williamson, J. (1966). Profit, Growth and Sales Maximization. *Economica: New Series*, 33(129), 1-16.

Williamson, O. E. (1985). *The economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: Free Press.

Williamson, O. E. (1991) Strategizing, Economizing, and Economic Organization. *Strategic Management Journal*, 12(1), 75-94.

Wilson, F., & Post, J. E. (2013). Business models for people, planet (& profits): exploring the phenomena of social business, a market-based approach to social value creation. *Small Business Economics*, in press.

Wilson, R. A., & Keil, F. C. (2002). *The MIT Encyclopedia of the Cognitive Sciences*. Cambridge, MA: MIT Press.

Wing, C. C. K., & Yiu, M. F. K. (1996). Firm Dynamics And Industrialization In The Chinese Economy In Transition: Implications For Small Business Policy. *Journal Of Business Venturing*, 11(6), 489-505.

Winter, S. G. (1986). The research program of the behavioral theory of the firm: Orthodox critique and evolutionary perspective. In B. Gilad & S. Kaish (Eds.), *Handbook of behavioral microeconomics* (pp. 151-188). Greenwich: JAI Press.

Winter, S. G. (2000). The Satisficing Principle in Capability Learning. *Strategic Management Journal*, 21(10/11, Special Issue: The Evolution of Firm Capabilities), 981-996.

Winter, S. G. (2003). Understanding Dynamic Capabilities. *Strategic Management Journal*, 24(10 Special Issue: Why Is There a Resource-Based View? Toward a Theory of Competitive Heterogeneity), 991-995.

Winter, S. G., & Szulanski, G. (2001). Replication as Strategy. *Organization Science*, 12(6), 730-743.

Winter, S. G., & Szulanski, G. (2002). Replication of organizational routines: conceptualizing the exploitation of knowledge assets. In C. W. Choo & N. Bontis (Eds.), *The Strategic Management of Intellectual Capital and Organizational Knowledge* (207–221). New York: Oxford University Press.

Winter, S.G., (1988). On Coase, competence, and the corporation. *Journal of Law and Economics and Organization*, 4(1), 163-180.

Wirtz, B. W., Schilke, O., & Ullrich, S. (2010). Strategic Development of Business Models Implications of the Web 2.0 for Creating Value on the Internet. *Long Range Planning*, 43(2-3), 272-290.

Witkin, H. A., Dyk, R. B., Faterson, H. F., Goodenough, D. R., & Karp, S. A. (1962). *Psychological differentiation*. New York: Wiley.

Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1977). Field dependent and field independent cognitive styles and their educational implications. *Review of Educational Research*, 47(1), 1-64.

Witkin, H.A., Oltman, P.K., Raskin, E. and Karp, S.A. (1971). *A Manual for the Embedded Figures Tests*. Palo Alto, CA: Consulting Psychologists Press.

Witt, U. (1998). Imagination and leadership: The neglected dimension of an evolutionary theory of the firm. *Journal of Economic Behavior and Organization*, 35(2), 161-177.

Witt, U. (2000). Changing cognitive frames - Changing organizational forms: An entrepreneurial theory of organizational development. *Industrial and Corporate Change*, 9(4), 733-755.

Witt, U. (2011). Emergence and functionality of organizational routines: an individualistic approach. *Journal of Institutional Economics*, 7(2), 157-174.

Woiceshyn, J. (2009) Lessons From “Good Minds”: How CEOs Use Intuition, Analysis And Guiding Principles To Make Strategic Decisions *Long Range Planning*, 42, 298-319.

Wolcott, R. C., & Lippitz, M. J. (2007). The Four Models of Corporate Entrepreneurship. *MIT Sloan Management Review*, 49(1), 75-82.

Wolf, F. (2010) Enlightened Eclecticism Or Hazardous Hotchpotch? Mixed Methods And Triangulation Strategies In Comparative Public Policy Research. *Journal Of Mixed Methods Research*, 4(2), 144-167.

Wolfe, R. A., Gephart, R. P., & Johnson, T. E. (1993). Computer-facilitated Qualitative Data Analysis: Potential Contributions to Management Research. *Journal of Management*, 19(3), 637-660.

Wolff, J. A., & Pett, T. L. (2006). Small-Firm Performance: Modeling the Role of Product and Process Improvements. *Journal of Small Business Management*, 44(2), 268-284.

Wong, E. M., Ormiston, M. E., & Tetlock, P. E. (2011). The Effects of Top Management Team Integrative Complexity and Decentralized Decision Making on Corporate Social Performance. *Academy of Management Journal*, 54(6), 1207-1228.

Wood, F., Ford, N., Miller, D., Sobczyk, G., & Duffin, R. (1996). Information skills, searching behaviour and cognitive styles for student-centred learning: a computer-assisted learning approach. *Journal of Information Science*, 22(2), 79-92.

Wood, R. E., Goodman, J. S., Beckmann, N., & Cook, A. (2008). Mediation Testing in Management Research: A Review and Proposals. *Organizational Research Methods*, 11(2), 270-295.

Wood, R., & Bandura, A. (1989). Social Cognitive Theory of Organizational Management. *Academy of Management Review*, 14(3), 361-384.

Woolley, C. M. (2009) Meeting The Mixed Methods Challenge Of Integration In A Sociological Study Of Structure And Agency. *Journal Of Mixed Methods Research*, 3(1), 7-25.

Worren, N., Moore, K., & Cardona, P. (2002). Modularity, strategic flexibility, and firm performance: a study of the home appliance industry. *Strategic Management Journal*, 23(12), 1123-1140.

Wright, M., & Stigliani, I. (2012). Entrepreneurship and growth. *International Small Business Journal*, 31(1), 3-22.

Wright, M., Hoskisson, R. E., Busenitz, L. W., & Dial, J. (2000). Entrepreneurial growth through privatization: The upside of management buyouts. *Academy of Management Review*, 25(3), 591-601.

Wu, C.-H., Parker, S. K., & de Jong, J. P. J. (2012). Need for Cognition as an Antecedent of Individual Innovation Behavior. *Journal of Management*, In Press.

Wu, G. A. (2012). The Effect of Going Public on Innovative Productivity and Exploratory Search. *Organization Science*, 23(4), 928-950

Wunker, S. (2012). Better growth decisions: early mover, fast follower or late follower? *Strategy & Leadership*, 40(2), 43-48.

Yan, Y., Chong, C. Y., & Mak, S. (2010). An exploration of managerial discretion and its impact on firm performance: Task autonomy, contractual control, and compensation. *International Business Review*, 19(6), 521-530.

Yasuda, T. (2005). Firm Growth, Size, Age and Behavior in Japanese Manufacturing. *Small Business Economics*, 24(1), 1-15.

Yin, R. K. (2009). *Case Study Research: Design and Methods* (5ed.). London: Sage Publications.

Yip, G. S. (2004). Using Strategy To Change Your Business Model. *Business Strategy Review*, 15(2), 17-24.

Yli-Renko, H., Autio, E. & Sapienza, H. J. (2001) Social Capital, Knowledge Acquisition, and Knowledge Exploitation in Young Technology-Based Firms. *Strategic Management Journal*, 22(6-7), 587-613.

Yli-Renko, H., Autio, E., & Tontti, V. (2002). Social capital, knowledge, and the international growth of technology-based new firms. *International Business Review*, 11(3), 279-304.

- Yoo, J. W., Reed, R., Shin, S. J., & Lemak, D. J. (2009). Strategic Choice and Performance in Late Movers: Influence of the Top Management Team's External Ties. *Journal of Management Studies*, 46(2), 308-335.
- You, J.-I. (1995). Small firms in economic theory. *Cambridge Journal of Economics*, 19(3), 441-462.
- Youndt, M. A., Subramaniam, M., & Snell, S. A. (2004). Intellectual capital profiles: an examination of investments and returns. *Journal of Management Studies*, 41(2), 335-361.
- Young, G., Smith, K. G., & Grimm, C. M. (1996). "Austrian" and Industrial Organization Perspectives on Firm-Level Competitive Activity and Performance. *Organization Science*, 7(3), 243-254.
- Yu, D., & Hang, C. C. (2010). A Reflective Review of Disruptive Innovation Theory. *International Journal of Management Reviews*, 12(4), 435-452.
- Yukl, G. (1989). Managerial Leadership: A Review of Theory and Research. *Journal of Management*, 15(2), 251-289.
- Yunus, M., Moingeon, B., & Lehmann-Ortega, L. (2010). Building Social Business Models: Lessons from the Grameen Experience. *Long Range Planning*, 43(2-3), 308-325.
- Zack, M. H. (1999). Developing a Knowledge Strategy. *California Management Review*, 41(3), 125-145.
- Zack, M. H. (2002). Developing a Knowledge Strategy. In C. W. Choo & N. Bontis (Eds.), *The Strategic Management of Intellectual Capital and Organizational Knowledge* (pp. 255-276). New York: Oxford University Press.
- Zack, M. H. (Ed.) (1999) *Knowledge And Strategy*, Woburn, Ma, Butterworth-Heinemann.
- Zahra, S. A. & George, G. (2002) Absorptive Capacity: A Review, Reconceptualization, And Extension. *Academy Of Management Review*, 27(2), 185-203.
- Zahra, S. A. (1993). Environment, Corporate Entrepreneurship, and Financial Performance: A Taxonomic Approach. *Journal of Business Venturing*, 8(4), 319-340.
- Zahra, S. A. (2008). The Virtuous Cycle Of Discovery And Creation Of Entrepreneurial Opportunities. *Strategic Entrepreneurship Journal*, 2(3), 243-257.
- Zander, U., & Kogut, B. (1995). Knowledge and the Speed of the Transfer and Imitation of Organizational Capabilities: An Empirical Test. *Organization Science*, 6(1), 76-92.
- Zhang, J., Soh, P.-h., & Wong, P.-k. (2010). Entrepreneurial Resource Acquisition through Indirect Ties: Compensatory Effects of Prior Knowledge. *Journal of Management*, 36(2), 511-536.
- Zhang, L.-f., & Sternberg, R. J. (2005). A threefold model of intellectual styles. *Educational Psychology Review*, 17(1), 1-53.

Zhao, X., Lynch Jr., J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research*, 37(2), 197-206.

Zhou, K. Z., & Li, C. B. (2012). How Knowledge Affects Radical Innovation: Knowledge Base, Market Knowledge Acquisition, and Internal Knowledge Sharing. *Strategic Management Journal*, 33(9), 1090-1102.

Zhou, K. Z., Gao, G. Y., Yang, Z., & Zhou, N. (2005). Developing strategic orientation in China: antecedents and consequences of market and innovation orientations. *Journal of Business Research*, 58(8), 1049-1058.

Zollo, M., & Winter, S. G. (2002). Deliberate Learning And The Evolution Of Dynamic Capabilities. *Organization Science* 13(3), 339-351.

Zook, C., & Allen, J. (2011). The Great Repeatable Business Model. *Harvard Business Review*, 89(11), 106-114.

Zott, C. & Amit, R. (2002) Measuring The Performance Implications Of Business Model Design: Evidence From Emerging Growth Public Firms. INSEAD Working Paper Series, No 2002/12/Ent/Sm, 17 January 2002, accessed 20 august 2011 from <http://www.insead.edu/facultyresearch/research/doc.cfm?did=1217>

Zott, C. & Amit, R. (2010) Business Model Design: An Activity System Perspective. *Long Range Planning*, 43(2-3), 216-226.

Zott, C., & Amit, R. (2007). Business Model Design and the Performance of Entrepreneurial Firms. *Organization Science*, 18(2), 181–199.

Zott, C., & Amit, R. (2008). The Fit between Product Market Strategy And Business Model: Implications For Firm Performance. *Strategic Management Journal*, 29(1), 1–26.

Zott, C., & Huy, Q. N. (2007). How entrepreneurs use symbolic management to acquire resources. *Administrative Science Quarterly*, 52(1), 70-105.

Zott, C., Amit, R., & Massa, L. (2011). The Business Model: Recent Developments and Future Research. *Journal of Management*, 37(4), 1019-1042.

Zubac, A., Hubbard, G., & Johnson, L. (2012). Extending Resource-Based Logic: Applying the Resource-Investment Concept to the Firm from a Payments Perspective. *Journal of Management*, 38(6), 1867-1891.

Appendices

Extended Review of Literature

1. Summary of the definitions of business model

Table 41: A list of the Definitions of business model

Author(s)	Definition
Abbell, (1980)	A business comprises three assumptions about customers (who assumptions), products and services (What assumptions) and methods, policies and procedures (How assumptions).
Drucker, (1994)	Business model represents the theory of the business that consists of two assumptions about what a business enterprise must do to create value for its stakeholders (what assumptions) and equally importantly how the firm must get them done (how assumptions).
Timmers, (1998)	The architecture of the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; a description of the sources of revenues.
Venkatraman and Henderson (1998)	a coordinated plan to design strategy along three vectors: customer interaction, asset configuration, and knowledge leverage
Stewart and Zhao (2000)	A statement of how a firm will make money and sustain its profit stream over time
Mayo and Brown (1999)	the design of key interdependent systems that create and sustain a competitive business
Slywotsky (1996)	The totality of how a company selects its customers, defines and differentiates its offerings, defines the tasks it will perform itself and those it will outsource, configures its resources, goes to market, creates utility for customers and captures profits.
Amit and Zott, (2001)	the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities.
Morris, Schindehutte, and Allen (2005)	A business model is a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets.
Baker, Addams, and Davis (1993)	Business model is the written detailed document of the firm's strategic planning
Shafer, smith and Linder (2005)	a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network.
Honig, and Karlsson (2004)	a written document that describes the current state and the presupposed future of an organization.
Shane and Delmar (2004)	a document that summarizes how an entrepreneur will create an organization to exploit a business opportunity.
Dubosson-Torbay,	the architecture of a firm and its network of partners for creating, marketing and

Osterwalder and Pigneur (2002)	delivering value and relationship capital to one or several segments of customers in order to generate profitable and sustainable revenue streams.
Voelpel, Leibold, and Tekie (2004)	The term business model can be defined as the particular business concept (or way of doing business) as reflected by the business's core value proposition for customers; its configured value network(s) to provide that value, consisting of own strategic capabilities as well as other (e.g. outsourced/allianced) value networks and capabilities to continually sustain and reinvent itself to satisfy the multiple objectives of its various stakeholders
Linder And Cantrell (2000) Björkdahl (2009)	A business model, strictly speaking, is the organization's core logic for creating value the logic and the activities that create and appropriate economic value, and the link between them
Betz (2002)	Business model in the abstract identification of how a business operate profitably
Chapman, Soosay, and Kandampully, (2003) Chesbrough (2010)	A systematic set of business practices designed and operated to receive efficiency gains from the usage of information technology BM is a focusing device that mediates between technology development and economic value creation of the firm
Chesbrough and Rosenbloom (2002)	The business model is "the heuristic logic that connects technical potential with the realization of economic value" (p. 529).
Mitchell and Coles (2004)	BM is the combination of the who, what, where, when, why, how and how much an organization uses to provide its goods and services (value offerings) and develop resources to continue its efforts
Downing, (2005, p. 186) Chesbrough (2007)	BM is a set of expectations about how the business will be successful in its environment. Business model defines firm's value creation and value capture
Demil, and Lecocq (2010)	the articulation between different areas of a firm's activity designed to produce a proposition of value to customers
Zott and Amit (2010)	a system of interdependent transactional activities that transcends the focal firm and spans its boundaries
Gambardella and McGahan (2010)	A mechanism for turning ideas into revenue at reasonable cost
Johnson, Christensen and Kagermann (2008)	A system of four interlocking factors including customer value proposition, profit formula, key resources and key processes that taken together create and deliver value
Itami and Noshino (2010)	a profit model, a business delivery system and a learning system
Teece (2010)	System of How a firm delivers value to customers and converts payment into profits.
Casadesus-Masanell and Ricart (2010a)	logic of the firm' ; how it operates and creates value for its stakeholders
Casadesus-Masanell and Ricart (2010b)	A logic that reflects the firm's realized strategy
Magretta (2002)	A systematic model that answers managerial questions such as: "who is the

	customer?”, “what does the customer value?”, “how do we make money in this business?”, “what is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?”
Slywotzky & Wise, 2003	recipes for firm activities that incorporate organizational design and strategy
Doz and Kosonen (2010)	Business models can be defined both objectively and subjectively: Objectively they are sets of structured and interdependent operational relationships between a firm and its customers, suppliers, complementors, partners and other stakeholders, and among its internal units and departments (functions, staff, operating units, etc) and as a subjective representation of these mechanisms, delineating how it believes the firm relates to its environment.
Hamel (1999)	BM is a systematic plan that define how firms manage their transactions with other organizations such as customers, partners, investors and suppliers to create and sustain value
Tikkanen et al. (2005)	a system manifested in the components and related material and cognitive aspects forming business logic of a firm
Storbacka and Nenonen (2009)	The configurations of interrelated capabilities, governing the content, process and management of the interaction and exchange in dyadic value co-creation.
Fiet and Patel, (2008)	A set of attributes (a model) that explains how a venture is expected to create a profit (balancing revenue and costs at counted risk)
Augier and Teece,(2007: 181)	A business model defines the manner in which a business enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit. It reflects the firm-specific assumptions about what customers want and how an enterprise can be profitable as a result of the value delivered. The business model determines: (1) how the revenue and cost structure of business is to be “designed” and then possibly “redesigned” to meet customer needs; (2) the ways in which the resources are to be assembled and the relevant market segments can be identified; (3) the mechanisms through which value can be created and captured.
Bock ,Opsahl and George (2010),George and Bock, (2011)	BM is the design of organizational structures to enact a commercial opportunity
Winter & Szulanski, (2001)	A complex set of interdependent routines that is discovered, adjusted, and fine-tuned by ‘doing
Hill and Jones,(2010:6)	a business model is a manager’s conception on how the set of strategies his company pursues should mesh together into a congruent whole, enabling the profit growth. in essence a BM is a kind of mental model, or gestalt, of how the various strategies and capital investments made by a company should fit together to generate profit growth.
Eden and Ackermann (2000)	the dynamic capability that links the firm’s distinctive competencies to organizational aspirations and outcomes.
Casadesus-Masanell and Ricart (2011)	A set of three types of choices and their flexible or rigid consequences ; choices of policies for operational actions , choices of assets and governance of the other two choices

2. Characteristics of Kirton's Innovators Versus Adaptors

Table 42: Kirton's Innovators Versus Adaptors

Adaptors	Innovators
Characterized by precision, reliability, efficiency, methodicalness, prudence, discipline, conformity	Seen as undisciplined, thinking tangentially, approaching tasks from unsuspected angles
Concerned with resolving problems rather than finding them	Could be said to discover problems and discover avenues of solution
Seeks solutions to problems in tried and understood ways	Queries problems' concomitant assumptions; manipulates problems
Reduces problems by improvement and greater efficiency, with maximum of continuity and stability	Is catalyst to settled groups, irreverent of their consensual views; seen as abrasive, creating dissonance
Seen as sound, conforming, safe, dependable	Seen as unsound, impractical; often shocks his opposite
Liable to make goals of means	In pursuit of goals treats accepted means with little regard
Seems impervious to boredom, seems able to maintain high accuracy in long spells of detailed work	Capable of detailed routine (system maintenance) work for only short bursts. Quick to delegate routine tasks
Is an authority within given structures	Tends to take control in unstructured situations
Challenges rules rarely, cautiously, when assured of strong support	Often challenges rules, has little respect for past custom
Tends to high self-doubt. Reacts to criticism by closer outward conformity. Vulnerable to social pressure and authority; compliant	Appears to have low self-doubt when generating ideas, not needing consensus to maintain certitude in face of opposition
Is essential to the functioning of the institution all the time, but occasionally needs to be "dug out" of his systems	In the institution is ideal in unscheduled crises, or better still to help to avoid them, if he can be controlled
When collaborating with innovators: supplies stability, order and continuity to the partnership	When collaborating with adaptors: supplies the task orientations, the break with the past and accepted theory
Sensitive to people, maintains group cohesion and cooperation.	Insensitive to people, often threatens group cohesion and cooperation
Provides a safe base for the innovator's riskier operations	Provides the dynamics to bring about periodic radical change, without which institutions tend to ossify

Source: Kirton, (1976:623)

3. Theory of Administration

It is perhaps appropriate to explain managerial services in the theory of the growth of the firm from the view of the administrative behavior (Simon, 1947) and the general theory of administration (Litchfield, 1956; Green, and Redmond, 1957). According to this line of research, administration is interchangeable with management (Litchfield, 1956). Litchfield further argues that, administration is a set of functions performed by an individual or a group of individuals. These functions or managerial services could include: a) decision making, b) programming, c) communicating, d) controlling resources and activities, and e) reappraising.

These services are interrelated in an administrative mode as follow (Litchfield, 1956): 1) Decisions can be made rationally, purposively, deliberately or irrationally, habitually and randomly and also any combination thereof. 2) Decisions can guide actions when they become interpreted in the form of specific programs which provide directions for detailed operation. 3) The effectiveness of a programmed decision varies with the extent to which it is communicated to those of whom action is required. 4) Actions are more assured if performance standards are established and achievements are enforced through the application of control over them and finally 5) decisions are subject to change over time, therefore to retain their validity they must be reviewed and revised.

Acknowledging these propositions, Green, and Redmond, (1957) further added that, because of the power and control involved in administration and the coherency of its functions, administration seeks to 1) perpetuate itself, 2) preserve its internal well-being, 3) preserve itself vis-à-vis others and 4) seek growth. Finally, the functions as postulated by Litchfield, (1956) can be meaningfully categorized into three areas of 1) resources (i.e. administering people, machinery, authority, time, energy and the desire to perform effectively). 2) Policies (i.e. creation of objectives, principles and procedures) and 3) execution (i.e. actions necessary to achieve completion of objectives) (Green, and Redmond, 1957:240).

4. Growth modes (organic, acquisitive and hybrid)

Penrose argued that executives have two strategic alternatives to pursue growth: (1) organic or internal and (2) acquisitive or external (Penrose, 1959; Locket et al. 2011). Organic growth (OG) refers to the growth through internal development, acquisition of new resources, employing and training new staffs (Davidsson, et al. 2010). On the other hand, acquisitive growth is the growth through acquiring other businesses, gaining controlling power in other businesses, integration and merger (Penrose, 1959; Lockett, et al. 2011).

Organic growth involves complex, firm's specific processes and is also mainly governed by tacit knowledge accumulating in the firm which is difficult to transfer and trade (Lockett, et al. 2011). However acquisitive growth involves acquisition of bundles or resources as well as growth opportunities owned by the acquired firm (Barney, 1986). It therefore requires financial and bargaining power (Buckley, and Casson, 2007). Therefore, it is generally assumed that large firms tend to grow through acquisitive mode while SMEs basically follow the organic mode (Meeus, et al. 2001; Thorpe et al. 2006).

Further, any given firm may pursue one of the two modes or a combination of them in different periods of time based on the 1) resources of the firm and 2) abilities of executives to manage different modes (Penrose, 1959). In respect to this, path-

dependency of growth implies that previous organic or acquisitive growth could both enhance and hinder future organic or acquisitive growth. For instance, Lockett, et al. (2011) examined growth of Swedish firms over a 10-year period and found that previous organic growth acts as a constraint on current organic growth while previous acquisitive growth has a positive effect on the current organic growth.

