TECHNOLOGY-BASED ACCOUNTING INNOVATIONS: IMPLICATIONS FOR ACCOUNTANTS AND ORGANISATIONS

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CERTIFICATION

I hereby declare that this submission is my own work and to the best of my knowledge it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Macquarie Graduate School of Management or any other educational institution, except where due acknowledgment is made in the thesis. Any contribution made to the research by others, with whom I have worked at MGSM or elsewhere, is explicitly acknowledged in the thesis. The Ethics Committee approval has been obtained for this thesis under protocol number HE24JUN2005-D04176.

I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

Antonio Elinon
26 May, 2013

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This thesis represents a promise I made to myself that there is nothing I cannot achieve. It has been a long journey and I am indebted to all those who shared this journey with me. To all of you I say thanks with all my heart.

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Finally to my wife Cecilia, son Ray and daughter Toni Rose – this work is dedicated to you. It is only because of your kind support and understanding that there is nothing that I cannot achieve.

LIST OF ACRONYMS

AASB	Australian Accounting Standards Board
ABC	Activity-Based Costing
ABS	Australian Bureau of Statistics
AF	Accounting Function
AI	Accounting Innovation
AIFRS	Australian International Financial Reporting Standards
AIS	Accounting Information System
ANT	Actor-Network Theory
APRA	Australian Prudential Regulatory Authority
BAE	British Aerospace Systems
BREPS	Business Reports
BSC	Balanced Scorecard
BU	Business Unit
BVS	Business Values Scorecard
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CONSOL	Consolidated Reports
CSR	Corporate Social Responsibility
CTP	Compulsory Third Party
DOI	Diffusion of Innovation
ERP	Enterprise Resource Planning
EVA	Economic Value Added
FAIS	Financial Accounting Information System
FC	Financial Controller
FD	Finance Director
FINCO	Financial Company - Pseudonym for Case-Study Organisation
GAAP	Generally-Accepted Accounting Principles
GFC	Global Financial Crisis
GI	General Insurance
GL	General Ledger

GM	General Manager
GPM	George Perrin method
HO	Head Office
IC	Intellectual Capital
ICA	Intellectual Capital Accounting
ICAEW	Institute of Chartered Accountants in England and Wales
IFRS	International Financial Reporting Standards
IIRC	International Integrated Reporting Council
IT	Information Technology
JV	Joint Venture
KPI	Key Performance Indicator
MAS	Management Accounting System
OPP	Obligatory Passage Point
SAP	SAP AG - German Software Company
SOE	State-Owned Enterprises
SM	Strategic Management
SMA	Strategic Management Accounting
SSK	Sociology of Scientific Knowledge
SSO	Shared Services Organisation
STS	Science and Technology Studies
TAM	Technology Acceptance Model
TBAI	Technology-Based Accounting Innovation
XBRL	Extended Business Reporting Language

ABSTRACT

Purpose

Technology-based accounting innovation (TBAI) is an important enabler for many organisations who need to transform their accounting functions. Generally, adoptions of accounting innovations have been low and TBAI in particular has focused on Enterprise Resource Planning (ERP) but has had limited applicability. Many accounting innovations and TBAI studies focus on relationships with accounting as 'supplier' and elsewhere in business as 'consumer' of innovation, but there is insufficient focus on 'supply-side', insufficient focus on adoption within the accounting functions, and still a need for more process studies to explain the continuous relationships. Furthermore, TBAI have effects as shown by findings in the extant literature, but they do not necessarily consider the effects for and within accounting functions. Using actor-network theory as a lens, this thesis investigates how TBAIs emerge and stabilise within accounting functions and consequently what effects they have for and within the accounting functions.

Design/methodology/approach

Using an ethnographic research method, this thesis investigates a case study of a large multi-national Australian financial company. Organisational actors were followed for a period of up to four years to gather evidence of how accountants adopt technology-based accounting innovations.

Findings

The pattern of adoption observed in the case study suggests that accounting functions are not homogeneous and total buy-in is required within the heterogeneous community. Consequently accounting and IT relationships are critical and there is a need to overcome functional silos to achieve innovation adoption. However, the process of innovation adoption is not linear where build and acceptance is implied as in Diffusion of Innovation (DOI) or Technology Acceptance Model (TAM), but is a process of translation where adoption is progressive and precarious. Once adopted, TBAI leads to financial function benefits from the strengthening of inscriptions and appearance of new inscriptions. Interestingly, TBAI also leads to unintended consequences in terms of changing of existing centre-periphery relations (empowerment) and creation of new centre-periphery relations (regionalisation).

Practical implications

Based on the findings, it is possible to help organisations deliver TBAI within accounting functions by focusing on important relationships such as accounting and IT partnerships; by understanding the continuity and precariousness of the adoption process; and by understanding the effects of TBAI adoption via the emergences of new objects.

Originality/value

This thesis provides useful ‘early in the piece’ insights for organisations wishing to embark on creating technology-based accounting innovations for and within accounting functions.

Keywords: technology-based accounting innovations, actor-network theory, sociology of translation, innovation adoption, ERP

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CHAPTER ONE

Thesis Overview

1.1 Introduction

This thesis looks at the emergence and consequence of technology-based accounting innovations as implemented in the accounting divisions of a large organisation. It uses a field-based ethnographical case study to examine how an accounting innovation was accepted within a group of accounting users, and its effects for these organisational participants. The research poses core questions of how accountants and innovations interact in the social environment of the organisation, in order to explore the accounting process changes in the organisation in the midst of innovation adoption. Its contribution is to fill a gap in the literature in explaining how accountants contribute to the adoption of accounting innovations and are affected by its consequences.

1.2 Background

Internationally, accounting is in a period of change, driven by several factors. These can be broadly identified as the Global Financial Crisis (GFC), attempts at international harmonisation of accounting standards, calls to extend traditional financial reporting to incorporate a range of other measures, and developments in information technology (IT) based accounting innovation. In particular, this study focuses on the adoption of technology-based accounting innovations, and on the role of the accountant in the adoption of accounting innovations.

The impact of financial crises is twofold. Organisations seek financial innovations to help them survive in a crisis, recognising that financial innovations are crucial to running the business and are not just for compliance. The GFC has made this particularly relevant to organisations internationally. Although Australia is seen to have been less impacted by the GFC, it has suffered corporate collapses, as have other countries across the globe. These failures, such as the Babcock & Brown liquidation (2010, p. 159), have led to an examination of the role of accounting. The role of single individuals, in particular accountants, in corporate collapses has been brought into the spotlight. These recent accounting scandals, in Australia and abroad, have led to increasing pressure for improvements in the accounting reporting process. Investigations into corporate governance in relation to corporate collapses (Battersby 2012; Colvin & Glanville 2005) have centred on whether directors could have known of impending disasters earlier, based solely on normative accounting reports, or whether these accounting functions must innovate and improve timeliness.

Additionally, there are moves around the world to harmonise accounting standards. Harmonisation and the *Sabarnes-Oxley Act of 2002* in the United States bring new reporting requirements. While these are likely to bring benefits, such as increased competition, lower cost structures and improved performance measurements, they also place pressure on organisations to comply, requiring accounting innovation.

At the same time, there have been calls to extend traditional financial reporting to incorporate a range of other measures (ICAEW 1999, 2003). Criticisms of traditional financial reporting inspires research in areas such as intellectual capital (IC) reporting, the balanced scorecard (BSC), and sustainability reporting, which attempt to

incorporate non-financial measures of an organisation's value and activities such as through integrated reporting initiatives (IIRC 2012). Beyond traditional financial reporting comes 'improved' performance measures of economic value added (EVA) that have fuelled advances in management research, practice and consultancy (Ittner & Larcker 1998). Moves to extend traditional financial reporting incorporate adoption of accounting innovations, and for innovative reporting to be successfully adopted by every organisation, impact on intangible assets, which have been grossly under-recognised in company balance sheets (Edvinsson 1997; Edvinsson et al. 2004).

Finally, IT-based accounting innovations, such as enterprise resource planning (ERP) systems, have spawned new discussions on the cost benefit justifications of innovation expenditure in IT. Of particular interest to this research is the study of actor-network models of IT systems and the evidence of accounting benefits derived from ERP systems (Kanellou & Spathis 2013).

The factors outlined above suggest that accounting innovations have potential benefits for organisations. Observing how innovation can change the organisation in terms of new activities, decision-making points and detailed process improvements in turn make possible an understanding of how innovation impacts the broader organisation through the decision-making process.

Thus the first important issue to be investigated in this thesis is:

> *I1: There is significant demand to transform accounting functions and technology-based accounting innovation is an important enabler.*

Two specific challenges for the accounting community can be identified. First, there is low evidence of take-up in current existing forms of innovation, such as activity-based costing (ABC) (Alcouffe 2002, 2004), intellectual capital (IC) measurement and reporting (Guthrie 2001; Guthrie & Petty 2000), economic value added (EVA) (Cuganesan, Free & Briers 2004; Ittner & Larcker 1998), and international standardisation (ICAEW 1999, 2003; Tweedie 2005). Insufficient take-up of innovations in organisations puts additional pressure on cost justifications in the development of such innovations. Failure to innovate perpetuates the continuing problems of conventional accounting processes.

Importantly, in spite of evidence that accountants add 'disciplinary' knowledge to the rest of an organisation (Cuganesan, Gibson & Petty 1997), studies still show most accounting work is 'data collection' and not analysis (Hope & Fraser 2003). These authors indicate that accounting personnel spend 79% of their time gathering data rather than analysing and interpreting financial numbers. Hence, this thesis considers the role of the accountant in the organisation. This focus is important and timely given that recent strings of corporate scandals (Enron Corporation, HIH Insurance, One.Tel Ltd, and WorldCom) have identified individuals within the accounting function as responsible, at least in part, for corporate failure.

Thus the second important issue to be investigated in this thesis is:

> *I2: Adoption of accounting innovation generally is low (except Balance Scorecard) and there is a need to examine*

technology-based accounting innovations in accounting functions.

So how can accountants contribute to the effective adoption of accounting innovation? Accountants are usually constrained to 'mainstream' accounting because of their training and educational background. This school of thought provides a cornerstone of the accounting discipline. Cuganesan and Gibson (1997) describe 'mainstream' as a state where accountants "provide a system of information to support the exercise of rational behaviour" and any remaining conflict is labelled as dysfunctional. At the same time, accountants are also actors in a network, and the accounting processes are actants themselves (Briers & Chua 2001). Thus it is possible for accountants to utilise their discipline in addressing the issue of innovation adoption for and within the accounting functions. As technology-based accounting innovations are adopted, it is possible to observe if the 'mainstream' value system also changes.

While there are a number of studies examining adoption and diffusion in accounting, few focus on how accountants and the accounting processes change with the introduction of technology-based accounting innovations. It has been observed that accounting innovations such as activity-based costing (ABC), ERP and new forms of performance reporting and measurement have a significant impact on the organisation in terms of cost structure, competitiveness and organisational effectiveness (Alcouffe, Berland & Levant 2008; Malmi 1999); however, few studies examine the impact on accountants and the processes in the accounting function. It is known that accountants typically play an innovative role in the implementation of AIS projects either as users,

trainers, and/or joint developers with IT. This leads to the aims and contributions of this study.

1.3 Aims and Contributions of this Thesis

1.3.1 Thesis Aims

Given the accounting landscape outlined in Section 1.2, the objective of this study is to understand the implications for accountants and organisations of technology-based accounting innovations. The research asks the following two research questions:

> *Q1: How does technology-based accounting innovation (TBAI) emerge and stabilise within accounting functions?*
>
> *Q2: What effects does a technology-based accounting innovation have for and within accounting functions?*

This thesis argues that there is a gap in the literature, and a potential to inform practice in response to the above questions. Few studies of technology-based accounting innovations (such as ERP) deal with processes and how these processes improve the accounting-related outcomes being investigated. There are two aspects to this gap in the literature: the 'supplier' or builder of technology-based accounting innovations; and accounting as 'consumer' of technology-based accounting innovations such as the ERPs. In the literature reviewed for this research, there is insufficient focus on the 'supply side', insufficient focus on adoption within the accounting functions, and a need for more process studies to explain the continuous relationships. Thus, this thesis aims to establish how technology-based accounting

innovation emerges and stabilises in the accounting function – that is, how accountants make this happen. It also measures the effects of the emergence of accounting innovation, specifically in relation to the accounting function. It does so by incorporating the study of actor and technology artefacts in the case study organisations, in the Australian finance industry. Hence, it takes a socially-based approach to follow accountants and artefacts in the context of their environment.

As part of the above, this thesis also attempts to examine the current practice in IT, providing observations between IT practitioners and the user community (the accounting function) that they service – in particular how the accounting function provides feedback to software development processes and subsequent adoption. Prior studies on innovation adoption have usually reported a monotonic increase of adoption over time for a given population. However, in a case study of a large organisation, the individual divisions/sub-organisations may experience different processes of adoption and interaction between the IT function and the user group. The thesis examines how IT practitioners and the accounting function cooperate to build and stabilise accounting innovations.

1.3.2 Contribution of this Research

In asking how accounting innovations are adopted, the focus is on the early phase of the organisation, where influences are found that shape the outcomes for the future. This is at the point where things are open, and there are many lessons to be learned. By investigating the effects of the innovations on the larger organisation, a more complete picture is revealed of the role of accountants, and the accounting function in the organisation.

The research focuses on the Australian insurance industry and uses actor-network theory as a lens through which to examine the role of actors in the case study organisation. In this case study, three accounting functions in the industry were studied: an Australasian head office that receives financial data from branch operations in different countries and consolidates these for senior managers, which is the basis of innovation for the group; a mid-size Asian operation wholly based (including accounting function) in Singapore, in which pressure to create financial reports for operational managers makes innovation less possible; and a large New Zealand (NZ) operation which implements its own accounting information system (AIS) innovations, and is able to ensure that these are used by other accounting functions (including Head Office) as well.

To make a significant contribution to knowledge, Macquarie Graduate School of Management (MGSM) at Macquarie University requires that a thesis for a Doctorate in Business Administration (DBA) be developed with the following two questions of significance in mind:

1. *Does the thesis make a distinct contribution to the improvement of professional practice or policy in the field of business administration?*
2. *Does the thesis afford evidence of originality shown either by the discovery of new facts or by the exercise of independent critical power?*

The contribution of this thesis is in the following three key areas. Firstly, a contribution to accounting and management professional practice is possible as the

study uncovers factors that affect the adoption of innovations specifically in financial reporting for shareholder interests as well as for statutory accounting bodies. Progress in standardisation of International Financial Reporting Standards (IFRS) will benefit because the study identifies factors that increase the adoption of AIS innovations. These provide a rationale for countries and organisations to adopt internationally recognised financial reporting standards, which are likely to increase competition, lower cost structures and improve performance measurements.

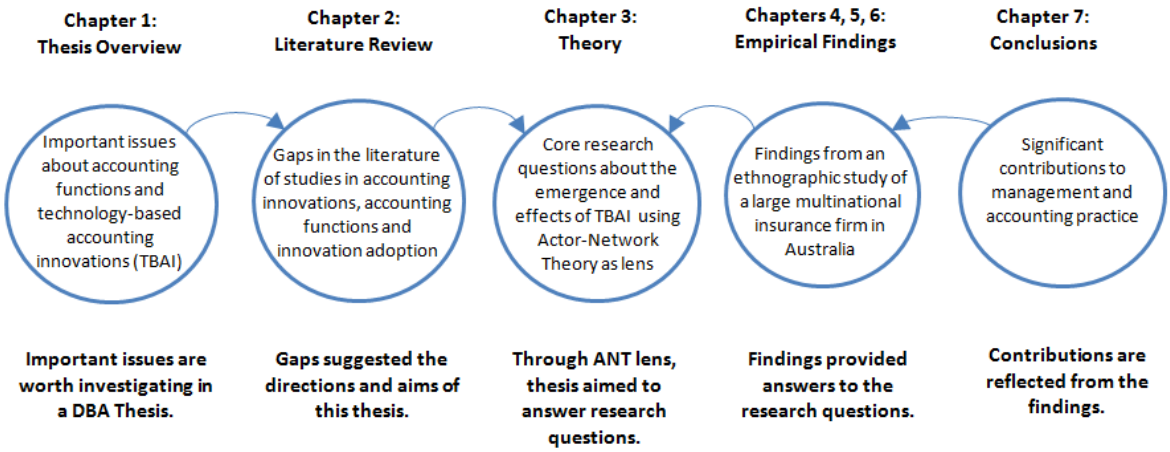
Secondly, the study contributes to Australian organisational policy making by examining how accounting innovations affect the organisation and how the adoption of innovations affects the innovations in turn. This has policy implications in identifying and justifying resources allocated to expensive technology projects such as ERP and AIS. Of particular interest is the focus on inter-actor relationships within organisations, how alliances are formed and what stimulates these relationships. The findings may provide useful information for organisations to justify the development of new innovative projects in IT and accounting.

Lastly, the thesis is a contribution to the research, suggesting new directions in investigating innovation adoption in the accounting function that may explain dimensions not fully explored by either diffusion theory or actor-network models. The contribution is derived from the combination of the actor network approach and the specific circumstances of accountants in the Australian financial community with empirical data.

1.4 Thesis Structure

Figure 1.1 gives an overview of the structure of this thesis. It shows the different focus of each chapter.

Figure 1.1 Thesis Structure Overview



The thesis is structured in seven chapters. Each chapter is outlined in more detail below.

Chapter 1 Thesis Overview

This provides an introduction to the thesis, discussing the background to the research, the aims and motivations and the contributions to professional practice and policy in the field of business administration.

Chapter 2 Literature Review

This discusses the patterns and the potential gaps in the literature about innovation adoption. It provides a focused summary about technology-based accounting innovations and the empirical studies that involve the accounting function in an adoption process of innovative accounting systems. The patterns observed in this

review allow for the identification of potential gaps to be pursued and inform the core research questions.

Chapter 3 Actor-Network Theory

This introduces actor-network theory (ANT) as the more suitable theoretical lens with which to study the phenomenon of technology-based innovation adoptions by the accounting function. Many researchers have used actor-network theory to explore the process of accounting innovation adoption in the organisation by accountants (Alcouffe, 2002) because of evidence in the emergence of actors forming alliances in a networked environment. Other models of innovations are also presented (Briers & Chua 2001), and in doing so, the thesis explains why ANT was chosen as the model to use in this research.

Chapter 4 Methodology

This explains the ethnographic model of the research process. It describes how the data was collected, analysed and evaluated by the researcher, who was embedded in the organisation.

Chapter 5 Building the Innovation

This describes and analyses the information gathered in the case study organisation. The actor and artefacts are identified and by using the information provided by these actors, the chapter follows them in their journey of translation. The journey can be described in four moments and these moments are also described from the point of view of the actors. This chapter attempts to answer the first research question and assesses how organisations build accounting innovations.

Chapter 6 Effects of the Innovation

This describes what happened after the accounting innovation was built in the FINCO (the pseudonym for the case-study organisation). After the mobilisation moment, a network emerged that consequently affected the organisation. This chapter attempts to answer the second research question and outlines findings in relation to how accounting innovations when adopted - affect the accounting function at a very early stage in the financial reporting process.

Chapter 7 Conclusions

This describes the effects of the actor-network on the organisations, accountants and accounting innovations as it travels through time and space. The issues identified in this chapter provide evidence of an actor-network framework that describe how innovations are adopted in the process-centric model.

1.5 Conclusion

This chapter outlined the background to the research and introduced two important issues facing accounting and management today:

1. There is significant demand to transform accounting functions and technology-based accounting innovation is an important enabler.
2. Adoption of accounting innovation generally is low and therefore examination of the role of accountants and the accounting function in innovation is necessary.

The thesis aims to make a distinct contribution to the improvement of professional practice and policy in the field of business administration. These aims and what motivates them were discussed in more detail. The use of actor network theory to

frame the examination of the role of actors in adoption of innovation was considered and the method for the study was briefly described. The study uses an ethnographic case study to examine the adoption of innovations and the consequent impact of these activities.

The next chapter will now review the literature in more detail and establish the research questions.

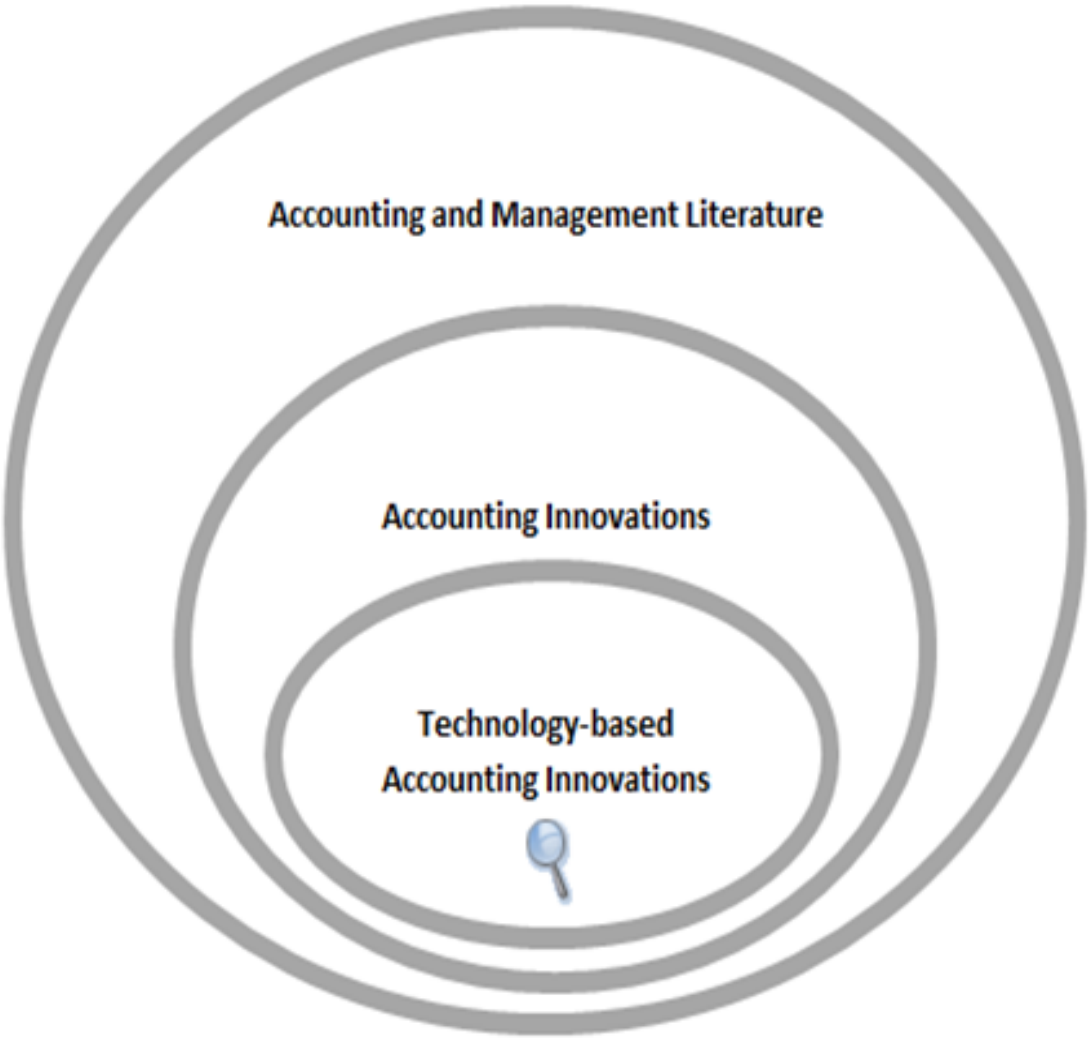
CHAPTER TWO

Literature Review

2.1 Introduction

This chapter reviews the extant literature on accounting innovation and technology-based accounting innovation. Figure 2.1 is a visual representation of the focus areas of the literature review. In reviewing the literature gaps are identified, which inform the two core research questions of the study.

Figure 2.1 Focusing the Areas of Research in the Literature



This chapter is structured as follows. Section 2.2 selectively reviews the broad prior research on accounting innovation, both non-technology based and technology-based. Section 2.3 reviews the studies that focus on the effects of the innovation on the broad organisation and identifies gaps in this literature. Section 2.4 identifies the research questions for the study. Section 2.5 provides a summary of the chapter.

2.2 Studies on Accounting Innovations Adoption

This section presents a review of prior research on accounting innovation adoption. It explores several examples of what has been researched so far and cites case studies that have done so. It first reviews the adoption of non-technology-based accounting innovations, then examines the adoption of technology-based accounting innovations and shows the concentration of focus on ERPs in contrast with the lack of focus on other technology-based accounting innovations such as costing systems. A critique is provided for the literature review so far, identifying a gap created by the current emphasis on IT-based tools satisfying the requirements of organisations in what they need to do business (demand side) rather than the how, why, and what that accountants introduce to the organisation (supply side) that are innovative and of benefit (Emsley 2005).

Although non-technology based accounting innovations are not as expensive as technology-based innovations, their patterns of adoptions and how they emerge and stabilise within the accounting function nevertheless provide a possible point of comparison or performance criteria. This can be used to observe how the more resource intensive technology-based accounting innovations emerge and stabilise within accounting functions.

Table 2.1 shows some selections of accounting innovations in diverse areas such as carbon accounting, continuous auditing, 'now' economy and strategic management accounting. Some of the examples are reviewed in detail below. Although they may have relationships to technology, they are primarily non-technology based in achieving their purposes.

In addition to these studies of specific non-technology-based accounting innovations, are studies that examine how accounting innovations emerge or stabilise. Alcouffe, Berland & Levant (2008), investigate innovations in France, extending Baxter and Chua's (2003) extensive discussion of ANT contributions in accounting:

> *"The aim is to understand how and why such accounting innovations as GPM and ABC were created and/or modified and then eventually became accepted in France. To do this, we will apply the ANT concept of translation. In doing so, we will discuss the notion of accounting change and the innovating nature of such techniques as GPM and ABC. We will also attempt to show how accounting innovations do not operate in a vacuum but instead, are in competition with one another. Problematisation arguments are scarce resources for the enrolment of which rival programs compete. We will also discuss the nature and role of interessement modalities and question the idea that commercial interessement may be the only driver of our global society. Finally, we will focus on the success/failure dichotomy and the issue of increased homogenisation of accounting practices through the diffusion of such innovations as ABC." (Alcouffe, Berland & Levant 2008, p. 4)*

Nassar, Al-Khadash, Al-Okdah and Sangster (2011) points out that *concepts* such as activity based costing (ABC), activity based management (ABM), target costing, strategic cost management and economic value added (EVA™), balanced scorecards (BSC) are now regularly included in standard management accounting textbooks and have also been gradually introduced into practice. As concepts they are not technology-based but provide important innovative changes to accounting such as the

environment in which management accounting is practised with different organisational relationships, more competitive markets and new management practices.

Table 2.1 Selected Studies on Accounting Innovations that are Non-Technology Based

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Ascui and Lovell (2012) Historical	Carbon Accounting Examines role of accounting profession regarding carbon accounting, over time.	Accountants' claims to competence on organisational carbon accounting overlap with other communities.	Innovation adoption within accounting function overlaps with other social actors in the community and a socially based model may be suitable.
Chan and Vasarhelyi (2011) Case Study	Continuous Auditing Proposes 4-stage paradigm to use continuous auditing.	Continuous auditing is a potential innovation to replace traditional auditing.	Innovations adopted within accounting functions are typically part of a network building process.
Cuganesan, Dunford & Palmer (2012) Longitudinal Study	Strategic Management Accounting (SMA) Study identifies roles for management accounting for strategising beyond decision-facilitation and decision-influencing within the public sector informed by strategy-as-practice perspective.	There are specific ways in which management accounting is constitutive of strategising through specific organisational practices.	Adoption of innovations such as SMA opens up new roles and practices for and within the accounting functions of the organisation.
Gond et al.(2012) Multiple Case Study	Management Control Systems Investigates how management control systems (MCS) integrate sustainability with organisational strategy.	Study identified suitable paths towards sustainability integration or marginalisation within organisations.	Innovations such as MCS identify other network paths that are socially constructed within the accounting function.

Table 2.1 (Continued) Selected Studies on Accounting Innovation that are Non-Technology Based

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Lee (2012) Field Study	Carbon Accounting Explores the roles and usefulness of carbon accounting of Korean automobile manufacturers.	Eco-control approach can foster alignment between management strategy and performance measurement.	Successful innovation adoption will align financial stakeholders with management expectations.
Vasarhelyi and Alles (2008) Historical Review	'Now' versus Traditional Experiences Paper poses key questions for accounting, assurance and information systems when accounting for accelerated processes.	Changes in the roles of accountants are inevitable. And it is for practitioners to embrace change by removing the 'traditional' label when in the 'now' economy.	Accountants in their profession must adopt the latest and 'now' innovations if they are to compete and retain their roles within their accounting functions.

Successful innovation adoption fosters alignment of finance stakeholders' performance measurement with management's strategy – as in the adoption of carbon accounting in Korean automobile manufacturers (Lee, K-H 2012) where an eco-control approach for carbon management allowed the finance function to give clear directions in carbon-efficient manufacturing and "communicate effectively with primary stakeholders including suppliers and buyers in relation to their product carbon emission performance." Eco-control can foster alignment and coordination by connecting the goals and objectives of financial stakeholders to performance evaluation. This authority over financial reporting in carbon accounting is also supported by Ascui and Lovell (2012) but note that full competence on organisational carbon accounting is also claimed by other sectors of the community: "While accountants have undisputed authority in the field of financial reporting of rights and liabilities created under emissions trading schemes ('financial carbon accounting'), their claims to competence in other aspects of organisational carbon accounting overlap with those made by several other communities." It can be seen here that technology innovations have overlapping implications when adopted by accountants.

Vasarhelyi and Alles (2008) outline the opportunities and challenges that accountants face in the 'now' economy and how they can provide assurances for the real-time organisation. Accounting innovations such as continuous auditing, continuous monitoring and continuous business assessment provide assurance classified at three levels: process level assurance (PLA), data level assurance (DLA) and opinion level assurance (OLA). For example, traditionally accountants would provide a yearly opinion on the corporate financial statements in the form of a blanket statement that there is no material error in the statement as a whole. However, an innovative continuous technology would help because:

> *"This opinion may mean that there are offsetting errors of a material level but the result would not lead an investor to a different investment action. If the data is balkanised, meaning broken into more disaggregate measures, say cash or accounts receivable and then distributed over the Internet, each of these datum are not assured individually as being free of material error." (Vasarhelyi & Alles 2008, p. 238)*

Accounting innovations when adopted by accountants therefore have implications as to how they traditionally perform their functions in view of the new real-time enterprise of the 'now' economy.

Other accounting innovations have a more direct impact on the accountant's practice, such as strategic management accounting (SMA). Cuganesan, Dunford & Palmer (2012) reports that with SMA there are specific roles that management accounting plays with strategic practices where strategising occurs. They extend beyond the well-established decision influencing and decision facilitation functions of SMA and SMA's passive depiction with strategic activities. This builds, therefore, on how accounting is constitutive of strategising because management accounting tools are used to further the organisations strategies. It can be seen here that the accountant's practice is directly implicated by the innovations they adopt.

Accounting innovations such as ERPs and accounting information systems fall into the category known in this thesis as 'technology-based accounting innovation'. These are likely to be more expensive than the non-technology based innovations outlined in Section 2.2. Table 2.2 shows some examples of accounting innovation studies with experiences in technology based ERP and AIS in the areas of management control systems, ERP configuration, and extended business reporting language (XBRL)

implementations. These examples also have implications for adoption of innovations specifically by accountants. Some of the examples are reviewed in detail below.

Table 2.2 Selected Studies on Accounting Innovations that are Technology Based

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Debreceny and Gray (2001) Case Study	Semantically Rich Accounting Reports Investigates the usage and adoption of extended business relational language (XBRL) within the accounting community.	Widespread adoption of XBRL is dependent on humans and non-human agents – such as accountants, taxonomies, databases, interfaces, financial statements.	There is a need to formalise the method by which human and non-humans interact in a socially based manner to realise the benefits of an innovation.
Henderson, Sheetz & Trinkle (2012) Field Study	Implementation of XBRL Investigates adoption of XBRL from both inter-organisational and internal purposes using structured equation modelling (SEM) multivariate analysis.	Statistical analysis suggests that internal adoption differ from inter-organisation adoption drivers.	To suggest difference between internal and inter-org, adoption of innovations may have social network drivers with major artefacts such as technology, organisation, and environment.
Jazayeri and Scapens (2008) Case Study	Performance Management Systems Using a culture change project, study traces the key values used in a business values scorecard (BVS) similar to Kaplan's business scorecard (BSC).	The BVS was a tool that enabled strategy to emerge, rather than to cascade downwards from the hierarchy. Even though the company increased profits, it was not possible to isolate whether this was due to the BVS introduction.	Innovations such as the BVS/BCS are best deployed in an emergent network in a social context within the organisation.
Fichman and Kemener (1993) Literature Review	Adoption of Object Orientation Reviews the adoption of object oriented technologies by organisations.	Diffusion of Innovations is a suitable method for describing how organisations adopt SDLC technologies.	Although not focused on TBAI, the study illustrates that organisations have similar stories in innovation adoption,

Table 2.2 (Continued) Selected Studies on Accounting Innovations that are Technology Based

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Kallunki, Laitinen & Silvola (2011) Field Study	ERP Impact on Performance Investigates the mediating effects of management control systems (MCS) on the effects of ERP adoption by 70 Finnish business units.	Formal types of MCS act as intervening variables mediating the positive lag between ERP adoption and non-financial performance. Informal types however do not mediate.	Adoption of innovations like MCS, provide improved performance when implemented with formal controls.
Teittinen, Pellinen & Jarvenpaa (2012) Case Study	Challenges/Benefits of Management Control Systems Provides empirical findings on results of ERP usage by small-medium enterprises (SMEs) as observed long after implementation.	There are challenges and benefits to adopting ERPs that end up modifying original expectations.	When adopting innovations, accountants must be aware of similar challenges and benefits, and the likelihood of changes in expectations.
Wagner, Moll & Newell (2011) Case Study	Configuring ERP Systems to Accounting Practices Study focuses on how ERP and AIS work effectively in an Ivy League university.	Management accounting may not be easily captured in ERP packages, even where the technology architectures are supposedly designed for a particular industry. Affordability and the power of communities of practice are mediating the extent to which familiar accounting logics may become integrated within the ERP system.	Adoption experience can consist of negotiation process after roll-out and may result in reconfiguration of the ERP to integrate with legacy functions.
Yigitbasioglu and Velcu (2012) Historical	Dashboards Proposes a selection of dashboards for performance management.	Dashboards can remedy the information overload problems if designed well.	Adoption of innovations typically will comprise of a highly social interpretivist component.

As accountants adopt innovations, they are continuously involved with the technology, even to the major extent of reconfiguring what is already an adopted innovation. Wagner (2011) describes how an ERP innovation adopted by a university resulted in reconfiguration to install additional legacy functionalities of commitment accounting. Effectively, management accountants initially adopted the accounting innovation but encountered resistance that consequently influenced the reconfiguration to include the missing functionality. This example provides an insight into how the accountant's unique position allows legacy accounting systems to continue to operate at the margins, even when new systems are introduced; and may become central to the workability of these systems when others fail to accept them (Wagner, Moll & Newell 2011).

ERPs not only provide extensive functionality to accountants, but potentially challenge the traditional way of the accounting reporting model. This is because of the highly technical ability of ERPs to transform an organisation into a real-time enterprise. There are other technology-targeted financial reporting tools such as the business value scorecard (BVS) from aerospace company *BAE Systems*, which is similar to the BSC of Kaplan and Norton (Kaplan et al. 2008). When this accounting innovation was adopted by accountants, Jazayeri and Scapens (2008) report that the tool enabled strategy to "emerge from within the organisation, rather than as a mechanism for cascading down the hierarchy strategy previously established by top-level managers." The research described a process of transformation observed during the adoption of the innovations:

> *"Managers used the five perspectives on the scorecard to develop strategies to implement the five key values, and to better understand the measures used within each perspective. We saw how, over time, the BVS evolved to become a central feature of the*

> *management control systems within BAE Systems, linking budgetary control and organisational practices with strategic intent." (Jazayeri & Scapens 2008, p. 68)*

Although the focus of this research is the study of technology based accounting innovations that ultimately address the finance functions, other studies that focus on non-Finance functions may also present similar stories (Fichman & Kemerer 1993) and encounter issues (Gross & Ginzberg 1984) such as those encountered with technology based accounting innovations. For example, Fickman & Kemener (1993) presented how software engineering organisations needed to adopt better software development technologies but are hampered by lack of unbiased information sources. In this case, the theory of Diffusion of Innovation was selected as the suitable tool to study innovation adoption as there was a rich source of studies presented by Everett Rogers (2003) to justify and identify the likely rate of adoption:

> *"To address the broader question of the likely rate of adoption of a specific innovation across an entire population, one must look to attributes of the innovation itself Everett Rogers reviewed hundreds of diffusion studies and identified five generic innovation attributes that influence rates of adoption: (1) relative advantage, (2) compatibility, (3) complexity, (4) trialability, and (5) observability. Although Rogers's synthesis is based mostly on studies of adoptions by individuals (e.g., of consumer goods), Van de Ven and others have argued that innovation attributes also play an important role in adoptions by organisations. In fact, these researchers maintain that innovation attributes take on a broader role in the context of organisational adoption of complex technologies, affecting not only the initial decision to adopt, but also the ease of traversing later stages of adoption such as implementation, adaptation, and routinization. (Fichman & Kemerer 1993, p 9)"*

Thus ultimately, as will be seen in Chapter 3 Theory, the choice of a suitable theory to use may depend on the particular circumstances of the case organisations and the attributes of the innovations being studied even though there is great similarity in their technological experience.

2.3 Studies on the Effects of Accounting Innovations

Whereas the previous section reviewed the literature in relation to innovation *adoption*, this section examines the *effects* of accounting innovations on the accounting function. Table 2.3 shows examples of the innovation effects on the accounting function and how they improve organisational innovativeness by affecting accountants and how accountants adopt innovation. Some of the examples are reviewed in detail below.

Table 2.3 Selected Studies on Accounting Innovations that have Effects on the Accounting Function

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Bryer (2013) Historical Review	USA Organisations and financial accounting Reviews American history of financial accounting to identify various innovations.	The key turning point in American business history is the conflict between 'capital and labour' and not 'managerial capitalism'.	Adoption of accounting innovations can have the effect of resolving conflicts within the accounting function.
Guthrie, Ricceri & Dumay (2012) Historical Review	Organisational accounting for intellectual capital (IC) Reviews a decade of research on intellectual capital accounting (ICA) to identify areas of studies, describe what has happened, analyse why and how it is changing, and highlight future directions.	ICA is an innovative accounting technology relevant to organisations to understand and manage knowledge resources.	Adoption of accounting innovations such as IC accounting has the effect of increasing the ability to understand and manage knowledge resources.
Herbert and Seal (2012) Longitudinal Case Study	Management Accounting under Shared Services model Reviews Shared Services model of management accounting as alternative approach to outsourcing.	Shared Services organisations (SSO) can reduce cost and improve service quality with additional benefits of retaining control and knowledge within the hierarchy of the firm.	Adoption of innovations may be aligned with new organisational forms resulting in more end-to-end process completeness.
Kallunki and Silvola (2008) Longitudinal Study	Organisational life cycle model used with ABC Investigates if use of activity-based costing (ABC) differs among firms in different organisational life-cycle stages from 105 Finnish firms.	ABC is more common in mature firms than in firms in growth phases.	Adoption of accounting innovations suggests that there is a positive effect to increasing maturity levels in the organisations.

Table 2.3 (Continued) Selected Studies on Accounting Innovations that have Effects on the Accounting Function

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Kanellou and Spathis (2013) Survey	Accounting Benefits of ERP Systems Identifies real benefits of ERP systems to the accounting functions.	The empirical evidence confirms a number of accounting benefits derived from ERP systems particularly for accounting process – such as quick data-gathering, reducing time, and reducing personnel	The benefits of ERP for the accounting functions will encourage organisations to develop new accounting techniques and processes in an ERP system.
Malsch (2013) Historical Analysis	Organisational accounting for corporate social responsibility (CSR) Discusses the mediating role of accounting firms and professional bodies in aligning the socially responsible practices of organisations with the rational morality of the market.	The economicisation of corporate social responsibility as symptomatic of the power imbalance between the world of humans and the world of objects governing the political structure of contemporary society and weakening democratic activity.	Innovations such as CSR are underpinned by the socially based power imbalance between humans and non-human actors in the organisation.
Nixon and Burns (2012) Historical Review	Organisational change with strategic management accounting Discusses a historical change of strategic management (SM) and strategic management accounting (SMA) practice marked as before and after Michael Porter's competitive model. Strategic management (SM) previously had a narrow view of the firm, and later on moved to a resource-based view.	SMA practices are now moving in line with strategy formulation and organisational processes.	There is a move for adoption of accounting innovations such as SMA practices, to be in line with broader organisational SM innovativeness.

An organisation's innovativeness can be manifested either technically through an oriented 'process' approach or through an organisational design oriented 'structural' approach to organisational solutions (Muthusamy 2009). An innovative organisational solution like CSR accounting is described by Malsch (2013) as being mediated by accounting practitioners through accounting firms and professional bodies. Accountants mediate by aligning the socially responsible practices of organisations with the rational morality of the market. Malsch views the: "economicisation of corporate social responsibility as symptomatic of the power imbalance between the world of humans and the world of objects governing the political structure of contemporary society and weakening democratic activity." (Malsch 2013, p. 149). This implicates the accountants heavily in the adoption of CSR accounting:

> *"In considering the history of the accounting profession and its development, it is hardly surprising to find that professional associations and large firms have also become involved in the effort to produce new information disclosure standards and new assurance and certification services. Even if they are motivated by commercial considerations, there is nothing illegitimate about financial audit experts wanting to transfer parts of their expertise into the sphere of social and environmental auditing. In this sense, the interest and involvement of the accounting industry in the construction of a socially responsible field of business is not problematic or reprehensible as such." (Malsch 2013, p. 165)*

Accountants are also implicated in new and innovative organisation forms such as the Shared Services Organisation (SSO) model. Herbert (2012) describes this implication in a study of management accountants in a longitudinal study where the SSO has been adopted to reduce costs and improve support service quality. Specifically, the study has a major focus on the evolving role of the divisional management accountant, emerging in three themes:

1. reduction of the day-to-day low level enquiries and transaction processing workload of divisional accountants due to self-service ERP systems and the SSO
2. some management accounting skills formerly done by specialist management accountants becoming embedded within the role of frontline workers
3. management accountants acquiring the responsibility for managing overall relationships between providers and the SSO.

Therefore it can be seen that the organisation's innovativeness reflected in both the technical adoption of ERP and the re-structuring approach of SSO had a major impact on accountants' adoptions of these innovations.

Boedker (2010) and Justesen and Mouritsen (2011) use ANT theory to consider new investigative approaches based on Latour's performative theory, proposing accounting strategy as a beneficial but precarious network object to follow:

> *"This proposes that strategy and accounting are somewhat fragile, even unstable, objects, which change depending on the hands through which they travel and the network within which they are located. Furthermore, accounting is not merely designed to follow or implement predefined intents. It is also a catalyst of expansion, transformation, even surprise." (Boedker 2010, p. 1)*

Kanellou and Spathis (2013) identified direct accounting benefits when accountants adopted technology-based accounting innovations. These benefits are that data can be gathered more quickly and easily; a reduction in time taken, increased flexibility in information generation and improved controls; and a reduction of the number of personnel in the accounting function.

The following subsections categorise studies on the effect of accounting innovations into those focusing on accounting roles, capabilities and processes, and organisational performance. By mapping and categorising it is possible to discover potential gaps for further research.

2.3.1 Accounting Roles

Frequently, a technology-based accounting innovation will start to be deployed and driven by an IT department. In this IT-centric world, accountants play an indirect role. Their relevance and treatment traditionally corresponds to a user or customer role. However, the direct role of accountants in technology-based accounting innovation is becoming recognised in the literature. Specifically of interest is how accountants view their roles within the accounting function as well as in relation to the IT landscape in areas such as ERPs. Whereas traditionally accountants used to view ERPs as a threat (Abu-Musa 2006), Sayed (2006) finds that "some accountants are promoting themselves as a group of experts in deriving benefits from these systems" where their "skills and their accounting knowledge are represented as important for the proper functioning of these technologies."

Accounting functions also play a direct role in initiating ERPs because of their lower operating costs, reduced cycle times and increased customer satisfaction. Spathis and Constantinides (2004) found empirical evidence that confirms the changes in the accounting process introduced with the adoption of ERP systems. Experiences in building IT-based AIS and ERPs have indicated growing influence on the organisation. From cost imperatives (Spathis & Constantinides 2003a) and effective management (Soobaroyen & Poorundersing 2008) to risk considerations (Peng &

Nunes 2009) and knowledge transfer (Lee, SM, Lee & Lee 2007), there is a continuing relationship between AIS and organisational practice.

However, although studies (Chen 2009; Rom & Rohde 2006; Sor 2004; Verville & Halingten 2002) show this trend of causal relationships between accountants, accounting functions, innovations and the organisation, few studies have approached the topic as a social phenomenon to allow the focus on inter-personal relationships (Abu-Musa 2008), and processes (Alcouffe, Berland & Levant 2008). Ethnographic studies, such as Allen (2005), do provide insight into the perceptions of participants in resolving conflicts within a social context. Allen (2005) concludes that such research brings us closer to the scenario "that computerisation choices be made in a more socially benign way."

It is possible to see that the role of accountants, though crucial, is apparently a cause-effect relationship rather than a multi-dimensional social process. However, by identifying the crucial role of accountants in the building process it is possible to follow these actors in their activities, such as in an ethnographic model (Allen 2005) and be able to project a multi-faceted view of the adoption stream.

When accountants promote themselves as a group of relevant experts in deriving benefits from ERP systems (Sayed 2006), the transforming effects of accounting innovations on the organisation are not just in the human resources area but in the knowledge management context (Chan, EWL, Walker & Mills 2009). This knowledge mediation (Hyvonen, Jarvinen & Pellinen 2006) is the basis of the organisation's deriving benefits from superior data processing properties. Hyvonen

(2006) also points out that ERP systems also have the "usability in overcoming resistance to change."

Many accounting innovation studies in ERP and AIS focus on the changing role of accountants. Accountants have a crucial role in the development and use of expensive ERPs and AIS for three possible reasons:

1. Accountants are subject matter experts who often play a role in testing, configuring and developing a system in conjunction with the ERP implementers.
2. Accountants are also the financial stakeholders, particularly the CFO who approves the budgets for acquiring the ERPs but are also dependent on IT to sign off on the successful completion of the ERP project.
3. Accountants are the primary users of the ERP and thus need to be aware of the effects of the new system with regard to their work flow practice because of the adoption of the new ERP technology, and because of the adoption of the new accounting process in the organisation.

Table 2.4 shows a selection of studies of accounting innovations that affect roles in the organisation. These studies have implications in the innovation building process and what roles the accountants play in the process. Some of the examples are reviewed in detail below.

Table 2.4 Selected Studies on Accounting Innovations that Affect Roles in the Organisation

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Burritt and Tingey-Holyoak (2012) Field Survey	Academic-practitioner links in carbon accounting Addresses gap between 'knowledge generation' of sustainability embedded carbon accounting instruments (research) and sustainability embedded carbon accounting 'knowledge application' with accounting tools – using a survey of professional accounting firms in South Australia.	Accounting tools related to sustainability developed by academics are ignored and need greater promotion, yet the results also suggest that, unexpectedly, practitioners apply some 'knowledge' tools promoted by researchers confirming that a gap between academics and practitioners exists.	Accounting innovations are more likely to emerge and stabilise within the accounting functions – with the presence of knowledge tools as well as actors with roles that can promote these tools.
Emsley (2005) Field Survey	Effect of role involvement on management accountant's innovativeness Identifies the relationship between 'business/accounting' roles and innovativeness.	Management accountants with a business unit orientation are associated with more innovativeness and more radical innovations – as compared to those with functional accounting orientation.	The emergence and stabilisation of accounting innovations can be highly dependent on roles held by accountants within the organisation and not just within the accounting function.

Table 2.4 (Continued) Selected Studies on Accounting Innovations that Affect Roles in the Organisation

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Jack and Kholeif (2008) Case Study	Limiting roles of management accountant on ERP Explores conflicting beliefs on the role of management accountants in ERP, using strong structuration theory – by observing the contest over the role of the management accountant (MA) in deploying ERP versus an alternative system.	Because of the ensuing conflict, the role of Management Accountant is compressed to the traditional role of cost information collector and provider, in spite of positive disposition of key actors in the organisation.	Accountant roles in the innovation building process may be influenced by many actors and actants.
Joshi, Bremser & Al-Ajmi (2008) Exploratory Study	Accountants role in adoption of global standards Study of Bahrain's accounting and auditing professionals' perceptions about issues relevant to global standards.	Accounting professionals hold a positive view for accomplishing accounting standards, expect challenges in applying standards, suggest growing demand for guidance in applying IFRS, and that nationalism is a major impediment to adoption of IFRS.	Although accounting innovations have a positive effect, there are expected impediments to its building and adoption process.

Emsley (2005) studies the effect of role involvement on management accountants' innovativeness. 'Role involvement' is defined as the dual nature of the accountant's role in the organisation. On the one hand, the accountant performs a *functional* role to provide direction and reporting of the finances. On the other hand, the management accountant also performs a *business unit* (BU) role in helping solve problems for the organisation. Emsley investigates the hypothesis that management accountants who perform more business unit roles end up being more innovative (by deploying more radical innovations) than those who perform functional roles only.

Emsley describes the literature to identify where this investigation is located. The literature he reviewed showed that there is a *demand-side* and a *supply-side* perspective. Demand-side refers to the need of parties (users, individuals or processes) in the organisation for innovations to improve their productivity, while supply-side refers to the intention of parties (experts, consultants, IT suppliers) in the organisation to provide innovations for others to use. Emsley proposes that the understudied supply-side is important because it may provide additional insights into the relatively low take-up of new or radical management accounting innovations. Emsley further describes the literature by way of mapping the stages and processes relating to innovations for the management accountant. By identifying management innovation studies and dividing them into demand-side and supply-side, it is possible to represent much of the extant literature and eventually focus on the specific area of this research for this thesis. Emsley's research provides a starting point to further investigate accounting innovations from beyond the "correlationship of role involvement versus innovativeness" into relationships that form networks, from

beyond management accountants into other actors in the organisation and from beyond innovativeness into what underpins the innovativeness.

Jack (2008) describes how the role of the management accountant has changed over the last two decades primarily due to the installation of large-scale integrated information systems that re-established the position and practices of management accountants: "The automation or computerisation of management accountants' work significantly affects management accountants' roles within organisations [and] finds that the role of management accountants is changing from that of accumulation, analysis and preparation towards interpretation, evaluation, control and involvement in decision-making." (Jack & Kholeif 2008, p.32). This significant impact in the innovation building process highlights the difficulties of establishing sustainable structures where there are conflicting dispositions and specific understandings of the roles of different groups of actors specifically that of the management accountants. Applying structuration theory to the case study, Jack note that the "perceptions of actors of the boundaries between internal and external organisations are significant when analysing both structure and action," therefore leading to the role of the management accountant returning to that of data custodian and information provider for those who control the organisation despite a supportive disposition for others in management. This curious result is in contradiction with Caglio's hybridisation trend where accountants blur the boundaries of the different roles they choose:

> "ERP systems certainly provide accountants with powerful modalities of structuration which can be leveraged in order to give new meanings to their activities, to increase the legitimation related to professional contributions and to the improvement of their power compared to the other stakeholders of firms. The boundaries of activities within organisations are blurring and the reallocation of practices as well as the redefinition of traditional organisational

> positions represent a natural consequence of the aforementioned issues, which are leading to change not only the activities themselves but also whom will hold the responsibilities for the activities which underpin them. Accounting people can become the proactive creators of their future within organisations by profiting from ERP systems, that is the standardisation of practices and languages transcending local contexts, the inter-functionality of information flows and working relationships and the adoption of a process view of organisational activities." (Caglio 2003, p. 146)

In the case of a fully processual innovation (that involves crucial actions by the organisation) such as the adoption of accounting standards, the role of accountants can be just as influential in the innovation building process. Joshi and Bremser (2008) describe this from survey results of accounting and auditing professionals in Bahrain. Using survey instruments they investigated the perceptions of accounting and auditing professionals from eleven audit firms in Bahrain, with regard to developing and implementing a single set of global accounting standards (IFRS) as Bahrain had experienced substantial economic growth and was viewed as a financial hub in the Middle East. Survey data showed that accountants supported the harmonisation of accounting standards and that it can be accomplished, albeit with challenges. Accountants see the benefits in terms of better financial reporting performance and because of the challenges there is a need for detailed guidance for IFRS. Therefore the accountant, in enacting his or her role, influences the innovation building process by mediating in the challenges, and providing input in what is required to overcome the challenges.

2.3.2 Expanding Organisational Capabilities and Processes

Whereas Emsley (2005) investigated the role of *accountants* in relation to accounting innovation, Alcouffe et al (2008) investigated the effect on the *organisation*, specifically in terms of capabilities and processes, of accounting innovation. Their study considered organisations throughout a country and across time periods by

comparing the adoption of similar management accounting innovations of activity-based costing (ABC) and the George Perrin method (GPM). While Emsley concentrated on management accountants as one major influence via their role in involvement and innovativeness by plotting a linear correlationship (regression), Alcouffe et al identified several major actors in the innovation acceptance process interacting over a time period at an organisational level. For example, the diffusion of GPM over time according to Alcouffe et al involved key actors/actants such as the inventor, academics, consultants, software publishers, and end-users. Consequently, Alcouffe et al described this framework in terms of actor-network theory (ANT). In reviewing the extant literature it is interesting that Alcouffe et al noted the importance of the *change process* itself and the existence of *power struggles*, leading to "embracing the ANT's conceptual framework" to "avoid a number of limits that characterise previous research on (management accounting) innovation diffusion." (Alcouffe, Berland & Levant 2008, p. 2). Table 2.5 shows examples of studies of accounting innovations that expand organisational capabilities and processes. These studies have implications in the innovation building process – particularly how innovation is adopted at the organisational level. Some of the examples are reviewed in detail below.

Table 2.5 Selected Studies on Accounting Innovations that Expand Organisational Capabilities and Processes

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Alcouffe, Berland & Levant (2008) Field Study	Organisations in France adopting accounting innovations Study of how French organisations adopted the George Perrin (GPM) innovation and the ABC innovation.	The use of actor-network theory was suitable and used to study the building and translation process. Various forms of ANT such as problematisation, enrolment, and mobilisation take shape in the organisation during the diffusion process.	Organisational processes and capabilities resources can be modelled using tools like ANT and sociology of translation.
Clarkson et al.(2011) Field Study	Adoption of IFRS Study of the impact of IFRS adoption in Europe and Australia on relevance of book value and earnings for equity valuation using a sample of 3488 firms.	There is no observed change in price relevance for firms in contradiction to linear pricing models. IFRS enhances comparability, something that would otherwise not be possible with linear pricing models.	The innovation building process provides benefits not immediately visible even with adoption.
Touron (2005) Field Study	Adoption of US GAAP by French firms Documents and explains why French firms adopted US GAAP standards.	Data showed that the use of internationally accepted standards is not an innovation, simply an imitation.	Social aspect of building innovations may produce contrary results highlighting socially-constructed nature of the building process.
Wu, Boateng & Drury (2007) Field Study	Adoption of western management accounting practices Study of the adoption and perceived benefits of western management accounting practices in China based on 64 JVs and 115 State enterprises.	The level of adoption depends on the ownership type (JV versus State-owned). There is a perception that other innovation budget control, budgeting, target costing are more beneficial for State-owned compared to JVs.	Benefits on innovation building can be socially-based perceptions.