Although the main two modes of growth in the Penrose's view were acquisitive and organic but recent studies in the growth of the firm also suggests that this dichotomy is simplicity and firms can grow through a hybrid mode as well that consists of growth strategies such as franchising, licensing, joint ventures, and strategic alliances all of which provide the firm with new resources, capabilities and productive opportunity sets (McKelvie and Wiklund, 2010; Davidsson, et al. 2010). Capron, and Mitchell, (2012) describe this hybrid form as the combination of building growth capabilities (organic), buying them (acquisitive) or borrowing them (alliance).

It is not within the scope of this study to examine modes of growth. It however suffices to argue that since this study focuses on small manufacturing firms it can be asserted that these firms mainly pursue growth through organic or hybrid modes due to their resource restrictions (Lockett, et al. 2011).

5. Stage Theory of Growth

According to Penrose (1952), economists tend to use evolutionary biology to explain behavior of firms and "probably the best known and most common of these analogies is that of the life cycle, in which the appearance, growth and disappearance of firms is likened to the processes of birth, growth, and death of biological organisms" (p., 804). This view is also common in business and management and has led to a number of theoretical models of growth (e.g. Greiner, (1972; Churchill, and Lewis, 1983; Smith, Mitchell, and Summer, 1985; Kazanjian, 1988).

In general, the main rationale behind these theoretical attempts has been to detect and categorize growth trajectories of a firm in a systematic way throughout its life span (Phelps, Adams and Bessant, 2007). It must be noted that in literature the terms 'life cycle' and 'stages' are used interchangeably for the purpose of theory development in this context (McKelvie, and Wiklund, 2010). Given this, the stage model basically suggests that "predictable patterns exist in the growth of organizations and that these patterns unfold as discrete time periods best thought of as stages" (Kazanjian, and Drazin, 1989:1489). Furthermore, there are regularities in each stage that impacts firm's strategies and structure for growth (Smith, et al. 1985). Therefore, a firm's strategies and structure tend to vary during different distinctive stages of growth.

Different stage models have been proposed for different types of firms. For instance, Greiner, (1972) suggested that any firm's growth can be modeled in five phases from creativity to direction, delegation, communication and coordination. Each phase is both an effect of the previous phase and a cause for the next phase. Thus it is an evolution which ends with a managerial crisis termed as revolution. Additionally for large firms some authors have argued that firm's growth goes through three stages of inception, high-growth and maturity (Smith, et al. 1985). For small businesses, however, Churchill, and Lewis, (1983) developed a five-stage model of existence, survival, success, take-off and resource maturity. Whereas for new technology-based ventures scholars have suggested a four-stage model of conception, commercialization, fast-growth and stability (Kazanjian,

1988; Kazanjian, and Drazin, 1989). In a similar fashion, Hanks, et al. (1993) argued that a high-technology small venture grows through four stages of start-up, expansion, maturity and diversification.

Despite these advancements the stage model of growth has received a considerable amount of criticism. For instance, Phelps, et al. (2007:4) highlight a number of problematic issues in the stage model as follows: 1) although stage model is conceptually and intuitively appealing but it implies a number of assumptions such as growth is linear, sequential, deterministic and invariant which do not pertain to organizations. 2) Assuming that, all firms go through some common stages of growth would perpetuate misconceptions about their heterogeneous growth and provides shaky foundations on which to build theory or develop policy and finally, 3) it is still unclear how many stages there are and precisely what it is that constitutes a stage. Specifically, reviews of literature have identified models from three to nine and even eleven distinct stages (Levie, and Lichtenstein, 2008). Accordingly, Levie, and Lichtenstein, argue that literature shows neither a consensus on basic constructs nor any empirical confirmations of stages theory. Endorsing this line of criticism Davidsson, et al. (2010) assert that, the stage view of growth allows a uniform path of growth in a deterministic way which lacks generalizable empirical support. In addition, “stages models are cyclical in the sense that they do not tend towards equilibrium, but rather return to a starting point or put simply organizations follow the same consistent pattern over time as they grow and decline which is different from the reality” (p. 51). In addition, it has been well documented that, the evolutionary growth of a small firm into a large firm is similar to the metamorphosis of a caterpillar to a butterfly (Curran, and Blackburn, 2001). It means that the structure, managerial system (control, communication and power) and organizational systems of a small firm undergo firm-specific transformations to form a large firm. This arguably could discredit the underlying assumptions of stage model that firms go through similar phases when growing.

More importantly, according to Davidsson, et al. (2010) stage models mainly focus on the evolving of formal structures of the firm thus they oversimplify the unique attributes of firms, the nature of the role of the managers, their motivation, decisions, and actions. In keeping with Davidsson, et al. (2010) it is argued that growth of a firm is neither linear nor heterogeneous over its life cycle. This issue is however beyond the scope of this research and hence this study does not seek to examine the phenomenon of growth from a small firm to a large one.

6. Non-linearity and heterogeneity of growth

Two salient properties of growth of a firm are its non-linearity and heterogeneity. Non-linearity of growth refers to non-linear patterns and rates of growth that a firm experiences (Weinzimmer et al., 1998). In other words, growth does not follow a linear behavior. So it cannot be identified and predicted during the life span of a firm (Achtenhagen, et al. 2010). Take for example a case that, “a company has been shrinking in terms of sales, profits, and/or numbers of employees over several years, but then acquired a company larger than this reduction amounted to, such operationalization would find linear growth to have taken place over the entire period” (Achtenhagen, et al. 2010:295). Another example could be the case of a firm which during a five-year period grows rapidly over a 2-year period and then stops growing for the next 3 years (Shepherd and Wikilund, 2009) thus a five-year study of growth shows a non-linear mode. Non-linearity implies that results of studying growth will differ depending on the numerous

time spans which can be chosen by researchers (Shepherd and Wiklund, 2009). The most common time periods used in the literature are 1, 3 and 5 years periods (Delmar, 1997) however prior studies have provided little explanation about the rationale for choosing a specific time span (Achtenhagen, et al. 2010). This issue is not within the scope of this study as it intends to explain causes and antecedents of growth from managerial perspective. However, in the next chapter this issue will be further explained in terms of the time period chosen for the measure of growth in the present research.

On the other hand, growth behavior is also heterogeneous in nature (Davidsson, et al. 2010). It means that, a firm can grow along different paths and patterns over a period of time (Delmar, et al. 2003). Furthermore, similar firms with similar bundle of resources and serving similar customers' needs can also grow along different paths (Davidsson, et al. 2010) because of the differences in their managerial perception of the markets and subsequent behavior and strategies (Penrose, 1954; Delmar, 1997). Other than variations in the firms' characteristics including managerial aspects, variations in measuring growth indicators (i.e. sale versus employment) and the process by which a firm grows (i.e. organic increase in sale, versus acquisition and merger, etc.) could cause this substantial heterogeneity in the growth of the firm (Delmar, et al. 2003).

Heterogeneity not in the measurement approaches (i.e. methodological) but particularly in the growth directions and behavior of the firm has been a center of focus in strategy and entrepreneurship studies that concern with managerial actions and competencies (Helfat, et al. 2007), it echoes the core logic of Penrose (1959) about conceptualizing growth as a managerial phenomenon.

Since the current research is also situated within this stream of research it emphasizes this aspect of heterogeneity not the methodological one. Therefore, it maintains that growth in a population of firms is a heterogeneous phenomenon due to the inherent heterogeneity in the characteristics of firms and their managers that drive their growth (Penrose, 1959; Helfat et al. 2007). In accordance with this notion, Delmar, et al. (2003:208) assert that, "organizational growth patterns are likely to be the outcome of different strategies and different environmental constraints. That is, associations between demographic affiliations (i.e. attributes of industries and markets where a firm resides) on the one hand, and type of growth pattern on the other may explain what caused the firms to follow different growth paths". Furthermore following the principles of the growth of the firm in the language of Penrose (1959), Delmar, et al. (2003:212) add that "managers might enjoy considerable freedom of choice as far as growth is concerned as they could consider that some growth strategies appear to be more compatible with resources, goals, and environmental constraints than are other growth strategies". Subscribing to this view, Wiklund (1999) concludes that strategies chosen by managers have the strongest and most direct influence on the growth of a firm. In keeping with this logic, Davidsson, et al. (2010) argue that managers' strategic actions such as choice of strategies could largely determine how a firm grows and why different firms grow differently in an industry.

7. Co-existence of Small and Large Firms

Economics literatures provide four major explanations for the size of a firm and more broadly co-existence of small and large firms in an industry. First, the optimal size of a firm is defined by the interaction between, on the one hand, technological ability of a firm to achieve economies of scale and scope (technologies of production) that increase return and, on the other, diseconomies in the organization of activities such as inefficient

allocation of resources, division of labor and investments in the efficient communication and coordination, etc. which decrease return (You, 1995).

So, existence of small firms indicates dominance of diseconomies of organizational activities that hinder economies of scale and scope (Tommaso, and Dubbini, 2000). Second approach is institutional and reduces the size of the firm to its ability to decrease transaction costs and increase transactional efficiency (transactions here refer to exchange of goods, services and information between firms and other parties in the business environment) (Williamson, 1985).

According to this view, amount of transactions and motivation to govern them effectively would lead to an increase in the size of the firm. Therefore, when a firm specializes in managing transactions more efficiently it can afford a larger size (Williamson, 1985) and by implication the differences in inter-firm efficiencies in handling transactions costs create a stage of co-existence between large and small firms with different specializations (You, 1995). Further, when in an industry the number of transactions is relatively little and costs of coordinating them is low the number of small businesses increases (Tommaso, and Dubbini, 2000).

The first two views suggest efficiency-based reasons for the size of the firm. However, the third approach attributes the size of the firm to market conditions, its market power and specifically acquired share of the markets it targets (You, 1995). Accordingly, characteristics of market segments in terms of differences in demands (tastes and preferences of customers), number of competitors and degree of product differentiation define size distribution of firms (Tommaso, and Dubbini, 2000). The coexistence of small and large firms is due to differentiated consumer tastes which create sources of profitable niches for firms with different flexibility and specialization (Tommaso, and Dubbini, 2000). Specifically, "it is possible of course for large firms to serve many different segments of the market. However, their attempt to capture specialized demand will be limited by bureaucratic costs owing to organizational dissonance, as it requires more and more dissimilar activities. So they tend to focus on more standardized and large-sized demand, while specialized and fragmented demand is served by lots of small firms dedicated to such demand" (You, 1995: 452). So, in short, market imperfections create niches for small firms to emerge and compete with larger firms (You, 1995) over bigger shares of the market. Furthermore, the ability to differentiate and capitalize on target niches stem from managerial or technological factors which are unique to each firm and inaccessible to other firms (You, 1995) which in return allow the firm to sustain its position and grow bigger (Porter, 1980, 1985).

The fourth view attempts to relate size of the firm to its age and stage in the evolutionary cycle of the business (Tommaso, and Dubbini, 2000). According to this view, most of firms start small and attempt to grow bigger (You, 1995). Search for opportunities and investing on innovation and specifically ability to impact and adapt to the technological regime of an industry determines the ability to grow (Nelson and Winter, 1982). This ability to innovate and adapt is based on the investments in the non-transferable assimilating knowledge (Research and Development). This ability increases by the age of the firm as it gain experience and accumulate more know-how (R&D) (You, 1995). Hence young firms are generally small and due to less experience are more likely to undergo turbulence while growing bigger and develop research and development capabilities (You, 1995). Therefore, size is reduced to the function of executives to detect opportunities and innovatively exploit them by developing new and using existing

knowledge of the industries and markets. This is a dynamic competitive view of both growth of small firms and their co-existence with large firm (Tommaso, and Dubbini, 2000). According to this view, firms are not in “a static equilibrium or even a dynamic adjustment process toward such an equilibrium. Rather, they must continuously initiate technological and organizational changes by transforming technological and market environment as well as adapting to new opportunities in order to maintain or strengthen their competitive positions. So in dynamic competition, successful small firms will grow while unsuccessful firms will shrink and eventually disappear” (You, 1995: 455).

8. History of Resource-based view and the concept of a firm's Resources

Success and particularly the sustained success (i.e. persistent above average performance over time in areas such as growth in sale, profitability, etc.) have been subjects of an ongoing research in economics, strategy and entrepreneurship for decades (e.g. Penrose, 1959; Pfeffer and Salancik, 1978; Wernerfelt, 1984; Barney, 1991; Nelson, 1991; Teece, 1982; Teece and Pitelis, 2009; Lockett et al. 2011). Scholars from different disciplines have developed a variety of theories to address different sides of these phenomena. For instance, theories such as the transactional nature of the firm (Coase, 1937), the theory of the growth of the firm (Penrose, 1958) , resource-dependence theory (Pfeffer and Salancik, 1978), organizational population and ecology theory (Hannan and Freeman, 1977; Singh and Lumsden, 1990), Evolutionary theory of economic change (Nelson and Winter, 1982) and more recently the resource based view (RBV) (Barney, 1991) and its extended perspectives such as knowledge based view (Grant, 1996; Spender, 1996), and dynamic capabilities view (Teece, et al. 1997).

RBV and its extensions share this common premise that resources of the firm, attributes of these resources and the way they are used are fundamental building blocks of sustained success. Thus resource potency and utilization competency determine which firm can lead the market. Influential research shaping this line of thinking include Ricardo (1817) , Penrose (1959), Lippman and Rumelt, (1982), Teece, (1982),Rumelt, (1984),Wernerfelt, (1984), Barney (1986 a, b), Dierickx & Cool, (1989) and Barney (1991), Conner, (1991), Castanias & Helfat, (1991), Peteraf, (1993), Amit and Schoemaker, 1993, Grant (1996), Teece, Pisano and Shuen, (1997).

Ricardo (1817) argued that differences in the quality of factors of production (i.e. resources such as land) matter in the competitive success of producers. So, superior resources generate superior profit. Penrose (1959) argued that a firm is a bundle of resources and performance of the firm can be explained from this perspective. Lippman and Rumelt, (1982) argued that inimitability and causal ambiguity of resources are two central attributes for generating sustained success. Teece, (1982) argued that multiproduct multimarket firms require different sets and combinations of resources. Rumelt, (1984) developed the view of resource-based logic as a strategic theory of the firm which can explain short run and long run behavior of a firm. Wernerfelt, (1984) added to this debate by stating that products and resources are flip sides of the same coin. So, instead of products a firm's strategic behaviors in markets can be explained by its resources. Barney (1986, a) argued that organizational culture can be an important resource, He also (Barney, 1986, b) argued that firms compete in factor markets to acquire different resources and factors such as their information about the value of resources and also luck influence their success or failure in acquiring resources. Dierickx & Cool, (1989) enriched this view by arguing that resources are especially useful when no effective substitutes are available and some resources such as brand reputation cannot be acquired

in the factor markets but should be developed internally. Barney (1991) formed the first theoretical body of resource based view by combining these arguments and proposed a theory of the firm in which valuable, rare, inimitable and non-substitutable (VRIN) resources form the building blocks of a sustained competitive advantage. Conner, (1991) showed that RBV has potential to represent a new theory of the firm as it is distinctly different from the outside-in tradition by focusing on inside-out view of competition. Castanias & Helfat, (1991) further argued that CEOs can be VRIN resources as they possess idiosyncratic qualities and quantities of general, industry-specific, and firm-specific skills and knowledge. Therefore RBV reached its peak in 1990s. Peteraf (1993) extended VRIN view and proposed four conditions which should be met to allow a firm generate sustained success from its resources. These four are: superior resources heterogeneity within an industry (existence of distinctive or superior relative to those of rivals), ex post limits to competition (forces which limit competition for rents generated by superior resources such as barriers to entry of porter 1980 or isolating mechanisms of Rumelt, 1984), imperfect resource mobility (e.g. such as causal ambiguity, internal development and embeddedness, high switching costs, co-specialized assets of Teece, 1982) and ex ante limits to competition (i.e. prior to any firm's establishing a superior resource position, there must be limited competition for that position).

As it can be seen from the above review, RBV reached its climax in early 1990s since then RBV has spurred a great deal of empirical research (e.g. Newbert, 2007; Crook et al. 2008) ranging from role of RBV in diversification (Harrison et al. 1991), significance of commitment in management of resources (Ghemawat, 1991), organization's identity as a resource (Fiol, 1991), comparing RBV with IO and clarifying its potential as a new theory (Conner, 1991), role of distinctive competencies in RBV (Mahoney & Pandian, 1992), introducing knowledge as a resource and impotence of organizational combinative capabilities in RBV (Kogut & Zander, 1992), the significance of resource accumulation and clarifying the difference between resources and capabilities as resources are productive assets while capabilities are the capacity to use resources in production (Amit & Schoemaker, 1993), illustrating the conditions under which resources lead to competitive advantage (Peteraf, 1993), introducing the notion of trustworthiness as a resource (Barney, and Hansen, 1994), classification of capabilities and their importance in resource deployment (Collis, 1994) and the significance of organizational knowledge as a resource and prerequisite for managing other resources (Spender, 1994).

Additionally, RBV has spawned a number of theoretical spin-offs (Barney et al. 2011) including the natural-resource based view (NRBV) (Hart, 1995; Hart and Dowell, 2011) knowledge-based view (KBV) (Grant, 1996; Spender, 1996; Conner and Prahalad, 1996) and dynamic capabilities view (DCV) (Nelson, 1991; Teece, Pisano, Shuen, 1997; Teece, 2007). In sum, NRBV claims that natural environment poses serious conditions that restrain firm's abilities to manage its resources such as pollution preventing policies and issues involved in sustainability (Hart, 1995), knowledge-based view (Grant, 1996; Spender, 1996) argues that knowledge is the most important resource of the firm and all actions and outputs of a firm can be discussed from the perspective of how a firm generates and uses knowledge. Dynamic capabilities view expands knowledge-based view and suggests that the nature of the firm is to develop capabilities and these capabilities should be dynamic due to the dynamic nature of markets. Therefore successful firm learn how to continuously adjust the ways their resources are being used and continuous acquisition of knowledge is central to this learning.

Given this brief introduction into the history of resource-based view, it seems appropriate to briefly discuss the concept of resources. Wernerfelt (1984:172) states that, “by a resource is meant anything which could be thought of as a strength or weakness of a given firm. More formally, a firm's resources at a given time could be defined as those (tangible and intangible) assets which are tied semi-permanently to the firm”. Teece, (1984) and Rumelt (1984), however, see resources and assets interchangeable and consider firms as systems of heterogeneous resources (assets). In their language, an asset refers to anything owned by a firm. In the same vein, Dierickx and Cool, (1989) see resources as the product of firm's asset stock accumulation and attribute the characteristics of resources to the accumulation mechanism. The authors consider assets as whatever a firm owns including all tangibles and intangibles.

Barney (1991:101) defines organizational resources as “all assets, capabilities, processes, attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness. Surprisingly, Grant (1991) takes a different position and differentiates resources from capabilities and assets. He then states that, “Resources are inputs into the production process—they are the basic units of analysis. The individual resources of the firm include items of capital equipment, skills of individual employees, patents, brand names, finance, and so on (p. 118)...but few resources are productive. Productive activity requires the cooperation and coordination of teams of resources. A capability is the capacity for a team of resources to perform some task or activity. While resources are the source of a firm's capabilities, capabilities are the main source of its competitive advantage (p. 119)”. Barney also classifies resources into three general categories including physical assets (e.g. location, access to raw material, physical technology, equipment, machinery, etc.), human capital assets (e.g. training, judgment, intelligence, employees' knowledge, skills and abilities, relationships, etc.) and organizational assets (e.g. structures, formal and informal relations with environments, planning, controlling and coordinating systems, etc.) (P., 101)

Furthermore, Mahoney and Pandian, (1992) apply the same approach and expand Grant (1991)'s view by asserting that; resources are difficult to classify and define however strategic capabilities of a firm as ability of the firm to use resources allows these resources to create a competitive position. Amit and Schoemaker (1993) endorse this view and argue that, resources are stocks of available factors that are owned or controlled by the firm and are converted into products and services using capabilities as capacity of the firm to deploy resources (p. 35) and all of these constructs can be considered as strategic assets. Pisano (1994) advocates this view and underlines the role of resources and capabilities as firms' specific assets in firms' behavior.

Finally Eisenhrdt and Martin, (2000) broaden this notion by asserting that, organizational resources are those specific physical (e.g., specialized equipment, geographic location), human (e.g., expertise in chemistry), and organizational (e.g., superior sales force) assets that can be used to implement value-creating strategies (p. 1107). Having considered this variety of conceptual perspectives in conception of organizational resources, it can be argued that firms are bundle of heterogeneous assets and/or resources that are embedded in a variety of forms and functions. However, as RBV is not the main scope of this dissertation, for the conception of resources and in adherence to the context and purpose of this research it suffices to consider organizational

resources as an overarching concept which encompasses all tangible and intangible assets including capabilities (Helfat et al. 2007).

9. Defining Knowledge as a resource: knowledge versus Information

Although in the business literature knowledge and information has been widely used interchangeably and seen as synonymous (Terrett, 1998; Tsoukas, and Vladimirou, 2001; Venkatraman and Tanriverdi, 2004) however in order to understand the strategic importance of knowledge as a firm resource the nature of knowledge must be understood (Spender, 1996; Alavi and Leidner, 2001) and discerned from information and data (Nonaka et al. 2001: 492). In this regard, data is the most rudimentary building block of knowledge. It forms information and information forms knowledge, this is called the hierarchy of data-information-knowledge (Alavi and Leidner, 2001).

Morroni, (2006:26) states that data derive from senses directly or indirectly reported to the brain as signals. Nonaka et al. (2001) call these senses the signal messages from the environment. Further, information is a series or an organized set of data (Nonaka and Takeuchi 1995). However information is not self-interpreting or self-elaborating but it must be interpreted by human through commitment and beliefs which results in the formation of knowledge (Nonaka and Takeuchi 1995; Morroni, 2006). "Ackoff (1989) views information as processed data that answers "who," "what," "where," and "when" types questions. He views knowledge as processed information that answers the "how" questions. The information processing view focuses on knowledge creation through the processing of externally available explicit information" (cited in Venkatraman and Tanriverdi, 2004:37).

Put differently, knowledge requires commitment and beliefs and is created or acquired by "elaborating bits of information and derives from the ability to search, select, memorize, retrieve, structure, embody and use bits of information"(Morroni, (2006:26). Therefore "information is medium or material for eliciting and constructing knowledge" (Nonaka et al. 2001:492) and must be distinguished from knowledge. In line with this argument, Liebeskind, (1996) defines knowledge as "information whose validity has been established through tests of proof and further argues that knowledge is different from opinion, speculation, beliefs, or other types of unproven information" (p. 94). Knowledge is essentially is the product of human involvement and action (Tsoukas, and Vladimirou, 2001). Alavi and Leidner, (2001) assert that data is raw fact, information is organized data and knowledge is authenticated information (p. 109). Davenport and Prusak (1998:5) defines knowledge as "a flux mix of framed experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers."

More precisely, knowledge is seen as a justified belief that brings or increases the capacity for action (Huber, 1991; Alavi and Leidner, 2001). These conceptions gain meaning in the organizational context when, for instance, executives of an organization gain information about a pattern in markets or technological advancement and convert it into action by making choice about developing a new product or adopting a new process, method or mindset. This view is consistent with the definition of learning proposed by Miller (1996) and principles of KBV in the studies of Grant, (1996) and Spender, (1996).