When it comes to adopting accounting standards, the innovation building process is influenced not just by the role of the accountants but also possibly by the innovation adoption rationale. In other words, the justification for adopting the innovation, such as structuration theory or institutional theory, impacts on the building process of the innovation. We see this in Touron's study of French firms (Touron 2005) that adopted the US GAAP (Generally Accepted Accounting Principles) standards in the 1970s when there was an imperative to adopt French statutory standards. Touron explains the symbolic adoption of accounting standards according to institutional theory where organisations use formal structures for the legitimisation independent of efficiency:

> *"Rationalised myths are structured for organisations. But structures can be more or less disconnected from the technical aspects of organisations. As a consequence, distinctive management practices, such as accounting standards, are used because they are socially legitimised, independently of considerations regarding efficiency. Organisations receive support and legitimacy because they follow these rationalised myths. By acting in this way, organisations legitimise themselves." (Touron 2005, p. 853)*

Touron also points out two primary reasons for the adoption of an accounting innovation like the US GAAP (Generally Accepted Accounting Principles) – mimetic isomorphism (the tendency to imitate) and formal compliance (the tendency to comply). Normative isomorphism played a determinant role because of the presence of accounting professionals, but the pressure of institutional environments was primarily on the imitation of other organisations that the French firms wanted to be associated with (mimetic isomorphism). 'Formal compliance' is defined as the disconnection between the adoption of a practice and its full implementation. In other words, formal compliance suggests a half-built process: "Companies' financial reports claim compliance with certain accounting standards. In parallel, managers do not implement them completely" (Touron 2005, p. 853). Therefore, it can be seen that

the adoption of accounting innovations in the case study impacts the innovation building process in three ways: 1) normative isomorphism influences what innovation to adopt, 2) mimetic isomorphism describes the reasons why to build the innovation, and 3) formal compliance suggests how much of the innovation is built.

If the innovation is not about standards, we may expect a different result. This may be the case in Wu's analysis of the adoption and perceived benefits of Western management accounting practices in Chinese state-owned enterprises (SOE) and joint ventures (JV) (Wu, Boateng & Drury 2007). Wu surveyed SOEs and JVs, to find that JV's significantly adopted the Western management accounting practice more than SOEs. This leads to the conclusion that with formal compliance or the major isomorphism rationale, there will be significant differences in levels of adoption between SOEs and JVs supporting the conclusion that foreign-partnered JV's constitute an important vehicle for importing Western management accounting practices into China. Therefore, in this case, accounting innovation (AI) adoption and its rationale impacts on the building process in terms of how much is adopted, as well as suggesting where to build to maximise the chance of getting the innovation adopted.

2.3.3 Improving Organisational Performance

Finally, some studies focus on the socially-based building process of accounting innovations. From here the organisation's performance can be observed as an individual unit, as a member of a larger society, as well as a community of actors. As they are socially based, they focus on the accountant but view the accountant as a social actor interacting with other members of the community. Table 2.6 shows some examples found in accounting as a learnt process, suggesting that the effects of the

innovation go beyond the normal accounting function. Some of the examples are reviewed in detail below.

Table 2.6 Selected Studies on Accounting Innovations that Improve Organisational Performance

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Alcouffe, Berland & Levant (2008) Historical	Socially based diffusion of accounting innovations Study of how management accounting innovations are diffused in France using two examples – George Perrin method (GPM) and ABC with different outcomes.	The difference in outcome for GPM (fail) and ABC (succeed) to diffuse is due to different socially based networks and how these networks emerged.	Important actions by human accountants and other non-human actors can be modelled using socially-based theories like ANT.
Bryer (2011) Ethnography	Accounting as a Learnt Process Develops the concept of learnt social practice, and a model for considering social and subjective capabilities of accounting as a practice embedded in social relations. Identify and explain how accounting practices can distort communication, but also push individuals to clarify their concerns through the constitution of social consensus.	Through social activities, accounting practices represent a form of inter-dependency sensitive to the needs and understandings of individuals.	Socially based practice of innovation building can fulfil and understand the needs of individuals in the broader organisation.

Table 2.6 (Continued) Selected Studies on Accounting Innovations that Improve Organisational Performance

Author **Methodology**	**Focus**	**Key Findings**	**Implications of Study**
Malsch and Gendron (2011) Case Study	Power dynamics in reining in auditors Investigates how creation of Canadian Public Accountability Board influenced power dynamics between large accounting organisations.	A "form of allegiance" developed and showed patterns of resistance against the logic of "arm's length" regulation is some sites. There is a spatial gap in any attempt to control and supervise a globalised industry from a national or regional perspective.	Adoption of accounting innovations among organisations has a positive effect of being a mediation tool for a globalised industry or at a national level.
Naranjo-Gil, Maas & Hartmann (2009) Archival and Survey Data	Adoption of Management Accounting Systems (MAS) Studies innovations such as ABC, BSC, and benchmarking to understand how CFOs moderate organisations in adapting to contingencies	Individual differences of CFOs are predictive of organisations use of MAS and assists in how organisations perform with environmental contingencies.	Adoption of accounting innovations has the effect of improving organisational performance.
Seifert et al. (2010) Field Survey	Motivations on accountant whistleblowing Determines if whistleblowing as a social behaviour by accountants will increase if whistleblowing procedures and outcomes are fair.	Accountants would internally report financial statement fraud if whistleblowing policies and mechanisms had higher levels of justices.	Adoption of accounting innovations can have the effect of motivating accountants and the accounting functions towards correct social behaviour.

A study of the *empresas recuperadas* (recovered enterprises) in Argentina (Bryer, AR 2011) illustrates the rich social aspect of accounting and accountants. *Empresas recuperadas* were a response to the factory closures during economic hard-times in Argentina, where bankrupted companies/factories were transformed into worker cooperatives. Consequently, the accounting functions achieved a highly socialised inter-relationship within the organisation and within the wider society. Bryer observed diverse collaborative and subjectively creative capacities and confirmed many accounting social practices from the extant literature:

> *"Accounting is a collaborative and nuanced practice, but these characteristics grow in diverse ways within different organisational and societal environments. The paper sought a clearer understanding of diversity within accounting's social life by analysing how wider dynamics between grass roots and institutional actors informed organisational understandings and purposes. It therefore highlighted the importance of connecting accounting theory to neo-institutional and social movement literature." (Bryer, AR 2011,p. 490)*

This confirmation of accounting for diversity shows that when the accounting functions adopt accounting innovations, accountants go beyond their accounting functions to find unique ways to solve accounting problems.

A socially-based model allows the researcher to follow the accountant and other actors in an organisation. Alcouffe et al (2008) attempt to do this as they investigate how French firms fared in adopting two accounting innovations – the George Perrin model (GPM) and activity-based costing (ABC). They used actor-network theory and in particular the sociology of translation to describe the difference in outcomes for the two innovations. Recognising that accountants are social actors, they identified social constructs that allowed the accountant actors to be followed. (Sociology of translation

and the terms *problematisation*, *interessement*, *enrolment*, and *mobilisation* are defined in detail in Chapter 3.3.) Alcouffe et al refer to some social constructs:

1. 'Problematisation' is not just a technical term but may also refer to such lofty ideals as the defence of the nation.
2. Various interessement modalities explicitly stand out in their two stories. Interessement can be commercial (an innovation to sell), political (a response to national challenges), editorial (a topic to publish on), intellectual (a concept to teach and to research) or career enhancing (a distinctive expertise for professional managers).
3. The question of characterising 'successful' and 'not-successful' accounting change remains. Enrolment seems to be the key concept when addressing this issue (Alcouffe, Berland & Levant 2008).

Therefore, these constructs including the quest for allies, controversies, problematising, translations, and settlement of controversy all impact the accountant beyond the normal accounting functions.

Delving deeper into the organisation, (Naranjo-Gil, Maas & Hartmann 2009) identified *higher-level* CFOs as crucial in the adoption of management accounting innovations. The understanding of why organisations adopt and implement management accounting systems (MAS) is still underdeveloped – thus the need to investigate CFOs and their role in MAS innovations. Naranjo-Gil, Maas & Hartmann et al. (2009) hypothesise that individual differences between CFOs are "predictive of organisations' use of innovative MAS" and in addition propose that "CFO

characteristics moderate the extent to which organisations rationally adapt to environmental contingencies."

2.3.4 Identifying the Gaps in the Literature

Many accounting innovations today are embodied in IT-based information systems such as ERP (Al-Mashari 2003; Sayed 2006). Spathis and Constantinides (2003b) show that the major sources of innovations in the organisation today are found in ERPs. Consequently, ERPs are closely aligned to the accounting function (Spathis & Ananiadis 2005; Spathis & Constantinides 2004). Research work done in various areas of ERP, organisation changes, accounting information systems and relevant IT experiences shows insights on social relationships between ERPs, the organisation and specifically accountants as major actors.

By summarising the literature review into two parts – the *adoption* and *effects* of the innovation process, it is possible to show the wider view of organisational processes. From this wide view of accounting innovations, Justesen and Mouritsen (2011) summarise how far ANT has progressed in accounting research from its seminal influence in Latour's original writings (Latour 1987). However, looking closely from the socially-based building aspect, there are some possible criticisms from O'Connell (O'Connell, Ciccotosto & Lange 2011) arguing that perhaps ANT is over-emphasising the social element and downplaying the non-human actors.

In studying the effects of accounting innovations, it can be seen that the accountant plays a major role in the adoption process of innovations such as ERPs. It seems inevitable that a study of accounting innovations leads to many technology-based

examples of innovations. Thus there is the need to recognise and compare this with non-technology based innovations so that it is possible to subsequently focus on the adoption processes and its effects in a socially-based community of accountants.

The literature reviewed above reveals implications for the processes of building an accounting innovation and for the actors who are building the innovation. Some of these processes have a social context, such as those that involve the accountant. Processes play an important role as many of these drive the organisational benefits that are derived from the accounting innovation. For technology-based innovations, these may include immediate cost savings, while for non-technology based innovations, there could be social, organisational or industry-wide benefits.

Technology-based accounting innovation can be seen as a continuous stream with potentially differing individuals involved in different processes. However, the literature in the field of technology-based accounting innovations has traditionally focused on improving an outcome rather than a process. This reveals a gap in the literature, where few studies of technology-based accounting innovations (such as ERP) deal with processes and how these processes improve the accounting-related outcomes being investigated. There are two aspects to this gap in the literature: the 'supplier' or builder of technology-based accounting innovations; and accounting as a 'consumer' of technology-based accounting innovations such as the ERPs. In the literature reviewed for this research, there is insufficient focus on the 'supply side', insufficient focus on adoption within the accounting functions, and a need for more process studies to explain the continuous relationships.

Thus the review of the literature above suggests a gap. The focus in the literature is on the demand side – the what – rather than the supply side – the how.

2.4 Research Questions

The gap identified in subsection 2.3.4 informs the development of the research questions for this thesis. The current emphasis in the literature is on IT-based tools satisfying the requirements of organisations in what they need to do business (demand side) rather than the 'how, why, and what' accountants introduce to the organisation (supply side) that are innovative and of benefit (Emsley 2005).

To examine the adoption of accounting innovations and their effects on the organisation, the following research questions were posited:

Q1: How does technology-based accounting innovation (TBAI) emerge and stabilise within accounting functions?

Q2: What effects does a technology-based accounting innovation have for and within accounting functions?

These questions will be asked specifically in relation to the areas of the finance and accounting function, and management decision-making processes.

In asking how accounting innovations are adopted, focus is on the early phase of the organisation, where decision points are found that determine the outcome for the future prior to the organisation's accountability-discharge to the external community. This is at the point where things are open, and there are many lessons to be learned.

By investigating the effects of the innovations on the larger organisation, a more complete picture is revealed of the role of accountants, and the accounting function in the organisation.

2.5 Summary

This chapter reviewed the extant literature both in relation to the adoption of non-technology based accounting innovation and technology based accounting innovation. It further explored the effects of accounting innovation. A gap was identified in the literature in which the prior literature emphasised IT-based tools developed in response to organisational requirements – the demand side. The literature is relatively silent on the 'how, why, and what' accountants introduce to the organisation – the supply side – that are innovative and of benefit (Emsley 2005). It is this area that this thesis seeks to explore and this gap informs the development of the research questions of the thesis.

Emsley further supports the case for the supply-side perspective using Jones and Dugdale's argument (Emsley 2005; Jones & Dugdale 2002; Lukka & Granlund 2002) that "certain high profile individuals have promoted the supply of managing accounting innovations (such as ABC and the balanced scorecard) to exploit potential consulting opportunities rather than because there is any hard evidence that these innovations are efficacious." Consulting opportunities frequently involve related IT-based projects such as third-party supplied enterprise resource planning (ERP) implementation. The categorisation of IT-based innovations into demand-side and supply-side contrasts with earlier work by Wolfe (1994) which identifies innovations research into three streams of a) diffusion, b) innovativeness, and c) process.

Diffusion of an innovation refers to "its spread through a population of potential adopters" while the objective of organisational *innovativeness* research is to "discover the determinants of an organisation's propensity to innovate. (Wolfe 1994)" However, demand-side analysis considers both diffusion and innovativeness, as forming a content stream. Therefore, more recent research has looked at and contrasted content and process studies. Process studies "typically use longitudinal case studies to examine 'how' and 'why' innovations develop" and content studies "often use cross-sectional surveys to evaluate the relationship between different explanatory factors and innovations." (Emsley 2005, p. 159).

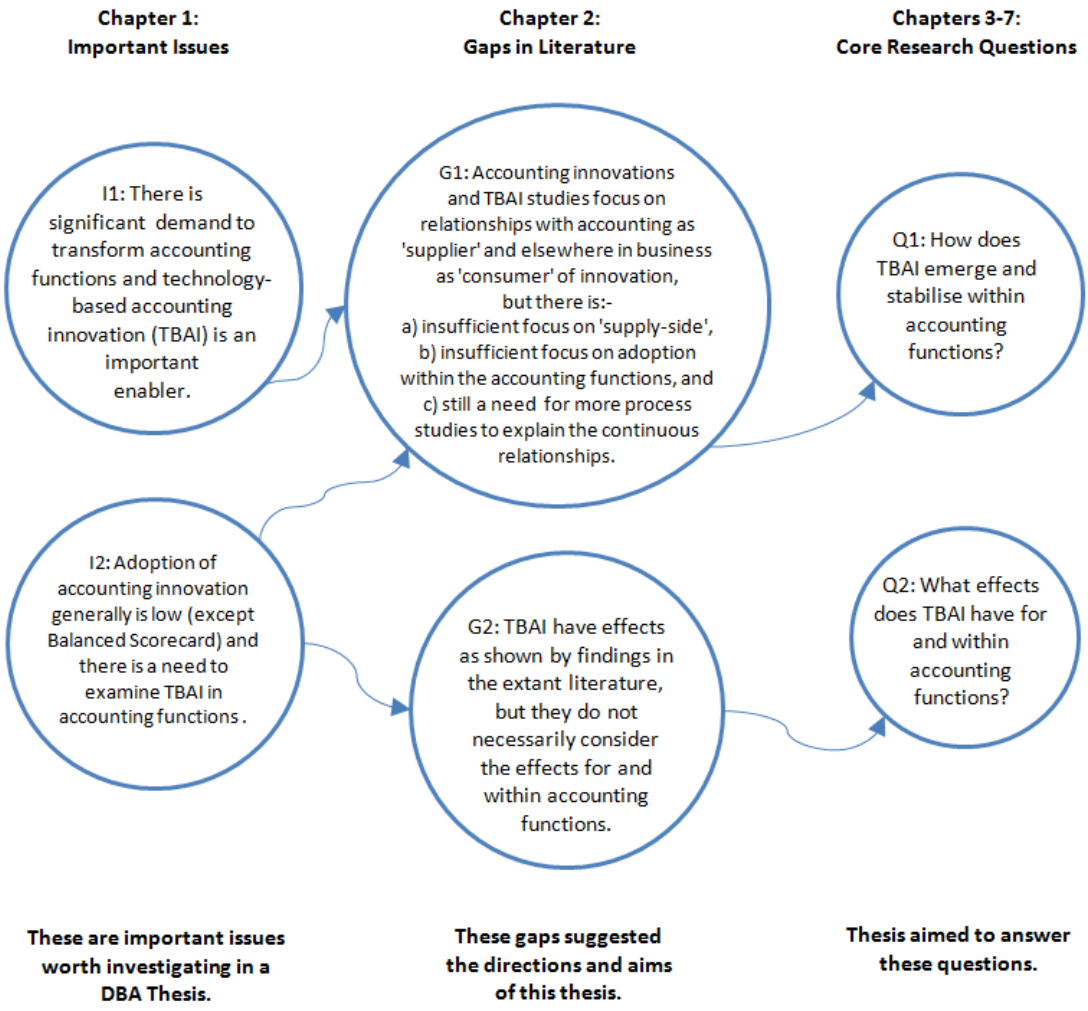
In summary, the two gaps identified in the extant literature are:

G1: Accounting innovations and technology-based accounting innovation studies focus on relationships with accounting as 'supplier' whilst elsewhere in business as 'consumer' of innovation, but there is:- a) insufficient focus on 'supply-side', b) insufficient focus on adoption within the accounting functions, and c) still a need for more process studies to explain the continuous relationships.

G2: Technology-based accounting innovations have effects as shown by findings in the extant literature, but they do not necessarily consider the effects for and within accounting functions.

Figure 2.2 shows the gaps in the literature in relation to the important issues and the core research questions.

Figure 2.2 Issues and Literature Gaps addressing the Core Research Questions



CHAPTER THREE

Actor-Network Theory

"… perfectly fit for a blind, myopic, workaholic, trail-sniffing, and collective traveller" (Latour 2005, p. 9)

3.1 Introduction

This chapter reviews the theory that is used to inform the empirical analysis of the thesis. The theory used is Actor-Network Theory (ANT) and specifically sociology of translation (or network building) that is located within ANT. This chapter reviews the theory and its implications in several subsections. In Section 3.2, it provides an overview of actor-network theory and explains why ANT is particularly suitable for the research questions examined in this thesis. Section 3.3 focuses on the area of Michael Callon's four 'moments' within ANT. Section 3.4 looks at the ANT forms such as centres of calculation and action at a distance. Section 3.5 reviews ANT in the field of accounting. This may provide an opportunity to locate this thesis within the stream of the studies of accounting innovations that have used ANT. Section 3.6 provides a summary of the chapter. Chapter 3 Theory together with Chapter 4 Methodology provide the justification for the research study that is described in Chapters 5 and 6.

3.2 Actor-Network Theory

The concept of actor-network theory was developed by Bruno Latour (1986), Michael Callon (Callon, 1986) and John Law (1987) at the Centre de Sociologie de

l'Innovation (CSI) of the École Nationale Supérieure des Mines de Paris in the early 1980s. It was initially created as an attempt to understand the processes behind innovation and knowledge-creation in science and technology as observed in the research-based workplaces. Therefore these authors drew much from science and technology studies (STS) or research work on large technological systems as well as studies in sociology of scientific knowledge (SSK).

From the point of view of Actor-Network Theory, innovations such as technology-based accounting innovations travel by being passed from one actor to another across time and space, and during this travel the innovation is constantly modified or mediated. What ends up as the adopted innovation is the totality of modifications or mediations applied such that it is an inherent part of the network. This is in contrast to other diffusion approaches that suggest that innovations travel on their own momentum, implying that innovations can travel linearly without the social influence of actors in the network. Thus the primary way to study actor-network theory and the cases where it is found is to follow actors and innovations (where innovations are treated like actors too) and observe the network transforming and mediating. Necessarily, following the actor involves observing processes that lead to transformation. These processes are in fact efforts to persuade or mobilise other actors until such point that the network stabilises and emerges in its mediated form. When observing and following actors, it then becomes easy to observe the effects of the one actor (the innovation) against the other actors in the network.

The central theme of ANT is the emergence of societal order. Thus ANT studies focus on how order is accomplished and made stable over time and space. It is a methodical

device based on the world view of tracing the process of how society is assembled. Consequently, ANT looks at the world as comprising heterogeneous relations and processes where humans and non-humans alike are treated as actors (Johannesson & Bærenholdt 2009). But for Latour (2005), ANT is simply an attempt to allow the members of a contemporary society to have as much leeway in defining themselves as that offered by ethnographers. Latour described ANT's origins via its alternate form 'sociology of translation':

> *"ANT is simply the realisation that something unusual had happened in the history and sociology of scientific hard facts, something so unusual that social theory could no more go through it than a camel through the eye of a needle." (Latour 2005, p. 106)*

Uden and Francis (2011) also described ANT:

> *"ANT is a heterogeneous amalgamation of conceptual, social, textual and social actors. Actors in ANT, known as Actants, are any agent, collective or individuals that can associate or dissociate with other agents. Actants enter into network association that in turn defines them, names them and provides them with substance, action, intention and subjectivity. It is via the networks that actants derive their nature and develop as networks. The main difference between actors and actants is that only actors are able to put actants in circulation in the system. In ANT, the social and technical aspects are treated as equally important. ANT denies that purely technical or purely social relations are possible. Instead it considers the world to be full of hybrid entities containing both human and non-human components. Actors in ANT include both human beings and non-human beings (such as technology) that make up a network to be studied. In ANT innovators attempt to create a forum, a central network in which all the actors agree that the network is worth creating and maintaining. Numerous actors within an organisation may be involved in a different process of translation, each with its own unique characteristics and outcomes. Each actor will have their own view of the network and their own set of objectives and goals. The process of translation seeks to align these goals with those of other candidates for the network and to create a set of shared goals." (Uden & Francis 2011, p. 25)*

A network association provides an opportunity to name them and give them substance, action, and intention (Callon, 1986). This then leads to a process of

translation as recognised by Callon (1986). Thus ANT is also known as the sociology of translation. The translation process is a process of negotiation where actors and actants interact to establish common definitions and meanings, define representatives and co-opt each other in the pursuit of their own objectives. This leads to the establishment and stabilisation of a durable network. Michael Callon also defined the translation process as having four moments to indicate the crucial points where the network is established and made durable. Section 3.3, will discuss the different moments defined by Callon.

There have been critical points raised against ANT. In the early years, ANT was subjected to criticism about its applicability and relevance. Johannesson (2009) argues that ANT-inspired approaches are not the most obvious choice for studies of cultural imaginations, geographical imaginations, nationalistic projects and the like. For Latour, this inapplicability could be due to misunderstanding what ANT is and the connotations of the terms used. As far as understanding ANT, there were four difficulties in the terms used to label ANT – the words ‘actor’, ‘network’, ‘theory’ and the hyphen are like “four nails to a coffin” that were threatening to push ANT into eventual disuse. Latour later reversed his comments on ANT’s unsuitable choice of vocabulary by accepting a double entendre metaphor to ANT as an insect and ANT as a qualitative approach. Thus, the ANT acronym is quite appropriate as it “was perfectly fit for a blind, myopic, workaholic, trail-sniffing, and collective traveller." (Latour 2005, p. 9). The phrase somewhat describes both the insect as well as the qualitative approach as a rigorous ethnomethodological journey. This satirical method of responding to the criticism of ANT is also illustrative of the technique of combining physical and metaphysical analogies to describe many ANT forms. For

example, Callon used this technique to describe a moment of translation as "negotiating a strong current of obstacles" by referring to both an ant-sized larva swimming in a body of water as well as an expert scientist extemporising in front of a hostile audience of other scientists (Callon 1986).

More importantly, the difficulties faced by the original proponents in addressing the criticisms of ANT illustrate that ANT itself is a theory that struggled to find acceptance in the research community during the early days, to the point where the main advocates had to distance themselves from the ANT label after 1999 (Johannesson & Bærenholdt 2009). In other words, ANT was competing with other theories for dominance in a socially-based selection process. By its own description, ANT is an actor in an actor-network world that is transforming across time and space. Some of the focal actors in this network included the original proponents, their amusing metaphors, ANT, the research community and the alternative theories. Although in the early days Latour fumbled from rejecting ANT as a misnomer to accepting ANT as an insect mascot, essentially ANT has come a long way in establishing itself in the extant literature today. This battle can be appreciated from Latour's own acknowledgement in the opening pages of his book (Latour 2005) when he refers to his works as having passed through many avatars. His use of the word 'avatar' suggests that each version was his own (to exert his intended influence) yet was malleable and mediated by the current thoughts at the time. Thus, his avatar is a boundary actor (Briers & Chua 2001) able to traverse space and time easily. Through his books, Latour's intention is for ANT to fight for dominance across this space and time:

> *"This book has passed through many avatars. It began almost thirty years ago, when I had the chance of being taught primate*

> *sociology by Shirley Strum and her baboons in Kenya. Although that project with Shirley has remained in limbo, it has been the staple of my teaching of sociology to young engineers at the school of Mines in Paris. When in 1996, I was offered to give the Leclerc lectures in Louvain-la-Neuve, I decided it was about time to synthesise what I had learned from Michel Callon, John Law, Madeleine Akrich, Andy Barry, Annemarie Mol, Antoine Hennion and many others in what had become known as Actor-Network Theory." (Latour 2005, p ix)*

Thus, in the actor-network world of research, there were other theories that competed with ANT in describing the adoption of innovation, such as innovation diffusion and technology acceptance model. Innovation diffusion or diffusion of innovations (DOI) is "the process by which an innovation is communicated through certain channels over time among the members of the social systems" (Rogers 2003, p. 5). The failure to diffuse over the social system implies the rejection of the new idea and therefore the decision not to adopt the innovation. While ANT has four moments of translation, DOI has four major elements: 1) the characteristics of the innovation, 2) the communication channels, 3) the passage of time, and 4) the social system. These four elements suggests that adoption of an innovation is a given, that it will happen and the only question is at what rate. Thus Rogers suggests the measure of rate of adoption. This rate, according to Tatnall (2011), is affected by perceived characteristics of innovations: relative advantage, compatibility, complexity, trialability and observability.

DOI is not without its successes even in the adoption of technology based accounting innovations, as in Brown, Booth & Giacobbe (2004) discussions of the adoption of ABC (activity based costing) in Australia. Brown, et al work presented a survey based study to examine the paradox of why so few companies have adopted ABC despite its demonstrated benefits to organisations. This survey of Australian CPA

members provided a cross-sectional picture of organisations in various stages of ABC adoption, thus depicting an indication of the rate of diffusion within the industry.

Brown, et al therefore illustrated a distinct advantage of Diffusion of Innovation - that the quantitative nature of DOI in establishing a rate of adoption - allows for further quantitative research into establishing explanatory factors of adoption. Thus their study presented a more integrated and extended theoretical model of how firms adopt:

> *"The present paper set out to present a more integrated theoretical model of the stages firms go through in ABC adoption and then to empirically examine the impact of a selected range of technological and organisational factors on movement through these stages of adoption. This aim was motivated by the disparate set of theoretical approaches and a wide variety of predictive factors considered to date in the developing research on ABC adoption, leading to a failure to build upon previous research and to develop the cumulative effects of pursuing streams of research (Brown, Booth & Giacobbe 2004, p 353) "*

Consequently, some of the discussions of comparing DOI and Actor Network Theory can take the form of criticisms between quantitative and qualitative research. Brown et al (2004) noted how their study can be limited with statistical bias because of the nature of surveys. Therefore, there will be a constant need for further validation to identify other factors that may have higher statistical significance as derived from different samples.

The technology acceptance model (TAM) is based on several theories that describe system usage (specifically IT-based systems) from the point of view of the typical computer end-user. It assumes that computer users act normally and rationally and use information in a systematic manner within the workplace. This process allows them a

valid platform to decide whether to accept or reject a technology such as the actual system they are using. Tatnall (2011) explains that:

> *"TAM theorises that the effects of external variables (such as system characteristics, development process or training) on intention to use the technology are mediated by perceived usefulness and perceived ease of use because if other things are equal, the easier the system (technology) is the more useful it can be."*

TAM has a very strong social basis, like ANT. For Kripanont (2007), TAM assumes that when someone forms an intention to act they will be free to act without limitation.

However, Latour rejects the arguments of diffusion models such as DOI and TAM because they assume that innovations generally have the ability to travel on their own. Latour does not agree that innovations travel independently. Latour explains that the DOI model considers innovations as facts and machines in free floating motion:

> *"At this point these people do not do anything more to the objects, except pass them along, reproduce them, buy them, believe them… It also seems that all the work is now over. Spewed out by a few centres and laboratories, new things and beliefs are emerging, free floating through minds and hands, populating the world with replicas of themselves." (Latour 1987, p.133)*

Only in exceptional cases (such as news) can innovations travel on their own, otherwise they need to be propelled in the hands of actors or allies in the form of humans and non-humans through a process of translation (Latour 1987). Thus ANT is the more suitable model if the innovation is to be investigated for its *processes* rather than the metrics and measures.

Similarly, Uden and Francis (2011) support ANT instead of DOI by giving the following benefits for using ANT, when used in the understanding, development and adoption of an innovation:

- ANT allows an open-ended array of things that need to be aligned including work-routines, incentive relationships, systems modules and organisational roles.
- ANT is appropriate for preparing design strategies by aligning the interests of the actor-network that is having the interests of all their influences fit together.
- ANT allows aligned interests to be inscribed into durable materials.
- ANT also introduces the concept of 'black-boxing' (sealed actor-networks).

Subsequently, Baxter and Chua (2003) celebrated theoretical contributions between ANT and accounting in a review of contributions to management accounting from different sociological models that included not just ANT but also institutional theory structuration theory and the Foucaldian approach. The Latourian approach by followers of ANT argued that management accounting numbers are fabrications, and that they are simply inscriptions built to appear as facts:

> *"Followers of [Latour] are concerned with understanding accounting technologies in the context of networks of human and non-human 'actants'. Correspondingly, it is argued that management accounting numbers are ''fabrications'' or inscriptions 'built' to take on the appearance of 'facts'. Case studies illustrate how management accounting numbers are constructed to accommodate and persuade diverse interests within organisations. For example, the [research] argues that the construction of budgeting numbers within British, North American and Australian hospital systems respectively, involves co-opting the interests of medical practitioners, hospital administrators and policy setters in these arenas. As a result, we begin to recognise the*

> *fragility of management accounting numbers. These numbers are built on the shifting and transient interests of disparate groups of organisational participants who work incessantly to maintain the [position] of (their) numbers and influence over organisational functioning." (Baxter & Chua 2003, p. 102)*

Tatnall also agrees that innovation translation with ANT is the better model that allows innovations to be adopted, therefore supplanting diffusion of innovation:

> *"Latour maintains that in an innovation translation model the movement of an innovation through time and space is in the hands of the people, each of whom may react to it in different ways: they may modify it, deflect it, betray it, add to it, appropriate it, or let it drop. He adds that this is true for the spread of anything from goods and artefacts to claims and ideas and that the adoption of an innovation comes as a consequence of the actions of everyone in the chain of actors who has anything to do with it. He suggests that each of these actors shapes the innovation to their own ends, but if no one takes up the innovation then its movement simply stops. Here, instead of a process of transmission, we have a process of continuous transformation where faithful acceptance involving no changes is a rarity requiring explanation. Instead of the transmission of the same token – simply deflected or slowed down by friction – you get the continuous transformation of the token." (Tatnall 2011, p. 56)*

In addition, from the researcher's point of view comes a strong urge to investigate the variety of phenomena that influence the course of an innovation (Callon 1986); (Latour 1987). ANT requires that to understand the emergence of an innovation, the researcher must investigate the pressures that form while it is being put together, and describe the processes of translation and displacement that gradually change; thus adapting the innovation to changing circumstances. The researcher is able to account for the changing innovation as minute details of the innovation story unfolds and develops:

> *"This plea – to restore innovation in the making without intervening in the explanation of those elements which are unknown until the end of the process – leads to challenging every story, every interpretation which censures, evaluates, or even worse, ridicules the stands taken or arguments developed at the moment when*

> *decisions are taken." (Akrich, Madeleine, Callon, Michel & Latour, Bruno 2002a, p. 191).*

Thus the overwhelming argument for choosing ANT over other diffusion models is the need to account for rather than assume about the environments and uncertainty surrounding the innovation:

> *"Any analysis, any judgement which does not reconstruct this co-production of the object and its society … would be of little use ... Socio-technical compromises and negotiations are the two key notions which allow this work of mutual adaptation … to be understood" (Akrich, Madelene, Callon, Michel & Latour, Bruno 2002b, p. 211).*

3.3 Sociology of Translation

The process of innovation building and adoption happens over space and time. As a constantly emerging and potentially unstable network it may be hard to trace the crucial points in space-time that enabled the change. In the case of organisations and innovations, these changes may well happen across several years, across remote distances and between many communities. To trace the changes that occur, Callon uses the four moments of translation – *problematisation*, *interessement*, *enrolment*, and *mobilisation* – as a way of identifying the crucial points of where and when important things happened. This section attempts to explain Callon's four moments of translation.

3.3.1 Problematisation

Problematisation is the initial phase of the translation process and subsequent creation of a viable network. Callon describes problematisation as having two parts: the inter-definition of the actors and the definition of obligatory passage points.

In his seminal article, Callon (1986) describes how the development of scallops and the fishermen of St Brieuc Bay followed a pattern of a sociology of translation. Here he describes how three researchers determined a set of actors and defined their identities in the problematisation stage. This simultaneously establishes, in a double movement, an obligatory passage point:

> *"During problematisation, a primary actor tries to establish itself as an obligatory passage point (OPP) between the other actors and the network, so that it becomes indispensable. The OPP is in the primary actor's direct path while others may have to overcome obstacles to pass through it." (Uden & Francis 2011, p. 26)*

The *inter-definition of actors* refers simply to the parties that have a stake in the problem. In the case of the scallops and fishermen, the problem/question was whether the young scallops (*Pecten maximus*) would attach themselves to underwater collection pods and grow to be farmed.

> *"The questions formed by the three researchers and the commentaries that they provide bring three other actors directly into the story of the scallops, the fishermen of St. Brieuc Bay, and the scientific colleagues. The definition of these actors, as they are presented in the scientists' report, is quite rough. However it is sufficiently precise to explain how these actors are necessarily concerned by the different questions which are formulated. These definitions as given by the three researchers themselves can be synthesised in the following manner." (Callon 1986, p. 7)*

How and Alawattage (2012), describe 'problematisation' as a decoupling between a centre and the periphery in the case of a Malaysian company justifying the implementation of a new ERP system. In this case, a branch manager resigned with two staff to form a competition to the original company. This then highlighted the problem that the branches operate with poor controls from Head Office, and there was an inability of the current accounting controls to regiment the periphery. What was a simple incident of the resignation of actors has been *inter-defined* to be the 'historic' trigger to implement a new accounting regime:

> *"This particular incident was 'historic' in the sense that it provided the impetus to bring the accounting system to the forefront of the managerial agenda for transformation. The centre's inability to find out exactly what had occurred at the outlet concerned was understood as an accounting problem. It created general acceptance across the organisation of the inability of the existing accounting regime to regiment the periphery: of the incapacity to render the periphery properly visible to the centre and, thereby to hold the periphery accountable. Consequently it became obligatory that top management 'do something to prevent the recurrence of such an event." (How & Alawattage 2012, p. 410)*

With the case of the scallops, there is a simple question that each stakeholder would like to know the answer to: the fishermen would like to know, so they can implement the relevant farming techniques; the scientific community would like to know since it has not been seen before; and of course arguably the scallops would like to know for their own survival. (Recall that in ANT, there is a concept of symmetrical treatment of all actors whether humans or non-humans.) Finally, the three researchers would also like to know as they are keen to help the fishermen economically succeed. The actors/actor groups may have different agendas or individual problems, but here they are facing the same identical question: does *Pecten maximus* anchor? This is enough to 'inter-define' them by establishing their identities and the links between them:

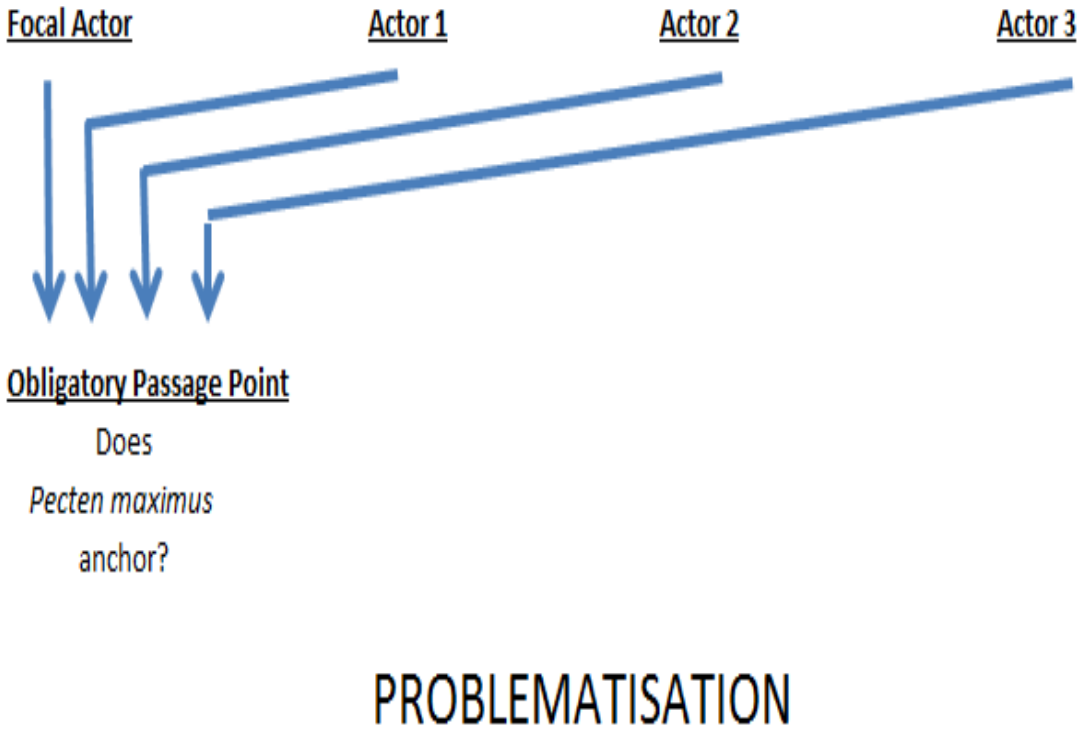
> *"Of course, and without this the problematisation would lack any support, the three researchers also reveal what they themselves are and what they want. They present themselves as 'basic' researchers who, impressed by the foreign achievement, seek to advance the available knowledge concerning a species which had not been thoroughly studied before. By undertaking this investigation, these researchers hope to render the fishermen's life easier and increase the stock of scallops of St. Brieuc Bay. This example shows that the problematisation, rather than being a reduction of the investigation to a simple formulation, touches on elements, at least partially and locally, which are parts of both the social and the natural worlds. A single question – does* Pecten maximus *anchor? – is enough to involve a whole series of actors by establishing their identities and the links between them." (Callon 1986, p. 7)*

The question "Does *Pecten maximus* anchor" is therefore the single point where all the actors converge. Not only does Callon identify the agendas of each actor, he also describes that the actors recognise that "their alliance around this question must benefit each of them." In other words the actors find that they are obligated to take detours and movements in synchrony with each other and specifically upon the bidding of the focal actor who established the *obligatory passage point*. Or viewed alternatively, the road is blocked by a series of problems:

> *"[It] shows that the problematisation possesses certain dynamic properties: it indicates the movements and detours that must be accepted as well as the alliances that must be forged. The scallops, the fishermen, and the scientific colleagues are fettered: they cannot attain what they want by themselves. Their road is blocked by a series of obstacles problems. The future of* Pecten maximus *is perpetually threatened by all sorts of predators always ready to exterminate them; the fishermen, greedy for short term profits, risk their long term survival; scientific colleagues who want to develop knowledge are obliged to admit the lack of preliminary and indispensable observations of scallops in situ. As for the three researchers, their entire project turns around the question of the anchorage of* Pecten maximus. *For these actors the alternative is clear; either one changes direction or one recognises the need to study and obtain results about the way in which larvae anchor themselves." (Callon 1986, p. 8)*

Callon describes this "holy alliance" as the associations between the entities, therefore defining their identities and what they want, and this is what will make the scallops multiply. Figure 3.1 shows the road map that is faced by the inter-defined actors and their obligatory passage point.

Figure 3.1 Road Map of Actors Faced with the Obligatory Passage Point



3.3.2 Interessement

Interessement (a term of French origin and used synonymously with the word 'interposition') is the second stage of the translation process. Problematisation alone does not guarantee the emergence of a network. Although the identities of the entities were established in problematisation, each entity enlisted can either submit to the definition or refuse the transaction. There is really nothing more done in problematisation other than identification. The reaction of the entities is not known, and certainly the entities have not been influenced yet.

Interessement is the set of actions performed by the focal actor to elicit a positive response from the actors identified. These actions are not meant for the focal actor to

change the nature of other actors but merely to "impose and stabilise the identity of the other actors it defines through problematisation." Instead, the focal actor's actions consist of placing interessement devices in front of the other actors:

> *"Interessement or 'how allies are locked in place' uses a series of processes that attempts to improve the identities and roles defined in the problematisation on the other actors… It means interesting and attracting an actor by coming between it and some other actors. This is the process of recruitment of actors – creating an interest and negotiating the terms of their involvement. The primary actor works to convince the other actors that the roles it has defined them are acceptable. Where there are groups of actors with the same goal, these can be represented by a single actor." (Uden & Francis 2011, p. 26)*

How and Alawattage (2012) describe 'interessement' as a discursive process through which a set of 'institutionalised myths' is translated into a set of organisational propositions that organisational actors collectively believe are indispensable. This can be enacted when a focal actor such as the Finance Director (FD) takes the central role in the implementation of an ERP:

> *"Empowered by the acquired role of translator-spokesman, and mobilising his cultural and symbolic capital as one of the most educated and professionally trained managers, FD thus created an alliance between the centre and the periphery for "everyone's common good". He got accounting clerks and others 'interested' in the activities required to translate their local accounting system (especially expenditure coding and classification) to SAP. Although they resisted initially, especially owing to the additional workload during the transition process and ignorance and misconceptions of SAP, accounting clerks at the sales outlets were easily brought to the project by employing a combination of monetary incentives (overtime payments, which had never been offered in this company before), subtle punishments (ridicule) and official threats of job losses for those failing to learn SAP. A series of training programmes was put in place. The first programme aimed at introducing SAP to all the clerks. Each of them was provided with a handbook which described SAP characteristics, functions and provided problem-solving tips. The next programme involved specialised functions such as human resources, finance, purchasing, sales and others. Clerks were grouped by job function and required to attend training related to particular functions" (How & Alawattage 2012, p. 411).*

‘Interessement devices’ are items placed between each and every actor/actant. These interposed devices are what will make the actors ‘interested’ in submitting to being part of the inter-definition. Interessement devices may be real or metaphysical. In the case of the scallops, the devices consist of physical towlines and collectors in the water that entice the young scallops to be domesticated and submit to the role of candidates for attachment and farming. For the farmers and other groups, their interessement devices consist of “texts and conversations” that lure them to follow the focal actor’s project.

Whether real or metaphysical, the objective of interessement devices is to strengthen or weaken existing links. If there is a link between an actor and his personal goal that does not take the road map via the obligatory passage point (OPP), then this link is meant to be weakened (if not completely cut off) by an interessement device. Conversely, if there is a link between the actor and a goal that follows the OPP, then this is encouraged in the interessement device. Therefore there can be interessement devices for as many as there are possible directed links (from-to) between actors. Strengthening the links to the OPP and weakening other links helps ‘corner’ the entities. In Callon’s domestication of the scallops, there is a striking illustration of this interessement mechanism. The three researchers were inspired by a Japanese aqua-farming technique where towlines were used as collectors immersed in the sea and each collector used fine net bags to anchor the larvae. The bags allowed free flow of water, prevented scallops from escaping and protected them from predators until they were old enough. Thus the towlines and collectors are effective interessement devices:

> *“In this way the larvae are protected during the period when they have no defence: that is, when they have no shell. The collectors*

> *are mounted in a series on the line. The ends of the two lines are attached to floats that are kept in place by an anchorage system. The towline and its collectors constitute an archetype of the interessement device. The larvae are 'extracted' from their context. They are protected from predators (starfish) which want to attack and exterminate them, from currents that carry them away where they perish, and from the fisherman's dredge which damages them. They are (physically) disassociated from all the actors who threaten them." (Callon 1986, p. 9-10)*

The interessement devices extend and materialise the hypothesis of the three researchers that they used to establish the validity of the earlier problematisation: 1) the larvae are constantly threatened by predators, 2) the larvae can anchor, and 3) the Japanese technique can be used in this case as there is not much difference between *Pecten maximus* and the Japanese scallops. However, if the scallops refused to anchor and proliferate, the collectors are then failures and the problematisation is refuted.

In the case of the Malaysian company implementing SAP (How & Alawattage 2012), the Finance Director considered himself and his staff similar to the scallops swimming in the sea yet captive within the collectors. The Finance Director described his (and his staff's) interessement device as like fishes in a fish tank, where they must allow the new regime or else:

> *"From top management to the accounting clerk, everyone in this company should abide by a clear set of accounting policies and every transaction should be recorded and documented. This is a basic principle of internal control that I was taught during my Chartered Accountancy training. And this principle is a fundamental pre-requisite for a better managed company. That's how and why we become accountants, abiding by the rules and to implement such rules for the betterment of everyone. . . . We are all like fish in a fish-tank. The tank is the company and we are the fish. If the tank is damaged and the water leaks out, that is the end of the fish. For me, finding another tank would not be difficult at all, but for you, I know, it would be really difficult. . . . Everyone in the company should therefore understand that it is in your own interests for us to bring in a new accounting system: to protect the company and to protect everyone's job. So you should not see this as a new problem. It is a solution, but becomes possible if and only*

if everyone here fully supports it and works to get it implemented." (How & Alawattage 2012, p. 411)

3.3.3 Enrolment

Once an entity is cornered, there is a need for it to take on the 'role' that has been identified during problematisation. Even if the entity is sufficiently constrained by the entrapping device of interessement, there is no guarantee of success yet. Enrolment is the successful-outcome version of interessement. Therefore enrolment describes the negotiations, trials of strength and tricks that accompany the interessements that enable success. No matter how constraining the trapping device, no matter how convincing the argument, success is never assured. In other words, the device of interessement does not necessarily lead to alliances, that is, to actual enrolment:

> *"This is where another actor accepts the interests defined by the primary actor. This is the third moment. It is how to define and co-ordinate the role. This leads to the establishment of a stable network of alliances. It requires more than one set of actors imposing their will on others for enrolment to be successful. In addition, it also requires others to yield. Actors accept the roles that have been defined for them during interessement. Enrolment means the definition of roles for actors in the newly created actor network." (Uden & Francis 2011, p. 26)*

Similar to interessement, enrolment can be physical or metaphysical as well. For example, for the scallops to successfully take on the role as attached entities, they must negotiate the physical water currents in reaching the collection points. For the scientific colleagues to take on the support-and-acceptance-of-knowledge role, they must negotiate the discussions of the experimental results:

> *"If the scallops are to be enrolled, they must first be willing to anchor themselves to the collectors. But this anchorage is not easy to achieve. In fact the three researchers will have to lead their*

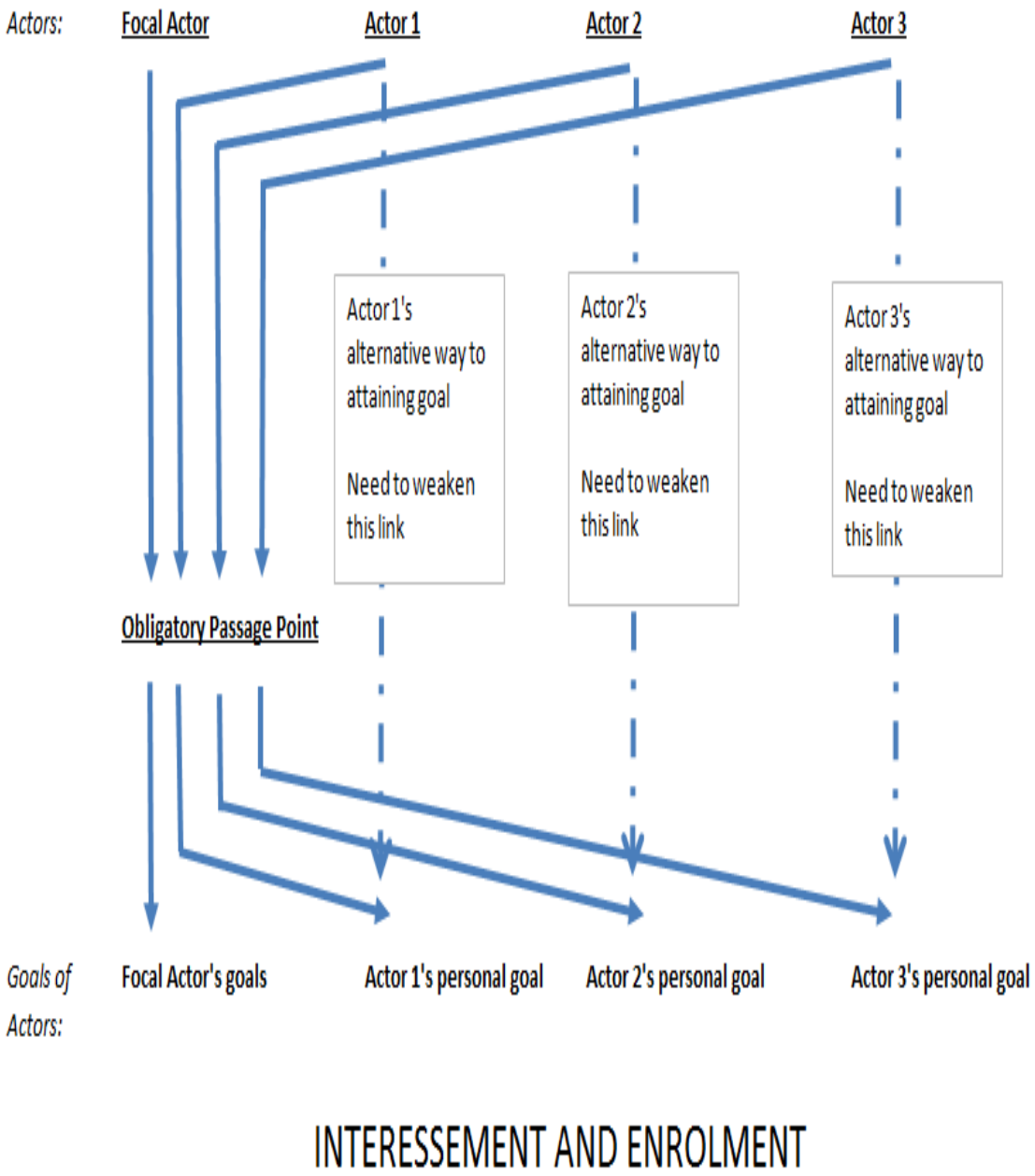
> *longest and most difficult negotiations with the scallops. Like in a fairy tale, there are many enemy forces which attempt to thwart the researchers' project and divert the larvae before they are captured. First the currents: 'Of the six towlines that were placed, four functioned correctly before different variables intervened. It clearly appears that the larvae anchor themselves better in the innermost parts of the Bay where the tidal currents are the weakest. To negotiate with the scallops is to first negotiate with the currents because the turbulences caused by the tide are an obstacle to the anchorage. But the researchers must deal with other elements besides the currents. All sorts of parasites trouble the experiment and present obstacles to the capture of the larvae." (Callon 1986, p. 10-11)*

Therefore enrolment is the summation of transactions that occurred that result in the actors taking the roles identified for them. For the scallops of St Brieuc, there were three parties that negotiated for transactions: 1) the scallops larvae negotiated as to whether they would or would not attach themselves to collectors, 2) the scientific colleagues negotiated on whether they were prepared to believe in the principle of anchorage and to judge the experiment to be convincing, and 3) the three researchers negotiated for everything to be a success and accepted as such. There was a lot of give and take as the scientific colleagues required previous work to be recognised and the number of anchorages to conclude the experiment to be a success. There are also other parties that didn't bother to negotiate, that is, the fishermen who would simply accept the conclusions and act on the results. Their consent was obtained without any discussion:

> *"Therefore for the most part, the negotiation is carried out between three parties since the fourth partner was enrolled without any resistance. This example illustrates the different possible ways in which the actors are enrolled: physical violence (against the predators), seduction, transaction, and consent without discussion. This example mainly shows that 'the definition and distribution of roles (the scallops which anchor themselves, the fishermen who are persuaded that the collectors could help restock the Bay, the colleagues who believe in the anchorage) are a result of multilateral negotiations during which the identity of the actors is determined and tested." (Callon 1986, p. 12)*

Figure 3.2 shows the OPP roadmap during *interessement* and *enrolment* when all the transactions take place and the links are strengthened and weakened. It may be typical to consider enrolment to naturally succeed after interessement.