Alternatively, Spender, (1996) argues that in order to better understand the strategic role and importance of knowledge in behavior of firms the philosophical nature of knowledge must be explained. In this respect, He adds that knowledge can be regarded as either Platonic or Aristotelian. Platonic refers to act of knowing based on experience whereas Aristotelian refers to the act of knowing by exercising reasoning and interpreting (p. 49). Knowledge in RBV is based on the synthesis of both as organization gains data (i.e. Platonic) and analyze and interpret data for action (i.e. Aristotelian). So, RBV considers knowledge as a resource that is gained and enables action (Tsoukas, and Vladimirou, 2001). Knowledge in this context may be best considered as being acquired or created, restored, retrieved and shared in the form of knowledge-as-information and then used in action as knowledge-as-knowledge (Tsoukas, and Vladimirou, 2001). This issue is more philosophical and hence goes beyond the scope of this research.²

The central tenet in this school of thought is that knowledge is the essence of organization (Tsoukas, 1996) and organization like human being is intrinsically an information-processing machine and a knowledge-driven system (Grant, 1996; Nonaka et al. 2001). Finally, given this nature of knowledge, a given organization may acquire and interpret information and use it in different ways which result in different embodiment of knowledge and subsequent heterogeneity in performance outcomes such as variations in growth (Nonaka, 1991; Kogut and Zander, 1992; Conner and Prahalad, 1996). Therefore, within this school of thought knowledge is explicitly or implicitly distinguished from information. This difference points to the existence of different types of knowledge derived from information and processing of information.

10. Dimensions of the knowledge-base of the firm

Knowledge of the firm as a resource has several important dimensions which were ignored or disused in the early RBV theories but gained attention in the knowledge-based view of the firm. These dimensions are tacit-explicit, specificity, simplicity, depth-breadth, utilitarian-instrumental, declarative-procedural, public-private and individual-collective. This section explains these dimensions.

Tacit-explicit dimension of knowledge was first discussed by Polanyi (1962). According to Polanyi, knowledge is either explicit or implicit (tacit). Explicit knowledge is codified, transferrable and is available to different individuals in the form of protocols, standards, artifacts, licenses, patents, etc. (Spender, 1996). Tacit knowledge, on the other hand, is embedded in the mind of individuals, is associated with experience and cannot be fully codified and transferred. It can be, however, partially transferred through narration and story-telling (Venkatchalam, and Busch, 2013). Tacit knowledge is also manifested in understanding of issues, norms, processes, and procedures (Piperopoulos, 2010). It therefore cannot be fully communicated (Piperopoulos, 2010). Tacit knowledge is acquired through experience, practice, perception, learning by doing, learning by using,

²Morroni (2006) points to the roots of the study of knowledge in organization and economics in the studies of Hayek, (1937), Simon (1955), Arrows, (1962) and Polanyi (1967). Briefly speaking, Hayek (1937) argued that knowledge is an economic resource which is dispersed evenly in the society and economic entities such as firms have different ability and capacity to acquire this knowledge. Simon, (1955) asserted that due to bounded rationality individuals and human systems such as firms have a limited capacity to acquire and process all the knowledge they need. Arrows (1962) envisaged the importance of uncertainty and knowledge asymmetries in the performance of an economic entity. Polanyi (1967) conceptualized the tacit (embedded) and explicit (coded) dimensions of knowledge. As it was explained, all these advancements are being widely used in the knowledge-based and dynamic capabilities view of the firm.

learning by observation, and learning to learn (Piperopoulos, 2010). Knowledge based view suggests that both tacit and explicit knowledge are important. The boundary between them is, however, porous and dynamic (Spender, 1996).

In reality, firms increasingly use codified knowledge but they are essentially dependent on tacit knowledge of their employees (Spender, 1996). Therefore, explicit knowledge is a source of advantage but it is tacit knowledge that bestows the firm a sustained competitive advantage because it is immobile and cannot be easily copied (Tsoukas, 2005) and is a fundamental factor in executives' decision making (Foss, 2005; Nag and Gioia, 2012). In overall, the existing literature provides ample evidence to support the strategic importance of tacit knowledge as a source of sustained advantage but what is less encountered is how this knowledge is made used of (Venkitachalam, and Busch, 2013). Thus, tacit-explicit dimension holds this assumption that all knowledge of the firm can be categorized as tacit or explicit (Abeson and Taku, 2009; Nonaka, and Von Krogh, 2009). Accordingly, tacit knowledge base (TKB) refers to the sum of tacit knowledge of the firm including employee's skills, talents and know-how (Lam, 2001; Ambrosini, and Bowman, 2001). In case of managers it becomes a fundamental part of their strategy-formulation and execution capacity (Bowman and Ambrosini, 2000a). TKB further claims that this part of resource-base of the firm comprises a key source of sustained advantage due to the valuable, rare, hard to understand, difficult to imitate and transfer nature of tacit knowledge of the firm (Miller and Shamsie, 1996; Abeson and Taku, 2009). On the contrary, explicit knowledge base (EKB) entails the sum of firm's codified and documented knowledge which can be shared and transferred and also imitated (Abeson and Taku, 2009). Explicit knowledge is captured in written documents, manuscripts, reports, graphs and drawings and supports the firm to act across contexts through conscious use (Nonaka, and Von Krogh, 2009). In sum, tacit-explicit dimension posits that, firm's knowledge base cannot be entirely tacit or explicit and all knowledge of the firm is combination of these two.

Alternatively, prior studies on KBV has established the idea that knowledge-base of the firm consists of specific and general knowledge (McEvily, and Chakravarthy, 2002). Specific knowledge resources are knowledge that the firm possesses about a specific context, such as a particular aspect of technology, market segment or information about a particular aspect of customers or specific to relationships with business partners (Dyer, and Hatch, 2006; De Luca, and Atuahene-Gima, 2007). On the other hand, knowledge that is generally applicable to the operation of the firm such as accounting and administration fall within the general knowledge base of the firm (Foss, 2005). Similar to the tacit-explicit dimension, it is generally assumed that knowledge base of the firm includes both specific and general knowledge (Kogut, 2008).

Further, knowledge resources of the firm can be placed along a continuum of simplicity (complexity) from being simple to complex or vice versa (McEvily, and Chakravarthy, 2002). According to this conceptualization, complex or sophisticated knowledge is difficult to comprehend because it consists of many different, unique and interdependent elements (De Luca, and Atuahene-Gima, 2007). Complex knowledge is difficult to transfer and copy (McEvily, and Chakravarthy, 2002). Analogous to other dimensions, simple-complex view also argue that knowledge-base of the firm is composed of both simple and complex knowledge (De Luca, and Atuahene-Gima, 2007). However, in case of some technology-based firm or high-technology businesses units the degree of knowledge complexity such as design of particular products is more important

that possession of simple knowledge (McEvily, and Chakravarthy, 2002). Furthermore, complex knowledge is basically developed internally through investment in technology and R&D (De Luca, and Atuahene-Gima, 2007).

Additionally, knowledge-base of the firm has been characterized by its depth and breadth (De Luca, and Atuahene-Gima, 2007; Zhou and Li, 2012). The breadth of knowledge base of the firm represents the extent to which it contains knowledge about multiple domains; whereas the depth of knowledge base reflects the level of knowledge sophistication and complexity about a specific domain (McEvily, and Chakravarthy, 2002). Therefore the depth of the knowledge base is intertwined with its complexity (De Luca, and Atuahene-Gima, 2007). Additionally, depth and breadth of the knowledge base of the firm show its structure and content (McEvily, and Chakravarthy, 2002). More specifically, depth represents horizontal dimension of knowledge of the knowledge base and breadth represents its vertical dimension (De Luca, and Atuahene-Gima, 2007).

Further, resources of the firm can be utilitarian or instrumental in terms of their usage in the productive operation of the firm (Brush et al. 2001; Jugdev, and Thomas, 2002; Doorewaard, and Benschop, 2003). Utilitarian resources refer to those resources which can be “applied directly to the productive process or combined to develop other resources” (Brush et al. 2001:67) such as machinery, space and equipment. Instrumental resources, on the other hand, are those resources which are “specifically used to provide access to other resources (Brush et al. 2001:67). Examples of instrumental resources could be financial resources. Knowledge of the firm could perform both instrumental and utilitarian functions (Kogut, 2008; Foss, 2005). For instance, managerial skills, knowledge and experience can be both instrumental to specific productive processes and utilitarian to the general operation of the firm (Foss, 2005). Noticeably, literature admits that, it is very hard to define a clear line between utilitarian and instrumental resources and more specifically utilitarian versus instrumental knowledge of the firm (Brush et al. 2001; Kogut, 2008).

Knowledge of the firm can be declarative and/or procedural (Wiklund and Shepherd, 2003). Declarative knowledge concerns ‘know-about’ or ‘know-what’ whereas procedural knowledge refers to ‘know-how’ (Zack, 1999). Although literature throws light on the other types of knowledge such as causal (i.e. know-why), relational (i.e. know-with) and conditional (i.e. know-when) (Zack, 1999) but in KBV the main focus is placed on the declarative and procedural knowledge resources (Wiklund and Shepherd, 2003; Kogut, 2008) and other types of knowledge are assumed to be implicitly included in these two main types (i.e. know-what and know-how) (Kogut, 2008). Specifically, KBV has emphasized procedural knowledge as it enables the firm to know how to do things and become competitively productive (Grant, 1996). Procedural knowledge is also difficult to transfer and formalize and hence meets the VRIN criteria better than declarative knowledge (Wiklund and Shepherd, 2003). Having said that, knowledge-base of the firm is always an inseparable and evolving bundle of declarative and procedural knowledge that complement each other and enable firm to adapt to changes (Zack, 1999; Wiklund and Shepherd, 2003; Foss, 2005)

Knowledge base of the firm also comprises public-private and individual-collective knowledge (Spender, 1996). Public knowledge refers to knowledge that is not proprietary to the organization as it mainly resides in public domain (Chua, 2002). Examples of public knowledge are industry best practices, and standards which are used in productive processes of the firm but are not possessed exclusively by the firm (Matusik and Hill,

1998). Since this knowledge is not controlled and owned by the firm it is not discussed in KBV (RBV) (Chua, 2002). In contrast, private knowledge refers to knowledge exclusively possessed by the firm such as unique processes, systems, know-how and knowledge of markets, technologies and strategies (Matusik and Hill, 1998). This knowledge is the main source of competitive advantage as it is most likely to fulfil VRIN requirements (Chua, 2002).

Furthermore, knowledge base of the firm includes both individual and collective knowledge (Spender, 1996). Individual knowledge refers to knowledge gained, held and used by individual during their task performance and in courses of actions while collective knowledge is the knowledge commonly held by group of individual in team, departments and business units (Matusik and Hill, 1998). KBV assumes that when individual knowledge is shared and transferred it becomes collective which brings more value to the firm (Chua, 2002). Collective knowledge enables the firm to adapt as it entails routines, principles and practices forming the behaviour of the firm (Zander and Kogut, 1995). More specifically, individual knowledge improves individuals' performance but collective knowledge is used in organizational level phenomena such as organization memory, organizational innovation management, organizational learning, communities of practice and organizational capabilities and routines (Hecker, 2012). KBV suggests that knowledge acquisition occurs at the individual level but organizations evolve and change through exploration and exploitation of collective knowledge of their members (Felin and Hesterly, 2007).

11. Attributes of Knowledge as a resource In the Organizational Setting

One of the principal contentions in RBV is that certain intrinsic characteristics of resources confer success (Barney, 1991; Peteraf, 1993). In case of knowledge, scholars have discussed a number of characteristics of knowledge as a strategic resource which distinguish it from other resources (Foss, 2005; Kogut, 2008; Morroni, 2006; Szulanski, 2003; Teece, 1996, 2000; SubbaNarasimha, 2001; McEvily, and Chakravarthy, 2002; Kraaijenbrink, Spender, and Groen, 2010). Stickiness, fungibility, non-exclusiveness, non-depleting and non-rivalrousness are some of the key attributes of knowledge

Another important characteristic of knowledge is its stickiness. It is particularly an attribute of organizational tacit knowledge (Morroni, 2006) such as knowledge that executives acquire through scanning, search and observation (Huber, 1991). Knowledge stickiness implies that it is difficult to separate knowledge from the human capital in which knowledge has been generated (Szulanski, 2003; Morroni, 2006). Furthermore, the stickiness of knowledge shows that knowledge has always a tacit dimension which cannot be made explicit. This dimension is intertwined with human cognition and mental maps of individual who acquire and generate this knowledge (Morroni, 2006: 36). Furthermore, Stickiness of knowledge implies its immobility. Specifically it makes knowledge difficult to transfer both inside the firm and between the firms. It is thus both a barrier to knowledge transfer and sharing and a valuable aspect of knowledge as a non-transferable competitive asset (Szulanski, 2003). Finally, stickiness of knowledge highlights the importance of executives' cognition in acquisition of knowledge and the amount of knowledge that a firm acquires (Hippel, 1994; Morroni, 2006; Szulanski, 2003). Foss, (2005) denotes that the sticky nature of knowledge necessitates investigation of cognition as a micro-foundation of organizational knowledge.

Knowledge of the firm is also fungible to an important degree (Teece, 2000, Teece, 1996: 178). A resource or an asset can be considered fungible if any unit, bit or piece of it is as good as any other units (Silk et al. 2011:107). Fungibility of an asset implies that it is very difficult to restrict the asset to specific purposes (Silk et al. 2011:107). Fungibility of knowledge is an important concept in RBV. It generally means that, knowledge gained by and held in human capital such as executives' skills, knowledge and talent is not always entirely specialized in a particular area (Teece, 2000). When it is embedded in a specific action or product, service output it represents one of several ways in which the executive or the organization can use this resource (Teece, 2000). Therefore executives can use knowledge in a variety of ways. This peculiarity of knowledge is indeed a variety-generating dimension of knowledge which enables a firm to be proactive and reactive by using its knowledge in different ways (SubbaNarasimha, 2001). Furthermore, fungibility implies the multi-applicability of the knowledge (SubbaNarasimha, 2001). That is, knowledge can support a variety of actions, products and services (peteraf, 1993) and thus enhances firm's adaptation to the changing environment (SubbaNarasimha, 2001). Furthermore, fungibility of knowledge indicates that knowledge is less likely to depreciate when certain conditions change in the business environment (McEvily, and Chakravarthy, 2002). This makes knowledge a significant resource for firms in fast-changing environment (Foss, 2005).

Additionally, non-exclusive nature of knowledge implies that knowledge as a resource can be simultaneously acquired and used for different purposes by different firms competing in a common market (Foss, 2005:114). Closely related to this concept is non-rivalrousness. That is, "deployment of knowledge by one firm, or for one purpose, does not prevent its redeployment by the same or another firm, or for another purpose" (Kraaijenbrink, Spender, & Groen, 2010:362). Non-depleting nature of knowledge also points to this fact that deployment of knowledge, unlike other resources, can increase it (Winter & Szulanski, 2001).

It seems necessary to add that, RBV tends to treat knowledge as a human capital embedded in individuals and regards organizations as collective systems of individuals that constitute a repository of knowledge (Kogut, 2008). Given the characteristics of knowledge, RBV indicates to a dynamic view of knowledge acquisition in which firms specialize in acquiring of knowledge for organizing activities and achieving certain objectives (Kogut, 2008). These activities are formed around business objectives in terms of operational and financial performance (Demarest, 1997). Therefore firms acquire more knowledge about activities they engage in (McEvily, and Chakravarthy, 2002).

The following conclusion derives from the above discussion. Knowledge acquired by executives is an individual tacit knowledge which is sticky, fungible and non-rivalrous. It is acquired based on the business needs of executives and the performance conditions of their firms. The true value of this knowledge is actualized in the choices that executives make.

12. Knowledge Acquisition and the organizational Information-Processing Theory

Organizational information processing theory (OIPT) is a theoretical view which has paid a remarkable deal of attention to the notion of knowledge acquisition. Consequently, an overview of the basic assumptions of this theory will be provided in this section. Additionally, It must be noticed that, OIPT is mainly used within management

information system (MIS) and organizational design literature (Galbraith, 1974; Premkumar, Ramamurthy, and Saunders, 2005) so it is not the intention of the present research to pay extensive attention to this theoretical perspective. Thus, the key rationale behind this discussion is to illustrate the broad applicability of the concept of knowledge acquisition across different strands of organization and management research.

Information-processing theory was originally proposed by Galbraith, (1973,1974). This theory suggests that firms are information-processing entities and the fit between their information processing requirements and processing capabilities determine their performance (Cousins et al. 2011). Furthermore in dynamic environment characterized by change and uncertainty, executives continuously face information gap and hence require external knowledge to fill this gap (Cousins et al. 2011). This continuous knowledge acquisition reduces uncertainty and enables the firm to develop capabilities to evolve and change (Premkumar, et al. 2005). Therefore continuous acquisition of external information becomes an important task of executives (Olson, Parayitam, and Bao, 2007).

Arguably, in OIPT knowledge is equated with information (Cousins et al. 2011). This is perhaps one of the main differences between KBV and OIPT. Furthermore, the main concern of OIPT is the fit between organizational design and its information requirements (Galbraith, 1974) whereas the central concern in KBV is the utilization of knowledge as a resource in creating a sustained competitive advantage for the firm (Grant, 1996; Spender, 1996). Having considered these differences, the shared tenet amongst these two perspectives is that in dynamic environment executives must continually acquire external knowledge. It is assumed that, this explanation supports the rationale behind inclusion of OIPT in this study. Since the purpose of this study is to advance mainstream research in RBV and KBV it continues by elaborating knowledge acquisition from the dynamic capabilities view.

13. Executives' Acquisition of Knowledge and Implicit Learning

Literature in organizational learning and KBV indicates that, individuals can acquire some knowledge unintentionally and unconsciously (Shanks, 2005). This phenomenon is known as implicit learning (Reber, 1967; Shanks, 2005). Implicit learning implies that some knowledge is acquired un-deliberately, automatically and even under reduced attention (Shanks, 2005). It thus represents acquisition of knowledge (i.e. acquisition and processing of complex information) in an incidental manner without awareness of what has been acquired (Seger,1994). Implicit learning has been argued to be an important part of organizational learning because it constitutes an important part of organizational tacit knowledge (Argote, and Ingram, 2000; Antony, and Santhanam, 2007).

Additionally, it has been shown that managers tend to acquire knowledge in emergent and implicit ways especially when they perceive environment as dynamic and fast changing (Miller, 1996). Similarly, some scholars have also argued that implicit learning is an important cognitive ability for individuals' performance especially when task environment is riddled with noisy and complex information (Kaufman, et al. 2010). Literature also suggests that implicit learning is related to the pursuit of non-conscious goals in the novel environments which acts as a motivative tool for individuals' performance (Eitam, Hassin and Schul, 2008). Given this, the implicit knowledge can be then used in developing skills and managerial proficiency (Enos, Kehrhaan, and Bell, 2003). Furthermore, implicit learning, as noted, is directly related to the accumulation of

tacit knowledge and thus as a corollary of KBV it is a driver of firms' competitiveness (Argote, and Ingram, 2000; Lubit, 2001).

Furthermore, in the literature on cognition implicit learning has been associated with implicit or intuitive information processing system which processes information effortlessly, unintentionally and holistically (Pretz, Totz, and Kaufman, 2010). This implies that individuals with tendency to rely on intuition could gain more knowledge implicitly than their analytic counterparts.

Moreover, cognitive psychology literature suggests that, explicit or deliberate learning (i.e. intentional and conscious knowledge acquisition) can be also influenced by implicit learning due to the subconscious nature of implicit knowledge acquisition (Lieberman, 2000). In fact, implicit learning is a fundamental and ubiquitous aspect of human cognition (Frensch and Runger, 2003). Therefore, in conclusion, implicit learning is not only an integral part of executives' acquisition of knowledge but also their managerial skills and abilities. This further places the role of intuition at the center of managerial knowledge acquisition and skill development (Dane and Pratt, 2007). Despite the significance of implicit learning, operationalization of the concept is still largely under-explained (Kaufman, et al. 2010). So, the present research does not measure executives' implicit knowledge acquisition and assume that this learning is reflected in the intuitive acquisition of knowledge.

14. Executives' Acquisition of Knowledge and Human Capital Theory

This section develops the argument that knowledge acquired by executives is a component of organizational human capital resources. Human capital resources include the "training, knowledge, experience, judgment, intelligence, relationships, and insight of individual managers and workers in a firm" (Barney and Clark, 2007:24). Becker, (1964) argues that knowledge that executives acquire increases their abilities and leads to more effective activities. This is because it is combined with their intelligence, insights and experience and results in an improved capacity for superior performance (Corbett, 2005, 2007).

Extending this view, Flamholtz, and Lacey, (1981) posit that this knowledge can take two forms. First, it could be specific. That is, it provides value only to one firm and is not transferable across firms. Second is could be general knowledge. That is, although it offers value to one firm but it is also transferable across a variety of firms (Barney and Clark, 2007:130). When executives engage in acquisition of knowledge they are likely to acquire a combination of firm-specific, industry-specific and general knowledge (Tsoukas, 2005). The totality of this knowledge brings about a superior ability to perform tasks more effectively (Hatch, and Dyer, 2004; Marvel and Lumpkin, 2007).

Therefore, according to the human capital theory, a firm with executives (i.e. top level managers) who possess superior knowledge and are uniquely positioned to make important choices may obtain imperfectly imitable advantages over firms that don't have such human capital resources (Barney and Clark, 2007:61). Following this assumption executives' acquisition of two types of knowledge will be studied in this research.

15. Executives' Knowledge acquisition and Environmental Scanning

Literature in organizational and executives' knowledge acquisition has paid a great deal of attention to the notion of environmental scanning as both a key task of executives and a strategic means for developing competitive advantage (e.g. Kefalas, and Schoderbek, 1973; Keegan, 1974; Thomas, 1980; Hambrick, 1981; Daft, Sormunen, and Parks, 1988; Auster, and Choo, 1994; May, Stewart, and Sweo, 2000; Peteraf, and Bergen, 2003; Garg, Walters, and Priem, 2003; Stewart, May, and Kalia, 2008; Makri, and Scandura, 2010; Haase, and Franco, 2011).

Environmental scanning is broadly defined as "scanning for information about events and relationships in a company's outside environment, the knowledge of which would assist top management in its task of charting the company's future course of action" (Aguilar, 1967). Therefore, it is an information gathering task (Auster, and Choo, 1994; Garg, et al. 2003) and must be distinguished from knowledge acquisition. Taken in this light, environmental scanning leads to possession of information which is then processed to shape environmental knowledge which becomes a part of the whole knowledge-base of executives and by implication that of their firm (Stewart, et al. 2008; Haase, and Franco, 2011).

So, scanning the same environment by different managers such as managers of different firms in one industry for example, small firms in the Australian office furniture manufacturing industry may result in the formation of different environmental knowledge. This is because, although these managers perform their environmental scanning task in a relatively similar way but their perception of the environment and consequent interpretation of issues differ due to their cognitive differences (Daft, et al. 1988). Hence, environmental scanning can be best described as an information gathering tool or as May, et al. (2000) put a 'search mechanism' employed to obtain information about trends and events in the environment (Hambrick, 1981; Walters and Priem, 1999).

Literature in the environmental scanning is broad and can be classified as descriptive in nature (Haase, and Franco, 2011). That is, it largely addresses sources of information (i.e. internal sources or external, personal or impersonal, etc.), importance of different environmental sectors and frequency of scanning (Auster, and Choo, 1994; May, et al. 2000; Stewart, et al. 2008). Accordingly, in general, two aspects of the external environment have been argued to be scanned by managers. The first is task environment which entails customers, competitors, suppliers, etc. or in general the near and direct market and industry as well as technological context in which a firm operates (Daft, et al. 1988) and the second is general environment such as the socio-economy and political (legal) regulatory environment which distantly impact the firm (May, et al. 2000). Theoretical and empirical evidence (Stewart, et al. 2008; May, et al. 2000) shows that in developed and stable economies the task environment changes more frequently, so it is considered more important and scanned more often and more deeply than the general one. whereas in transitory economies like emerging economies and less developed countries the general environment and its political legal sectors are considered more important so are scanned more frequently (Stewart, et al. 2008).