Figure 3.2 Interessement and Enrolment Road Map



However in the case of Alcouffe et al investigations of France's adoption of activity-based costing (Alcouffe, Berland & Levant 2008), enrolment was critical because there was strong competition that had similar measures of interessement. In the 1950s there was a race for dominance between the cost accounting methods GPM (George Perrin method) and ABC (activity-based costing). In explaining why GPM lost out, Alcouffe et al point out the failure of GPM to successful enrol allies:

> *"Georges Perrin and his successors therefore tried to enrol allies and spokespersons but in vain. He and his wife exhausted them one after the other. Suzanne had the opportunity to embody the method into a computer program, something that in those days would undoubtedly have contributed a lot of power to the network, but she failed to do so. Moreover, the Perrins remained adamant about the GPM's "technical purity". The name of the method, in itself, showed an excessive desire to claim a place in History. Playing the role of the "guardian of the temple", Suzanne successively angered all the consultants to whom she licensed the method by refusing any transformation. This made the network rather unstable due to the frequent disputes that opposed her to the consultants. Also, this inhibited any translation by other potential allies by preventing them from recapturing the concept for their own purposes." (Alcouffe, Berland & Levant 2008,p. 8)*

3.3.4 Mobilisation

'Mobilisation' is the final stage of the translation process where the focal actor is finally able to represent or speak on behalf of the other actors. In synchronising their roadmaps as they achieve their individual goals and agendas the actors empower the focal actor to be their spokesperson. There are multiple levels of representation (or equivalences) that happen during mobilisation. The actors, who follow the OPP and designate the focal actor as spokesperson, may themselves be representatives of multitude others like themselves. In case of the scallops, only a handful of larvae may have attached themselves to collectors, but these handfuls represent the entire group

of scallops within the St Brieuc or perhaps even in the world. The scientific group may also represent other scientists in the study area and perhaps in the world, and so on. Finally the focal actor themself speaks on behalf of these representatives of representatives:

> *"[This] is the point where enrolled actors are given the tools of communication and are able to themselves create an interest in the network or to create sub-networks. This is the final moment. Mobilisation occurs as the proposed solution gains wider acceptance and an even larger network of absent entities is created through some actors acting as spokespersons for others" (Uden & Francis 2011, p. 26).*

With the actors of St Brieuc, Callon points out that interessement and enrolment involved only a few individuals; a few scallops, a few fishermen, and a few scientific colleagues. The question of whether *Pecten maximus* anchors not just by accident is answered only by these few scientific colleagues. And yet even with the few colleagues, it was a few *Pecten maximus* larvae that anchored. The few larvae represent the anonymous masses of larvae sitting in the ocean floor:

> *"A few larvae are considered to be the official representatives of an anonymous mass of scallops which silently and elusively lurk on the ocean floor. The three researchers negotiate the interessement of the scallops through a handful of larvae which represent all the uncountable others that evade captivity. The masses at no time contradict the scallops which anchor themselves. That which is true for a few is true for the whole of the population… This small number of individuals speaks in the name of the others" (Callon 1986, p. 12-13).*

Representation is also at the heart of the researchers' transactions with scientific colleagues and the fishermen. The scientific colleagues represent the scientific community and the few fishermen are just official representatives of the industry:

> *"Properly speaking, it is not the scientific community which is convinced but a few colleagues who read the publications and attend the conference. It is not the fishermen but their official*

> *representatives who give the green light to the experiments and support the project of restocking the Bay. In both cases, a few individuals have been interested in the name of the masses they represent (or claim to represent). The three researchers have formed a relationship with only a few representatives – whether they be larvae on a collector, professional delegates or scientific colleagues participating at a colloquium" (Callon 1986, p. 12-13).*

Mouritsen, Hansen & Hansen (2009) used Callon's diagrammatic forms to illustrate how mobilisation is achieved through translations. They showed that management accounting calculations mediate and mobilise innovations through calculations such as when they extend or reduce innovation activities because performance is adequate or inadequate:

> *"Based on examples from three firms, management accounting calculations – sales performance, contribution margin, and ABC margin – are mobilised in relation to innovation and in turn, surprisingly, in relation to sourcing and strategy. The management accounting calculation works by extending or reducing the number of entities that innovation can take into account, less by describing the dimensions of innovation and inter-organisational design and more by adding perspective to them. This mechanism is stronger when a calculation is challenged by another one. This is when there is maximum pressure on innovation activities to show their strategic significance. The tensions between calculations bend organisational activities such as innovation to considerations such as growth, productivity, profitability, and liquidity" (Mouritsen, Hansen & Hansen 2009,p. 752).*

Mobilisation has the effect of dislodging or transporting a member of a community from membership to representation. This displacement is what renders actors mobile, and it is in this mobilisation that networks are seen to emerge and stabilise. Therefore the multiple levels of representation not only resolve the equivalences but displace and reassemble actors and entities at another point in space-time. Callon illustrates this as he points out that the scallops begin as larvae, are counted in numbers, and then these numbers become tables and graphs in a paper report, and these papers are

further transported to a scientific conference where they are spoken about by the focal actors. The entire population of *Pecten maximus* has been mobilised:

> *"The symmetry is perfect. A series of intermediaries and equivalences are put into place which leads to the designation of the spokesman. In the case of the fishermen, the chain is a bit longer. This is because the professional delegates stand between the tallying of the vote and the three researchers. However, the result is the same: both the fishermen and the scallops end up being represented by the three researchers who speak and act in their name. Although no vote is taken, the agreement of the scientific community is also based on the same type of general mechanism: the same cascade of intermediaries who little by little reduce the number of representative interlocutors. The few colleagues who attend the different conferences or seminars speak in the name of all the researchers involved. Once the transaction is successfully accomplished, there are three individuals who, in the name of the specialists, speak in the name of the scallops and fishermen" (Callon 1986, p. 13-14).*

3.3.5 Implications of the Four Moments of Translation

For Uden and Francis (2011), *translation* explains how artefacts become a result of negotiations between the involved subjects. Therefore, "ANT can be used as a theoretical lens to study the development and adoption" of technology-based innovations such as AIS.

Using ANT as a tool to study the development and adoption of AIS involves other tools and artefacts. The process of creating tools that ensure the protection of actors' interests is also called *inscription.* 'Inscription' is the act or process which actors perform on other actors to shape their attitudes and properties. Typically, in the accounting information system (AIS), human actors (such as software developers and accountants) are able to inscribe onto non-human actors (software and financial systems) through the IT development and design process. Conversely, non-human actors are able to inscribe onto human actors by improving the working conditions of

users of the AIS, although the IT system (AIS) is an inscription tool; the inscription process itself is the shaping of other actors into what they are in the community and roles they play. In any case, each and every non-human and human is an actor in the ANT landscape.

Effectively, actors (such as finance users) are able to implement a *translation* that is carried out via this inscription that transfers attributes and properties to other actors (accountants and managers) in the organisational community.

3.4 Centres of Calculation and Action at a Distance

To illustrate the concepts of centre of calculation and action at a distance, Latour gives the example of ships travelling to far distances and at the same time illustrates the same as knowledge being collected at a central point. Latour (1987) relates how La Perouse in 1785 attempted to travel around the world and map the places that he visited. His maps would give his sponsor the French King Louis XVI a powerful device by which to conquer natives of the Pacific and Australia. La Perouse was smart enough to make sure that copies of his maps returned to France by sending them back home using alternative routes whenever he reached established ports. His maps eventually returned home, even though he and his ships perished somewhere in the Pacific (believed to be in the Solomon Islands) and some even believe he had met a gruesome death in the hands of cannibals.

La Perouse and his ships represented an iteration (one of many) emanating from the centre of calculation. It is a centre of calculation that strives to dominate a large community (of enemy natives) at a distance using the cumulative knowledge gained in repeated contacts. If La Perouse did not implement a way for his maps to return

home safely, then his trip would not have contributed to the growing influence of this body of knowledge. Doing what he did, Latour points out, meant that in the end La Perouse strengthened the centre of origin. The natives who killed him and his crew did not stand any chance against the real might of the centre of origin. France was able to chart the globe and open new maritime routes, achieving power and riches along the way. Slowly but surely, across time and space, these native islands would be conquered without any resistance.

In a double meaning sense, Latour explains this gap between remote offices and central offices as the 'Great Divide':

> *"At first sight, it seems that the differences between La Perouse's enterprise and those of the natives are so colossal as to justify a deep distinction in cognitive abilities. In less than three centuries of travels such as this one, the nascent science of geography has gathered more knowledge about the shape of the world than had come in millennia. The implicit geography of the native is made explicit by geographers; the local knowledge of the savages becomes the universal knowledge of the cartographers; the fuzzy, approximate and ungrounded beliefs of the locals are turned into a precise, certain and justified knowledge. To the partisans of the Great Divide, it seems that going from ethnogeography to geography is like going from childhood to adulthood, from passion to reason, from savagery to civilisation, or from first degree intuitions to second degree reflexion" (Latour 1987, p. 216-217).*

Many authors credit Bruno Latour as having developed actor-network theory in his book *Science in Action [1987]*. In the final chapter of this book (Latour 1987, p 215-257), Latour defines ANT as a three-part journey to bridging the Great Divide; and thus, building great innovations or techno-sciences. This three-part journey comprises of: a) action at a distance; b) centres of calculation; and c) metrologies. These are described below.

3.4.1 Action at a Distance

In the first part of 'action at a distance', Latour showed that the emergence of innovations comes from an accumulation of knowledge in the same way that La Perouse's mapping expedition proceeded to define 'knowledge' based on how much La Perouse acquired information from Chinese sailors and fishermen. ANT, therefore, is a study of innovations in the making, which Latour describes as cycles of accumulation:

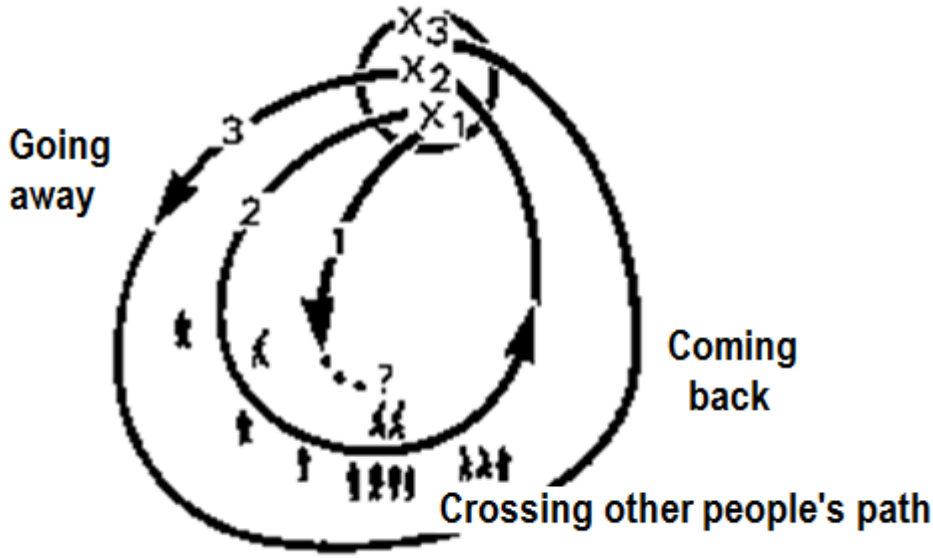
> *"The first time we encounter some event, we do not know it; we start knowing something when it is at least the second time we encounter it, that is, when it is familiar to us. Someone is said to be knowledgeable when whatever happens is only one instance of other events already mastered, one member of the same family" (Latour 1987, p. 219).*

Latour points out that knowledge has no meaning without understanding the process of getting knowledge. Knowledge is not just about information or lack of it; but the knowhow of bringing in more knowledge. It only holds if it can be considered as a building process:

> *"What is called 'knowledge' cannot be defined without understanding what gaining knowledge means. In other words, 'knowledge' is not something that could be described by itself or by opposition to ignorance or to belief, but only by considering a whole cycle of accumulation; how to bring things back to a place for someone to see it for the first time so that others may be sent back again to bring other things back. How to be familiar with things, people and events, which are distant" (Latour 1987, p. 220).*

Therefore to study an innovation means to study the process of how it was made and ANT provides this opportunity with action at a distance. Latour used the illustration in Figure 3.3 to describe this physical cycle of accumulation.

Figure 3.3 Action at a Distance (Latour 1987, p. 220)



From the diagram, **X1** represents the first expedition that failed to return; therefore no new knowledge is gained. **X2** is the second expedition that was able to return with notes and information and that in turn allowed **X3** to study and learn from even before setting sail; and therefore able to move quickly to gather more maps and more information:

> *"At every run of this accumulation cycle, more elements are gathered in the centre (represented by a circle at the top); at every run the asymmetry (at the bottom) between the foreigners and the natives grows, ending today in something that indeed looks like a Great Divide" (Latour 1987, p. 221).*

The circle at the top is the point at which a centre can *act at a distance* against many other points. In **X1**, it acts at a distance and nothing new comes out of it. In **X2**, it acts at a distance and accumulates knowledge. In **X3**, it acts at a distance more effectively because of previously accumulated knowledge, and accumulates further knowledge for the next action at a distance.

3.4.2 Centres of Calculation

In the second part, 'centres of calculation', Latour points out that even though the cycle of accumulation endowed the centre with vast knowledge from faraway lands, there is another form of knowledge acquired that is perhaps even more important than the raw data that was returned. This is the knowledge that is uncovered when the raw information is tied together and consolidated into new order of inscriptions. These are processed and constructed inside centres of calculation. There could be an unlimited amount of new information that could result in calculations and recalculations. The *nth* order inscription is just as easy to do as the *nth–1* order inscription. To give an example, Latour explains how the chemist Mendeleev, through successive versions of the elemental table and using many previous works (*nth–1*) on the problem came up with an *nth+1* version that finally produced the periodic table of elements:

> *"Each element is now situated on a new paper form at the intersection of a longitude and of a latitude; those on the same horizontal line are close by their atomic weight although foreign by their chemical properties. Those on the same vertical line are similar by their properties although they are more and more distant by their atomic weight. A new space is thus locally created; new relations of distance and proximity, new neighbourhoods, new families are devised; a periodicity (hence the name of the table) appears which was invisible until then in the chaos of chemistry." (Latour 1987, p. 236)*

Therefore centres of calculation are constructed by bringing in elements from faraway to allow the centres to dominate at a distance. However, these elements are not brought in permanently or else the centres will be swamped. Although this sounds paradoxical it is simply the definition of information:

> *"This compromise between presence and absence is often called information. When you hold a piece of information you have the form of something without the thing itself for instance the map of Sakhalin without Sakhalin, the periodic table without the chemical reactions, a model of Rotterdam harbour without the harbour itself.*

> *As we know, these pieces of information (or forms, or paper forms or inscription, all these expressions designating the same movement and solving the same paradox) can be accumulated and combined in the centres." (Latour 1987, p. 243)*

Thus the presence of the centre of calculation and its capability to dominate at a distance implies that the innovation has stabilised.

3.4.3 Metrologies for Extending the Network

Latour's explanation of the Great Divide describes 'action at a distance' as translating the world from the periphery *towards the centre;* while 'centres of calculation' refers to the "unexpected supplement of strength" gained by working to create *nth* degree inscriptions from *inside the centres.* The final third part of the explanation is metrologies – the search for universal measurements. By this, there is a need to expand and go back *towards the world* thus observing its effects. Latour points out that science and technology are not universal, and that once discovered they do not automatically spread everywhere without effort. In other words, if scientists and engineers were followed, their metrological networks (the new system of metrics and measures that they have implemented through their inventions) would be seen to extend further and further. As we have seen in the centres of calculation:

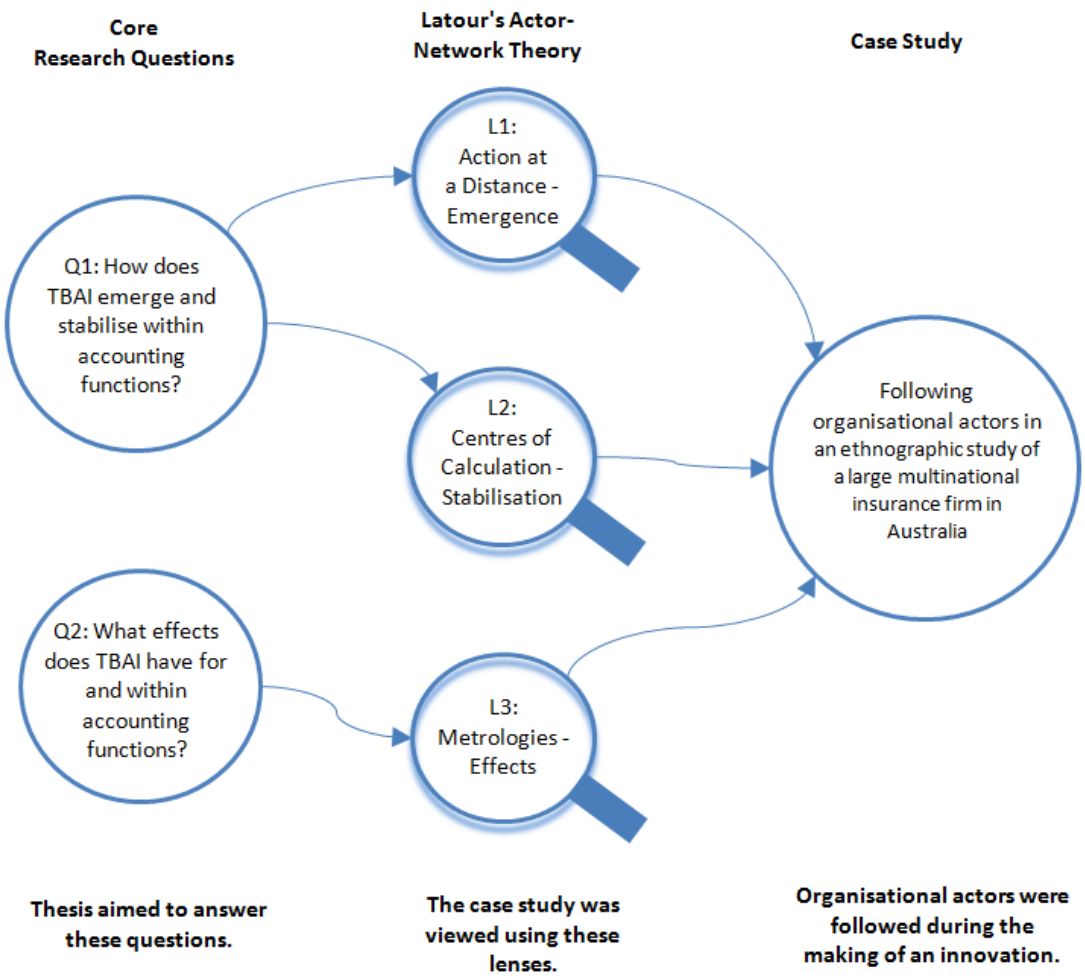
> *"a calculation on paper can apply to the outside world only if this outside world is itself another piece of paper of the same format. At first, this requirement seems to mark the end of the road for the calculations. It is impossible to transform Sakhalin, Rotterdam, turbulences people, microbes, electrical grids, and all the phenomena out there into a paper world similar to the one in there. This would be without allowing for the ingenuity of the scientists in extending everywhere the instruments that produce this paper world. Metrology is the name of this gigantic enterprise to make of the outside a world inside which facts and machines can survive. Termites build their obscure galleries with a mixture of mud and their own droppings, scientists build their enlightened networks by giving the outside the same paper form as that of their instruments inside. In both cases, the result is the same: they can travel very far without ever leaving home." (Latour 1987, p . 251)*

In an organisation, the extension of this metrological world is a consequence of adopting the innovation and the metrics it provides.

3.5 Summary

This section reviewed actor network theory (ANT) and showed that it is a suitable lens through which to study the processes involved when accountants adopt accounting innovations. ANT is the better model to choose over diffusion models because environments and uncertainty have to be accounted for rather than assumed when researching the emergence of an innovation. Latour also defined ANT as the building of innovations in a three-part journey – from the early cycles of accumulation where innovations emerge; to centres of calculations where innovations stabilise; to the metrologies that extend the effects of innovation. Thus in defining this three-part journey Latour urges for the need to follow innovations while it is in the making. Figure 3.4 shows how Latour's definition of ANT relates to the core research questions in investigating the case study.

Figure 3.4 ANT used as Lens to View Case Study and Answer Research Questions



ANT focuses on socially-based processes rather than outcomes or metrics, as would be the case with an alternative theory like diffusion on innovations. Selected studies on accounting innovations using ANT have indicated similar investigations towards socially-based processes. Furthermore, ANT in conjunction with Callon's sociology of translation suggests following the actors in how they transform the networks. This matches with the objective of the current research of following accountants as they

build accounting innovations and reveals the effects of the innovations on the organisation.

For Tatnall (Tatnall 2011), comparing ANT with other models of innovation adoption is akin to comparing quantum physics with Newtonian physics. Models like diffusion of innovations work on a large scale similar to Newtonian physics, explaining how gravity works between large objects such as planets. Meanwhile, actor-network theory works on a more quantum level, explaining how fundamental particles and fundamental forces interact. This analogy illustrates why ANT is the more accurate tool to use when explaining internal and external relationships. In addition, it treats any member of the community equally, whether technical or non-technical, human or non-human, in the same way that any large body of objects may exhibit the same Newtonian properties.

Therefore to address some criticisms of ANT, other theories were also investigated that are used to study innovations. For this researcher, the main shortcoming of TAM and DOI when applied to technology-based innovations is that they both refer to measurements of delivery. Also, there is an *abrupt* differentiation in the state of the innovation between adopted and not adopted, rather than a *continuous* picture of transformation, which is a more appropriate framework by which to answer the current research question of how do innovations emerge/stabilise and how do they affect the organisation.

In essence, for this researcher, ANT is a more suitable theory to use as the lens to study many socially-constructed realities. Consequently, the next chapters, Chapter 4 (Methodology) and Chapters 5 and 6 (Data Analysis chapters) will use actor-network theory (ANT) as the model for studying the research case.

CHAPTER FOUR
Methodology

4.1 Introduction

This reviews the research methodology used in collecting data and studying the collected information in the research process. The primary research methodology used is ethnographic research – a qualitative research method typically used to study cultural phenomena. The review of ethnography in this chapter will show that ethnographic research is the suitable methodology to choose because the ANT model as described in Chapter 3 requires the following and observing of the actors in their native environment. Also this researcher in his role as one of the innovation builders was in a unique position to participate and observe the accountants being followed in their native environment. As a qualitative tool, ethnography complements the socially-based approach of the ANT model in investigating the case study, that is ANT is all about faithfully following ethnomethodology (Law & Hassard 1999). Thus, a review of ethnography will show that it is the best way to collect and generate the situationally complex data that will be analysed by ANT.

To review the methodology, Section 4.2 briefly describes and justifies the ethnographic research method. Section 4.3 describes the general insurance industry where the ethnography takes place. Section 4.4 then focuses on the organisation that is ethnographically investigated and studied in this research. Also provided are some details on personal interviews conducted in the organisation. Section 4.5 provides

some insights in the research phase as conducted on site in the organisation. Section 4.6 gives a summary of the chapter.

4.2 Ethnographic Research Method

The main objective of the study is to determine, using qualitative methods, how the accounting function changes in the adoption of an AIS innovation, how this influences the use of the innovation by accountants and the consequent changes to the broader organisation. Innovations such as balance scorecard and intangible asset monitoring have been adopted extensively in many companies but have not necessarily opened up the accounting function for critical investigation. Thus there is a need to observe first-hand how the accounting function changes and eventually impacts on the broader organisation within the context of the adoption of an AIS innovation. This first-hand participant observation can best be done with the qualitative research method of case study, observing and interviewing respondents to determine their involvement in the adoption process. The case study may help generate data for an ANT-based model to investigate the research objective of how and why accountants in the accounting functions (AF) change and how and why these changes affect the broader organisation.

Ethnography may be criticised as lacking the structure and focus normally attributed to laboratory conditions supported by quantitative metrics. However, Parker (2012) notes that the qualitative phenomenon has achieved an acceptable position and role relative to the still dominant positivist quantitative mode of management accounting research: “The time for defensiveness when presenting qualitative research in the international accounting community is long gone. In fact, ethnography recognises that laboratory conditions are not the best for investigating social phenomena.” Parker

compares and contrasts the rigours of laboratory conditions versus the reflexivity (i.e. the ability to internally examine and independently critique causes and effects) in qualitatively studying social phenomenon in the accounting discipline:

> *"Any engagement with the qualitative tradition in the accounting discipline invariably prompts questions concerning reflexivity and 'rigour'. These are recurring themes. Compared with the quantitative tradition of assuming the neutral, independent researcher, the qualitative tradition embraces the researcher's close and oftentimes personal encounter with the research site and its members. This then requires attention to researchers' own reflexivity in the sense of their being sensitive to and explaining their own direct involvement with the research site actors and their own role in interpreting and creating meaning from the data they collect. For quantitative accounting researchers, 'rigour' is often employed in a general sense as a code for 'quantitative', and more specifically as a catch-all term that privileges their quantitative preoccupation with validity and reliability in experimental and statistical hypothesis testing research. The implied concern of the quantitative researcher is the ability to replicate empirical study results as they search for statistically generalisable recipes for policy and practice." (Parker 2012, p. 58)*

Using ethnography as a tool is suitable for social studies so long as practices are kept consistent with the rationale of doing qualitative research. These practices are demands placed on the ethnographic practitioner and some of them are discussed here.

First and foremost of these demands is that the ethnographic practitioner must conduct himself in a reflexive manner at all times. This recognises the fact that the researcher is constantly imbibing information and not just collecting data. It also recognises that the researcher has a direct impact on the environment that is being observed. Only with reflexivity is it possible to maintain a distance and to protect against or nullify the adverse consequences of 'going native' during extended periods of the study. Within the ANT framework the researcher has many possibilities for

engagement. With reflexivity it becomes possible to be directly engaged in the field, be able to interact with other actors and share in the building process. This researcher therefore engages the field of study in the role of *participant actor*. Parker describes this engagement opportunity in terms of Scapens' (Scapens 2004) five classifications:

> *"The qualitative tradition recognises and values varying degrees of engagement between researchers and actors in the field. Scapens offers five classifications of researcher engagement possibilities. As an outsider, the researcher relies on documentary sources, having no direct contact with actors in the field of study. This is often the approach adopted in historical research. As a visitor, the researcher repeatedly visits the field site(s), employing interview, observation and documentary evidence gathering methods. This is typical of field based case study research, for example. As a facilitator, the researcher becomes more directly involved in field site activities, assisting with issue exploration and diagnosis. Action research is a tradition that often fits into this classification. As a participant, the researcher may operate as a full working member of the organisation being studied, noting observations throughout the working period. As an actor, the researcher may play a leading role in key organisational activities, thereby having access to data on management accounting implementation and organisational change. Participant and actor roles fall within the ethnographic and participant observer traditions." (Parker 2012, p. 58)*

Secondly, the ethnographic practitioner must "embrace situational complexity" (Parker 2012, p. 54). This is in recognition of the fact that an ethnographic study is extremely rich in data and only by embracing this complexity can the ethnographer capture as much of the richness that there is. In the qualitative tradition, the ethnographic practitioner adopts a position that ultimately all research is infused with culture, values, beliefs, stories, language, perception, cognition, ideology and politics:

> *"Management accounting's embedded and actioned values and meanings are all inducible from the field. Text and socially constructed reality are forever intertwined and represent the reflexive engagement between researchers and organisational actors. The multiple accounts and critiques they produce, offer an enhanced understanding of organisational control, change and management accounting processes in both general and unique settings. A hallmark of much qualitative research is its engagement*

with actors and their worlds at close quarters rather than research from a distance." (Parker 2012, p. 56)

Thirdly the ethnographic practitioner must be fully trained and practice as much as possible. Often it is the first time for him to be actually using ethnography, and very likely it is the first time that the particular environment will be studied ethnographically by anyone. Training includes the ability to immerse in the field of study for extended periods, the need to thoroughly document the research, and the need to analyse collected data while still in the field. Nevertheless, Parker recognises that there is a gap between research and practice; for example, with respect to evolving approaches to strategy and its implementation:

> *"The research-practice disconnect has been explained by some researchers in terms of academics' marginal role in professional accounting policy making and the academic research traditions and associated rewards that militate against this [Hopper and Kasanen] have argued that very few management accounting research studies produce solutions to explicit organisational problems because their underpinning natural and social science philosophies exclude such applied problem solving and because such solutions draw researchers into confidential consulting relationships with the subject organisation(s). Further drivers of this research-practice disconnect can be found in the agendas of business school deans whose managerial interests must be satisfied by academic researchers under their jurisdiction. Their interests are often focussed upon research key performance indicators (KPIs) that include monetary value of research grants won, number and speed of successful doctoral student completions and crucially for this discussion, number of publications in highly rated journals. Journal ratings are reputationally based without necessarily reflecting usage or value in use. Consistently top rated journals in, for example, UK and Australian academic surveys and rankings of accounting journals, are largely economics based journals that demonstrably do not publish qualitative research. Thus in terms of practice connection and relevance, the qualitative researcher arguably faces two glass ceilings: trying to penetrate highly esteemed journals many of which prefer quantitative positivist studies focussed upon building and testing predictive models of 'what is', and additionally conforming to a similar convention in journals publishing qualitative research that favour studies drawing the line at interpreting, critiquing and theorising processes of 'what is'. Thus academics have become largely institutionalised*

> *into designing and writing studies that fit a template that largely precludes the investigation, formulation and implementation of potential accounting policy and practice." (Parker 2012, p 64)*

The foregoing provides justification for the use the qualitative tradition of ethnography in this research. But it must be remembered that the ANT framework itself is underpinned in an ethnographic environment. ANT's strength is suggested in the emergence of actor networks that must necessarily be observed directly by no less than a participant observer, that is, another actor. Thus it is possible to justify the application of ethnography in this case study.

Analysing the networks that formed within this organisation leads to descriptions of the various other innovations encountered along the way. The artefacts and potential actors that form an emergent network are described comprehensively from an organisational role; not just how they see themselves, or how others see them, but how they appear in contrast to a centre–periphery relationship. Their role is described from an IT project development phase, which is how they first came to the researcher's attention. Identifying the expectations of the potential actors allowed the researcher to plan a schedule for interviews, observations and the collation of available texts.

Describing the organisation this way paints a backdrop of the network that caused it to change and perhaps also provides clues about how the organisation, in turn, will change the innovation that changed it.

There were multiple AIS innovations observed within the accounting function. But if each innovation is identified as an actor in the ANT model, then each one has a

different story to tell. A primary AIS innovation was selected to trace its journey within the network of actors and actants. This AIS innovation is an improved implementation of an existing reporting system, which employs a time-consuming data-entry and data-validation stage.

Having provided an overview of the research methodology, the next sections will now describe the context of the situation where the ethnography will take place. First the industry is described in general and then the case study organisation is described in particular.

4.3 Australian Insurance Industry

The Australia Insurance industry has three major sections – life insurance, general insurance and health insurance. The life insurance companies offer products such as term life insurance and disability income insurance, while health insurance focuses on the universal government provided Medicare and private insurance to offer services not covered by Medicare. General insurance refers to a varied range of products divided into two classes: liability insurance and property insurance. Liability insurance comprises products such as compulsory third party (CTP) motor insurance, workers' compensation, professional indemnity, and various forms of business insurance. Property insurance comprises products such as home and contents, travel, and comprehensive motor insurance. Property insurance typically protects against loss or damage. Within these products there are certain types of insurances that arise such as compulsory third party (CTP) and worker's compensation that are also referred to as 'statutory' because they are uniformly handled as prescribed by state or national laws.

The Australian general insurance industry is regulated by the Australian Prudential Regulation Authority (APRA). From its website <www.apra.gov.au>, APRA publishes a suite of 15 statistical publications that provide regular updates on the financial performance of APRA-regulated industries and individual entities. Five of these are for the general insurance industry and three are for the life insurance industry. APRA collects data submitted by the APRA-regulated industries and individual entities and shares them with other government agencies, including the Australian Bureau of Statistics (ABS) and the Reserve Bank of Australia (RBA), as well as international agencies such as the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF) and the Bank for International Settlements (APRA 2012a).

Some of the life insurance companies and their websites in Australia are:

- AIA Australia – www.aia.com.au
- AMP Limited – www.amp.com.au
- Suncorp Insurance – www.suncorp.com.au
- Allianz Australia – www.allianz.com.au
- MLC Australia – www.mlc.com.au
- Macquarie Life – www.macquarie.com.au
- Zurich Financial Services Australia – www.zurich.com.au

The large general insurance companies in Australia include:

- IAG Group Ltd (a group comprising of NRMA Insurance, RACV Insurance, CGU Insurance Australia, SGIO Car Insurance, SGIC Insurance, and Swann Insurance)

- Suncorp Group Ltd (which owns AAMI Insurance, GIO Insurance, Apia Insurance, Just Car Insurance, and Bingle Car Insurance)
- QBE Insurance Group (a multi-national Australian company).

To report on the health of insurance companies, the APRA report General Insurance Company Level Statistics (GICLS) includes insurer specific information about financial performance, position, and capital base and solvency. To align with the Australian equivalents to International Financial Reporting Standards (AIFRS), APRA adopted a change in the accounting framework underpinning these statistics:

> *"On 1 July 2010, the balance sheet and income statements in APRA's reporting framework were aligned with the Australian equivalents to International Financial Reporting Standards (AIFRS), including AASB 1023. The most significant difference between the AIFRS requirements and APRA's reporting framework which applied until July 2010 arises from the difference between prospective accounting and the deferral and matching principles of AASB 1023. Under APRA's prospective accounting reporting framework, expected future profit or loss on written business was immediately recognised. Under AASB 1023, profit or loss is recognised over time in accordance with the expected pattern of risk associated with the business.*
> *APRA has aligned the reporting framework with AIFRS requirements to deliver three important benefits: reduce the reporting burden by simplifying reporting to APRA, provide APRA with more effective information for assessing insurer performance, and enhance the dialogue between APRA and individual insurers on their performance." (APRA 2012b, p. 4)*

This change in accounting framework is relevant specifically to the treatment of premiums as per Australian Accounting Standards Board's AASB1023 standard for Financial Reporting of General Insurance Activities. Typically, general insurance premiums are collected on a yearly basis (12 months) however, insurance coverage is provided on a monthly basis and premiums are correspondingly earned on a monthly basis in exchange for the cover. Thus the yearly premium total starts as an unearned

premium amount and is reduced on a monthly basis to become earned premium. APRA requires the following metrics – insurance revenue, outstanding claims provisions (OCP), premium liabilities – to be reported under the new accounting framework (APRA 2012b, p. 5):

> *Insurance Revenue: Premium income, reinsurance premiums and acquisition costs are deferred and amortised under AASB 1023. Consequently, unearned premium, deferred reinsurance expense and deferred acquisition cost concepts are now incorporated in the reporting framework. Under the previous prospective accounting reporting framework, premium income, reinsurance premiums and acquisition costs were recognised fully upfront and were not deferred.*
>
> *Outstanding Claims Provisions (OCP): This is recognised on the same basis but is measured in accordance with AASB 1023 rather than GPS 310.*
>
> *Premium liabilities: The concept of premium liabilities is a prospective item which is not recognised by AASB 1023. It represents a forward-looking provision for claims yet to be incurred on premium already written. Under AASB 1023, premiums are set aside until earned and are subject to tests of adequacy.*

There are many metrics and ratios that are calculated to conform to these tests of adequacy and AASB 1023 reporting framework that general insurance companies calculate using their accounting information systems.

As of APRA's report on December 2011, there are 124 General Insurance companies in Australia. Of these, one hundred twelve (112) operate as direct insurers; while twelve (12) operate primarily as reinsurers. Eighty-four (84) companies have their Head Office in Australia, while forty (40) are overseas-based. Ninety-two (92) companies have no restriction in the General Insurance licenses, while twenty-two (22) companies are restricted only to operate as run-offs (no new business), four (4)

operate primarily for captive customers, and six (6) primarily operate in the lenders mortgage market (APRA 2012b, p. 26-29).

Some large general insurance companies can end up selling both life and general insurance products as a result of buying other companies. In this case, they would normally sell on the non-core portfolio to other insurance companies. For the sake of fully servicing customers, some life insurance companies can sell general insurance products (and vice versa, general insurance companies can sell life insurance products) through the process of 'fronting'. Fronting is selling other companies' products and taking commissions. Life and general insurance companies typically underwrite (sell) their core products to simplify product risk management.

Although the selling of general insurance policies is basically the selling of an intangible financial service, general insurance (GI) companies typically align their business model to a manufacturing process, where product offerings are differentiated to be competitive. However, some GI products are difficult to differentiate (such as worker's compensation) because they are strictly regulated. In these cases, the competitive factors centre on the 'ease of use' of the customer-facing systems as owned and operated by the GI companies. This is why GI companies make large investments in building GI customer-facing systems such as public websites, intermediary (brokers) extranet systems, and internal core insurance systems. To differentiate products, many GI core insurance systems are able to quickly define new offerings by identifying a niche market segment and being able to price competitively to capture that segment. For example, a GI company may possibly define a new discounted product for home insurance for homes located on streets where there are

retired couples, the idea being that retired couples will be on the lookout for break-ins and so there are less chances of a claim. The onus is on the core insurance system to be able to capture this highly specific information and incorporate it automatically in rating engines.

Crucial to the running of an insurance business is the ability to manage risk via external reinsurance. Reinsurance is an option for an insurer to reduce its total risk by passing a set of portfolios to a reinsurer and paying the reinsurer a premium. In case of a claim by the original policy holder, the reinsurer reimburses all or part of the claim costs. The insurance company then is able to manage its risk mix by selling unwanted risk or portions of it. Even if an entire portfolio is offloaded to reinsurance, the insurer still keeps the original business relationship with the policyholder, and this will still have ongoing benefits with renewals and opportunities for offering other products.

In terms of total assets, Table 4.1 shows the financial position of the top 20 general insurers in Australia as published by APRA as at December 2011. APRA explains the source of this information as follows:

> *"Data in this publication are sourced from audited regulatory returns submitted to APRA under the* Financial Sector (Collection of Data) Act 2001 *by authorised general insurers and also data submitted by Lloyd's Australia. Private insurer returns relate to the financial year end of each insurer, which can occur on any date within the 12 months up to and including the reference date of the publication. Details of each insurer's balance date can be found in the company classification table.*
> *Lloyd's underwriters are authorised to write Australian insurance business under the Insurance Act. It is not possible to compare Lloyd's data with that of authorised companies. Lloyd's syndicates use a three year accounting framework and different classes of business are also used. Recent years of account are not yet*

finalised in terms of Lloyd's three year accounting system." (APRA 2012b, p. 30)

Table 4.1 Top Insurer by Total Assets (as at December 2011)

Company	Investments	Total assets	Outstanding claims provision	Unearned premium liabilities	Total liabilities	Share-holders' equity
Insurance Australia Limited	8,557,392	11,679,506	4,582,094	1,795,066	8,269,070	3,410,436
Allianz Australia Insurance Limited	5,932,921	9,192,320	5,117,214	1,796,965	7,346,320	1,846,000
QBE Insurance	4,897,113	8,422,066	4,326,446	2,205,900	6,850,850	1,571,216
Vero Insurance Limited	4,704,577	6,330,507	2,036,243	693,932	3,591,644	2,738,863
Suncorp Metway Insurance Limited	4,285,600	5,837,251	2,677,525	547,630	4,119,304	1,717,947
CGU Insurance Limited	2,872,034	5,057,112	2,287,947	1,071,733	3,834,061	1,223,050
Munich Reinsurance Company Aus Branch	2,195,584	4,529,495	2,896,454	389,633	3,559,758	969,737
IAG Re Australia Limited	629,546	4,522,493	3,277,178	557,767	4,055,121	467,373
Zurich Australian Insurance Limited	1,815,343	4,508,445	2,942,943	667,086	3,906,118	602,327
Swiss Reinsurance Company Ltd	1,364,069	3,779,659	2,559,727	352,897	3,123,227	656,432
GIO General Limited	2,298,999	3,696,501	1,933,438	914,254	3,188,754	507,748
Genworth Financial Mortgage Insurance PL	3,334,936	3,626,177	334,920	1,022,522	1,637,140	1,989,037
Australian Associated Motor Insurers Limited	2,366,625	3,584,146	1,779,317	1,039,512	3,080,613	503,533
Insurance Manufacturers of Australia PL	1,625,712	2,947,696	611,646	1,310,540	2,407,035	540,659
Chartis Australia Insurance Limited	1,098,634	2,602,930	1,301,497	340,027	2,038,798	564,132
Wesfarmers General Insurance Limited	986,635	2,203,998	948,573	758,951	1,879,415	324,583
QBE Lenders' Mortgage Insurance Limited	1,700,495	1,895,199	185,435	566,381	875,809	1,019,390
BHP Billiton Marine & General Insurances PL	665,154	1,719,082	1,128,395	3,719	1,149,537	569,545
RACQ Insurance Limited	992,239	1,476,381	799,530	300,736	1,218,498	257,883

Source: APRA (APRA 2012b)

These financial positions are calculated from accounting information systems as well as other metrics used for calculating tests of adequacy. There is a limit established of how much risk an insurer can hold relative to 'prudential margin' amounts that they have to keep in liquid cash. This is based on the formula that outstanding claims provision (OCP) is equal to a central estimate plus a prescribed minimum prudential

margin. If these limits are reached, the insurer must either stop selling, or increase prudential margins, or offload risks to reinsurers. Thus, the reinsurance business is a necessary component in the Australian insurance industry. However, since reinsurers do not maintain customer relationships with original policy holders, reinsurance is typically done in the international global arena. Some large insurers also operate as wholly-owned reinsurance companies and offload risk to their self-owned reinsurance company. This may seem like flaunting the 'prudential margin' limits, however, this is allowed as the reinsurance business is also closely monitored and regulated. Furthermore, reinsurers themselves can offload risks and risk portfolios to other reinsurers.

Prudential margin is an example of many metrics that are calculated with the help of fully consolidated accounting information systems (AIS). These metrics are required for statutory liability valuation standards for general insurers because of Australian Accounting Standards Board's AASB1023 standard for Financial Reporting of General Insurance Activities:

> *"The* Insurance Act 1973 *(Insurance Act) requires an insurer to set aside a provision in respect of its liabilities. General insurance general purpose accounts are governed by AASB1023 Financial Reporting of General Insurance Activities. Among other things, AASB1023 requires that a general insurer establish provisions in respect of its unearned premiums and outstanding claims. The prudential regime under the Insurance Act imposes a minimum solvency requirement on general insurers. This requires companies to maintain assets (at market value) in excess of reported liabilities by at least a prescribed amount. The calculation of the provisions for liabilities is governed by AASB1023. That is, the same provisions have been accepted for prudential and solvency reporting purposes under the Insurance Act and general purpose financial reporting under the Corporations Law. Under AASB1023: · assets are at market value; · premium revenue is brought to account in line with the incidence of risk; · outstanding claims liabilities: - are inflated and discounted; - include an allowance for claims incurred but not reported; - include an allowance for claims*

incurred but not enough reported; and - include an allowance for claims handling expenses" (APRA 1999,p. 5).

4.4 FINCO Insurance Company

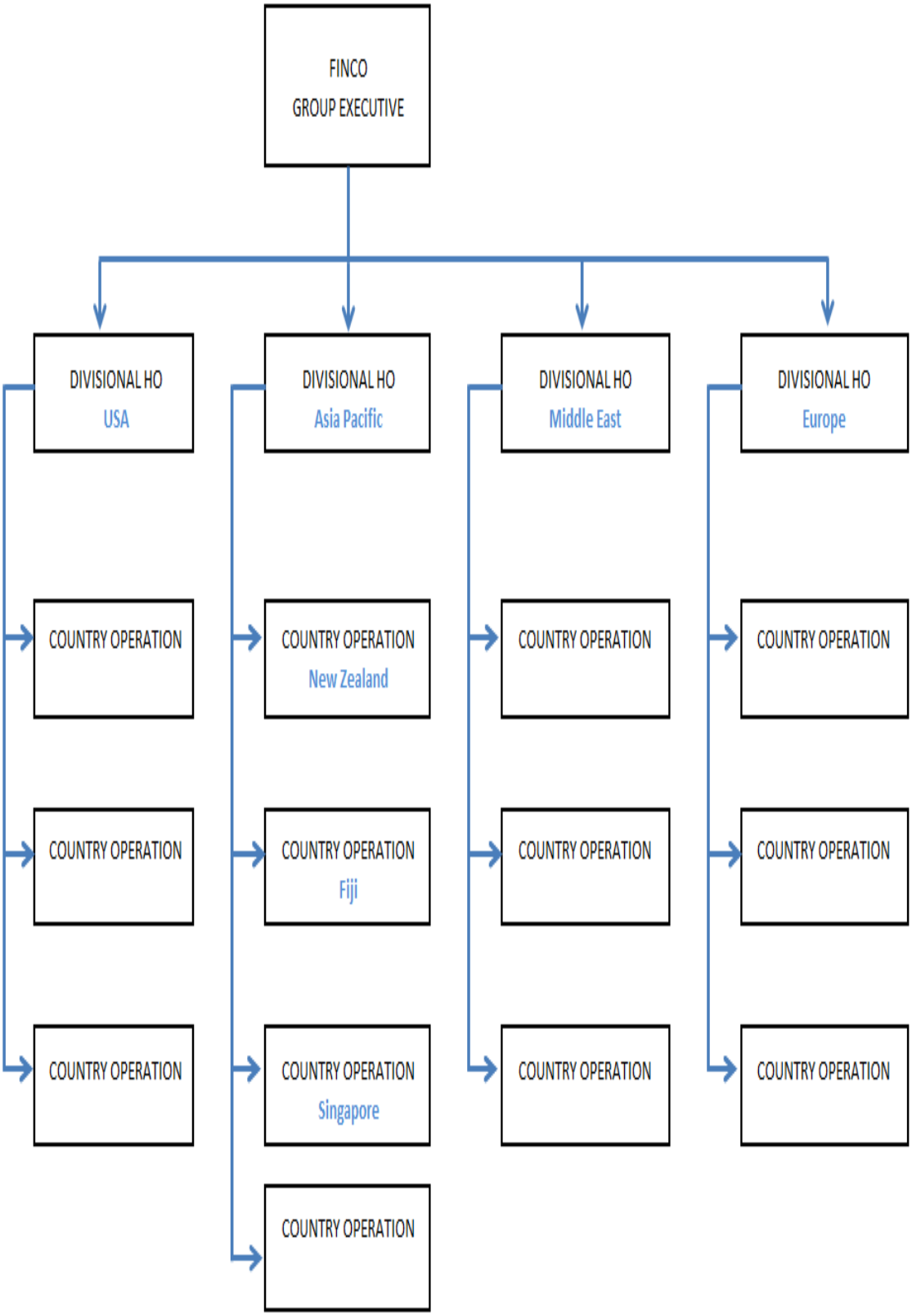
The organisation this research studied is the FINCO Insurance Company, a fictitious company name with fictitious actor names to preserve the anonymity of the actual organisation and individuals that this researcher encountered. FINCO's essential description is provided in this thesis but some unessential details have been abstracted. FINCO is one of the largest general insurance companies in Australia and one of the top 50 in the world. As a financial services group, it has over 10,000 employees in over 40 countries and in 2011, generated over 15 billion dollars (AUD) in revenue. It operates and sells financial products in all the major continents – Australia, Asia, Europe, USA and Americas.

FINCO is basically a multi-divisional, multi-national organisation whose biggest selling product is general insurance. Although its biggest selling product is general insurance, like many financial companies its biggest source of income can be from the investments returns it makes from placing large amounts of collected premiums in the short-term, medium- term and long-term investment markets.

Each division in FINCO operates fairly independently, and within each division there can be branches that operate within the local statutory regulations, such as state laws or national laws. For example, branches operating in French territories must provide very specific but French-standardised balance sheet and profit and loss statements.

Insurance companies are subject to national laws and must be licensed specifically for each country they operate in. If a division operates from within a country, then that division is also incorporated (and licensed) in that country. Similarly, some country operations are incorporated within the local country they operate in. This incorporation is financially reported separately in the local currency to the local authorities. The same financial information is then forwarded and consolidated at Group level in Australian (AUD) currency. Figure 4.1 shows the structure of FINCO Group Executive (including Finance), Divisional and Country Operations.

Figure 4.1 FINCO Divisional Structure



From this Divisional structure flowchart, the focus of the research turns to the Asia-Pacific Divisional Head Office. The management structure of the finance department is described and a list of individual actors drawn to be included in the study. They comprised senior management, accountants, finance managers and IT professionals. From the country operations, at the minimum, the chief accountant was selected for interview and/or or observation.

Table 4.2 shows the list of actors/actants that were investigated as possible major actors that would be followed to trace how the network emerged and became strong. All actual names are disguised. Each focal actor had a major role in the organisation, before, during and after the network transformations. In many cases the organisational roles changed, and in some cases the changes influenced their actor-network roles. Initially, each one of the actors listed here was followed equally. It was recognised early that this procedure would be temporary and would dynamically change after some analysis.

After preliminary analysis, Table 4.2 shows the focal actors and major actor groups that were identified to be followed for the research study. Note that the actor group Regional HO was relatively new and appears later in the research. This group consisted of actors from a group that was already being followed. Section 5.2: Introducing a New Reporting Framework – Problematisation will explain how they were identified because of the roles they played in the network. It is noted here that the data collection focus was changed as soon as the focal actors were identified. An additional list of organisational artefacts can be found in Appendix A1.

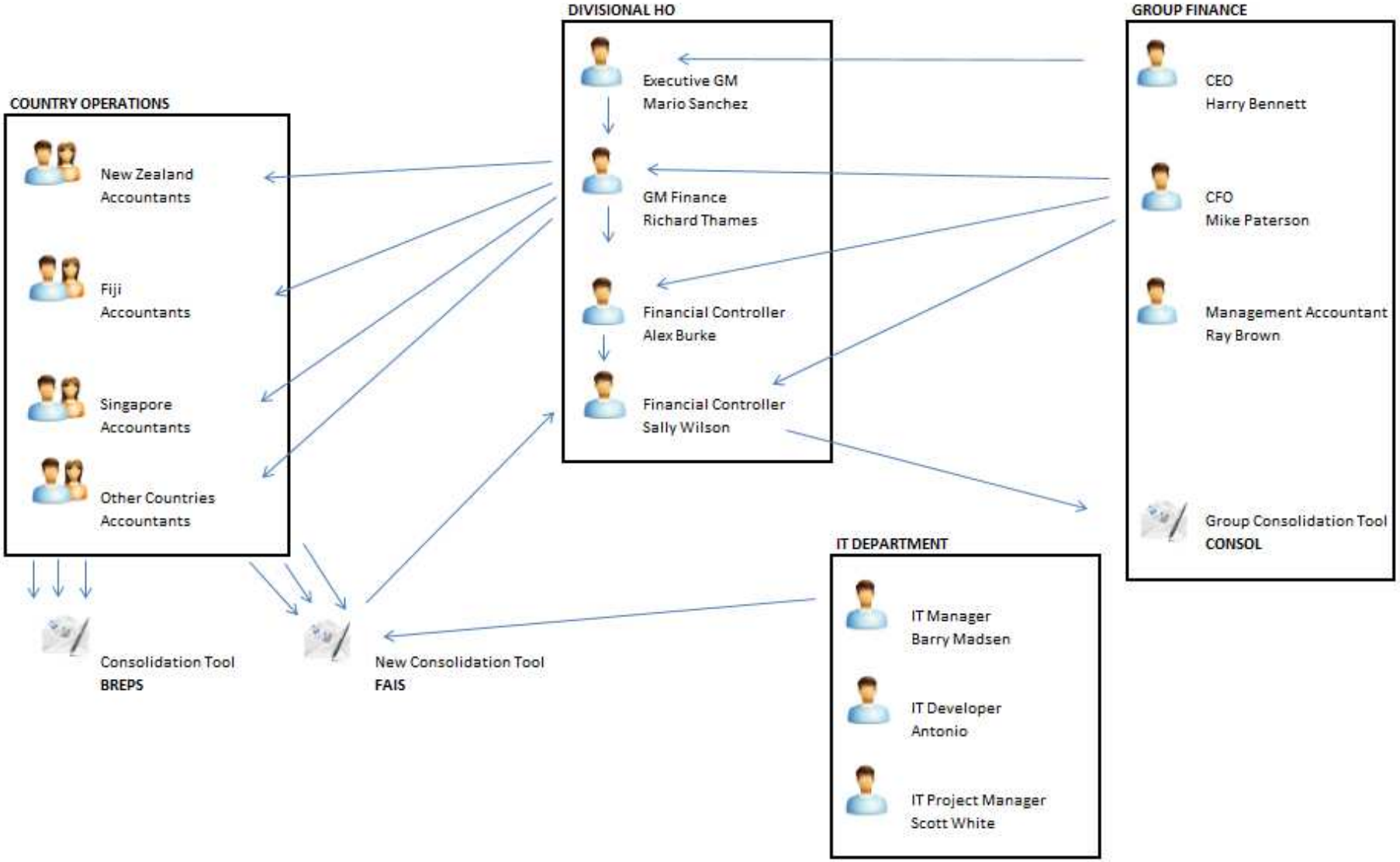
Table 4.2 Main Actors/Actor Groups and Role Overview

Actors (Names are fictitious)	Overview of Role
Divisional Head Office Richard Thames – General Manager Finance Alex Burke – Financial Controller Jimmy Tong – Assistant Accountant Jerry Tan – Financial Controller Sally Wilson – Financial Controller Mario Sanchez – General Manager	Divisional HO Finance was concerned with the ever increasing difficulty in consolidating financial information from Asia-Pacific and Central Europe country operations. Prior to this concern, the reporting requirements were simple, the number of country operations was few, and the IT tools available were sufficient to deliver the requirements. Beginning in around 2000, Alex Burke was hired for the purpose of modernising the reporting methods and setting up the required tools. Richard initiated and sponsored the project and asked Alex to engage the IT department to build a Financial Accounting Information System (FAIS) system that will be the backbone of a calculation centre. Ray assisted Alex in designing reports; Jimmy entered the information received from country operations into the FAIS system; Sally and Ray coordinated with the country operations to consolidate results.
Country Operations **Pacific-Asia-NZ** Mary Yim – Accountant Rosie Ng – Regional Accountant (plus other country accountants)	Pac-Asia-NZ Finance was responsible for reporting the individual country operations' monthly results to country management and to Divisional Head Office Finance group. Various operations had different sizes and complexity, which correlated directly to their capability to report on time. In some cases the complexity of the operations applied pressure to deviate from standard formats of Australasia HO and therefore created controversies on whether country operations should align or Australasia HO should create additional standard formats. Each country accountant was enrolled by Alex Burke to draw up his or her results using the new centre of calculation. The large country had enough resources to quickly join and revise their IT procedures. The small countries operations needed special consideration, as it may not be cost-effective to change procedures for a largely manual infrastructure. Mid-sized countries required special IT consideration or assistance.

Table 4.2 Continued

Actors (Names are fictitious)	Overview of Role
Group Finance Harry Bennett – Chief Executive Officer Mike Paterson – Chief Financial Officer Ray Brown – Management Accountant	Group Finance accepted consolidated reports from Australasia Division HO and incorporates with other global divisions (e.g. USA) to produce reports for Group Executive and shareholder market. The Group Finance was particularly keen in timely consolidated information such as rankings and other performance measures to be able to manage the business. Harry received the final results direct from the FAIS and was eventually impressed in the time-compression and the new agile reporting process. Mike continued to implement organisational changes to improve performance reporting.
IT Department Antonio – Developer Barry Madsen – IT Manager Scott White – Project Manager Laurie Young – IT Manager	The IT department was the provider of tools at every level and phases of the business. Main tools provided are the insurance system and the accounting systems. The IT group (and the tools provided) have been evolving along with the changes from the organisation relationship. In many cases, changes in the business organisation causes abrupt and mid-stream changes in IT group processes. For example, IT projects are cancelled and new ones started as the countries are regionalised – a common project for Asia-Pacific splits into two IT projects – Asia and Pacific with different requirements and IT solutions. Barry Madsen's IT department was engaged by Richard Thames to deliver the AIS innovation. Antonio was directed to work closely with Alex in all aspects of the development including post-implementation stage of report writing and deployment of the innovative AIS, and technical support in the running of the calculation centre.
Regional HO (NEW) Rosie Ng – Regional Accountant NEW Sally Wilson – Regional Accountant NEW	Later actors such as Rosie Ng and Sally Wilson arose from the natural coalition of the country operations by geography – Asia, Pacific, Central Europe, and Australia. The role of Australasia Divisional Head Office was watered down by the emergence of the Australasia Regional Areas, e.g. Asia operated independently from Australia. Rosie and Sally became the new regional centre of calculation after this de-centralisation and Alex also left FINCO.