In addition, scanning is not a formulated and formal task assigned to executives and in fact it is mainly carried out on an ad hoc basis by all managers (Aguilar, 1967; Hambrick, 1981). Given that, executives tend to gather information from these environments through personal contacts (direct communication) or impersonal sources (i.e. magazines, news,

etc.) (Auster and Choo 1994; May, et al. 2000). Research also suggests that executives tend to seek external sources of information to avoid selective bias and gain richer information (Keegan, 1974; Thomas, 1980). It has also been argued that executives favor verbal information over written documents (Daft, et al. 1984; Auster, and Choo, 1994).

Finally, due to their bounded rationality executives tend to specialize in and focus more on some particular aspects of the environment based on their functional area and position in the firm (Thomas, 1980; Hambrick, 1981). More precisely, executives' attention is a scarce resource and must be used selectively in environmental scanning (Walters and Priem, 1999). Therefore, scanning is carried out based on the strategies of the firm. For instance, executives of firms with a differentiating strategy tend to focus on environmental issues and sectors that are relevant to research and development and product innovation (Walters and Priem, 1999; Haase, and Franco, 2011).

In conclusion, executives' environmental scanning is an information gathering behavior that forms a central part of their knowledge acquisition. It leads to development of environmental knowledge which is then used in formulating and implementing strategies aimed at creating and maintaining the competitive position of the firm in the market place.

16. Measuring Hemispheric Specialization

In cognitive psychology scholars have attempted to measure human hemispheric specialization (i.e. cognitive style or reliance on right versus left hemisphere) via a number of methods (Robey, and Taggart, 1981; Kahneman, 2003; Hodgkinson et al. 2009 a). Robey, and Taggart, (1981:375) provided an overview of three main classes of methods. These three include: (1) physiological state indicators (such as electroencephalograms and electrical skin resistance), (2) psychological tests that imply processing style through observable behavior, and (3) self-description inventories.

Although management scholars have gained insights from laboratory and electroencephalograms methods (Hodgkinson et al. 2009 a; Aydinonat, 2010; Becker, Cropanzano, and Sanfey, 2011; Senior, Lee, & Butler, 2010) and indeed both psychological methods and laboratory tests have enabled management scholars to gain scientific knowledge about brain activities in information processing (Baron and Ward, 2004) however, research in organizational cognitive psychology has been dominated by self-descriptive inventories (questionnaires) (Armstrong et al. 2011). Therefore, the present section overviews some of the key inventories used in business and management research.

17. Review of Prior Research on Key Theories of Cognitive Style

Myers–Briggs Type Indicator: MBTI Theory

MBTI was developed in 1962 (Myers, 1962) based on the personality type view of Jung (1923). It is in nature neither a unitary nor a dual view of cognitive style. However, it has many commonalities and similarities with the unitary perspective (Armstrong, et al. 2012). It assigns a complex nature to the cognitive style by arguing that people have preferred way of perception (sensing, intuition), judging (thinking, feeling,), attitudes (extroversion, introversion) and orientation (perceiving and judging). Using these four dimensions it attempts to examine how individuals perform in different situations. These are operationalized by a 50-item inventory (Myers, et al. 2003).

Gardner, and Martinko, (1996) reviewed MBTI research on managers. Their Review revealed that MBTI has been widely used in studies on leadership, conflict management, education, gender, cultural differences as well as risk management. Their findings can be summarized as: 1) managers tend to prefer thinking and judgment over feeling and perception compared to the general population. 2) Sensing managers tend to prefer concrete information whereas intuitive ones tend to prefer abstract information. 3) Sensing managers prefer conventional, detailed and systematic behaviour while intuitive managers are inclined towards unconventional, holistic and creative behaviour. 4) The proportion of sensing versus intuitive managers increases as one, moves up the organizational hierarchy. 5) Intuitive managers tend to engage in strategic planning more frequently and effectively than sensing managers. 6) Thinking managers prefer objective information while feeling managers prefer subjective information.

Armstrong, et al. (2012) also found that MBTI is the most-used measure in cognitive style and been extensively used in marketing and sale, strategy, entrepreneurship and management information systems. Some studies relevant to the present research are the work of Ginn, and Sexton, (1990) that compared managers of fast and slow growing SMEs in the US and found that founders of rapid growing firms have a tendency to use intuitive style as measured by MBTI when gathering information. More recently Hough, and Ogilvie, (2005) and Gallén, (2006) used MBTI in strategic choice making and strategic type preferences of CEOs. The former is a study of 749 managers which shows that Intuiting-thinking managers use intuition to craft more decisions of higher quality than other managers whereas Sensing-Feeling managers seek socially acceptable choices that lead to the lowest number of decisions and the lowest perceived effectiveness. The latter is based on an analysis of interviews with 70 managers and suggests that, “intuitive managers tend to view the prospector or the analyser strategy as the most viable future alternative for a firm whereas the analyzer or the defender strategy is preferred by the sensing managers” (p. 118).

White, Varadarajan, and Dacin, (2003) also used MBTI to examine market situation interpretation of marketing managers. They found that, “managers with more extroverted, judging, intuiting, and thinking cognitive styles (compared with those with more introverted, perceiving, sensing, and feeling styles) tend to perceive situations as more controllable and interpret it as an opportunity ” (p. 73). Lindblom, Olkkonen, and Mitronen, (2008) studied 226 retailers contracted to the largest retail alliance (known as the K-alliance) of Finland and claimed that these entrepreneurs tend to be thinking and sensing not intuitive and feeling and their style is not related to the performance of their firm which are against expectations form MBTI in the entrepreneurship literature. Finally, Franco, Meadows, and Armstrong, (2013) used MBTI in predicting individuals’ differences in scenario planning workshops.

Kirton’s Innovator-Adaptor Theory (KIA)

Kirton’s innovator-adaptor theory (Kirton, 1976) is one of the major views in cognitive style research and falls within unitary perspective. It assumes that people produce different solutions to seemingly similar problems based on their specific style (Kirton, 1976; Armstrong et al. 2011). It further associates these differences with differences in the thinking style of people as adaptors and innovators (Kirton, 1984). Accordingly, “everyone can be located on a continuum ranging from highly adaptive to highly innovative”(Kirton, 1984:137). Hence it perceivably acknowledges the unitary view of cognitive style. Furthermore, the adaptors share attributes of analytic and

innovators share attributes of intuitive people (Armstrong et al. 2011). A detailed description of the characteristics of these two types is available in appendix 27.

Following this perspective, Kirton (1984) argued that since managers and executives focus on the interactions between people and changing business environment the innovator-adaptor view would have important implications for business and management studies. He further asserted that, executives' behavior varies because the way they think differs and this defines how they behave and are seen to behave. However, each organization has its own climate and for instance executives who work in a more stable climate tend to incline towards adaptors and in contrast in more turbulent environment executives more likely incline towards innovators.

KIA further assumes that when task tends to be internally oriented such as in stable climate where internal efficiency matters to managers, adaptors tend to fit better with tasks. In contrast, in turbulent environment where external pressures determine tasks, innovators tend to fit better. These variations can exist not only between organizations but also between different work groups and also organizational units.

Numerous studies have tested and validated these variations. For instance Thompson (1980) studies managers in Singapore and Malaysia and found positive relationship between internal and external task orientations and cognitive style (adaptors-innovators) of respective managers. Foxall, Payne, and Walters, (1992) also investigated the fit between task orientation and cognitive style of Australian managers and provided further evidence to validate KIA.

Despite these findings, one of the challenging assertions in KIA is that adaptor-innovator view as a cognitive style is independent of the culture (Kirton, 1984), however research on the relationships between culture and cognitive style is inconclusive (Armstrong et al. 2011). Kirton, also relates behavior of innovators to their tendency towards reliance on the right hemisphere of brain (right-dominated) and behavior of adaptors to their tendency towards reliance on the left side of their brain (left-dominated) (Kirton, 1984:139). Previde, and Carli, (1987) further examined the relationship between KIA and hemispheric preferences of individuals in an Italian context and found a strong correlation between these two.

Additionally, recent studies show that cognitive style can embrace affective factors such as emotions (Armstrong et al. 2011). KIA, however, as a cognitive style tends to be independent of affect (Kirton, 1994). Empirical examinations of Kubes, (1992) and Tullett, and Davies, (1997) confirmed this independency. As will be explained later, recent research on cognitive style (e.g. Epstein et al. 1996; Hodgkinson et al. 2009) suggests that cognition and affect are intertwined and hence cognitive style measures ought to embrace affective factors.

From a different perspective, Mudd,(1995) argues that KIA can be primarily seen as a theory of organizational behavior rather a theory of intrapersonal psychology. He further disserts that, KIA has basically implications for seven domains of organizational and managerial behavior. These seven are summarized in table below.

Table 43: Domains of executive behavior in Kirton's Theory

Domain of Executives' Behavior	Adaptor	Innovator
problem solving	Tend to take the problem as defined and generate novel creative ideas aimed at 'doing things better'	Tend to redefine generally agreed problems, breaking previously perceived restraints, generating solutions aimed at 'doing things differently'
solutions	generally generate a few well-chosen and relevant solutions, that they generally find sufficient but which sometimes fail to contain ideas needed to break the existing pattern completely	produce numerous ideas many of which may not be either obvious or acceptable to others. Such a pool often contains ideas, if they can be identified, that may crack hitherto retractable problems
policies	Prefer well-established, structured situations. Best at incorporating new data, into existing structures and policies	Prefer unstructured solutions, Use new data as opportunities to set new structures or policies accepting the greater attendant risk
organizational fit	Essential to the ongoing functions, but in times of unexpected changes may, have some difficulty, moving out of their established role	Essential in times of change or crisis, but may have some trouble applying themselves to ongoing organizational demands
potential creativity	Adaptors and innovators are both capable of generating original, creative solutions but each reflect their different overall approaches to problem solving	
collaboration	Adaptors and innovators do not readily get on, especially, if they are extreme scorers	
perceived behavior	Seen by innovators as sound, conforming, safe, predictable, relevant, inflexible, wedded to the system, intolerant of ambiguity	Seen by adaptors as unsound. Impractical, risky, abrasive, often shocking their opposites and creating dissonance

Source: Mudd, (1995:167)

With respect to these findings, Thong, and Yap, (1995) argue that in small business context adaption of IT is more likely to be managed effectively by firms which are directed by CEOs who are innovators rather adaptors. The result of a survey on 172 SMEs in Singapore validated this hypothesis.

More recently, McGrath and Parkes, (2007) found positive relationships between innovators and organizational knowledge creation and adopters and knowledge usage. Finally, Chakraborty, Hu and Cui, (2008) attempted to study the technology use of individuals from the perspective of KIA. Their findings revealed that innovators are more likely to perceive a new technology as useful and easy compared to adaptors. Furthermore, innovators are less likely to be negatively influenced by subjective norms of a new technology.

Cognitive Style Indicator (CSI)

Allinson and Hayes (1994) reviewed the cognitive style literature in psychology and found that, because numerous styles have been discussed important differences between them could be submerged and ignored. Accordingly, they followed the analytic-holistic view of Miller (1987) as a means to reduce the complexity surrounding the concept of cognitive style and numerous styles under this concept. They later (Allinson and Hayes

1996) developed the cognitive style indicator (38 item measure) based on the unitary logic. They argue that, cognitive style falls somewhere between personality and ability and by measuring it “interest centers on how far individuals are analytical or intuitive in their cognitive style and to what extent it is possible to integrate the two and develop a whole brain approach” (p. 132). According to this measure, “analysts pay attention to detail, focus on ‘hard data’ and adopt a sequential, step-by-step approach to processing information. Intuitive people are, on the other hand, less concerned with detail, more receptive to ‘soft’ data, and emphasize synthesis and the simultaneous integration of many inputs at the same time” (Armstrong, et al. 2012, p.252).

This approach has gained remarkable acceptance (Allinson and Hayes 2012). For instance, Hayes, Allinson, and Armstrong, (2004) showed that there is no difference between female and male managers in terms of intuitive style. However, female non-managers are less intuitive than male non-managers and more analytical than female managers. Furthermore, a number of studies in entrepreneurship have found that executives of high-growing firms (Allinson, Chell and Hayes 2000) and also entrepreneurs of high-technology firms (Brigham and Sorenson 2008) are inclined towards the intuitive side of CSI.

Moreover, Doyle, Fisher and Young (2002) and Armstrong and Hird, (2009) reported a positive association between intuitive style and entrepreneurial drive of individuals. Corbett, (2007) found that, intuitive executives use a comprehensive mode of information acquisition and discover more opportunities than analytic executives. Dutta, and Thornhill, (2008) established a link between intuitive style of CSI and growth intension of executives. Barbosa et al. (2007) also found evidence suggesting that individuals who score high on the intuitive style have a greater entrepreneurial self-efficacy reflected in their risk taking and innovativeness. Kickul, et al. (2009) showed that, intuitive executives are more able to and confident in recognizing opportunities while analytic ones are more able to and confident in planning and marshalling resources to exploit opportunities. Brigham and Mitchell (2010) also found strong positive links between intuitive style of owner-managers of SMEs and growth of the firm. Acedo and Galan (2011) and Acedo and Florin, (2007) found that managers of Spanish SMEs who score high on intuitive style exhibit greater tolerance of ambiguity and tendency towards proactive and innovative strategies.

However, despite this popularity the unitary structure in which intuitive and analytic are two poles of a continuum has been criticized for being inaccurate and misleading (Hodgkinson and Sadler-Smith, 2003; Hodgkinson, et al. 2009 b). Consequently, the REI method is increasingly recognized as a more accurate and precise measure (Hodgkinson, et al. 2009 b; Chaston and Sadler-Smith, 2012).

Linear-Nonlinear Thinking Style Profile (LNTSP)

Another measure based on the dual view is Linear-Nonlinear Thinking Style Profile (LNTSP) developed by Vance, et al. (2007). According to this profile linear thinking represents analytic style while non-linear thinking indicates intuitive mode. Vance et al. also showed that this measure is different from Myers-Briggs Type Indicator (MBTI) and Cognitive Style Indicator. The main assumption of LNTSP is that, a balanced thinking style can be associated with effective performance of tasks in organizations.

In an attempt to test this assumption Groves, Vance, and Paik, (2008) found that managers with a balanced thinking style are more likely to produce ethical decisions. In the same line, Vance, Zell and Groves (2008) showed that executives with a balanced thinking style are more competent in developing organizational culture supporting innovation. More recently, Groves, Vance and Choi (2011) offered new evidence supporting the validity of the assumptions of LNTSP by illustrating that entrepreneurs have a better balance than non-entrepreneurs.

Non-Unitary Cognitive Style Indicator (Co-SI)

Cools and Van den Broeck (2007a) proposed the 17-item cognitive style indicator (Co-SI) based on the dual information processing (i.e. non-unitary) view. They argued that this measure is different from cognitive style indicator in that, it conceptualizes intuitive style as creating style and splits the analytic style in in a knowing and a planning style. Therefore, it proposes three styles of creating, knowing and planning on each of which individuals can be ranked as low and high.

Accordingly, Armstrong, et al.(2012) describe these three as: “individuals who score high on knowing have strong analytical skills; prefer a logical, rational and impersonal way of information processing. Individuals who score high on planning are attracted by structure; search for certainty; prefer well organized environments and are concerned with efficiency and individuals who score high on creating search for renewal; have a strong imagination; like to work in a flexible way; prefer creative and unconventional ways of decision making; and make decisions based on intuition.”

Few empirical studies have examined the validity of these styles. For instance, Cools, and Van den Broeck (2007 b) compared 177 entrepreneurs with 60 non-entrepreneurs and found that non-entrepreneurs tend to score higher on the knowing and planning style. However, for the creating style no difference was found. Furthermore, Cools, and Van den Broeck (2008) assessed testimonies from 100 managers and observed that differences in the three styles proposed by Co-SI lead to various ways of decision making, conflict handling and feedback giving. More recently, Cools, Van den Broeck, and Bouckenoghe, (2009) observed that people who succeed in finance, IT and R&D departments of organizations tend to score higher on the knowing style. While those who score higher on planning style tend to be more successful in administrative and technical and production functions; and those who score higher on the creating style tend to prosper in sales and marketing functions and general management. More recently, Knockaert, et al. (2011) showed that, in a sample of 251 individuals in Norway, growth intentions is positively related with planning and negatively related with knowing styles.

Research Design

18. Control Variables: Rationale and Operationalization

Controlling for the Environmental Munificence/Hostility

Perception of the external environment in which firm operates influences the cognitive process of executives (Mitchell et al. 2011; Hambrick, 2007) and has an impact on the resource acquisition of executives and the growth of their firm (Sirmon et al. 2007). Following the classification of environmental dimensions in management and

organization theory in studies of Aldrich, (1979), Dess and Beard (1984) and Starbuck, (1976) different aspects of environment namely hostility or munificence and dynamism or uncertainty are used in this study in order to improve the examination of the relationship between independent, mediator and moderator variables (Atinc et al. 2012; Becker, 2005).

It was previously explained how the environmental dynamism is measured. In addition to that, this study is also controlled for the environmental munificence or hostility. Munificence and hostility are two sides of the same constructs (Miller, Ogilvie, and Glick 2006; Elbanna, Ali and Dayan, 2011). Perception of munificence or hostility reflects the richness of the markets for the firm and the potential of acquiring resources and deploying them to commercial ends such as growth (Elbanna, et al. 2011). It has been argued to be a key factor in behavior of executives such as resource acquisition (Sirmon et al. 2007) and in particular strategic behavior of firms in small business context (e.g. Covin and Slevin, 1989; Specht, 1993). Literature generally suggests that in munificent environment firms can grow better (Wiklund, et al. 2009). So, the growth of the firm as well as knowledge acquisition of executives was controlled for the degree of perceived munificence.

To measure this construct this research employs the scale developed by Covin and Slevin,(1989) that was later modified by Slevin and Covin, (1997) and used in the studies of Green et al., (2008) and Mitchell et al. (2011).This scale involves six items anchored on 7-point Likert type indicating the extent to which the executive strongly disagrees (1) to strongly agrees (7) (Mitchell et al. 2011:692).A sample item of this scale would be: *“The failure rate of firms in my industry is high”*.

Controlling Family Business Influence

SMEs are likely to be owned by families- being family business (Lubatkin et al. 2006). This family-ownership as a governance mechanism leads to a behavioral discrepancy between family and non-family firms (Smith,2008). Specifically, literature suggests that family businesses tend to behave differently in terms of strategies and growth directions due to family influence and control (Lindow ,Stubner and Wulf, 2010). In general family firms are more conservative and less prone to change -de-emphasizing risky innovation (Dess, Pinkham, and 2011) and also growth is not a primary objective of their executives (Smith, 2008). So, both growth of the firm and the executives' choice of emphasis on BMI are controlled for the family ownership by asking executives a dummy variable (dichotomous value of 1 if the business is owned by a family and 0 if otherwise). This approach is adopted from Lubatkin et al. (2006).

Controlling for Executives' Demographics

Research is controlled also for executives' age, gender, experience (tenure and general managerial) as well as education. This is because; executives' cognition and hence strategic choices that they make are influenced by these factors (Hambrick and Mason, 1984; Hambrick, 2007; Vissa and Chacar, 2009). Although, cognitive style is argued to be relatively in-born and consistent over years (Armstrong et al. 2012) However, it must

be noted that, executives' behavior is not entirely and solely reliant on their cognitive style and many other cognitive factors including their beliefs systems that stem from education and experience as well as age and gender also influence their behavior (Hambrick, 2007; Narayanan et al. 2011) hence these variables were also included as control variables. So, following the convention in the strategic leadership theory (Hambrick, 2007) the emphasis on BMI as a strategic choice of executives was controlled for the potential impacts from these variables (Simsek, 2007; Barkema, and Chvyrkov, 2002).

So, gender was measured by a two-choice question of male and female. Age was measured based on the study of Marta et al. (2008) as a five-choice question (under 30, 30-39, 40-49, 49-59 and 60 and over). Level of education was tailored for the Australian context by asking from experts and accordingly was measured by asking executives to choose their highest level of education from 1) Completed school year 10 or equivalent .2) Completed school year 12 or equivalent .3) TAFE or other trade training, 4) Bachelor Degree , 5) Master Degree and 6) Doctoral Degree.

Finally, executives' experience was measured by asking them to specify how many years of general industrial experience they have. It was accordingly scaled based on the work of (Kearney, Gebert, and Voelpel, 2009) as less than 2 years, 2-5 years, 5-10 years and more than 10 years. It must be however pointed that, this study did not distinguish the scope of experience of executives (i.e. Marketing, production, sale and so on) as in Hitt and Tyler, (1991) or the entrepreneurial versus managerial experience as in Stuart, and Abetti, (1990). So, due to the scope of this study the general experience is emphasized (Forbes, 2005). More precisely, since this study emphasizes the cognitive style which is relatively persistent overtime and is argued to be an in-born attribute the influence of scope and type of experience appears to be less relevant to the cognitive style as opposed to other cognitive factors of executives such as cognitive structures (Narayanan et al. 2011) or perception of industries and competitors (Kaplan, 2011). Similar argument and measure was applied for executives' tenure.

Controlling Firm size and Age

Firm size and age are important factors of the choices that executives make (Narayanan et al. 2011) as well as their growth. These two are likely to influence executives' governance systems (Brunnerge et al. 2007). Specifically in regard to the emphasis on innovative strategies such as BMI literature suggests that "the older a firm is, usually the more hierarchy and inertia it has", and thus, its executives has rigidity and are less motivated to initiate a change (Tang, and Hull, 2012). So, in order to control for these variables this study followed the prior studies of Wolff and Pett, (2006), Brunnerge et al. (2007) and Mitchell et al. (2010). So, the study was controlled for the potential influences of firm's age and size on both their growth and emphasis on BMI.

Accordingly, firms' age was measured as the numbers of years since firm was established. To gain data on firm's age DnB (Dun and Bradstreet) was asked to provide data on the years of the establishment of the sample firms in their database. This information was included in the data obtained from this database. Firm's size was also measured in terms of the number of full time employees (Ling et al. 2008; Simsek, et al. 2005). This approach is in fact undertaken because prior research has proposed several approaches to measure firm size such as number of employees, sales, volume, or total assets. Given that SMEs generally do not disclose their financial measures related to size, the number of employees has been widely recognized as an appropriate measure of firm size (Buyl, et al. 2011). To do so, the specified data from DnB database was used and then categorized them based on the number of full-time employees of the sample firms according to the classification of the Australia bureau of statistics (ABS, 2010) as following: (1) 1-4 employees as micro enterprise, (2) 5-19 employees as small enterprise and (3) 20-199 employees as the medium-sized enterprise. This classification is consistent with the study of Terziovski, (2010). Further, it will be shown in sampling phase that, firms with less than 5 employees were excluded from the survey.

Controlling for Product-Market Strategy Factors

Product-market strategies of the firm are closely related to its business model (Zott and Amit, 2008) and as well as growth (March, 1991; Burgers et al. 2008). Particularly the breadth of market offerings of a firm has significant impact on its operative capabilities (Penrose, 1959). Therefore, two aspects of firm's product-market strategies determined by Zott and Amit, (2008) was included including breadth of product offering (i.e. pursuing a narrow and focused product scope) and breadth of market segment (i.e. pursuing a narrow and focused market segment scope). These dimensions have been assumed to be pertinent to the business model choice of executives (Morris et al. 2005; George and Bock, 2011). Therefore, the executives' emphasis on BMI was controlled for these strategies. Consequently, executives were accordingly asked to rank the importance of each dimension by a five-anchor Likert scale ranging from '1= not important at all' to '5=very important'.

Controlling for the Stage of the Growth of the Firm

The rate of knowledge acquisition in a firm is influenced by its stage of growth (Phelps, Adams and Bessant, 2007). Therefore the knowledge acquired by executives could be influenced by the stage of the growth of their firm. So, this study was controlled for the impact of the stage of the growth of firm on executives' acquisition of knowledge. To do so, the framework of Kazanjian and Drazin, (1989, and 1990) was employed. According to this framework, a small business may go through four stages of growth; conception, commercialization, growth and stability within each one of them different emphasis on knowledge is required. These four was measured by a description of each stage and asking CEOs to choose the most-relevant description to the current state of their business. A sample description is: "The Company has a product that performs well and meets a need in the marketplace. We have the capability to produce and sell but we have

yet to firmly establish the company in the market. The president/entrepreneur is central to all functions and communications. The firm has some revenues and some backing of orders.”

Controlling for country of origin and national culture

Many factors influence behavior of small firms including the national factors such as the cultural and institutional issues (Kreiser et al. 2010; Goldszmidt, et al. 2011). In general national or societal factors influence many aspects of executives’ choices and hence the subsequent behavior of SMEs (Hayton, George, and Zahra, 2002). Therefore, study is limited to a single country (i.e. Australia) in order to avoid cross-national variances. So the impact of country, origin or national culture is controlled by collecting data from a single country (i.e. Australia) which enables a homogenous national and cultural setting for sampling and data analysis.

19. A Step-Wise Guideline to Implement Online Survey

Table 44: A Step-wise guideline to implement online survey

No	Steps	Guidelines
1	the objective or purpose of the survey	<ul style="list-style-type: none"> • specify the population of interest • delineate the type of data to collect • determine the desired precision of the results • consider alternative data collection methods
2	identify and understand target population and sample	<ul style="list-style-type: none"> • consider the viability and feasibility of intent survey • specify the method of sample selection • consider the likely reaction of target population to alternative surveying modalities
3	identifying the appropriate intent surveying method	<ul style="list-style-type: none"> • ensure the representativeness • consider potential sample size • evaluate a single or combination of internet surveying modalities
4	design the questionnaire and determine the appropriate surveying software	<ul style="list-style-type: none"> • consider alternative survey formats • screen survey questions before using • pretest and revise the survey instrument
5	soliciting participation in the survey and test survey	<ul style="list-style-type: none"> • personify that the survey has phased in • consider the most effective invitation format and method
6	execute the survey, follow-ups and reminders	<ul style="list-style-type: none"> • evaluate alternative response inducement techniques

		<ul style="list-style-type: none"> • consider mode and method of follow-up • use post-delivery reminder and thank you
7	survey phase out and data transfer to SPSS	<ul style="list-style-type: none"> • assess the survey software data transferring capability • assess the quality and quantity of the transferred data • ensure variables being transferred correctly

Adopted from Simsek et al. 2005:193

20. Attributes of Reflective Versus Formative Constructs

Table 45: Attributes of Reflective Versus Formative Constructs

Issue	Reflective Construct	Formative Construct
Causal Priority	Indicators are realized From construct to indicators	Indicators are explanatory From indicators to construct
Measurement Error	Established practices important at the item level	Statistical assessment is problematic, but should be done at the construct level
Internal Consistency	Indicators should possess internal consistency	Internal consistency is not implied
Correlations	Should be high	Not expected
Identification	“Rule of three”	Two emitting paths plus formative indicators
Error terms	Yes, at indicator level	No – only disturbances at construct level
Measurement Interchangeability	Removal of an item does not change the essential nature of the underlying construct	Omitting an indicator is omitting a part of the construct

Source: Freeze and Raschke (2007:1484)

21. Specification of research constructs

Table 46: Specification of research constructs

Construct	Sample Of Measuring Items	Specification	Justification
Emphasis on BMI	<ul style="list-style-type: none"> In our strategy, it is central to make initiatives to create novel value by challenging existing industry-specific business models, roles, and relations in certain geographic market areas 	Reflective	Literature shows that emphasis on business model innovation can be assessed using different measures such as design themes and even a dichotomous factor (Bock, et al. 2012). Furthermore, in the measure adopted in this study deleting one item does not change the nature of the construct and construct is not defined by a fixed number and nature of items. So these issues indicate a reflective rather formative nature of the emphasis on BMI.
Cognitive Style	<ul style="list-style-type: none"> I try to avoid situation that require thinking in depth about something. I am not that good at figuring out complicated problems 	Reflective	<p>Intuitive is different from analytic however measures</p> <p>of each seem to be reflective rather formative. This is because, there is arguably a ‘good redundancy’ in measurement items and they target same attribute or common feature of the construct which indicate the reflective direction between the measure and construct</p>
Degree Of Knowledge Acquisition	<ul style="list-style-type: none"> Gain new knowledge of different technologies important for my business. Gain new knowledge about the market of business not known to the general public 	Reflective	Both market and technological knowledge are broad and general constructs which might cover different information. The adopted measure embraces this multi-dimensionality and attempts to capture five aspect of each type of knowledge hence it implies a - reflective directions between the measure and its construct.

Growth	<ul style="list-style-type: none"> My firm's average sales growth for the last two years has been 	Reflective	The nature of the firm's growth is an increase in the firm's outcomes which can be reflected in a number of indicators. Since different studies have employed different attribute or common feature of the construct such as only growth in size, or sale it implies a reflective direction between the measure and the construct.
Dynamism	<ul style="list-style-type: none"> Competitive intensity is high in my industry 	Reflective	Dynamism refers to the perceived rate and magnitude of change in the business environment. Since different dimensions and measures of these changes have been used in the literature we argue that there is a reflective direction between the measure and the construct.

22. Theoretical Roots of the Interview Protocol

Table 47: Theoretical roots of interview protocol

Section	Question	Source	Target Concept	Theoretical Base
Section 1	1	Sullivan and Marvel,2011	Market knowledge for growth of a firm.	behavioral view of executives, RBV,KBV
	2	Sullivan and Marvel,2011	Technological knowledge for growth of a firm.	behavioral view of executives, RBV,KBV
	3	Chandler and Lyon, 2009	Activities for acquiring knowledge.	behavioral view of executives , strategy as practice, KBV
	4	McGee and Sawyerr, 2003	Key sources for acquiring knowledge	S-as-P, learning, KBV
Section 2	5	Locket et al. 2011	Organic growth dimensions (sale, market share, employments.	KBV, RBV and organic growth
	6	Macpherson, & Holt, 2007	Market and technological knowledge and growth opportunities and	firm's productivity through knowledge (KBV)

Section 3	7	Aspara et al. 2010,Amit and Zott,2001;George and Bock,2011	strategies. Innovation in value creating and delivering offerings based on knowledge of customers and competitors and technologies.	business model innovation as configuration of activities for enacting new opportunities
	8	Morris et al.2005, Aspara et al. 2010 Zott and Amit, 2002	Industrial rules, existing customer segments, offerings.	configuration and inclusion of customer base as a basis of RBV and KBV
	9	, Chesbrough,2010;Teece,2010;Zott and Amit, 2010	Emphasis on keeping industrial recopies and replicating aspects competitors BM for competing on existing markets.	configuration, structure of resources, KBV and managing of resources (RBV,KBV,DCV)
	10	Zott and Amit, 2010,Morris et al. 2005;Aspara et al. 2012	Key aspects of the BMI	configuration of resources to appropriate value (RBV,KBV) in existing market models
	11	George and Bock,2011; Sadler-Smith ,2004;Teece,2010,Tollin,2008	Business model as a mental model consisting of key business hypotheses.	managerial cognition and emphasis on BM design
	12	Woiceshyn,2009 Hodgkinson and Healey,2011, Mitchell et al.2005	Role and significance of intuition in different managerial behaviors.	managerial cognition, dual system
	13	Woiceshyn,2009 Hodgkinson and Healey,2011 Mitchell et al.2005	Role and significance of analytical thinking in different managerial behaviors.	managerial cognition, dual system
Section 4	14	Mitchell et al. 2005; Kickul et al. 2009; Sadler-Smith, 2004	Intuitive and analytic situations	cognition, s-as-p,
	15	Hensman and Sadler-Smith, 2011	Antecedents of intuitive versus analytic behavior by discerning an intuitively-induced incident.	cognitive style strategy, S-as-P and strategic cognition , entrepreneurial effectuation

16	Woiceshyn,2009 ; Hodgkinson and Healey, 2011	Impacts of business environment on the reliance on intuitive and analytic thinking.	dual information processing in managerial choice, managerial discretion
17	Hodgkinson and Healey, 2011	The impacts of interactions between CS and perception of the environment on BM strategies and KA	dual information processing in managerial choice, managerial discretion, S-as-P, cognitive side of RBV, KBV

23. Reliability and Validity Issues in the Quantitative Phase

Construct Reliability and Validity

Construct Reliability

Although all measures were adopted from previous studies which reported evidence of reliability, however, as study conditions and context change the reliability of the study (Slater and Atuahene-Gima, 2004) a pilot study was conducted to ensure the reliability of the measure using a well-established statistical test to measure its Cronbach Alpha (i.e. reliability test). This test has been argued to be the most effective way to measure the reliability of multi-item test in a self-administered survey (Easteby-Smith, et al. 2008).Accordingly this test was ran for all measures in the model. The reliability was also measured in the main survey as well (e.g. Wolff and Pett, 2006; Easteby-Smith, et al. 2008). Chapter five elaborates the test and its results.

Face and Content Validity

This research employed as series of established measures. However to evaluate the content and face validity of the measures (Burns, 1996; Ping, 2004), the survey questionnaires was assessed by a panel consist of academicians and practitioners as explained prior the conduct of pilot study. To do so, theoretical and conceptual description and definitions of constructs and sources of their measures were provided to panel and they asked to judge them in respect to the research (Ping, 2004). This approach is consistent with the methods adopted by scholars such as Newebert, (2008) and Hughes, and Morgan, (2007). Chapter five will discuss this issue in more details and show hoe the expert panel judges the face and content validity of the measures in the research instrument.

Discriminant Validity

Discriminant validity is central to the robustness of the research and quality of its results (Lehmann, 1988; Harris, 2004; Campbell, and Fiske, 1959). Since this research employs a set of relatively new constructs measures such as REI cognitive style

(Armstrong et al. 2012) and business model innovation (Zott et al. 2011; Aspara, et al. 2010) a test for discriminant validity using confirmatory factor analysis by AMOS (Byrne, 2010) was conducted based on the multi-trait multi-method analysis (MTMM) (Campbell, and Fiske, 1959). This method has been previously used by scholars (Fornell and Larcker, 1981; Hulland, 1999; Gatignon, et al. 2002; Gatignon; 2003; Zott and Amit, 2008). Chapter five provides the details on these tests and its results.

Convergent Validity

Convergent validity (CV) of a construct measures “the extent to which different assessment methods concur in their measurement of the same trait” (Byrne, 2010:275). It is a key factor in determining the effectiveness of SEM (Shook et al 2004; Carlson and Herdman, 2012). Therefore, for this research CV is calculated by a general confirmatory factor analysis based on the multi-trait multi-method analysis (MTMM) (Campbell, and Fiske, 1959; Byrne, 2010) as a well-known and established approach (Campbell, and Fiske, 1959; Coenders, and Saris, 2000; Corten et al. 2002). Next chapter discusses this approach and its implementation using AMOS based on the instructions of Byrne (2010).

(Uni) Dimensionality of the Measures

Since the measures of the study are multi-items and anchored by different scales, this study is subject to test for dimensionality of the measures (Churchill, 1979). Therefore, both exploratory and confirmatory factor analyses were used to assess the dimensionality of research constructs (Byrne, 2010; Presutti et al. 2011).

Accordingly, scales were tested by a principal axis method through an exploratory factor analysis to see whether they post a single factor and then for standardized scales a confirmatory factor analysis was run. To conduct these tests the study of Hurley et al. (1997) was adopted. For standardizing factors the minimum value of 0.4 and for average variance between factors the minimum value of 0.5 were chosen (Presutti, et al. 2011: 376). The results of these tests and the description of their conducts are further discussed in the next chapter.

Internal and external Validity of Design

According to Bergh, et al. (2004) history and selection are the most common issues in determining the internal validity of the research. In addition, Balnaves and Caputi, (2001) state that sampling is the main concern in evaluating the external validity of a research design. Accordingly the next sections address these issues respectively.

Internal Validity: History and Selection

History is a threat to internal validity when events occur between measurements periods (Bergh, et al. 2004). Therefore, since this study does not intend to measure constructs with a time-lag and dependent, mediating and independent variables are all measured at a single point in time through a unified instrument (Bergh et al. 2004) the

phenomenon under investigation are not sensitive to the time period of the research the history threat it is argued to may not apply to this research.

Put differently, the model and research questions aim to investigate the current cognitive style, chosen business model design and degree of knowledge acquisition of executives in small businesses at a single point in time and hence argued to be not within a period of observation or not becoming emergent phenomena during the data collection (Cook and Campbell, 1976 cited in Bergh, et al. 2004:349). This issue was also discussed in the panel of experts (i.e. academicians) and the results of the discussion were in accord with this argument. In sum, history appears to be implausible or plausible but did not occur when collecting data (Bergh, et al. 2004:349) in this research.

So, focusing on dealing with history threat to the internal validity is not included in this study. Non-response and late-response biases are used to assess the selection threat to internal validity (Bergh, et al. 2004; Green et al. 2008). Chapter five further elaborates results on these tests.

External Validity: Sampling

Inappropriate sampling is the key threat to the external validity of a quantitative research measuring causal relationships (Russ-Eft and Hoover 2005). Therefore, to achieve a desired level of external validity the suggestions of Slater and Atuahene-Gima, (2004) were followed. This study also adopted a random sampling from a carefully selected population (Australian manufacturing SMEs). Further, during pilot and expert tests it was ensured that non-obtrusive measures would be adopted (Dilman, 2007).

As previously mentioned, the survey was also pilot-tested and an expert panel test was undertaken to assess whether measures seem obtrusive. These techniques increase the likelihood of achieving a high degree of external validity (Slater and Atuahene-Gima, 2004; Russ-Eft and Hoover 2005). This is consistent with the study of Kriauciunas, Parmigiani, and Rivera-Santos, (2011) in which authors argue that a survey based on established-measures and a careful sampling and detailed administration (e.g. Dilman, 2007) will result in satisfactory external validity and meaningful generalizable results.

24. Reliability and Validity Issues in the Qualitative Phase

Reliability

In case of a qualitative research reliability is synonymous with dependability (Riege, 2003). It reflects the stability of methods and findings and is an indicator of accuracy (Denzin, and Lincoln, 1998 a: 287). Thus, providing a full description of methods, data and ideas, assuring the congruence between research issues and features of design as well as recording data and developing databases are key techniques for acquiring reliability (Riege, 2003; Yin 2003). This may represent the notion of reliability as a part of overall validity of a qualitative research which is thus fulfilled by meeting requirements of validity (Koro-Ljungberg, 2010). Yin (2003) specifically suggests use of protocols in

which all the informants are subjected to a same sequence and conditions of entry-exit, interview protocol, and construct of similar data bases.

In adherence to these suggestions, consistency of interviews was assured and case databases were developed in Nvivo 9.0 (Riege, 2003) to engender a high degree of reliability. These techniques enable the interpretations to cope effectively with pluralistic view of paradigms and methods in a mixed-methods design (Miller, 2008:753).

Validity

Qualitative validity hinges on the credibility and skills of the researcher (Patton, 2002; Miller, 2008:909). To attain this end some traditional quantitative factors can be used as they are not mutually exclusive between qualitative and quantitative approaches (Patton, 2002:14). These include construct, internal and external validity (Easterby-Smith, Golden-Biddle, and Locke, 2008).

Constructs Validity

In a qualitative study construct validity must cover two issues: 1) selecting the specific types of change in the social context and relating them to the research objectives and 2) demonstrating that the research reflects those specific types of change (Yin, 2003:35). These two can be achieved by using multiple sources of evidence including interviews and observations and field notes, establishing a chain of evidences (in this study Nvivo 9 is used to record and form databases of evidences) and having key informants review the case report (Yin, 2003: 34).

Finally, the informants fill both survey questionnaires and interview protocols. This ensures that this study uses multiple sources of evidence. In addition to these techniques as Eisenhardt (1989) suggests, developing a detailed interview protocol also brings about construct validity. These techniques will be all employed in this research and have been elaborated this chapter. Their utilization will be discussed in the next chapter.

Internal Validity

Research with multiple interviews can improve its internal validity by encouraging methodological awareness and setting up a set of internal dialogue that ensures findings are presented to the stakeholders of the study (Seale, 2002; Donmoyer, 2008; Blatter, 2008). It also can use a careful method of pattern-matching for data analysis, explanation building and addressing rival explanations through detailed coding and analysis of emerging codes (Yin, 2003:36). Furthermore, developing matrices for individual and collective analyses of data across and within cases also increase internal validity (Miles and Huberman 1994).

This research adopts these approaches and sets a systematic dissemination of results amongst participants. It accordingly conducts expert and pilot tests for the interview protocol to engender methodological awareness and robustness and develops data

matrices based on the guidelines of Miles and Humenrman (1994). Furthermore, pattern-matching coding and thematic analysis of codes, tables of matching and competing explanations and illustrative logic models of themes and codes (Yin, 2003) are also deployed to reach internal validity. The techniques and the results will be illustrated in the next chapters.

External validity

Since the key concern of external validity is its immediate generalizability, in an interview-based research it initially looks problematic (Donmoyer, 2008:714). It, however, can be treated for instance by applying comparatory analyses in order to perform the logic of replication amongst cases (Yin, 2003). Seale (2002) argues that, external validity can be replaced with transferability and is fulfilled by developing detailed and rich descriptions of setting so reader is given sufficient information to judge the applicability of findings to other settings (p. 105). Denzin, and Lincoln, (1998 b: 210) further argue that trustworthiness and authenticity of qualitative analysis and interpretation also form its external validity. Therefore, approaches to attain external validity are analogous with the analytical generalization as discussed previously (Healy and Perry, 2000; Yin, 2003:37).

To conclude, external validity test is checked in this research by addressing trustworthiness and authenticity of the results and analytic generalizability criteria through a careful design and interpretation of evidence.

Data Collection

25. Ethics Committee's Approval Letter

Final approval - Ethics applicationn 5201200101(D)

Dear Dr. Jo Rhodes

Re: Project entitled: Examining the relationships between CEO's cognitive style, business model strategy and acquisition of resources: implications for firm's growth Ethics Ref: 5201200101(D)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Business & Economics Human Research Ethics Sub Committee, and you may now commence your research.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Chief Investigator: Jo Rhodes

Other Personnel: Arash Najmaei Lonbani, Peter Lok.

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).

Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 4 June 2013

Progress Report 2 Due: 4 June 2014

Progress Report 3 Due: 4 June 2015

Progress Report 4 Due: 4 June 2016

Final Report Due: 4 June 2017

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have final approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of Final Approval to an external organisation as evidence that you have Final Approval, please do not hesitate to contact the FBE Ethics Committee Secretariat,

Yanru Ouyang, via yanru.ouyang@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of final ethics approval.

Yours sincerely

Alan Kilgore

Chair, Faculty of Business and Economics Ethics Sub-Committee

26. General Ethical Considerations

Several issues were taken into consideration for complying with codes of ethics in this research project. These issues apply in both qualitative and quantitative data collection and analysis. These include:

Confidentiality and anonymity:

The confidentiality and anonymity assure that information will be safeguarded and the identity of people or institutions will be protected during and after the research. In my research i make executives that their name and their respective enterprise will be protected by me during my research and after its publication and this matter is raised in my ethical approval by the authorized committee the university.

Ownership of data and conclusion:

I will be the owner of data and their conclusion so I have the responsibility for the data. Furthermore, as my research is a copyrighted manuscript under the control of Macquarie University this issue is discussed in detail further in the process of submitting manuscript and process of getting it published.

Use and misuse of results:

The obligation i have to make sure that my research process and findings will not be used inappropriately and misused will be discussed in detail in research methodology, data analysis and discussion of my final dissertation from chapter three to four and five. However, briefly here I should point out the following precautions steps:

1. Assuring the use of most appropriate method of data collection and data analysis to minimize the risk of research misconduct and unrepresentativeness
2. Assuring the effective and accurate selection and operation of sampling strategy in order to obtaining sufficient quality data which in return yields expected results.
3. Review of results and writing of working paper in each step to improve the quality of analysis and getting feedbacks form experts in order to apply all on the final draft.

Honesty and trust:

Since the people involved in my research are executives and my research is a higher degree academic project i have obligation to be honest and transparent with all stakeholders in my study. This includes my supervisors and also executives who are participants in my study. I should be honest and provide and maintain a mutual trust throughout the process of this research from design to data collection, writing, analysis and publication.

Reciprocity:

The results of this study, its managerial implications and a summary of findings will be sent to all participants as a way to acknowledge their participation and help them understand their managerial situations in similar context and improve decision making. Furthermore, this study will be presented in some conferences and published in appropriate journal articles to provide an interactive research base for improving further both practical and theoretical studies.

Intervention and advocacy:

Although my research is not technical but if i see any harmful, illegal, wrongful behavior during my research i immediately report it to relevant authorities and discuss it with my supervisor to inspect its prospect and potential impacts on the progress and process of my research and in case of any serious impact i rearrange to redo the affected steps in due time in order to protect my research and its findings from these sorts of conditions and situations.

Harm and Risk:

My research potentially doesn't hurt people involved as it entailed interview and observations. However in case of interview, the interview protocol, its questions and content are checked to make sure that they are morally and ethically appropriate, the time and location of interviews will be also checked to assure that it doesn't bother any person involved.

Conflict of interest:

Participants in my research are executives of manufacturing enterprises in Australia, so I should consider their power, attitudes and reliance in conduct of interview and do not create a situation of inter-person conflict before, during and after interviews and data collection. In sum, my data collection must be handled with care and respect.

27. Survey Questionnaire

Each of the following eight sections (A-H) has specific instructions. Please read them carefully before answering the questions. Return the completed questionnaire in the provided return envelope.

A: The following questions are related to your preferences for ANALYTIC OR INTUITIVE THINKING. Please choose the appropriate number for each item where 1 means 'definitely not true of myself' and 5 means 'definitely true of myself'.

		definitely not true of myself				definitely true of myself	
1.	I try to avoid situations that require thinking in depth about something.	1		2	3	4	5
2.	I am not that good at figuring out complicated problems.	1		2	3	4	5
3.	I am not very good at solving problems that require careful logical analysis.	1		2	3	4	5
4.	I do not like to have to do a lot of thinking.	1		2	3	4	5

5.	I enjoy solving problems that require hard thinking.	1	2	3	4	5
6.	I am not a very analytical thinker.	1	2	3	4	5
7.	I don't reason well under pressure.	1	2	3	4	5
8.	I have a logical mind.	1	2	3	4	5
9.	I have no problems thinking things through carefully.	1	2	3	4	5
10.	I usually have clear, explainable reasons for my decisions.	1	2	3	4	5
11.	I like to rely on my intuitive impressions.	1	2	3	4	5
12.	Using my gut feeling usually works well for me in figuring out problems in my life.	1	2	3	4	5
13.	I believe in trusting my hunches.	1	2	3	4	5
14.	Intuition can be a very useful way to solve problems.	1	2	3	4	5
15.	If I were to rely on my gut feelings, I would often make mistakes.	1	2	3	4	5
16.	I don't like situations in which I have to rely on my intuition.	1	2	3	4	5

C: This section is about your acquisition of MARKET AND TECHNOLOGICAL KNOWLEDGE. Please choose the appropriate number where 1 means ‘to a very large extent’ and 5 means ‘to a small extent’.