Figure 4.2 Actors and Current Roles in the FINCO (names are fictitious)



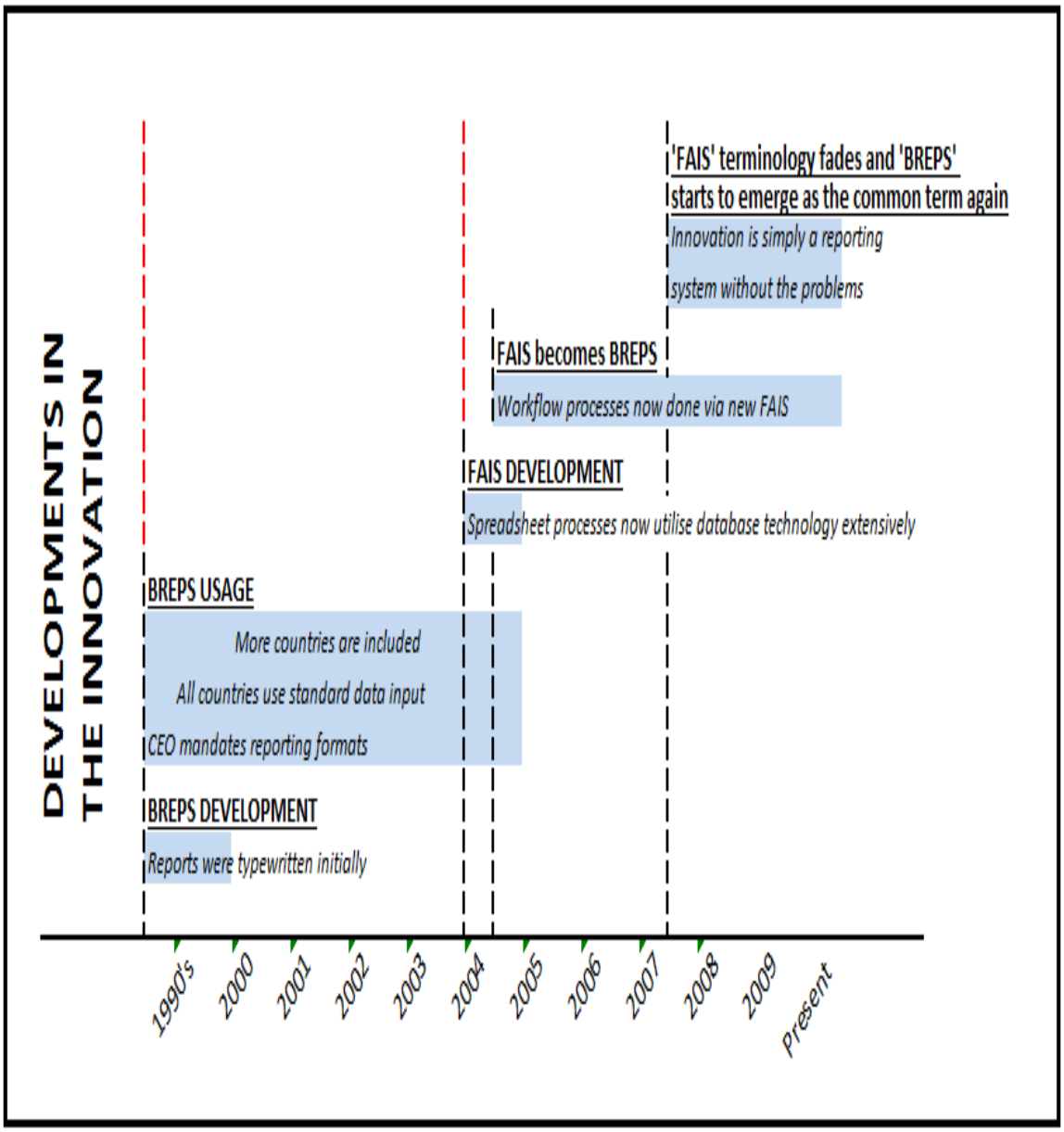
4.5 Research Design

The research for this thesis commenced in mid-2004 and ended in December 2010 when all data was collected. The researcher has been employed in the organisation since late 2003 and had proposed a study of the company in conjunction with a Doctorate in Business Administration (DBA) course he was enrolled in. Throughout the research period the researcher was primarily a participant actor who was simultaneously a participant observer and actor in the role of innovation builder. As innovation builder, the researcher was the primary IT developer of the Financial Accounting Information System (FAIS). The researcher was continuously employed full-time at FINCO for the entire duration of the research – for a total of approximately six years and six months, and continued to be employed by FINCO for some time when data collection ceased. In requesting data access, this researcher proposed to Alex Burke (Financial Controller) and Richard Thames (GM Finance) that a study of the FAIS project as part of an ongoing doctoral research would have some potential advantages in providing academic rigour and validation. Alex and Richard agreed and provided permission, noting that many of the stakeholders would agree to be interviewed as part of providing more details to the project and allowing more opportunities for an exhaustive analysis. In this subsection, the research phases will be detailed, including an overview of the timeline of the phases, the different situational themes, and data collection overviews.

The researcher was hired in late 2003 and proceeded to develop a system (FAIS) as instructed by the IT department and funded by the Divisional accounting office.

Figure 4.3 shows the timeline of key innovation events showing the participant actor roles played by this researcher.

Figure 4.3 Timeline of Key Innovation Events



In 2004, the researcher proceeded to develop FAIS. The main tasks were project development and included definition of the FAIS project – identifying the sponsors, users, and infrastructure resources. Then, as part of requirement analysis, this researcher met with and collected project requirements data from the stakeholders.

The researcher worked with an IT team with a project manager, tester, coder, database administrator, network consultant, and other infrastructure analysts. The requirements documents were presented for approval by the project sponsors Alex and Richard. After approval of the requirements document, coding and development proceeded.

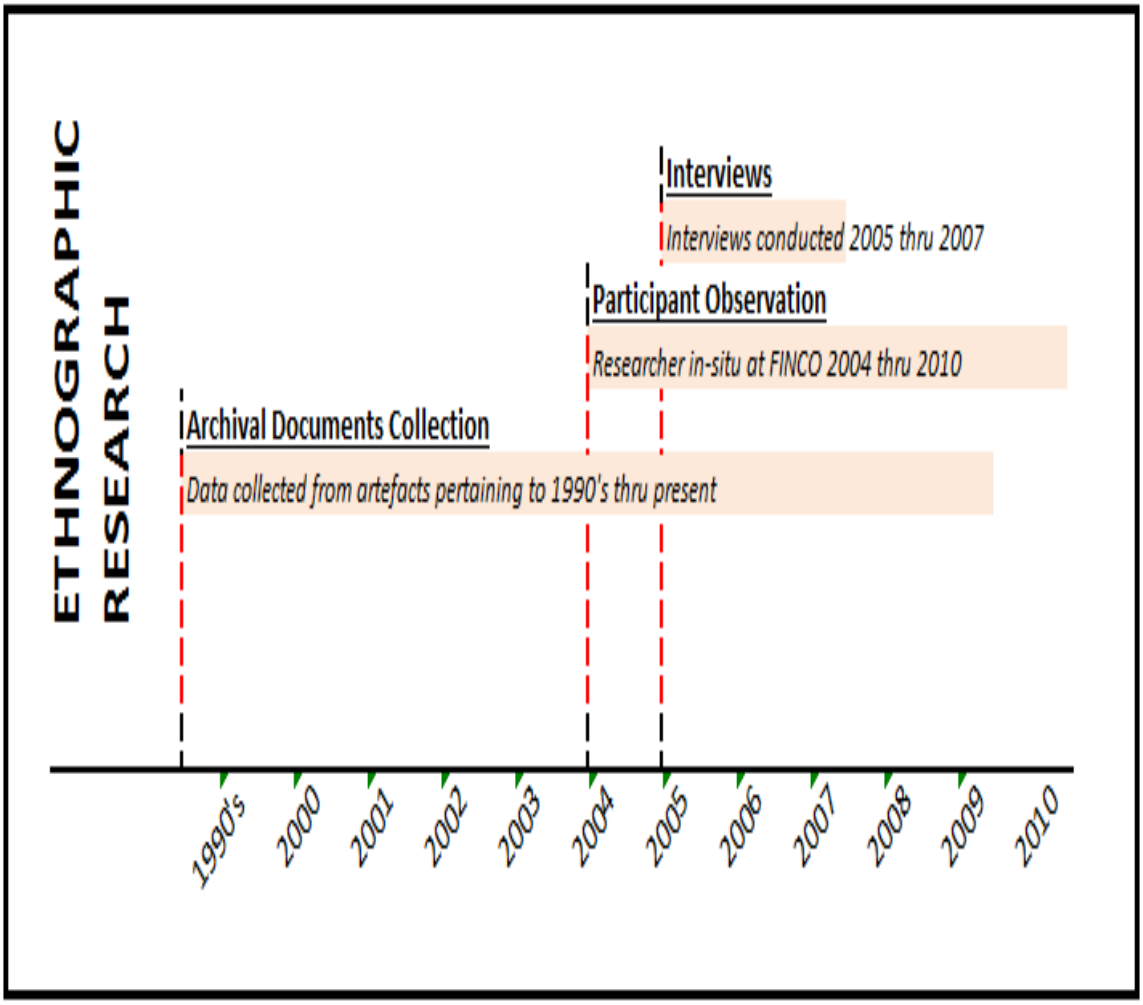
By 2005, the IT solution was deployed across the division. At this point, this researcher took on additional roles for IT support and implementation analyst from the IT side. From the accounting function, he also performed a management accounting role in helping design the new management accounting reports in Excel.

By 2007, the new software was stable and fully deployed across the division. All management reports were in place, and additional reports could be created as part of the built-in flexibility provided by the new software. The researcher role focused on supporting and enabling this new flexibility in conjunction with the management accounting team. The researcher was working mostly with Ray Brown, the Divisional HO management accountant, but also with various country accountants and the Pacific financial controller Jerry Tan. As the IT software was stable, the researchers' IT function diminished and became mostly management accounting report development (40%), management accounting support (40%), and IT software support (20%). It was at this phase that many interviews were conducted as the researcher was not tied to software development tasks and able to meet stakeholders as part of support and training tasks.

It was also at this phase that additional historical data was collected, because as new reports were developed because of the new built-in flexibility, this researcher was

able to understand the background of existing reports, why they needed to be changed, and why they worked but yet were difficult to use. With the existing users, the researcher and Ray Brown (management accountant) redesigned the BREPS reports, analysed the old Excel reports and proceeded to replace the old Excel reports with easier to use server-based data collection packs written in Excel and Excel VBA (Visual Basic for Applications). Figure 4.4 shows the time span of data collected in this manner. The old BREPS reports were revisited to as far back as the 1990s to identify why they needed to be adapted, who asked for them and what needed to be taken into consideration when incorporating them with the new reports. These rules of interpretation were established with the current stakeholders.

Figure 4.4 Timeline of Ethnographic Research



As also shown in Figure 4.4, this researcher conducted the initial interviews in 2005. From there, the researcher identified the next courses of action such as identifying the important artefacts to be collected and the full list of people to interview. Interviews continued on until 2007, but important artefacts were identified and collected that would fill the gaps in data for the previous years, specifically the information relating to BREPS. The researcher was primarily concerned that historical information might be lost when experienced accountants leave FINCO. These were accountants who actually used the BREPS system over ten to fifteen years ago. They were the first ones scheduled for interviews. Next, the researcher looked at the project timetable of

when he would be visiting overseas operations so that he could be on-site for the interviews. Then finally, this researcher scheduled interviews based on when a particular respondent would be heavily involved in the FAIS project, such as testing or requirements gathering. This produced an initial version of the schedule of interviews. Table 4.3 shows the various locations where the one-on-one interviews took place among the different actor groups in the research. Note that the identification of the focal actor group and the major actor groups as aligned with Callon's four moments of translation was done later, after critical reflection and preliminary data analysis.

Table 4.3 Data Collection Categorised by Business Function Areas as Themes

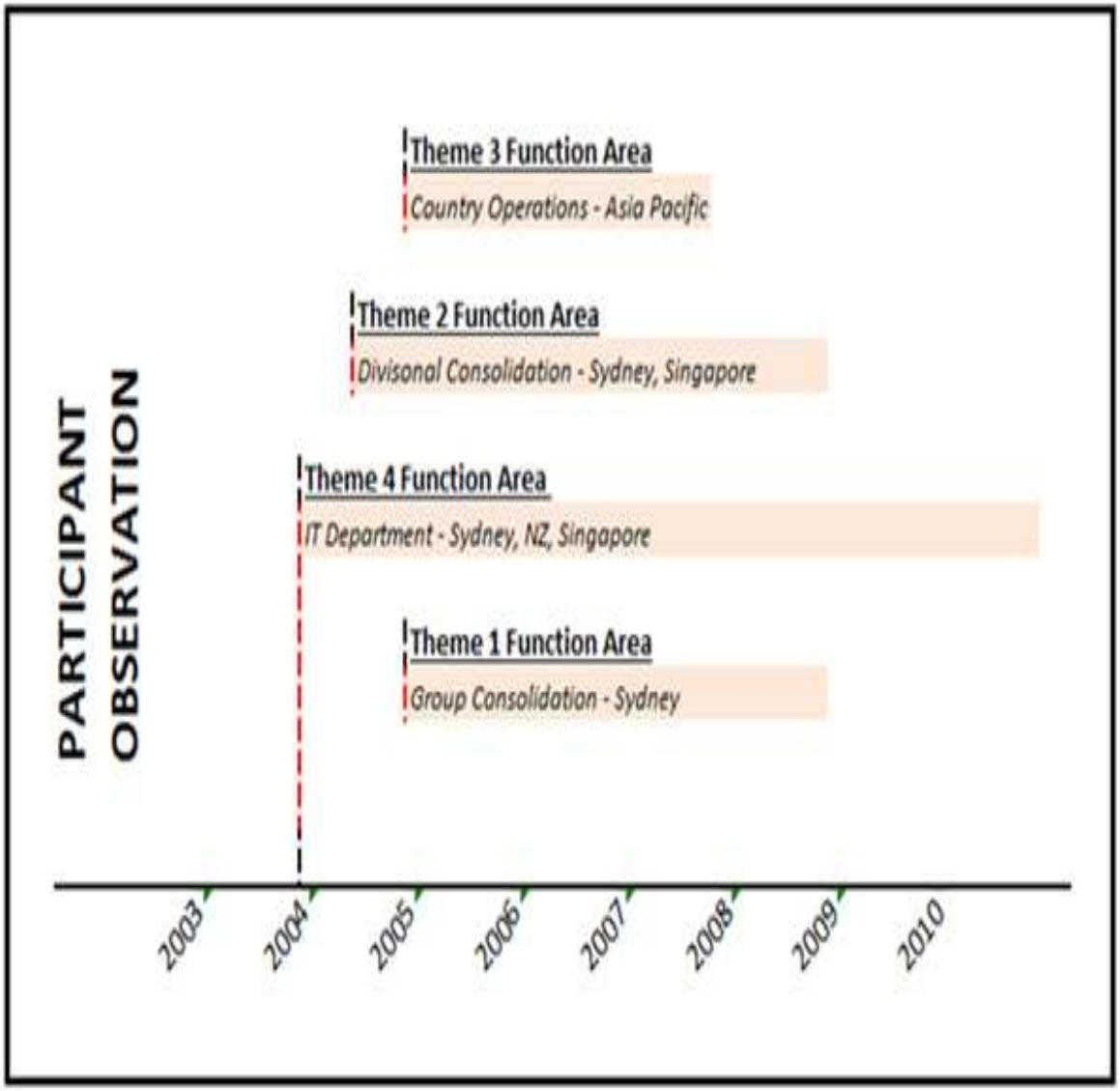
	Theme 1	Theme 2	Theme 3	Theme 4	
	Group Consolidation	*Divisional Consolidation*	*Country Operations*	*IT Developers*	*Total*
Location	Sydney	Sydney, Singapore	Asia Pacific	Sydney, NZ, Singapore	
Period Covered	Jan 2005 - Dec 2008	Mar 2004 - Dec 2008	Jan 2005 - Dec 2007	Jan 2004 - Dec 2010	
Duration (months) *	3 months	36 months	3 months	36 months	42 months (adjusting for overlap)
Data Collection					
Preliminary Interviews	0	2	0	10	**12**
Formal Interviews	3	7	3	3	**16**
Informal Interviews	15	10	16	10	**51**
Meetings/Presentations	5	60	20	40	**125**
On-Site Participant Observations (days) *	30	250	25	350	**655**
Documents Collected **	5	50	50	200	**305**

* Duration refers to the period where the participant observer was working with the same actor network; On-site refers to the period that the participant observer was located within the premises of the actor network.

** Includes group emails, meeting minutes, memos, project documents, corporate magazines, training and presentation documents.

Prior to the identification of the focal actors and major actor group, the column areas shown in the Data Collections Overview were identified as departmental areas that were crucial in the building of the innovation. Figure 4.5 shows the timeline of periods this researcher spent in the different functional areas as a participant actor. The different function areas are explained below.

Figure 4.5 Timeline of Participant Observation by Business Function Areas as Themes



4.5.1 Archival Documents Collection

The collection of archival documents during research had three purposes:

1. to create and collect information needed for the specification and building of the innovation, as part of this researcher's role in the creation of the FAIS system

2. to collect data that documents and supports the actors' roles in the building of the FAIS innovation
3. to uncover artefacts that are actants themselves within the actor-networks.

The archival documents were available to this researcher primarily as they formed a crucial background to the requirements and specifications of the building of the FAIS.

Although subsequent IT documents authored by this researcher also formed part of the archival set, the more interesting documents were to be found in the historical set that supported the formation of networks prior to the building of FAIS. These included information such as what were the previous systems in place and what was common in them. They were uncovered by investigating previous requirements specifications, past reports, and original case studies.

4.5.2 Participant Observation

Function Area 1 (Group Consolidation) participant actor observation occurred from the beginning of 2005 through to the end of 2008. As participant actor, the researcher's task included installation of the software onto PCs, training in how to use the new reports, and support and training on how to interface with the Group's own reporting subsystem. This functional area seemed to be the main driver of the FAIS project initially as it was responsible for the final reports at the statutory level. The reports it produced are submitted to the board and eventually released to the public. Therefore, initially the bulk of the data observed and collected from this group consisted of documents mostly in final release forms. However, they became the major focus only after the software was deployed and actually working. This is because Group consolidation needed combined data from the country operations. This

researcher participated in this function area at a time when the other function areas were fully operational.

Function Area 2 (Divisional Consolidation) participant actor observation occurred from mid-2004 through to the end of 2008. As participant actor, the researcher's task included the installation and support of the new software, management accounting support and joint development of new reports with Ray Brown and maintenance of server parameters for running monthly reports. Other project support issues were with main stakeholders Alex and Richard. This function area became the main source of data historically as there were many long-time serving staff in that team. They were therefore able to point out to the researcher who else he could interview or what documents he could search for. Being located in Sydney gave this researcher good access to this source of data. As part of a regularly occurring reorganisation in FINCO, there were some instances where functions (and teams) were re-located between Group Consolidation and Divisional Consolidation. The Data Collection Overview has been adjusted to re-classify these items.

Function Area 3 (Country Accountants) participant actor observation occurred at the beginning of 2005 through to the end of 2007. It involved some overseas travel and included tasks such as the installation of software on PCs, training of country accountants, and liaison and training of country PC/server support staff. Also there was some local customisation of the software to cater for non-English languages (for example French) in the PCs. This phase was the most difficult group to collect data from, mainly due to the accountants' off-shore remoteness. However, they appeared to have missing information on how the focal actors are defined and how to identify

the real issues. They were a rich source of data and needed to be interviewed one-on-one. The most problematic of the country operations was chosen and the researcher proceeded to fly overseas to be able to observe them on-site. This resulted in the interview of the chief accountant and also coincided with the successful implementation of ERP functionality. The successful implementation had put that person in a good mood and they were able to provide much data for collection and critical analysis.

Function Area 4 (IT Developers) participant actor observation occurred from the beginning of 2004 through to the end of Dec 2010. This was the longest phase of all as it was the period spent by the researcher in his original employment role as IT Developer. The tasks included software development, project management and user training and support. Project tasks were not limited to the FAIS project but also included other IT projects for the accounting function and other business areas in FINCO. Initially this area did not seem to be a good source of information for collection, as there was not much idea of what the project was about. They did prove very important later on as sources of information for how things should be and therefore provided many artefacts such as rules, systems, documents, and meetings. Interviews with some senior IT managers also provided interesting historical feedback and complemented/validated much of the information provided by the accounting groups.

4.5.3 Interviews

Interviews were conducted in both formal and informal situations. The formal interviews were generally harder to accommodate as they required allocating non-productive time for both the researcher and the interviewee. However they did

provide a more conducive atmosphere so long as there was no pressing work that needed to be completed. Informal interviews provided more data for the research as they were work-related and effectively network-related. The information collected from informal interviews allowed each actor's role to be specifically defined vis-a-vis their input to the building process of the accounting innovation.

There were 16 formal interviews. Each interview lasted from 45 minutes to 70 minutes with an average of 60 minutes. The sessions were sound recorded on an iPhone device. After interview, the resulting sound file was sent to a professional transcription service. Each interview consisted of some standard questions on the interviewee's background and role, and then some open-ended questions about their opinion on the accounting innovations. For more details on the survey questionnaires, refer to the Appendix A.2.

There were 51 informal interviews. An informal interview is comprised of regular work meetings that also included collection of data related to the research. This researcher had many other regular work meetings with actors but if they did not contain any data related to the research they were not considered as informal interviews. Informal interviews ranged from 30 minutes to a full day as in the case of actual work-related collaborations. Appendix A.3 lists the one-on-one formal and informal interviews across the functional areas.

4.6 Analysis Process

Formal interviews were recorded on digital media and sent to professional transcribers. The transcribed notes were analysed and stored as nodes using the NVivo software from Australian software supplier QSR International Pty Ltd

(QSR_International 2013). Auld et al. (2007) described NVivo as an appropriate tool for qualitative data analysis and used NVivo to analyse interviews of 204 Asian, Hispanic and white parents in twelve USA states. They claimed that the experience provided insight into issues that should be considered when deciding to use the software. NVivo can enhance the qualitative research, quickly process queries, and expand analyses:

> *"NVivo, a QSR qualitative analysis software product, can enhance the process and expand analytical avenues. NVivo aids analysis by coding data according to a classification scheme that allows easy identification, indexing, or retrieval of data during analysis. The software also provides capabilities for data management, coding text, retrieving text, and testing theory through the examination of relationships among nodes. NVivo uses the document and node as central organising concepts." (Auld et al. 2007, p. 37)*

Using NVivo (Auld et al. 2007), codes were derived from the case study using axial coding techniques. Core themes (such as common reasons for acceptance, recurring difficulties, preferred tools, and attitudes towards IT) were generated from the axial codes (from interview responses, test results, and historical documents). These common themes were analysed to identify important relationships between actors and artefacts.

Initially, the interview transcripts were collated and analysed based on the questions. The answers from each respondent for each question were entered into NVivo. These provided basic identification about actors and their functional role. It became apparent immediately that much of the responses in the open-ended questions contained personal opinions and suggested that these be further analysed for their thematic contents. Therefore, across questions, thematic contents were re-coded in NVivo under new categories – while constantly keeping track of who said what or

who owned that axial code. Axial codes were easy to generate and maintain because most responses remained in the realm of functional roles and tools used within accounting functions. However many respondents were encouraged to talk freely about their personal view points and thus provided many data points regarding interests, likes/dislikes, personal relationships, historical relationships, and many instances of cross-functional roles within the organisation.

After several cycles of thematic extractions through analysis and synthesis of NVivo data records, certain common themes began to emerge, such as accountants' common attitudes towards IT and IT staff, increasing delineation/differentiation of accountant relationships (e.g., that there is a distinct difference between the interactions of two accountants working together in the remote country as opposed to the interaction between the remote country account and the Divisional HO accountant located in Sydney), as well as attitudes of IT staff towards IT customers.

As themes fully developed, there were also additional revelations based on occurrence counts (as recorded in NVivo), of how important certain themes were; and that if there were any contrary themes it is possible to identify which is the norm and which is the exception.

Aside from survey responses, data points from historical documents were also recorded in NVivo to support (triangulate) or de-emphasise themes generated from extraction cycles. Once the major themes were finalised, certain quotes were selected to represent these themes for presentation in the thesis. Figure 5.6 in Chapter 5

contain examples of quotes identified for suitable presentation to represent the themes.

All NVivo data collected were stored in the researcher's home computer with secure server backups. The researcher then discussed the common themes with his supervisor to verify their role and relevance in the qualitative framework of Actor Network Theory. Based on these analyses, subsequent interviews and plans for collecting artefacts were reviewed to ensure optimum and efficient data collection.

Text artefacts were also analysed including emails, meeting minutes, requirements documents, testing documents, training documents, project status reports, and historical report samples. Axial codes derived from artefacts were also stored in NVivo, and cross referenced with interview data. Examples of prominent axial codes and common themes derived from text artefacts include metrics and the relationships of these metrics to actors and other artefacts.

4.7 Summary

This chapter began by presenting the ethnographic research methodology used in collecting data at FINCO. This methodology was suggested as the more suitable methodology for the kind of data that was to be collected and the particular circumstances of the current research as well as the current researcher. The reason for choosing ethnography as a methodology aligns with the gap identified in Chapter 2 to investigate socially-based processes and ANT is the suitable theoretical model to do this. Consequently ethnography provides the richness and situation complexity from which data can be collected and analysed though ANT. The ethnographic

methodology and the qualitative tradition were described in detail including possible criticisms of their effectiveness.

Then this chapter described the Australian financial industry to provide a background of what was to be expected in terms of products and services that the accountants store in their accounting information systems (AIS).

It then turned specifically to the FINCO Finance Company that is the focus of this research. It provides a good opportunity due to this researcher's role as a member of the IT group. At the same time FINCO provides a rich environment as it is a multinational company that has operations in many countries around the globe. Many of these operations provided sample data for ethnographic research. This researcher explained in detail the organisational structure of the FINCO finance function across the country operations and across divisions.

This chapter also provided a timeline diagram that showed the vast amount of information available at FINCO across time and space covering the years prior to 2000 up to 2010. With such a vast amount of data, this research chose to follow closely only a handful of actors among those that the researcher has encountered. It was important to note that even though the data collection stage took a very long time, there were crucial points of reflection and analysis that dictated how data could be further collected. This researcher realised that this choice shaped the nature of the overall ethnographic encounter. But at the same time, it provided the maximum exposure to the research field that this researcher could possibly achieve.

The research phase comprised primarily interviews that allowed the researcher to identify who were the focal actors and artefacts to be followed. From this initial data, the researcher was able to expand his data collection to all artefacts available in his role as a member of the IT group as well as a lead member of the FAIS development project. The researcher was also able to go back and revisit and confirm data previously collected.

Consequently, much empirical data would be collected and analysed on what would be established as the centre of calculation for the focal actors in the next chapter (Chapter 5).

CHAPTER FIVE

Building the Innovation

Sally's Story

Sally Wilson recalls how she started at FINCO as a new graduate accountant working in Fiji. It was her job to produce a monthly sales report to be submitted to Head Office. Entering it into Lotus 1-2-3, she needed to rush this branch monthly information (BREPS) by fax to the Financial Controller in Sydney, who had to collate them with other branches and sign off on the international consolidated totals. Mario Sanchez, one of the international roving managers, who helped set up the Fiji insurance operations, is keen to know how much insurance premium was for the month. He can ask for Sally's reports but it is really the consolidated totals that Mario needs to know, because from these he can see the performance of the other operations, judge whether setting up the Fiji operations was justified and consider whether he could set up other operations in the Pacific.

Today, 2006, I see Sally sitting in her Level 7 office in George St, Sydney; she is the new Regional Financial Controller for the Pacific. She looks at an Excel 2003 spreadsheet file that has just been generated from the new FAIS software that shows the BREPS consolidated reports for each Pacific operation (including Fiji). She is still hesitant to call it an FAIS (Financial Accounting Information System) report. She has been calling it the BREPS (branch management information) report for a long time – although she admits that it is easier and more powerful, as far as she is concerned: "It serves the same purpose. It hasn't really changed." This set of reports contains indicators of how each business operation is performing. A plumbing chart shows the gross premium and what makes up this amount, as well as claims and what makes up the total claims. The performance metrics are displayed as both ratios as well as AUD amounts. A rankings chart contains the comparative Combined Operating Ratio (COR) for each country, showing at a glance which country operation is performing best (Fiji vs. New Caledonia vs. French Polynesia). Because of these comparative performance metrics, these reports are now known as Business Metric Indicators (BREPS). Sally is keen to analyse the results so that she can explain them in her narrative report to the board. There is no doubt of the benefits of FAIS in producing the BREPS quickly, without the problems of data entry errors. FAIS automatically feeds from the operations submissions. Sally can ask for other reports from the database without having to handle large spreadsheets.

I comment to Sally how well she has done in her career at FINCO, and how far she has travelled over the years. At the same time I ponder about the accounting systems she has encountered during that time. Some of these innovations were built for her use, and some of them she had a part in developing. Accounting innovations have been built at FINCO and have come and gone; Sally remembers them and hopes to see a lot more of them in the future.

5.1 The Process of Building Innovations at FINCO – Translation of Networks

In Chapter 1, two interesting core research questions were initially asked by this research. In Chapter 3 (Theory) and Chapter 4 (Methodology), it was chosen to frame these core research questions in actor-network theory and ethnographic methodology. Because of these choices it was now possible to investigate the core research questions informed by this approach. To recap, the following are the two core research questions to be answered in this research's Data Analysis chapters (Chapter 5: Building the Innovation and Chapter 6 Effects of the Innovation):

Q1: How does technology-based accounting innovation emerge and stabilise within accounting functions?