Over the past three years, to what extent have you :

		to a very large extent				to a small extent
23.	Gained new knowledge of different technologies important for your business?	1	2	3	4	5
24.	Gained new knowledge of a specific technology important for your business?	1	2	3	4	5
25.	Gained new knowledge of a technology that is central to your business?	1	2	3	4	5
26.	Gained new knowledge of a technology not known to the general public?	1	2	3	4	5
27.	Gained new hands-on experiences with a technology that is important for your business?	1	2	3	4	5
		to a very large extent				to a small extent
28.	Gained new knowledge about how the market functions for your business?	1	2	3	4	5
29.	Gained new knowledge of suppliers in the primary market of your business?	1	2	3	4	5
30.	Gained new knowledge of manufacturers or developers in the primary market of your	1	2	3	4	5

business?

31.	Gained new knowledge about the market of business not known to the general public?	1	2	3	4	5
32.	Gained new first-hand experiences from within the primary market of your business?	1	2	3	4	5

D: This section is about your BUSINESS ENVIRONMENT. Please choose the appropriate number where 1 means 'strongly agree' and 7 means 'strongly disagree'.

		strongly agree						strongly disagree
33.	My business rarely changes its marketing practices to keep up with competitors.	1	2	3	4	5	6	7
34.	The rate at which products are becoming obsolete in my industry is very slow.	1	2	3	4	5	6	7
35.	Actions of competitors are quite easy to predict.	1	2	3	4	5	6	7
36.	The set of competitors in my industry has remained relatively constant over the last 3 years.	1	2	3	4	5	6	7
37.	Product demand is easy to forecast.	1	2	3	4	5	6	7
38.	Customer requirements/preferences are easy to forecast.	1	2	3	4	5	6	7

39.	The failure rate of firms in my industry is high.	1	2	3	4	5	6	7
-----	---	---	---	---	---	---	---	---

40.	My industry is very risky, such that one bad decision could easily threaten the viability of my business.	1	2	3	4	5	6	7
-----	---	---	---	---	---	---	---	---

41.	Competitive intensity is high in my industry.	1	2	3	4	5	6	7
-----	---	---	---	---	---	---	---	---

42.	Customer loyalty is low in my industry.	1	2	3	4	5	6	7
-----	---	---	---	---	---	---	---	---

43.	Severe price wars are characteristic of my industry.	1	2	3	4	5	6	7
-----	--	---	---	---	---	---	---	---

44.	Low profit margins are characteristic of my industry.	1	2	3	4	5	6	7
-----	---	---	---	---	---	---	---	---

E: This section is about your PRODUCT MARKET STRATEGIES. Please choose the appropriate number where 1 means ‘very important’, 2 means ‘important’, 3 means ‘moderately important’, 4 means ‘slightly important’ and 5 means ‘not important at all’.

		very important	important	moderately important	slightly important	not important at all
--	--	-------------------	-----------	-------------------------	-----------------------	----------------------------

45.	In our strategy, pursuing a narrow, focused product range is:	1	2	3	4	5
-----	---	---	---	---	---	---

46.	In our strategy, pursuing a narrow, focused market range is:	1	2	3	4	5
-----	--	---	---	---	---	---

47. F: This section is about THE GROWTH STAGE of your business. Please select the one statement from below that, most closely describes your current business.

☐ Within this company, the primary focus of our activities is on product development and design, securing adequate financial resources and developing a market. Most of our employees have technical tasks but could be considered more as generalists than specialists, as we all perform multiple tasks. We more closely resemble a task group than an organization. Formality and procedures are almost non-existent at this firm, but the chairman/entrepreneur is central to all functions and communications.

☐ The company has a product that performs well and meets a need in the marketplace. We have the capability to produce and sell but we have yet to firmly establish the company in the market. The chairman/entrepreneur is central to all functions and communications. The firm has some revenues and some backing of orders.

☐ The company is characterized by high growth rates in both sales and number of employees. The major internal focus is around issues of how to produce, sell, and distribute the products in volume while attaining profitability. Internal structure and communication is becoming more formal and increasingly individuals are assuming specialist roles. The company has a single product line.

☐ Within this company, the major internal activities include: (1) development of 2nd, 3rd generation products and/or totally new product lines; (2) securing growth funding; (3) securing or growing Markets share; (4) penetrating new geographic territories. The firm has a formality of organization structure, rules, and procedures. Budgeting and strategic planning are established processes. A top management team composed of some individuals with broad industry experience is in place or is being built.

G: The following questions are about the growth of your firm. Please choose the appropriate number where 1 means ‘very low’, 4 means ‘average’ and 7 means ‘very high’.

Compared to the industry rivals:

		very low			average			very high
48.	My firm’s average sales growth for the last three years has been:	1	2	3	4	5	6	7
49.	My firm’s average market share growth for the last three years has been:	1	2	3	4	5	6	7
50.	My firm’s average employment growth for the	1	2	3	4	5	6	7

last three years has been:

51. My firm's average percentage of operational profit by total sales for the last three years has been:
- 1 2 3 4 5 6 7

H: The following questions are about your personal background. Please select the appropriate response:

52. How many years of general managerial experience do you have?

- ☐ less than 2 years
- ☐ 2-5 years
- ☐ 5 to 10 years
- ☐ more than 10 years

53. How long have you been working as the CEO/managing director in your current firm?

- ☐ less than 2 years
- ☐ 2-5 years
- ☐ 5 to 10 years
- ☐ more than 10 years

54. Is your firm a family-owned business?

- ☐ yes
- ☐ no

55. How old are you?

- ☐ less than 30
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60 and above

56. What is your gender?

- ☐ Male
- ☐ Female


57. Please indicate the highest level of education you have completed:

- ☐ Completed school year 10 or equivalent
- ☐ Completed school year 12 or equivalent
- ☐ TAFE or other trade training
- ☐ Bachelor Degree
- ☐ Master Degree
- ☐ Doctoral Degree

End of Questionnaire, Thank You for Your Participation

28. First Page of the Online Survey

Link to the survey is : <https://www.surveymonkey.com/s/Arash-Najmaei>



CEO's cognition and growth of Australian SMEs

2.

A. The following questions are related to your preferences for ANALYTIC OR INTUITIVE THINKING. Please choose the appropriate number for each item where 1 means 'definitely not true of myself' and 5 means 'definitely true of myself'.

1. try to avoid situations that require thinking in depth about something.	1	2	3	4	5
1=definitely not true of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I am not that good at figuring out complicated problems.	1	2	3	4	5
1=definitely not true of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I am not very good at solving problems that require careful logical analysis.	1	2	3	4	5
1=definitely not true of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I do not like to have to do a lot of thinking.	1	2	3	4	5
1=definitely not true of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I enjoy solving problems that require hard thinking.	1	2	3	4	5
1=definitely not true of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am not a very analytical thinker.

Figure 25: First page of the online survey

29. Interview Protocol

Investigator: Arash Najmaei

Date: -----

Time: -----

Venue: -----

Case number: -----

Introductory section

- A brief description of the research and explanation of its rationale and conduct.
- Asking participants to give a brief introduction of themselves and their business.

Section 1: Perception or Environment and Acquisition of Market and Technological Knowledge:

1. How would you assess the rate of change in your business environment?

Probes:

- a. *Magnitude?*
- b. *Sectors?*

2. How actively do you seek knowledge about markets (i.e. customers, competitors, suppliers)?

Probes:

- a. *Activities?*
- b. *Sources?*

3. How actively do you seek knowledge about technological aspects of your business?

Probes:

- a. *Activities?*
- b. *Sources?*

Section 2: Growth and Knowledge Acquisition

4. Thinking about the growth rate of your firm, how do you think it relates to the amount of market knowledge you acquire?

Probes:

- a. *How?*

5. Thinking about the growth rate of your firm, how do you think it relates to the amount of technological knowledge you acquire?

Probes:

- a. *How?*

Section 3: Emphasis on Business Model Design

6. Have you repeated the same business model over the past two years?

Probe:

- a. *Which aspects have been repeated?*

7. Have you developed /are you developing a new business model?

Probe:

- a. *Which aspects are newly developed?*
8. Would you characterize your overall management style as being oriented towards continuing with your current business model or continuously changing it?

Section 4: Cognitive Style

9. How actively do you rely on intuitive thinking/gut feeling in managing your business?

Probe:

- a. *Why?*
 - b. *Which aspects?*
 10. How actively do you rely on analytic thinking in managing your business?
- Probe:*
- a. *Why?*
 - b. *Which aspects?*
 11. Now thinking about the rate of change in your business environment, do you believe your gut feeling plays an important role in your management?
- Probe:*
- a. *Knowledge acquisition?*
 - b. *Business model strategy?*
 12. Can you please describe to me a time when you had a gut feeling about a course of action without knowing whether it is right or wrong and what was the outcome?

Closing section

- Thanks for your participation
- If there is any question please feel free to ask
- It will be much appreciated , if your provide me your comments and suggestions about this research in general and the interview in particular

End of the Interview

30. Survey's Informed Consent Letter

Chief Investigator's / Supervisor's Name: Jo Rhodes

Chief Investigator's / Supervisor's Title: Dr.

CEO's Questionnaire Information and Consent Form

Dear CEO

First of all I would like to cordially thank you for volunteering to participate in my research.

It will be much appreciated if you give 30 minutes of your time to complete the attached questionnaire. This is a doctoral study that aims to explore how executives in Australia use their analytic and intuitive thinking to become more competitive. The questionnaire consists of eight sections with specific instructions given at the beginning of each section. This study is being conducted by Arash Najmaei (arash.najmaei@students.mq.edu.au, 0414872787) from the Macquarie Graduate School of Management to meet the requirements of the degree of Doctor of philosophy under the supervision of Dr. Jo Rhodes (Jo.Rhodes@mgsm.edu.au, 0298509041).

The outcomes of the research could assist executives to make more effective decisions regarding the competitiveness of their business model and growth of their firm. The advantage of your participation in this research is having access to an industry based report which will demonstrate how and where your partners and competitors operate. This data can be then used as inputs for your competitive decision making.

By completing the questionnaire, it is deemed that you have given consent to participate in the research study. You can complete the questionnaire in two ways based on your preference: 1) by filling the questionnaire as attached and return it using the enclosed postage-paid return envelope or 2) by filling the online survey via the provided link. If you would like to receive the results please email or contact me. If you would also like to receive more information please feel free to contact me.

The ethical aspects of this study have been approved by the Macquarie University Ethics Committee. Any information or personal details gathered in the course of the study are confidential. No individual will be identified in any publication of the results. Only my supervisors and I will have access to the data. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Macquarie University Ethics Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Investigator's Name: Arash Najmaei

Investigator's Signature:

Date:

31. Interviews' Informed Consent Letter

Chief Investigator's / Supervisor's Name: Jo Rhodes

Chief Investigator's / Supervisor's Title: Dr.

CEO's Interview Information and Consent Form

Dear

First of all I would like to cordially thank you for volunteering to participate in my research.

It will be much appreciated if you give 45 to 60 minutes of your time to participate in an interview. This interview is part of a doctoral study that aims to explore how executives in Australia use their analytic and intuitive thinking to become more competitive. This study is being conducted by Arash Najmaei (arash.najmaei@students.mq.edu.au, 0414872787) from the Macquarie Graduate School of Management to meet the requirements of the degree of Doctor of philosophy under the supervision of Dr. Jo Rhodes (Jo.Rhodes@mgsm.edu.au, 0298509041).

The advantage of your participation in this research is having access to an industry based report which will demonstrate how and where your partners and competitors operate. This data can be then used as inputs for your competitive decision making. This data can be then used as inputs in your competitive decision making. The outcomes of research assist executives to make more effective decisions regarding the competitiveness of their business model and growth of their firms. If you would like to receive the results please email or contact me. If you would also like to receive more information please feel free to contact me.

With your permission I would like to record your responses. Before we begin, please feel free to raise any question or issue you may want to share. Your participation in this interview is strictly voluntary and you can withdraw from the study at any time. Further, all information you provide will be confidential, secured, saved and coded with password-protection to ensure anonymity, safety and confidentiality. Only my supervisors and I will have access to the data and no individual will be identified in any publication of the results.

The ethical aspects of this study have been approved by the Macquarie University Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Given this guideline please provide your permission for the following items:

- I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence. I have been given a copy of this form to keep.
- I agree to the interview session being tape recorded.
- Data collected from the interview will be used in reports and publications. Quotations and data will not be identifiable to any interviewee in reports or publications.

Participant's Name:

Participant's Signature:

Date:

Investigator's Name:

Investigator's Signature:

Date:

I, _____ have read (or, where appropriate, have had read to me) and understand the information above and any questions I have asked have been answered to my satisfaction.

32. Interviewing Techniques

Avoiding Prejudice

In conduct and assessment of a qualitative interview, as an interpretive scheme the notion of prejudice must be carefully understood, recognized and dealt with. To do so, the following approach suggested by Gillham (2005) is undertaken and completed by a series of suggestions from the experts on the field of qualitative interviewing and qualitative social research:

1. Three initial questions were asked by the researcher and some noted based on preliminary answers were taken. These three questions are: what do I expect to find? What would I prefer to find? And what would I hope not to find?
2. Design of questions was carefully checked against these noted in order to ensure that questions do not reflect these issues and do not mislead the process of interview. It is important because misleading questions negatively affect exploration and creation of context-rich knowledge.
3. A series of test and control interviews was conducted by the researchers in presence of experts before the main interviews of the research in order to practice the process of interview and ensure that interview conduct is not affected by prejudicial leadings.
4. Finally, data analysis and codings were double-checked by the experts and also rechecked by the researcher against the prejudicial questions and answers in order to make sure that the coding and analysis are not affected by prejudgments.

Probing and Prompting

In order to gain integrity and develop relevant, consistent and context-rich data from the interview and explore the interviewee deeply, the running of interviews were properly (unobtrusively) steered and controlled by use of prompts and probes (Gillham, 2006). The methodological rationale behind use of prompts and probes is to ensure that the process of data collection gains a degree of standardization and comparability from one interview to another and also it covers the key targeted areas of the research (Gillham, 2004). Prompts were developed based on the key concepts and themes derived from the review of literature and were used to direct the interview towards key points and are developed by interview questions.

To do so, the main points and topics were noted based on the objectives of the research, research questions and theme of literature review. These notes form the

common ground of the research and must be addressed by the interviewees. While each interviews mainly came up with its unique issues which were peculiar to it, the interviewees were directed towards these noted. The process and governance of this steering is highly interview-specific and was dependent on the contingent flow of the interview in the context. For instance if the interviewee addressed the issues, obviously interviewer didn't need to use prompts but there were there to remind the direction of the interview. In another case, if the interviewee didn't cover some specific topics the relevant prompts were asked to redirect the interview.

Furthermore, probes are supplementary questions or responses which the interviewers use to get the interviewees to feed more data into interview and expand, enrich and broaden their responses in order to minimize ambiguities and misperceptions during analysis and maximize clarification (Gilliam, 2004:47). Probes must be simple, clear and relevant. Use of probes must be accompanied by showing appreciation and understanding. Review of the studies of Galunic and Eisenhard, (2001), Eisenhardt and brown, (1997), Danneels (2010), Autio, George and Alexi, (2011), and Zott and Huy (2007) show that , the researchers have effectively used probes by asking the interviewees to provide examples, name key incidents, clarify their determents and consequences.

Encouraging Reluctant Interviewees

In order to develop rapport and extract rich data from respondents, the six-phase approach of Dundon, and Ryan (2010) was utilized. This approach is in particular developed for qualitative management research. Accordingly, the first phase is opening the interview by obtaining the permission, building trust and agreement. This is done, as explained earlier, by describing the research, offering inform consent form and assuring the confidentiality, anonymity and promise of providing results. In the second phase, respondent were given the option to stop interview at any time they feel tired or distracted. Refreshment was provided by the researcher. Off-topic talks were also allowed (not recorded and noted) to refresh the context and help facilitate the dialogue. Thirdly, a neutral, quiet and comfortable place was chosen for interviews. It was a chose made by respondents at their convenience. The fourth phase concerned with getting-back on-topics from refreshments and off-topic talks.

This method is likely to encourage and engage participant in talk and establish sufficient amount of empathy and trust (Dundon, and Ryan 2010:12). In the fifth phase, it was tried to capitalize on benevolent relationships by executing probing and prompting techniques and seeking further evidence and example. This phase is consistent with the suggestions of Gilliam, (2004) for core skills and methods of interviewing as explained in the previous section. The last phase is about adding value post-interview, interviews were asked to provide any additional story, comment to gain new rich data and anecdotes.

33. Methods to Improve Executives' Response Rate to the Survey

The quality of mail survey research in organization and management studies is associated with the issue of executives' response rate (Cycyota and Harrison, 2006). This issue is particularly important in research on small firms in which executives' response rate to surveys is generally lower than large firms (Cycyota and Harrison, 2002). Although prior studies (Larson and Chow, 2003; McCoy and Hargie, 2007) have recommended approaches such as monetary incentives, follow-up calls, personalization of cover letters and advance-notice to increase the likelihood of executives' response however they are not always effective and also bring additional time and cost to the research (Greer, Chuchinprakarn and Seshadri, 2000). Furthermore, as the next section discusses, they also cause some psychometrical biases which influence the quality of data (Cycyota and Harrison, 2002). Hence, this research employs a combination of techniques which are assumed to be widely used and have the least impact on psychometrical biases of survey (Jobber and O'Reilly, 1998; Greer, Chuchinprakarn and Seshadri, 2000; Cycyota and Harrison, 2006; McCoy and Hargie, 2007). These include: (1) scheduled follow-up calls, (2) use of return stamped colored envelop to increase appeal and enhance return of the questionnaire (3) guarantee of anonymity and confidentiality, and (4) inclusion of a friendly cover letter indicating the salience of the topic and university endorsement.

34. Method to Minimize Respondents' Psychometric Biases

There are three general psychometric biases involved in a mail-survey research which negatively influence the quality of data (Cycyota and Harrison, 2002). First is acquiescence bias or feeling of providing responses in favor of survey sponsor. The second is self-representation or the tendency towards portraying the firms in a most desirable manner and the third is the feeling of obligation or debt to provide favorable information. In order to minimize the likelihood of these biases this study does not include incentives including monetary or non-monetary ones and avoid providing personalized letter or any information which provoke feeling of traceability in respondents (Podsakoff, and Organ, 1986; Cycyota and Harrison, 2002). The choice of techniques explained in the previous section shows this approach.

In addition, since this study uses self-report questionnaire which contains perceptual measures its data are subject to rater bias (Heneman, 1974). So, following Gupta and Govindarajan, (1986) the anonymity of data was guaranteed and highlighted that the objective of the data collection and purpose of the research is purely scientific not evaluative. This was mentioned in the consent form.

35. Addressing Retrospective and Recall Bias

Survey of executives is subject to recall or retrospective bias (Huber, and Power, 1985; Miller, Cardinal, and Glick, 1997). This is because executives have limited and imperfect recall and implicitly employ espoused views to reconstruct the past (Huber, and Power, 1985; Cox, and Hassard, 2007). Specifically, Peterson (2005:349) states, "If study participants are answering a question about behavior even questions that are expected to

be intuitively answered need to recall or reconstruct relevant instances of this behavior from memory”. Sources of these recall biases are pervasive, inevitable and are not limited to past strategies and actions. Despite their inevitability, however, there are guidelines to improve and increase the accuracy of responses.

The instruction proposed by Huber and Power, (1985) was employed as one of the most-used and recommended tools to improve recall bias (Miller, et al. 1997). Huber and Power (1985) suggest the followings: 1) if only one informant per organization is to be questioned, attempt to identify the person most knowledgeable about the issue of interest. So, following this note, in order to assess emphasis on BMI and growth of the firm only CEOs were targeted as they are argued to be the most knowledge individuals in SMEs (Ling, et al, 2008 a,b,; Lubatkin, et al. 2006). 2) When choosing key informants, recognize that the person’s emotional involvement with a topic or unit of analysis may either increase or decrease the accuracy of information. So key important topics (growth and BMI) were chosen to ask from CEOs and relate them with their own personal attributes and behavior (KA and CS). 3) Motivate informants to co-operate with researcher. This was done by ensuring anonymity and confidentiality and explained how the findings can be useful to the informants (CEOs). 4) Minimize the elapsed time between the events of interest and the collection of data. This study hence focused on the recent events and activities such as general acquisition of knowledge, business model innovation and growth and 4) use questions that are pretested, structured and that impart an image of being rich in information content without being complex. This study hence used previously tested measures with high reliability and also used two different pilot testing techniques before the main survey. Additionally, even though various measures were carefully undertaken. However, in order to estimate the effects of potential recall bias we tested for non-response and late-response biases. This will be explained in the next section.

Data Analysis

36. Identifying and Profiling Non-Respondents

In survey research response rate is of central importance. Consequently identifying non-responding cases has been a subject of on-going debate (Ivan and Makin, 1986; Rogelberg, et al. 2003; Burkell, 2003; Braunsberger, Gates, and Ortinau, 2005; Nesterkin, and Ganster, 2012). This issue is particularly important to understand whether non-respondents deliberately (purposefully) choose not to participate in the survey , which may be caused by a problem in in the design of the survey or its conduct or the non-responsiveness is random or passive due to issues such as being not interested in the survey, having forgotten, or being busy, etc. (Rogelberg, et al. 2003; Nesterkin, and Ganster, 2012). The random or passive non-responsiveness is the ideal case as it assures that responding and non-responding cases do not differ statistically and consequently the results of the survey are externally valid and can be generalized to the population of interest (Nesterkin, and Ganster, 2012). As a result, identifying the rate of non-

responsiveness and profiling them according to the reasons driving this behaviour has been studied extensively (Braunsberger, et al. 2005; Rogelberg, et al. 2003).

Identifying non-respondents is largely done through two methods. First, if the survey is conducted via a drop-and-collect technique the reason for not returning the survey is directly asked and recoded (e.g. Cao, et al. 2010) and this direct feedback is used in profiling respondents. For other types of survey such as postal and online, authors (e.g. Simsek, et al. 2005) have used subtle coding system. According to this technique, firms or executives listed in the purchased database are numbered and then questionnaires sent to them will be also numbered accordingly. This enables the researcher to profile the early, late and non-respondents because the returned questionnaires contain a number that links them back to the lists of sample firms (Rogelberg, et al. 2003). This profile will be then used to explore and examine the reasons behind non-responsiveness of sample cases by contacting and interviewing a small sample of non-respondents (e.g. Terziovski, 2010). Furthermore they can be counted and different tests such as T-test and ANOVA used to see if they differ statistically from early and late respondents and whether they are active or passive non-respondents (Rogelberg, et al. 2003). This coding mechanism was applied in this study. So, following Rogelberg, et al. (2003:1107) surveys were sent with a subtle (imbedded) code corresponding to individual data in the base dataset and accordingly early, late and non-respondents were recoded for further tests and examinations.

37. Estimating Non-Response and Late-Response Biases

Non-response and late-response biases are methodologically caused by similar sources and hence can be estimated using similar techniques (Armstrong and Overton 1977). For late-response bias, Armstrong and Overton suggest a procedure for post hoc testing, where the researcher compares respondents from the first wave of returned surveys with late respondents, typically from a second wave replying to a reminder notice. For estimating these biases characteristics of executives in two samples of early-respondents and late-respondents were compared using T-test and significance of differences was assessed. Statistically non-significant differences on a number of descriptive variables indicate a lack of bias resulting from self-selection (Mullen, Budeva, and Doney, 2009:302). Results of this approach are discussed in chapter 5.

Similarly, for assessing non-response bias the known characteristics of firms including their age and size were compared between a sample of responded and non-responded firms using a combination of T-test and ANOVA (Armstrong and Overton 1977; Merrilees, Rundle-Thiele, and Lye, 2011). Another test analogous to the work of Terziovski, (2010) was also undertaken on Australian manufacturing SMEs. Accordingly, 5 short phone-interviews with non-respondents were conducted to seek the reasons behind their non-responding behavior. Appendix 26 explains how non-respondents were identified.

38. Reverse coding and reliability of REI items after Pilot Testing

Table 48: Reverse coding and reliability of REI

No	Item	Sub class	Scoring	Reliability Results if item deleted	Decision to remain in the survey
Experientiality measure (intuitive cognitive style)					
1	I try to avoid situations that require thinking in depth about something.	Rationality engagement	Reverse	0.599	Yes
2	I am not that good at figuring out complicated problems.	Rationality ability	Reverse	0.603	Yes
3	I enjoy intellectual challenges.	Rationality engagement	Normal	0.786	No
4	I am not very good at solving problems that require careful logical analysis.	Rationality ability	Reverse	0.611	Yes
5	I do not like to have to do a lot of thinking.	Rationality engagement	Reverse	0.620	Yes
6	I enjoy solving problems that require hard thinking.	Rationality engagement	Normal	0.577	Yes
7	Thinking is not my idea of an enjoyable activity.	Rationality engagement	Reverse	0.766	No
8	I am not a very analytical thinker.	Rationality ability	Reverse	0.701	Yes
9	Reasoning things out carefully is	Rationality	Reverse	0.802	No

	not one of my strong points.	ability			
10	I prefer complex problems to simple problems.	Rationality engagement	Normal	0.833	No
11	Thinking hard and for a long time about something gives me little satisfaction.	Rationality engagement	Reverse	0.863	No
12	I don't reason well under pressure.	Rationality ability	Reverse	0.684	Yes
13	I am much better at figuring things out logically than most people.	Rationality ability	Normal	0.888	No
14	I have a logical mind.	Rationality ability	Normal	0.722	Yes
15	I enjoy thinking in abstract terms.	Rationality engagement	Normal	0.901	No
16	I have no problems thinking things through carefully.	Rationality ability	Normal	0.704	Yes
17	Using logic usually works well for me in figuring out problems in my life.	Rationality ability	Normal	0.888	No
18	Knowing the answer without having to understand the reasoning behind it is good enough for me.	Rationality engagement	Reverse	0.9	No
19	I usually have clear, explainable reasons for my decisions.	Rationality ability	Normal	0.699	Yes

20	Learning new ways to think would be very appealing to me.	Rationality engagement	Normal	0.802	No
Rationality measure (analytic cognitive style)					
21	I like to rely on my intuitive impressions.	Experiential engagement	Normal	0.777	Yes
22	I don't have a very good sense of intuition.	Experiential ability	Reverse	0.866	No
23	Using my gut feeling usually works well for me in figuring out problems in my life.	Experiential ability	Normal	0.653	Yes
24	I believe in trusting my hunches.	Experiential ability	Normal	0.698	Yes
25	Intuition can be a very useful way to solve problems.	Experiential engagement	Normal	0.744	Yes
26	I often go by my instincts when deciding on a course of action.	Experiential engagement	Normal	0.865	No
27	I trust my initial feelings about people.	Experiential ability	Normal	0.891	No
28	When it comes to trusting people, I can usually rely on my gut feelings.	Experiential ability	Normal	0.855	No
29	If I were to rely on my gut feelings, I would often make mistakes.	Experiential ability	Reverse	0.549	Yes

30	I don't like situations in which I have to rely on my intuition.	Experiential engagement	Reverse	0.633	Yes
31	I think there are times when one should rely on one's intuition.	Experiential engagement	Normal	0.744	Yes
32	I think it is foolish to make important decisions based on feelings.	Experiential engagement	Reverse	0.801	No
33	I don't think it is a good idea to rely on one's intuition for important decisions.	Experiential engagement	Reverse	0.844	No
34	I generally don't depend on my feelings to help me make decisions.	Experiential engagement	Reverse	0.796	No
35	I hardly ever go wrong when I listen to my deepest gut feelings to find an answer.	Experiential ability	Normal	0.702	Yes
36	I would not want to depend on anyone who described himself or herself as intuitive.	Experiential engagement	Reverse	0.681	Yes
37	My snap judgments are probably not as good as most people's.	Experiential ability	Reverse	0.833	No
38	I tend to use my heart as a guide for my actions.	Experiential engagement	Normal	0.789	No
39	I can usually feel when a person is right or wrong, even if I cannot explain how I know.	Experiential ability	Normal	0.531	Yes

40	I suspect my hunches are inaccurate as often as they are accurate.	Experiential ability	Reverse	0.933	No
----	--	----------------------	---------	-------	----

39. Rationales for Using Structural Equation Modeling

Structural equation modeling (SEM) is being increasingly applied in strategy and management research (Williams, Vandenberg, and Edwards, 2009; Williams, Gavin, and Hartman, 2004). This is because this method not only provides a deeper understanding of causal relationships but also offers a pictorial view of the causation through which inference building is enhanced and richer meanings are generated (Byrne, 2010). Additionally, “SEM is usually used because it permits the measurement of several variables and their interrelationships simultaneously. It is more versatile than other multivariate techniques because it allows for simultaneous, multiple dependent relationships between variables” (Hoe, 2008:77). Given these features, SEM appears to be an appropriate analytical approach for analyzing quantitative data and assessing research questions based on the proposed theoretical model. As a result, for this research SEM is employed.

SEM is however a broad techniques (Williams, et al. 2009; Byrne,2010).Therefore, in order to analyze data the two-phase maximum-likelihood structural equation modeling (SEM) proposed by Anderson and Garbing(1988) and recently sued in the context of small business (e.g. Lubatkin, et al. 2006;Ling et al. 2008a) was employed because it is a covariance-based approach of structural equation modeling (Fornell and Bookstein, 1982) and delivers better results than variance-based approaches in terms of parameter consistency and accuracy (Reinartz et al., 2009).

Accordingly, following Ling et al. (2008b), “The first phase of this approach involves using a confirmatory factor analysis (CFA) model to fit to the observed data. The second phase involves comparing a sequence of nested structural models to gain information concerning the structural model that best accounts for the co-variances observed between the exogenous and endogenous constructs” (Ling et al. 2008b: 565). The software package AMOS 20.0 was employed (IBM, New York) to conduct the modeling and used instructions provided by Byrne (2010) and Arbuckle (2011).

40. SEM Operationalization Protocol

Having mentioned the statistical tool and package (SPSS IBM 20.0 and AMOS IBM 20.0), in order to properly conduct and report the finding of this method the checklist and guideline proposed by Shook et al. (2004) and McDonald and Ringo, (2002) were employed. Table 9 illustrates the checklist adopted from Shook et al. (2004:403) and how each issues is taken into consideration in this research. Additional considerations for

model tests and also moderation, mediation and analysis of control variable were adopted from Williams et al. (2009) as illustrated in table below.

Table 49: SEM Operationalization Protocol

Topic	Issue	Recommendations
Developing indicators	Item versus parcel?	<ol style="list-style-type: none"> 1. Consider items for scale development if number of latent variable is low, and sample size is adequate. 2. Consider parcel if item distribution non-normal, number of latent variable is high and sample size is relatively small. 3. Use factorial method for unidimensional latent variable and domain representative for multidimensional latent variable, but also consider separate latent variables for dimensions.
Indicator-latend variable relationship	Reflective versus formative?	<ol style="list-style-type: none"> 1. Beware of identification and interpretation issues with formative measurement. 2. Beware of philosophical limitations of formative measures 3. Consider representing formative indicators with latent variables using reflective indicators; model these latent variables as causes of more general constructs, measured with reflective indicators.
Mediation and latent variavle relationships	How to test for mediation?	<ol style="list-style-type: none"> 1. Beware of revision to Baron and Kenny's (1986) causal steps approach. 2. Test for mediated effects as products of path estimates using bootstrap approach. 3. In complicated models with multiple mediation processes, supplement estimate of total effects with reports of all mediated effects using effect decomposition.
Moderation and latent variable relationships	How to test for moderation and multiple indicator models?	<ol style="list-style-type: none"> 1. Key issue is how to form product latent variable used to test for moderation 2. Be aware of two categories of approaches, one that uses product indicators and one that does not. 3. Jöreskog and Yang (1996) approach recommended, using mean centered indicators and relaxing normality based model constraints.
Using control variables in latent variable models	How to optimally use control variables with latent variable models?	<ol style="list-style-type: none"> 1. Be aware that using control variables can change meaning of endogenous latent variables as they become residualized after control variables are included. 2. Use control variables conservatively and only with good measures and supporting theory. 3. Consider investigating extended causal role of

		control variables, including as mediators and moderators.
Model evaluation and latent variable relationships	How to determine if model is adequate and represents latent variable relationships?	<ol style="list-style-type: none"> 1. Give priority to CFI, RMSEA, fit measures. 2. Supplement fit measures with other model diagnostics, including analysis of indicator residuals, composite reliability and variance extracted estimates, and R^2. 3. Include focus on latent variable relationships with special fit indices, two-step procedure of McDonald and Ho (2002), and analysis of latent variable residuals.

Source: Williams, et al. (2009:589-591)

41. Executives' Characteristics

Following the convention in strategic leadership (Hambrick, 2007) key demographics of executives were assessed. Simple frequency analysis of the sample showed that, 264 (88.29%) out of 299 executives were male and 35 were female (11.71%). In terms of education, 112 (37.46%) executives had TAFE or equivalent college or trade degrees, 92 (30.77%) had finished year 12 or equivalent, 44 (14.72%) had finished year 10, 36 (12.04%) had a bachelor degree, 12 executives (4.01%) had a master degree and 3(1.00%) had completed a doctoral degree. In terms of age, results revealed that 116 (38.80%) executives were in the range of 50-59 years old, 74 executives (24.75) in the range of 40-49, 59 (19.73%) executives were 60 or above 60 years old, 34 (11.37%) executives were in the range of 30-39 years of age and 16 (5.35%) executives were younger than 30 years old. In terms of managerial experience, 115 (38.46%) executives had between 5 to 10 years of experience, 61 (20.4%) executives had more than 10 years of experience, 98 (32.78%) executives 2-5 years of experience and 25 (8.36%) less than 2 years of managerial experience. In overall, it can be asserted that the sample is heterogenous and seems adequately diverse to represent the population.

42. Firms' Characteristics

In terms of the geographical distribution of firms, frequency analysis showed that majority of firms are from New South Wales (97 firms equal to 32.44%) followed by Victoria (86 firms equal to 28.76%), then Queensland (47 firms equal to 15.71%), Western Australia (35 firms equal to 11.70%), South Australia (21 firms equal to 7.02%), Tasmania (8 firms equal to 2.67%) and finally Northern Territory (5 firms equal to 1.67%). I didn't receive any questionnaire from firms located in the Australian Capital Territory.

Furthermore in terms of the primary SIC (standards industrial classification) the results show that, majority of firms operate in the: Aircraft Engines and Engine Parts (31 firms equal to 10.36%), Biological Products, except Diagnostic Substances (28 firms equal to 9.36%), electronic components (27 firms equal to 9.03%), Dental equipment and

Supplies (25 firms equal to 8.36%), Asphalt Felts and Coatings sector (22 firms equal to 7.36%), followed by industrial precision machinery and equipment (22 firms equal to 7.36%), fabricated structural metal (21 firms equal to 7.02%), Automatic Controls for Regulating Residential and Commercial Environments (20 firms equal to 6.69%), Electro-medical and Electrotherapeutic Apparatus (18 firms equal to 6.02%). Boat building and Repairing (16 firms equal to 5.35%), Commercial Printing, Lithographic sector (12 firms equal to 4.01%) adhesives and sealants sector (10 firms equal to 3.34%) , Chemicals and Chemical Preparations (10 firms equal to 3.34%), construction machinery and equipment (9 firms equal to 3.01%), Air Conditioning & Warm Air Heating Equipment & Commercial & Industrial Refrigeration (8 firms equal to 2.68%), Bolts, Nuts, Screws, Rivets and Washers (8 firms equal to 2.68%), Architectural and Ornamental Metalwork (7 firms equal to 2.34%), farm machinery and equipment (5 firms equal to 1.67%). Following the OECD (2011)'s technological intensity definition the above industrial classification can be further divided into high (151 firms=50.5%) and low (148=49.5%) technology manufacturing sub-sectors. This issue goes beyond the scope of this research and will not be further discussed. With regard to the age, size and revenue of firms , analysis revealed that the average age of the firms in the sample was 18.27 years with the minimum of 6 and maximum of 100 years.

Additionally, the average number of full time employees (size) of the firm was 15.16 with the minimum of 5 and maximum of 100 employees. The average revenue of firms in the sample recorded at the end of 2011 fiscal year was AUD 5927560.50 with the minimum of AUD 35000.000 and maximum of AUD 54643300.00 and finally, in respect to the governance mode of the firms, it was observed that 196 (65.55%) firms were private non-family owned business firms whereas 103 were family-owned business firms (34.45%).

43. Results of the test for Multivariate Normality

Univariate normality is a prerequisite for multivariate normality (Byrne, 2010). Therefore, data was first checked for univariate normality using AMOS normality detector and the values of standardized kurtosis and z-test critical ratio (C.R) (Byrne, 2010) of all items in the proposed model. Given the cutoff value of 7.0 for the kurtosis it was found that there is no item in the model substantially violating normality. Then the multivariate kurtosis values were used with their associated z-statistic. The cutoff value of 5.0 was used as the guideline (Byrne, 2010). Accordingly, a degree of multivariate non-normality was detected in the data (Kurtosis= 148.588, C.R. = 32.455). So, Satorra-Bentler robust method (Satorra, and Bentler, 1994) as suggested by Byrne (2010) was performed. This test is not available in AMOS. Hence, following Byrne (2010) M-plus package was used (Muthen and Muthen, 2012). Then, goodness of fit indices for two models as suggested by Byrne (2010) were compared to evaluate the bias caused by this multivariate non-normality. The results are presented in the below table.

Table 50: Results of non-normality bias test

	ML estimation	DF	Robust ML estimation
Model Fit statistics			
Chi-Square	1295.83	755	1191.861
CFI	0.973		0.985
RMSEA	0.071		0.069
RMSEA 90% C.I.	0.049, 0.055		0.033, 0.041

Source: Byrne (2010:126)

As the table shows both models provide adequate fit and the difference between chi-squares ($\Delta\chi^2=104.969$) is also not too much therefore it can be argued that multivariate non-normality is not a threat to the analysis. An additional step was also undertaken in order to further assess this claim from another viewpoint. A bootstrapping resampling approach was used in AMOS and the bootstrap p-value was calculated as 0.18 which is greater than 0.05 and hence the model is correct despite existence of multivariate non-normality. So, it can be concluded that although the assumption of normality has not been met in the data but this error does not cause a problem to the analysis and model corrected-ness in existence of multivariate non-normality is acceptable.

44. Detecting and Dealing with Multivariate Outliers

In survey research, questionnaires are subject to careless or inattentive responses of respondents. This would result in outliers in the data (Meade, and Craig, 2012). I searched for outliers using the squared Mahalanobis distance (D^2) in AMOS (Byrne, 2010:106). This technique is specifically appropriate for multi-item surveys because it can detect the pattern of responses across a series of items (Meade, and Craig, 2012). Typically, an outlying case would show a D^2 value that stands distinctively apart from all the other D^2 values (Byrne, 2010:106). Accordingly minimal evidence of serious multivariate outliers was found (only one case with Mahalanobis d-squared of $D^2 = 104.2$). Therefore, it was reasoned that the issue of multivariate outliers is not likely to pose a threat to the analysis.

45. Detecting and Dealing with Missing data

Missing or incomplete data is an inevitable occurrence in survey-based research (Byrne, 2010). Missing data was expected to be minimal. However, since the questionnaire is composed of both personal and business-related questions a small number of missing cases were detected by AMOS. Cohen and Cohen, (1983) argued that missing data of up to 10 percent is unlikely to be problematic in the interpretation of data. Following this notion, since the number of missing cases was very little it was assumed that missing cases might just result in a small missing bias. Then the Full Information Maximum Likelihood (FIML) approach as the most appropriate technique for dealing with missing data in AMOS was employed (Byrne, 2010) and expectation-maximization (EM) in SPSS

was used to examine whether missing data is missing at random (MAR) or missing completely at random (MCAR) (McLachlan, and Krishnan, 1996; Schafer, and Graham, 2002).

MCAR is the most restrictive form of missing data while MAR is less restrictive because it indicates that, “missing-ness is independent only of the missing values and not of the observed values of other variables in the data. That is to say, although the occurrence of the missing values, themselves, may be random, their missing-ness can be linked to the observed values of other variables in the data” (Byrne, 2010: 354). According to EM algorithm if the chi-squared value (χ^2) is not significant at alpha level of 0.001, the missing data can be assumed to be MAR not MCAR (Kline, 2010). Accordingly, using FIML missing data bias was examined by creating and computing a dummy variable that reflects the presence or absence of missing data for each variable in the model. This dummy variable then was correlated with all other variables in the model as well as an array of demographic variables and the full model estimates and goodness-of-fit indices were examined. It was found that missing data bias is negligible and does not pose any threat to the estimates in the model. Furthermore, the value of missing data was imputed in variables with missing cases through EM in SPSS. Then the chi-squared value at alpha level ($p > 0.001$) was examined. It was found that the missing data are not MCAR. Thus it was deemed to be MAR. Following Terziovski (2010:896) in the dataset the variable means for the missing cells were substituted. To detect multi-collinearity and uni-dimensionality factor analysis (FA) must be performed (Harlow, 2005). So, at first as factor adequacy test was performed.

46. Homoscedasticity

Homoscedasticity is a key issue in multivariate analysis. It refers to a situation where residuals are normally distributed and have uniform variances across all levels of the predictors. It is a key assumption of multiple regression and consequently SEM (Kline, 2011: 23). To detect whether or not data conform to this assumption, a heteroscedasticity (i.e. absence of homoscedasticity) test was executed (Hair et al. 2006). In general, heteroscedasticity is caused by multivariate non-normality, outliers and measurement errors (Kline, 2011). As previously discussed these issues were not likely to affect data analysis of this study. However to take one step further following Kline, (2011:65) a scatter plot of the standardized residuals against the standardized predicted scores for the same data for each one of the research dependent variables in the hypothesized model is to be developed in SPSS. So growth of the firm was used as the only dependent variable and no evidence of heteroscedasticity (uneven distribution around zero) was observed. It is to be noted that, although this test is subjective and arbitrary, however, it is commonly used and have been argued to be appropriate (Kline, 2011). Therefore, it can be concluded that the assumption of homoscedasticity is met in this research.

47. Factor Adequacy Test

Following Merrilees, Rundle-Thiele, and Lye, (2011) the Kaiser–Meyer–Olkin (KMO) test to measure sample adequacy was used to examine whether or not data is adequate for running factor analysis required for the structural equation modeling. The cut off rate is 0.6 and the results for the constructs of this research as illustrated in the table below show that the sample size is adequate. Furthermore The Bartlett's test of sphericity is also used to test that the variables in the population correlation matrix are uncorrelated. Accordingly, the associated probabilities of Bartlett's test as shown in the table were lower than 0.05 indicating that relationships among variables in the factor analysis are strong enough. So, factor analysis can be properly used (Hair, et al. 2006).

Finally, following Field, (2000) the anti-image matrix of covariance and correlations was also calculated. In order for the sample to be adequate, all elements on the diagonal of this matrix should be greater than 0.5. In the sample, this value was reached and hence it can be assumed that the sample is adequate for factor analysis. Based on this conclusion, multi-collinearity and uni-dimensionality of constructs can be examined using factor analysis.

Table 51: Results of factor adequacy test

Latent variable	KMO	P-Value of Bartlett's Test of Sphericity
Cognitive Style (Analytic)	0.932	0.000
Cognitive Style (Intuitive)	0.939	0.000
Market Knowledge acquisition	0.850	0.000
Technological Knowledge acquisition	0.850	0.000
Growth of the firm	0.810	0.000
Emphasis on BMI	0.950	0.000
Perceived Dynamism	0.870	0.000
Perceived Munificence	0.880	0.000

48. Detecting and Dealing with Multi-Collinearity

In multivariate methods such as multiple regression there are different methods to detect multi-collinearity such as factor analysis and use of Bartlett's test of sphericity (Field 2000: 457) and correlations matrix (Tabachnick, and Fidell, 1996; Harlow, 2005) and the determinant value (Field 2000: 445) or linear regressions amongst the pairs of independent variables and checking their variance inflation factor (VIF) and the value of tolerance in an iterative process (Harlow, 2005). Although SEM is based on multiple regression but these methods are not very useful in SEM because some factors such as high R^2 , high reliability of measures and large sample size can offset the problems caused by multi-collinearity (Grewal, Cote, and Baumgartner, 2004).

Therefore, Grewal et al. (2004:528) argued that “good measure reliability, a model whose explanatory power is high, and a large sample size can effectively protect against the deleterious effects of multi-collinearity”. However, to detect multi-collinearity, Grewal et al. (2004) suggests that, since multi-collinearity is closely related to discriminant validity, if the discriminant validity criterion proposed by Fornell and Larcker (1981) is satisfied, the errors caused by multi-collinearity are unlikely to occur. This method has become common and been adopted recently by scholars such as Lubatkin et al. (2006), Ling, et al. (2008 a, b), and Cao, et al. (2010). This issue will be further discussed in the section on discriminant and convergent validities.

In addition, following Byrne, (2010) the standardized estimates values of all correlations in the model by a confirmatory factor analysis (CFA) were used to find and locate multi-collinearities. An estimate value of more than 0.85 indicates multi-collinearity.

Table 52: Results of confirmatory factor analysis

Confirmatory factor analysis		Standardized factor loadings	
Items	Construct		
CS19	ACS	<---	.789
CS16		<---	.792
CS14		<---	.792
CS6		<---	.782
CS5		<---	.756
CS2		<---	.837
CS1		<---	.820
CS35		<---	.799
CS31		<---	.753
CS30		<---	.810
CS25	ICS	<---	.760
CS24		<---	.783
CS23		<---	.792
CS21		<---	.767
CS36	MKA	<---	.835
MKA5		<---	.830
MKA4		<---	.741

Confirmatory factor analysis		Standardized factor loadings
MKA3	<---	.834
MKA2	<---	.818
MKA1	<---	.789
TKA5	<---	.801
TKA4	<---	.832
TKA3	<---	.706
TKA2	<---	.822
TKA1	<---	.742
GROWTH1	<---	.792
GROWTH2	<---	.747
GROWTH3	<---	.823
GROWTH4	<---	.780
DYN6	<---	.794
DYN5	<---	.826
DYN4	<---	.811
DYN3	<---	.813
DYN2	<---	.824
DYN1	<---	.803
MUN6	<---	.798
MUN5	<---	.794
MUN4	<---	.722
MUN3	<---	.788
MUN2	<---	.789
MUN1	<---	.773

As illustrated in the table above all standardized regression weights (i.e. factor loadings) are above the cut off value of 0.7 and less than 1.0 which indicates existence of acceptable measurements for the research factors (i.e. latent variables) and

simultaneously lack of multi-collinearity. This conclusion will be further addressed in conjunction with the assessment of divergent and convergent validity.

It is also to be noticed that, in the above table two latent variables (analytic and intuitive cognitive styles) are represented by 7 and 8 factors respectively instead of 10. This is due to model trimming for the full confirmatory analysis of measurement model to be used in the structural equation modeling. This trimming will be elaborated in the first phase of executing SEM.

49. Examining Uni-dimensionality of Constructs

Since the present research is interested in analyzing data at the composite or scale level not item level (Gerbing, and Anderson, 1988; Danes, and Mann, 1984; Anderson, Gerbing, and Hunter, 1987) dimensionality of measurements was assessed. A uni-dimensional (homogenous) measure can be explained by a single latent method factor (Byrne, 2010:295). To examine this, a confirmatory factor analysis for each construct was performed (Byrne, 2010). Setting the Eigen Value above 1.0 the results of principal component factor analysis (a set of items can be considered to be unidimensional if there is only one distinct factor calculated with the majority of variance above in the total variance table and one factor above the elbow of the scree plot curve) (Harlow, 2005). Results of the total variance explained for research constructs showed that constructs can be assumed unidimensional.

Table 53: Results of total variance extracted in CFA for dimensionality of constructs

Total Variance Explained							
Latent variable	factors	Initial Eigen values			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
ACS*	1	9.031	90.307	90.307	8.924	89.238	89.238
	2	.620	6.198	96.505			
	3	.163	1.635	98.140			
	4	.052	.519	98.658			
	5	.037	.365	99.023			
	6	.033	.327	99.350			
	7	.025	.254	99.605			
	8	.018	.177	99.782			
	9	.013	.130	99.912			

ICS*	10	.009	.088	100.000			
	1	7.917	79.175	79.175	7.786	77.856	77.856
	2	.994	9.937	89.111			
	3	.589	5.886	94.997			
	4	.223	2.232	97.230			
	5	.103	1.031	98.260			
	6	.054	.542	98.802			
	7	.046	.464	99.267			
	8	.033	.328	99.594			
	9	.022	.217	99.812			
TKA*	10	.019	.188	100.000			
	1	2.703	54.052	54.052	2.206	44.116	44.116
	2	.806	16.124	70.176			
	3	.667	13.348	83.524			
	4	.439	8.779	92.303			
MKA*	5	.385	7.697	100.000			
	1	2.548	50.965	50.965	2.002	40.039	40.039
	2	.815	16.291	67.256			
	3	.709	14.183	81.438			
	4	.497	9.942	91.380			
DYN*	5	.431	8.620	100.000			
	1	5.176	86.273	86.273	5.016	83.594	83.594
	2	.278	4.630	90.903			
	3	.185	3.085	93.988			
	4	.149	2.484	96.472			
	5	.114	1.897	98.369			

MUN*	6	.098	1.631	100.000			
	1	5.612	93.542	93.542	5.542	92.372	92.372
	2	.212	3.525	97.067			
	3	.108	1.804	98.871			
	4	.043	.718	99.589			
	5	.020	.328	99.917			
GROWTH*	6	.005	.083	100.000			
	1	2.857	71.430	71.430	2.543	63.586	63.586
	2	.572	14.298	85.728			
	3	.402	10.048	95.776			
	4	.169	4.224	100.000			

*Extraction Method: Principal Component Factoring

50. Analysis of Discriminant and Convergent Validity

The notion of convergent and discriminant validity of a construct was established by Campbell, and Fiske, (1959). Literature indicates that, it has become necessary to detect these validity accepts in all studies based on structural equation modeling (Byrne, 2010). Following Hair, et al. (2006) the correlation matrix and standardized regression weights of all factors in a model are estimated using a confirmatory factor analysis in AMOS. Then four indicators including Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV), and Average Shared Squared Variance (ASV) are used to examine the assumptions of convergent and discriminant validity based on a number of criteria. The first criterion is: $CR > 0.7$ and then for Convergent Validity the criteria are: $CR > (AVE)$ and $AVE > 0.5$ and for discriminant validity the criteria are: $MSV < AVE$ and $ASV < AVE$. This method has been argued to be superior to the traditional multi-trait multi-method (MTMM) approach of Campbell, and Fiske, (Fornell and Larcker, 1981; Hair, et al. 2006). The results of analysis are shown in table below. It can be accordingly argued that assumptions of convergent and discriminant validity of constructs have been met in this study.

Table 54: C.R., AVE, MSV, ASV for Convergent and Discriminant Validity

Construct	CR	AVE	MSV	ASV
DYN	0.998	0.977	0.888	0.666
ACS	0.977	0.860	0.753	0.134
ICS	0.957	0.887	0.753	0.131
MKA	0.976	0.904	0.882	0.667
TKA	0.971	0.855	0.799	0.665
GROWTH	0.977	0.967	0.766	0.668
MUN	0.992	0.896	0.801	0.666
BMI	0.933	0.885	0.785	0.643

51. Assessing the Duality of the cognitive style measure

An underlying assumption of this research is the duality of cognitive style. That is, intuitive and analytic aspects of cognitive style are independent cognitive attributes of executives (Pacini and Epstein, 1999; Chaston and Sadler-Smith 2012). Therefore, before proceeding to the measurement models and structural equation analysis the cognitive style measure must be examined for its structure. This logic is commonly adopted by scholars in cognitive psychology (Pacini and Epstein, 1999) and strategic management using REI measurement (Chaston and Sadler-Smith, 2012). To do so, a principal component factor analysis (PCA) with varimax rotation was used to assess the distribution of 20 items into 2 independent scales (i.e. one for analytic style and one for intuitive) (Pacini and Epstein, 1999). The results are congruent with Pacini and Epstein (1999) showing that, rationality measuring analytic style and experientiality measuring intuitive style are independent and orthogonal (uncorrelated with the component correlation of $r = -0.03$ and non-significant computed scale correlations shown by $r = -0.03$). Additionally, PCA shows that first factor stands for 16% and the second stands for 19% of the variance indicating that the construct has a two-component structure (no single factor with more than 50 percent of variance). In addition, first ten items show factor loadings of above suggested threshold of 0.7 on the first factor (analytic style) and the second set of ten items show factor loadings of above 0.7 on the second factor (intuitive style). Therefore the structure of the cognitive style measure according to dual information processing is supported consistent with Chaston and Sadler-Smith, (2012). Therefore, it is argued that analytic and intuitive are two independent constructs of executives' cognition and hence the proposed model in chapter three can be measured.

Table 55: Results of factor analysis for duality of CS

Component Matrix		
	Extracted Component	
	1	2
CS1	.982	
CS2	.990	
CS4	.999	
CS5	.998	
CS6	.993	
CS8	.998	
CS12	.997	
CS14	.997	
CS16	.998	
CS19	.972	
CS21		.993
CS23		.989
CS24		.991
CS25		.992
CS29		.990
CS30		.989
CS31		.980
CS35		.979
CS36		.989
CS39		.991

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

52. Inter-Constructs Correlations Matrix

Correlations are significant at $p < 0.05$ if greater than 0.12, at $p < 0.01$ if greater than 0.19 and at $p < 0.001$ if greater than 0.22.

Table 56: Correlations Matrix

	12	13	14	15	16	17	18	Number of items	Mean	S.D
								1	1.66	0.34
								1	2.67	0.74
								1	2.33	0.47
								-	-	-
								-	-	-
								-	-	-
								-	-	-
								-	-	-
								-	-	-
								1	10.95	1.46
								6	2.9	1.43
								4	0.21	0.09
								5	1.01	0.41
								5	1.65	0.58
								10	2.61	0.96
					1			10	2.88	0.89
				-0.07	0.03	1		-	15.16	2.65
			0.04	0.01	-0.01	0.18	1	-	18.27	2.37
		0.29	0.27	0.03	0.07	-0.07	0.02	6	1.66	0.47
1										
0.21		1								
0.23		0.09	1							
0.21		0.19	0.21	1						
0.22		0.18	0.19	0.07	1					
-0.08		0.12	0.14	-0.07	0.03	1				
-0.05		0.07	0.04	0.01	-0.01	0.18	1			
0.11		0.29	0.27	0.03	0.07	-0.07	0.02			

Variables	1	2	3	4	5	6	7	8	9	10	11
PMS1	1										
PMS2	0.43	1									
STAGE	0.07	0.06	1								
EXPERIENCE	0.07	-0.09	0.09	1							
TNUR	0.04	-0.1	0.19	0.45	1						
FAMILY	0.02	-0.01	0.01	0.08	0.04	1					
AGE	0.05	0.08	0.07	0.27	0.24	0.01	1				
GENDER	0.03	0.11	0.03	0.04	0.07	0.02	0.01	1			
EDUCATION	0.06	0.04	0.01	0.21	0.18	0.11	0.02	-0.09	1		
EBMI	0.36	0.32	-0.22	-0.17	-0.19	0.03	-0.25	-0.09	-0.21	1	
MUN	0.22	0.21	0.05	0.04	0.10	0.02	0.11	0.09	0.01	-0.21	1
GROWTH	0.27	0.26	-0.16	0.13	0.14	0.08	-0.27	-0.08	0.24	0.35	0.11
TKA	0.15	0.14	0.05	0.17	-0.20	-0.21	-0.17	0.06	0.19	0.39	0.12
MKA	0.14	0.16	0.04	0.16	-0.19	-0.19	-0.16	0.07	0.20	0.41	0.11
ICS	0.07	0.07	0.09	0.06	0.05	0.01	0.03	0.03	0.01	0.27	0.06
ACS	0.07	0.06	0.11	0.05	0.07	0.01	0.02	0.02	0.03	0.24	0.05
F_SIZE	0.29	0.31	0.19	0.14	0.15	-0.08	-0.16	0.05	0.13	-0.18	0.08
F_AGE	0.26	0.24	0.18	0.19	0.21	0.07	-0.01	0.07	0.01	-0.09	0.09
DYN	0.09	0.03	-0.21	0.11	0.11	0.05	0.08	-0.02	0.03	0.32	0.01

53. Plan for addressing equivalent models in SEM

An important issue in SEM is the acknowledgment of the potential existence and plan to address equivalent causal models (MacCallum, et al. 1993; Henley, et al. 2006). According to Henley, et al. (2006:516) “An equivalent model is an alternative model that fits the data equally well, thus producing the same covariance or correlation matrix but often differing significantly in theoretical interpretation”. That said, in this study the plan proposed by Henley, et al. (2006) for addressing equivalent models was followed (illustrated in table below). Results have been discussed in chapter five.

Table 57: Plan for addressing equivalent models in SEM

Plan for addressing equivalent models in SEM	
Step	Considerations In This Study
Acknowledging the potential impact of equivalent models	discussed in chapter five
Identifying potential models	discussed in chapter five
Determining whether alternative models are plausible	discussed in chapter five
Eliminating relevant models through design	discussed in chapter five
Note those models which cannot be eliminated	discussed in chapter five

Source: Henley, et al. 2006:530

54. Common Method Bias

As noted, Common method variance (CMV) or bias (CMB) refers to the amount of spurious covariance shared among variables because of the common method used in collecting data (Buckley, Cote, and Comstock., 1990; Malhotra, Kim, and Patil, 2006). Studies based on self-report surveys are particularly subject to this bias (Crampton and Wagner 1994). This method bias is problematic because the actual phenomenon under investigation becomes hard to differentiate from measurement artifacts. According to Podsakoff et al. (2003) in a typical survey study the use of single respondents (i.e. executives) makes the study subject to a common method variance or bias known as common rater effect. It affects the accuracy of judgments reflected in the survey.

To minimize the impact of this bias the recommendations of Podsakoff et al. (2003) were followed and used a number of techniques such as 1) employing measures with different scaling such as 5 and 7 point Likert types and 2) use of measures with reverse-coded items (i.e. cognitive style measure). However, CMB cannot be fully avoided. So to detect and examine the impact of this bias the Harman’ single-common factor approach (Harman’s 1967) was used. That is, to add all “variables of the research in an exploratory factor analysis and examine the unrotated factor solution to determine the number of factors that are necessary to account for the variance in the variables” (Podsakoff et al. 2003:889).

It must be noted that, as a mixed-method research, qualitative data and integrative analysis and interpretation reduces the impacts of quantitative biases (Creswell, 2009). However, since the priority was given to the quantitative investigation the method of Li et al. (2011) was adopted to perform Harman' single-common factor. This test would show how single respondent leads to a bias (Podsakoff and Organ, 1986; Doty, and Glick, 1998). Podsakoff and Organ (1986) show that, if this bias exists a single factor emerges from a factor analysis of all survey items. Further, Doty and Glick, (1998) add that, if one general factor accounting for survey items emerges it implies the existence of the common method bias (Li et al. 2011:135). For assessing so, an unrotated factor analysis with the Eigen-value-great-than-one criterion was used (Podsakoff et al. 2003). In addition, a confirmatory factor analysis (CFA) was run in order to determine how many factors underline the model (Menon et al., 1996 cited in Li et al. 2011). Finally using AMOS single latent factor the amount of bias created by CMB was assessed. The results of these tests will be further explained in chapter 5 and shown in the following appendices.

55. Results of Herman single factor analysis

Table 58: Results of Herman single factor analysis

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	23.116	45.326	45.326	22.884	44.871	44.871
Extraction Method: Principal Axis Factoring.						

56. Results of common latent factor analysis

Table 59: Results of common latent factor analysis

Path in the CFA measurement model		Estimate	S.E.	C.R.	P	R ²
CS1	<--- common	-.027	.013	-2.040	.041	0.000729
CS2	<--- common	-.027	.013	-2.040	.041	0.000729
CS5	<--- common	-.027	.013	-2.040	.041	0.000729
CS14	<--- common	-.027	.013	-2.040	.041	0.000729

Path in the CFA measurement model			Estimate	S.E.	C.R.	P	R ²
CS16	<---	common	-.027	.013	-2.040	.041	0.000729
CS19	<---	common	-.027	.013	-2.040	.041	0.000729
CS36	<---	common	-.027	.013	-2.040	.041	0.000729
CS35	<---	common	-.027	.013	-2.040	.041	0.000729
CS31	<---	common	-.027	.013	-2.040	.041	0.000729
CS30	<---	common	-.027	.013	-2.040	.041	0.000729
CS25	<---	common	-.027	.013	-2.040	.041	0.000729
CS24	<---	common	-.027	.013	-2.040	.041	0.000729
CS23	<---	common	-.027	.013	-2.040	.041	0.000729
CS21	<---	common	-.027	.013	-2.040	.041	0.000729
MKA1	<---	common	-.027	.013	-2.040	.041	0.000729
MKA2	<---	common	-.027	.013	-2.040	.041	0.000729
MKA3	<---	common	-.027	.013	-2.040	.041	0.000729
MKA4	<---	common	-.027	.013	-2.040	.041	0.000729
MKA5	<---	common	-.027	.013	-2.040	.041	0.000729
TKA1	<---	common	-.027	.013	-2.040	.041	0.000729
TKA2	<---	common	-.027	.013	-2.040	.041	0.000729
TKA3	<---	common	-.027	.013	-2.040	.041	0.000729
TKA4	<---	common	-.027	.013	-2.040	.041	0.000729
TKA5	<---	common	-.027	.013	-2.040	.041	0.000729
MUN1	<---	common	-.027	.013	-2.040	.041	0.000729
MUN2	<---	common	-.027	.013	-2.040	.041	0.000729
MUN3	<---	common	-.027	.013	-2.040	.041	0.000729
MUN4	<---	common	-.027	.013	-2.040	.041	0.000729
MUN5	<---	common	-.027	.013	-2.040	.041	0.000729
MUN6	<---	common	-.027	.013	-2.040	.041	0.000729

Path in the CFA measurement model			Estimate	S.E.	C.R.	P	R ²
DYN1	<---	common	-.027	.013	-2.040	.041	0.000729
DYN2	<---	common	-.027	.013	-2.040	.041	0.000729
DYN3	<---	common	-.027	.013	-2.040	.041	0.000729
DYN4	<---	common	-.027	.013	-2.040	.041	0.000729
DYN5	<---	common	-.027	.013	-2.040	.041	0.000729
DYN6	<---	common	-.027	.013	-2.040	.041	0.000729
GROWTH1	<---	common	-.027	.013	-2.040	.041	0.000729
GROWTH2	<---	common	-.027	.013	-2.040	.041	0.000729
GROWTH3	<---	common	-.027	.013	-2.040	.041	0.000729
GROWTH4	<---	common	-.027	.013	-2.040	.041	0.000729

Results of the common latent factor analysis shown in the table above (table 59) suggest that although a common latent variable is statistically related to the observed variables ($B=0.027$, $C.R.=2.04>1.96$, $P=0.041<0.05$) however the total variance carried by the common latent variable is less than 1% ($0.027^2 = 0.0007<0.07\%$). This indicates that common method bias is not a threat to the results of the study and the bias is very small and negligible.

57. Coverage of research constructs by interviewees

Table 60: Coverage of research constructs by interviewees

Key Variable	Dimensions	Participants				
		Mr. A	Mr. B	Mr. C	Mr. D	Mrs. E
Environmental Dynamism:	• Change is constant and considerable	✓	✓	✓	✓	✓
	• Supply side of the market	✓		✓		✓
	• Technology side	✓		✓		✓
	• Demand side of the market		✓		✓	
	• Crisis in EU	✓	✓	✓	✓	✓
	• GFC (Global Financial Crisis)	✓	✓	✓	✓	✓
	• Rise of India and China	✓	✓	✓	✓	✓
Market knowledge is	• Via observations	✓	✓	✓	✓	✓
	• From direct contacts and engaging in the market	✓	✓	✓	✓	✓
	• From feedbacks	✓	✓	✓	✓	✓

acquired :	• <i>Form business meetings</i>	✓	✓	✓	✓	✓
Market Knowledge is About:	• <i>About Customer's behavior</i>	✓		✓		
	• <i>About Competitors value offerings</i>	✓	✓	✓	✓	✓
Technological Knowledge is About:	• <i>New machineries, tools and systems</i>	✓	✓	✓	✓	✓
	• <i>New materials</i>		✓	✓	✓	
	• <i>New methods of production , delivery, and inventory</i>					
		✓	✓			
	• <i>Contestant change in the business model</i>	✓	✓	✓	✓	✓
	• <i>Centrality of business model innovation in the strategy of the firm</i>	✓	✓	✓	✓	✓
	• <i>Business model innovation as changes in the production system; delivery system and/or commercialization mechanism</i>	✓	✓			✓
Importance of emphasis on business model innovation	• <i>Business model innovation as changes in the way operational and financial aspects of the business are linked to create a competitive edge</i>			✓	✓	
	• <i>Logic of business model innovation is to challenge the industrial established formulas</i>	✓	✓	✓	✓	✓
	• <i>Business model innovation contributes significantly to the growth of the firm</i>	✓	✓	✓	✓	✓
	• <i>Business model innovation is more difficult than new product/process development</i>	✓	✓	✓	✓	✓
	• <i>Business model innovation takes different forms</i>	✓	✓	✓	✓	✓
	• <i>Customization</i>	✓				
	• <i>Cost management</i>		✓		✓	
	• <i>inventory</i>			✓		
	• <i>delivery</i>					✓
	• <i>Ideation required market and/or technological knowledge</i>	✓	✓	✓	✓	✓
	• <i>Execution required both types of knowledge</i>					
		✓	✓	✓	✓	✓
	• <i>Prefer to rely more on Analytic thinking</i>			✓		✓
	• <i>Prefer to rely more on intuitive thinking</i>	✓	✓		✓	
Cognitive Style:	• <i>Use of both intuition and analysis in acquiring new knowledge</i>	✓	✓	✓	✓	✓
	• <i>Use of both intuition and analysis in adopting/developing new business models</i>	✓	✓	✓	✓	✓

58. Codebook

Table 61: Codebook

Research variable	Examples of Key Codes derived from Literature
Market knowledge acquisition	<i>Acquiring Market intelligence</i> <i>Better understanding of how product is selling in the market</i> <i>Acquiring market information</i> <i>Competitive intelligence</i> <i>Knowledge of the market</i> <i>Knowledge of the customers</i>

	<i>New understanding of market</i> <i>New understanding of consumers</i>
Technological knowledge acquisition	<i>Methods of production</i> <i>New technologies</i> <i>New advanced tools</i> <i>Innovative methods of production</i> <i>New materials</i>
Intuition	<i>Hunch</i> <i>Intuitive feeling</i> <i>Gut feeling</i>
Analysis	<i>Rational thinking</i> <i>Full reasoning</i> <i>Understanding</i> <i>Deep thinking</i>
Business model innovation	<i>New to market model</i> <i>Value innovation</i> <i>Game-changing plan</i> <i>Revolutionary strategy</i> <i>Challenging industrial norms</i>
Growth	<i>Increase in sale</i> <i>Increase in market share</i> <i>Increase in profit</i> <i>Increase in revenue</i>

59. Coding and Qualitative Analytic Approach

Following the suggestions of Auerbach, and Silverstein, (2003) coding was defined as the process of organizing text and discovering patterns within its structures in order to address research concerns (p. 31). Furthermore, coding process was then set according to Auerbach, and Silverstein, (2003: 35) by sifting through transcribed interviews and notes in order to abstract the data from raw text to relevant text to themes and finally into research concerns. To apply codes to the transcripts the Weber protocol (Weber, 1990) was employed. Weber protocol has been argued to be a reliable and widely used method for analyzing texts such as transcribed interviews in management and business research (Duriau, Reger and Pfarrer, 2007). The protocol has eight steps as shown in table 33. Accordingly predefined codes were applied to phrases or sentences expressed by executives. Definitions of codes and their meaning were clear as they were extracted from the literature. Given that, CEOs were first tested on a sample part of the text and their reliability and accuracy was assessed. It was found that these codes can be used effectively to abstract and categorize text into units that are related to the research hypotheses. Then, on the basis on this reasoning these codes were applied to the entire manuscript. Therefore, all the text was coded accordingly. Two analytic methods were employed to analyze codes: Pattern-Matching Logic and UCC. In a theory-testing research patterns matching compares observed (i.e. emergent) patterns with expected patterns (i.e. hypotheses). It is in fact a non-statistical logic of theory-testing or

hypotheses validation (Dul and Hak, 2008). Therefore, to find what themes emerge from the interviews and whether they match with the hypotheses or not the interviews need to be coded and analyzed. For patterns matching procedure as explained in the previous section a number of codes were developed prior to the analysis based on the hypotheses and key terms (e.g. knowledge acquisition, business model, value innovation, intuition, hunches, gut feeling, etc.). Interview transcriptions were then reviewed and coded accordingly (Dul and Hak, 2008). The objective is to find conceptual links between codes that match research hypotheses in order to cross-validate or corroborate quantitative findings (Dickson, et al. 2011).

60. Interviews' Transcripts

In compliance with the research' code of conduct, interviews' transcripts can not be appended here. To obtain access to this file a written permission from the Macquarie University's Ethics Committee must be provided.