Q2: What effects does technology-based accounting innovation have for and within accounting functions?

This chapter will attempt to answer the first question while Chapter 6 will focus on the second question. Although several innovations will be followed over a prolonged period, from conception and development through to acceptance, the focus will be on the accounting innovation built by the main focal actors. The innovations will be analysed within the organisational landscape as this may indicate how the organisational landscape frames both the AIS innovations and the accountants that accept or reject the AIS innovations.

After reviewing the extant literature on accounting networks, accounting information systems, and how accounting innovations have been adopted and having discussed the ANT framework as the lens that can be used to look into the FINCO accounting environment, empirical analysis of data gathered from the ethnographic encounter will now be presented.

The empirical analysis in subsection 5.1.1 begins by introducing the four moments of translation that characterised the journey of the financial accounting information system (FAIS) that the researcher helped build, as it represented the first contact point into FINCO. From here, the researcher's ethnographic path begins as he meets other elements within the empirical setting. A set of tables are presented showing the major actors of the ethnography. Subsection 5.1.2, introduces some actors to give a historical background to the problems before and gives a suggestion of how the rest of the community will react to the new system. The rest of Section 5 then follows the four groups of focal actors – who they are and their roles in the organisations. There is also a focus provided for accountants as they face technological change and the effects of the innovation process for the actors as well as the innovation.

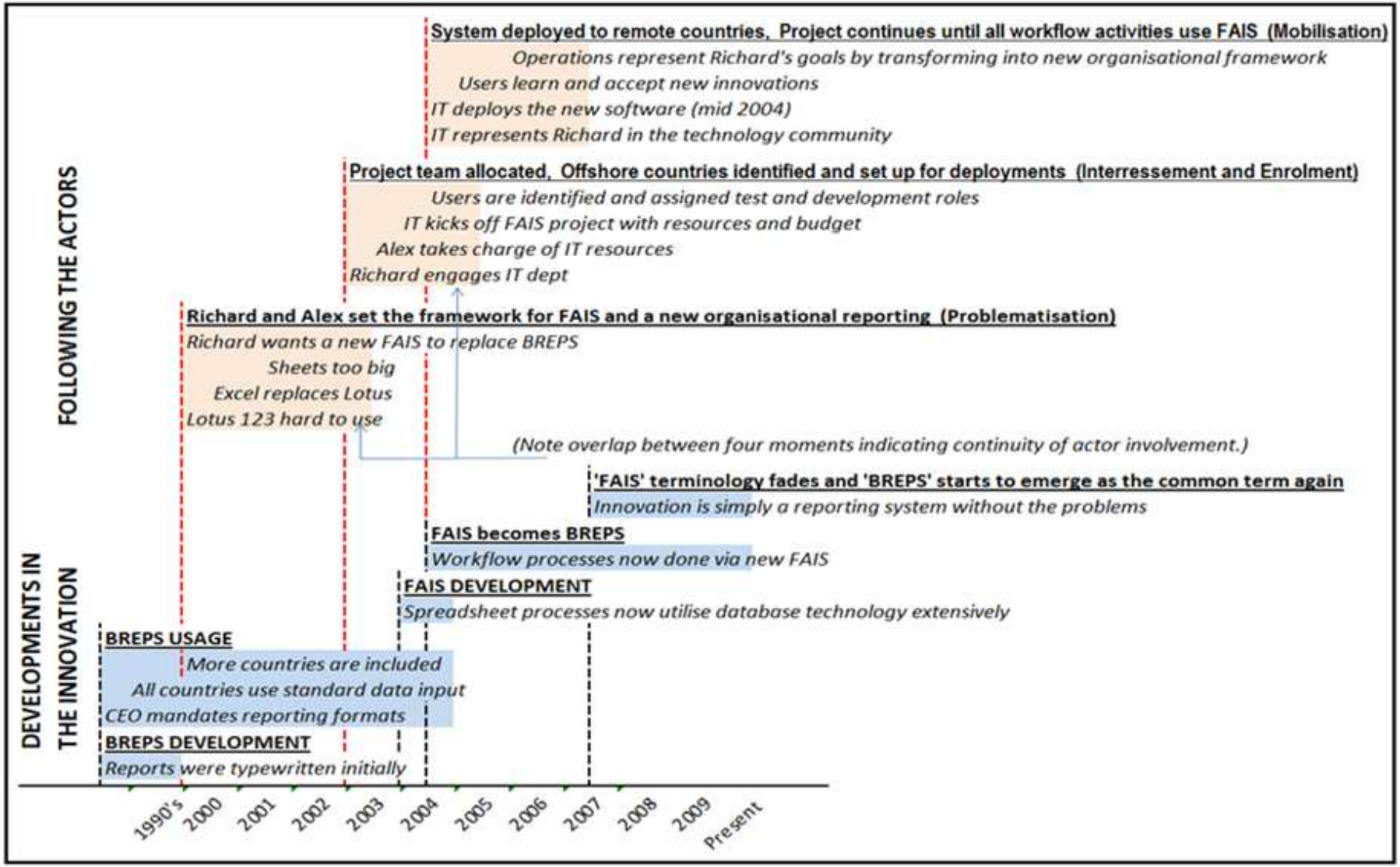
Section 5.2 explains the translation moment of *problematisation*. After identifying the focal actors Alex and Richard, this section discusses the creation of a new organisational centre and how it operated as an obligatory passage point. Section 5.3 discusses the translation moments of *interessement* and *enrolment* – how others joined in (or resisted joining) in the network set up by two focal actors Richard Thames and Alex Burke, as well as how they subsequently accepted the roles offered to them. Section 5.4 describes the translation moment of *mobilisation* where the roles that

actors and actants accepted as per their enrolment included functions that advanced the goals of the network. Section 5.5 gives a summary of the innovation building journey in terms of how an accounting innovation became a representation of the goals and many actors in the finance departments in the FINCO organisation.

The process of innovation building at FINCO took over several years, and across different countries, as well as different communities in the organisation. Basically, the current innovation has roots from previous attempts to improve a reporting system that was mandated by the FINCO Group CFO. Over time, a number of innovations were introduced by various entities leading to the current attempts of the focal actors to build a new organisational process and relationship in the finance function. The emergence of this network can be traced by following the development of the innovative accounting systems as well as the individuals involved in the innovation. Observations of the network will focus on main innovations (the new FAIS accounting information system and the previous BREPS system) as well as two focal actors Richard Thames (Divisional CFO) and Alex Burke (Finance Manager).

Figure 5.1 shows the timeline of the developments in the innovation alongside the different moments of translation that occurred.

Figure 5.1 Timeline of Developments in the Innovation



As shown in Figure 5.1, various actors were crucial in the history of innovations in the FINCO Head Office Finance function. Although there is a common goal required for the finance function, each member of the team had a different purpose in adopting the innovations and therefore different reasons for accepting or rejecting the tools that were presented to them. In addition, some members had different skill sets and familiarity with IT and technology against a background of changing environments and team compositions.

In 1993, Sally was the assistant accountant in Fiji, and was promoted to accountant a few years later and then transferred back to Head Office in Sydney. In 1998 she came back to Sydney as an accountant with a group of accountants known as the National Division. They had a Finance Controller, Peter S, who had moved on to Group Internal Audit. There were three of them – Sally, Peter and Jesse. They used to handle Asia, as it now had eight operations. Pacific also had eight offices at the time because they had Japan, so it was a full office. In December 1999, Peter was transferred to internal audit and was replaced by Richard Thames. Sally recalls that at the time it was known as Asia-Pacific Operations. When Richard came along, the team comprised Steve, his assistant Sonia Cruz, a full-time contractor and Sally – so there were five of them. They were then given more countries to manage. For every senior person, over the years an assistant was appointed and they each ended up with six or seven people. At the end of 2003, the Division became known as 'Australasia' and that was when they took on the many operations. Sally Wilson was now Regional FC for Pacific reporting to Mario Sanchez with a dotted line to CFO Mike Paterson. Mike has always been the regional manager for Pacific. He has also been the general manager for overseas and has been there a very long time. All the time he has been

there, with the exception of the SE Asia period where he was assisting Ramon Jose (Mergers & Acquisition Manager) with mergers and acquisitions, he was general manager for the Pacific Region. He had always had that title, but had never had a team.

5.2 Introducing a New Reporting Framework – Problematisation

Alex Burke and Richard Thames saw the need for a new organisation reporting system to cater for the ever increasing growth at FINCO. Richard kept asking to see more key performance indices (KPIs) and metrics in the final monthly reports and Alex simply responded by adding more data and more Excel formulae in the spreadsheet reports. But Alex also informed Richard that even though the formulae calculated the correct metrics, the spreadsheets were becoming unmanageable. The growing numbers of new country operations due to mergers and acquisitions stressed the financial processing and reporting system to breaking point. Many of the Excel spreadsheets when combined and saved on the shared drive would no longer open quickly and caused bandwidth disruptions for other IT users. This was a problem for all accountants and specifically annoying to Alex as he needed to do this last step himself. Together Alex and Richard sought to create a new framework to replace or improve the existing BREPS used in the processing for monthly period close. They also saw that they needed to transform people and not just systems. This problem had begun some time ago since Lotus 1-2-3 and the emerging problem was similar to when they put improvements into reports in the past, except they felt there was a more permanent solution possible.

To succeed, they needed to identify groups or individuals in the organisations that could help them achieve their goals. As innovators, they saw a problem and devised a solution that involved other groups. The following were groups or entities that were crucial to achieving their goals:

1. *Group Finance* whom Alex and Richard sent their reports to, and who demanded new reports and quicker turn-around times such that Alex and Richard found themselves in need of better ways of doing things. Included in Group Finance were Lisa Silverio (Financial Controller), Elise Fischer (Finance Manager), Harry Bennett (CEO), Mike Paterson (CFO), and Ray Brown (management accountant).
2. Individual accountants were needed as they tested, developed and provided accounting support as the system was built. These included *Country Accountants* as well as Sydney-based *Country-submission Accountants* who helped the country accountants with the monthly submission process. Thus these Sydney-based country-submission accountants were followed closely along with country accountants because they pursued the same goals. Included in country accountants were Mary Yim, Rosie Ng, and Jerry Tan; and included in Sydney-based country submission accountants were Jimmy Tong, Margaret Hall, Sally Wilson, and Helen Goodall.
3. It was necessary to engage the *IT department* as they provided system development resources. Included in the IT department were Barry Madsen, Grant Mitchell, Scott White and this researcher who acted as lead developer.

For Alex and Richard each of the three groups needed to answer the same question – Can the monthly close period process be improved by a server-based data-entry application (instead of the current method of storing data entries in Excel sheets)? By posing this common question, Alex and Richard hoped to convince all groups to cooperate and build the system solution they envisioned. By inter-defining the three groups, Alex and Richard also established an obligatory passage point that each one must undergo or address. The obligatory passage point was not just the question of the success of the server-based application process but eventually the IT-based system solution (FAIS) that was built in the process. This inter-definition and establishing of the obligatory passage point happened in one simultaneous 'double movement' (Callon 1986, p. 6) and is described in detail below.

5.2.1 The Inter-definition of the Actor Groups

The inter-definition of the actor groups happened in an unfolding fashion because each group had needs that were satisfied by Alex and Richard whilst Alex and Richard needed something from a particular group to satisfy the needs of another group. For example Group Finance needed the consolidated reports from Richard while Alex needed the individual country results to be able to create a consolidated report via a reliable tool provided by the IT department. Each group needed to be convinced of their role in an inter-defined manner for the whole thing to come together. Thus Alex and Richard worked in a prepared sequence of moves where one role definition unfolded into another role definition.

Alex and Richard saw Group Finance as the easiest group to convince as they were the original drivers of requirements for the project. As in the past, Richard needed to provide Group Finance with the KPIs they requested. Thus with the establishment of

the new reporting solution they would cooperate as long as Alex and Richard pointed out that the new system would provide these KPIs. Group Finance's cooperation was simply a consequence of their requirements. For as long as the project objectives were met, Group Finance automatically gave their commitment to join. Thus Group Finance committed to join in the role defined for them as the ultimate beneficiary of the innovative accounting solution that would provide new KPIs and a highly flexible reporting system.

However, Alex and Richard realised that the second group, FINCO accountants would be the most difficult to convince because of their remoteness and the complexity of their functions. The second group comprised country operations willing to be the first users of the system. Alex knew that country accountants would experience the most disruption to their current accounting operations when they tested new systems while doing current business-as-usual functions. The current situation was already bad enough that spreadsheets took too long to open. When a new system was implemented, the accountants would be asked to take time away from their current tasks to help with user testing, parallel testing, and parameter definitions. Alex decided that selecting members of this subgroup of early adopters should be based on minimising disruption. The smaller operations were the initial candidates. The accountants needed to be convinced even though they had a reporting line to Alex and Richard. A major concern was whether the third group was able to provide time for the project in addition to their current duties. Alex and Richard decided that selected members of the third group would comprise accountants who had intimate knowledge and experience in the current BREPS system. They would be able to provide input to the system developers on the requirements of the new system. Thus the accountants

committed to join in the role inter-defined for them, as joint developers, testers, and early adopters of the innovative accounting solution that would provide benefits and make their job easier.

Alex and Richard then saw the IT department group as more than willing to help as part of their service-oriented function. Richard knew that all that was needed to engage the IT department was to sponsor the FAIS project. The IT department then assigned staff resources to the project and implemented a standard project development program. The major concern with the IT group was whether they had the qualified resources to deliver a highly customised solution and whether the IT resource could deliver a system that was easy to adopt by end-users. As soon as the resources had been allocated (budgeted), the IT department assured the completion of the project. Thus the IT department committed to join in the role inter-defined for them as primary solution providers of the FAIS accounting innovation, as Alex and Richard's representatives to the rest of the IT community to guarantee the sociability of the new FAIS innovation within the FINCO IT infrastructure and as support function to the adoption of the innovation by accountants.

As Alex and Richard found these three groups crucial to achieving their goals, they also realised that the groups must act under their control. There are various ways that Alex and Richard did this. For the IT group, this was implicit in the engagement model. But for the accountants and especially the remote country operations, Alex and Richard needed to convince these groups that the new reporting systems, calculations, and processes, were central to their responsibilities and functions. Without the calculation centre (that is created by achieving the goals of Alex and Richard), life

was more difficult for everyone. Alex and Richard's conversations with Group Finance, the country accountants and the IT department are described below and show evidence that they are crucial to defining the calculation centres.

FINCO Divisional Head Office finance function was located between FINCO Group Executive Finance and the country operational finance function. In this way, Alex's accounting function was subservient to Group Finance in the sense that they had reporting obligations to submit consolidated reports to Group Accounting (along with other FINCO divisions) while similarly, the operations had obligations to submit on time the monthly results to Alex's team.

> *"There are different purposes for our responsibility. You've got management reporting, where the financial information is presented under Business Reports – which we are trying to improve. Then there's also regulatory reporting, which we rely upon the group finance system called CONSOL. This relies upon CONSOL and Word documents. And there's control and administration bookkeeping – and that uses a variety of different spreadsheets, systems and the Zebra GL."*

Alex and Richard were not able to explain the new FAIS and its benefits fully to everyone such as Lisa Silverio from Group Finance. Lisa was crucial to FAIS as she received the reports from Divisional HO. Thus Lisa Silverio, who had not been part of the project team, initially instead felt that other projects were not always taken into consideration but had impacted on the current FAIS project. The project planning process should have involved all other projects or else they got in the way. Lisa had only been around for a short time and only had an outsider's perception of events, but agreed that others felt the same way too, that they had not been involved but still added to the cost of total project. For Lisa, "cost is always an issue – that is why everyone is involved." Without a clear explanation of the benefits of the project to

certain individuals, Alex and Richard did not have immediate support from these individuals in Group Finance. Alex and Richard had to wait for another time to get back to Lisa and ensure that she was convinced of FAIS.

However, there were some from Group Finance such as Ray Brown (Group Finance management accountant) who said immediately that FAIS was a good tool. Alex frequently dealt with Ray Brown because of modifications to the data-entry models. These conversations made Ray think that FAIS had become relevant; it had achieved what it was designed to do. But going forward there were still better ways of doing things. For the time being, his gut felt that for the next twelve to twenty-four months, BREPS would be around until the integrated General Ledger (GL) came along. The integrated GL (One GL) did well on some of the areas discussed, like expenses; and consequently it was able to report the product profitability metrics. Ray said,

> *"You can pull the income numbers from policies by product, and then all the reporting tool does is add the branch expense number and allocates it by some method. And if the integrated GL (One GL) can do that, then that would be good."*

Elise Fischer (also from Group Finance) was aware of this serious problem. Alex worked with Elise prior to 2004 when she was involved in the budgeting process and was also indirectly involved with the monthly process. Thus Alex was able to convince Elise of the benefits of FAIS because Elise considered the old reporting tool as a spreadsheet base; everything was linked to the spreadsheet, which was linked to another spreadsheet and so on. Sometimes it did not succeed because of Excel memory limitations. Elise pointed out:

> *"You have to be checking all the time and because many files had errors, you don't even know it takes you a while to go and look for it. Relying on it means you are constantly checking on it all the time. There's still work that's going on it and there are still aspects which*

> *require doing manually. Because people knew the old system, people came to use Excel and so understood what needs to be done well and in most cases, Excel has been helpful. Any change to make it simple is good because not all people are accountants or computer programmers as some were managers. It is up to systems people to give someone a program by which to download things – for example the FAIS downloads from your ledger to put into your results. They need to do only a minimum amount of task to achieve this."*

Those who used the systems more frequently, such as the country accountants, were easier to convince. Alex and Richard saw Helen Goodall (a country submission accountant) as someone who could be convinced to accept the new FAIS solution, and showed her how it was an improvement on the existing data entry models. Helen had been in FINCO for nearly forty years and had been with Head Office for twenty-five years. There was a Head Office accounts department which did all the reporting for Australian operations as well as international operations. There was a group Head Office function but no international counterpart. During the merger with a bank, the Pacific operations were established and the Asian ventures were started via Singapore. Throughout all of this growth, Helen and other accountants had always done management reporting of the classes of business showing premiums and claims. What was done now was exactly the same as then, but with better technologies. Before the accountants started doing the FAIS system, it was basically just on simple spreadsheets. The simple spreadsheets were in Lotus 1-2-3 which then moved to more complicated Excel sheets when it was found that Excel provided more features. Spreadsheets allowed reports to be printed directly, whereas previously, reporting involved typing the results manually. So Helen had learned from different reporting systems, beginning with punch card systems through to the sophisticated web. Most of the country submission accountants such as Helen Goodall and Jimmy Tong were

easily convinced of the FAIS project because manual entry, as pointed out by Alex, was not to be desired – instead they needed to improve the accuracy of the reports.

Alex Burke explained to country submission accountants that the main reason for using the new FAIS reporting system was to remove some of the inadequacies and time-consuming requirements of using a manual process.

> *"Previously they had a web of interconnected Excel spreadsheets. It was time-consuming to roll over and prepare the reports for each month. It was also time-consuming to change any of the reports. It was prone to linking problems so that it required at least two or three man-days to manually print the output and the reports that came out of these to make sure that none of the links have become corrupted. And one of the main benefits of this was that they needed to build a more flexible reporting especially because there were twenty-four countries that reported in local currency; which then got reported into Australian dollars at divisional level."*

Alex explained that when someone questioned where an expense variance came from, it was very hard to provide an answer using the old fashion spreadsheets, whereas in a database approach one could analyse the FX components down to local currency and still came to the same variance that was being explained.

For Alex, the system was more flexible with their reporting and querying. The management level of Australasia still relied upon hardcopy of the report. The benefit there was improved response time for querying the database. This was because they interrogated the data in the database and used queries, whereas in the past they did it manually and created separate spreadsheets which was very time-consuming.

In a document evaluating the usage of external market research at FINCO, Alex noted the controversy of the consolidation at the Head Office versus Regional Level. The controversy emerged as a result of the compression of data-capture and involved

the rationalisation of the final reporting information. Consolidated reports were needed quickly in the regions and therefore had to be rationalised to meet the regional requirements. Sally Wilson (as a country submission accountant) had thought of FAIS in terms of team effort. She, along with Alex, proposed to Richard that there had to be a dedicated and separate team, which Richard did not agree with. Alex wanted to increase team resources. Alex wanted extra staff and to dedicate more of his time, so that FAIS could be completed by as much as two years earlier.

Richard Thames, FINCO's Divisional General Manager Finance, represented the executive management and the need for relevant and timely performance metrics from the operational results. As project sponsor of the IT project, Richard joined Alex and together they presented to the IT department a solution that would: a) improve the country operations data-entry models, and b) be developed jointly with the IT department to replace the old data-entry models with more modern database tools. There were many potential issues that could arise, but Alex and Richard felt confident that they were able to address these as they came. Therefore they called on the IT department to discuss the scope and identify requirements and potential issues of the project. By following the FINCO standard IT development methodology they were able to minimise risks such as missing out on important issues, at least on things related to IT.

Alex and Richard convinced the other groups to join the network by introducing inscription devices that influenced their actions. The IT department did not need to be influenced – at least initially. IT perceived the work as simply an exercise of their skills. Alex and Richard were aware that as part of the standard IT development

process the IT department ensured successful project implementation. Therefore Alex and Richard did not exert much effort to convince the IT department to accept their role as it was simply a project that was to be completed among other IT projects in the pipeline. On the other hand, Alex and Richard found the accountants harder to convince, as evidenced by the frequent travel to remote countries and the careful prioritisation of software deployment schedules. As the new system was very disruptive and took effort to learn, accountants were disinclined to adopt it and some needed to be convinced with offers or demonstrations of advantages to be found in the new system.

The FAIS project development was initiated in January 2004, when Alex approached the FINCO IT department to develop a new reporting system. As FAIS was an IT project, January 2004 marked the beginning of the project in terms of a promise to deliver and a commitment to fund the IT resources. However, as far back as 2000, the accountants had initiated the necessary legwork to set up certain focal actors who took control of the IT-based accounting innovation. Alex Burke – as FINCO Divisional HO Finance Manager – had put in place simple but crucial Excel-based tools that the country operations had been using. It was Alex's role to input data from all the country operations.

> *"It's really a Head Office reporting and control role whereby a variety of inputs comes in from the country operations in our 24 different overseas countries, that are different types of internal management information, financial information, regulatory reporting information, and technical information, on the insurance reporting. So, we summarise that information here. We consolidate it into various job categories such as the legal entity of FINCO insurance international, or, perhaps the Australasia division which provides regional board papers for regions such as Pacific Islands, Central Europe or Asia. And we also provide tailored format management reporting, for the senior executive team here, to what we call our blue book; where we have: performance management reports, financial*

> *reports by business with budget, prior year comparatives, and commentary – that reviews the results and tends to explain any variances against budgets for full year forecasts."*

Thus, it can be seen that attempts by Alex and Richard to inter-define the actor groups followed a planned strategy where each convincing attempt to create a role for an actor group was related to the next attempt in convincing another actor group. Although each actor group accepted the role from a logical perspective, it is also clear that there appeared simultaneously a common point that all three groups encountered that was crucial to how they were convinced. This common obligatory passage point is explained in detail below.

5.2.2 Emergence of FAIS Monthly Calculation Process as Obligatory Passage Point

Initially, the obligatory passage point was interpreted as a common question of whether the monthly consolidation process could be improved by the use of a central database rather than Excel files that accumulated in size rapidly over time. As the actors groups were inter-defined, they each had their own relationship to this question. It was continuous involvement and ultimately the question transformed to a calculation process implemented as the FAIS accounting innovation. The establishment of the FAIS monthly calculation process as an obligatory passage point was a simultaneous consequence of the actor groups recognising their role and relationship with the problem presented by Alex and Richard. For example, Group Finance became the main beneficiary of powerful reports, but also walked the path of the calculation process laid out by Alex and Richard. The IT department accepted the role of the solution provider of FAIS, but also recognised that the FAIS process was the only correct calculation process for the monthly period close for FINCO – no

other path would achieve this. Similarly the country accountants accepted the role of adopters and beneficiaries of an accounting innovation but simultaneously walked the path that passed through the FAIS monthly calculation process and not any alternative system around.

To achieve problematisation, Alex and Richard needed everyone to recognise the importance of the monthly calculation process as an obligatory passage point to achieve their own interests. The question here was what Alex and Richard did to make everyone recognise this importance and that it benefitted the accountants by reducing the time to process month-end results. At this point the new FAIS innovation was only a proposal and the monthly calculation process was simply a representation that was critical to accountants. Accountants provided evidence that the monthly calculation process emerged as critical to their jobs. Therefore, they recognised its importance and consequently the focal role that Alex and Richard had in improving the monthly calculation process. This focal role was supported by Mario Sanchez (representing Alex and Richard's Divisional HO) who was based in Sydney as the regional manager for Pacific Islands. Alex Burke assured Mario Sanchez that new management board reports would be delivered in much the same way as before, while information passed through the new process.

Many of the actors reported that increased competitiveness was the primary reason the organisation would be forced to build the innovation. Competitiveness drives the need for improvement in as many aspects of the organisation as possible. The opportunity to innovate for competitiveness can be missed as cost is always an issue. So when the opportunity came, it provided another good reason to build the FAIS innovation.

Along with competitiveness, the other reasons for building were: improved system performance, improved productivity and to cater for statutory requirements.

Mario gave his view of why a new version was needed. He thought that BREPS needed to be changed to become a more concise document. He saw it becoming more comprehensible because of visual aids. He believed that the BREPS could be simplified. For example, because they report on a class-by-class basis, there should be some reports that go only to senior management and some that are used at a lower level in the country operation. These reports should be on a product-by-product basis, therefore identifying which product was losing money. It would allow one to drill into where you can get at the problem – then either drill up or down. This would allow the system reports to link better. There can be no double entry because that means errors. Now there was a need to move to a more general approach with BREPS because others do things differently. There tend to be differences in some other countries. For everything to be consolidated, you needed to have one system. Head Office Group were progressively moving towards integration but they needed everyone to buy in into the style of the new BREPS. The main thing was for people to get used to it. Resistance to change was a common thing. People are people; they have a comfort zone sometimes when things are changing, but there was a need for people to be part of the change to enable accountants to be successful.

There will always be a need to check spreadsheets for their correctness and there will be a need to perform financial analysis. People expect to do their jobs as before with or without the AIS innovation. The old process was simply too slow to cater for increasing data analysis such as new and special projects for the finance team.

Although a separate tool in itself, the general ledger was a source of information that was included in financial planning. The AIS innovation took data from existing general ledgers and consolidated them. Because people expected to do the same thing in their normal jobs, it was easy to perceive that the general ledger and any other tools were part of the same innovation that the IT department was delivering. The situation at FINCO required innovation as Richard was faced with a growing need for data entry and maintenance, while his department also attempted to provide meaningful reports to management. It was unacceptable that every report analysis required separate data collection and maintenance, where spreadsheet files had to be reconstructed, recalculated, tested, checked and signed-off before a management accountant could make more of this as it shows that the innovation would have effects on other in the organisation through "new performance metrics".

Alex Burke related how some of the factors that would have driven the innovation came from Group Finance Office. They would get an email request from Alison Hodges (from Group Finance administration) asking for an analysis of expenses. In trying to answer Alison's questions, Alex realised the shortfalls of the old rigid reporting versions of the previous BREPS, and how the rigid reports could not be manipulated to easily reply to Alison. Alex said,

> *"If you look at an example, that budgeting process was used to generate a whole variety of new formatted reports that fed these 'essential packs'. As part of the budgeting process, historical data needed to be analysed and entered into the budget packs. These historical data would come from Group Finance – but in fact originated from the operations themselves. They are actually re-creating and re-entering the data – that was already entered – into yet another new formatted report. This was very time-consuming. If they had the data entered once into FAIS – it would just be a matter of writing a new budget report, which would be applied to all the countries, rather than having to manually create a spreadsheet for each country operation based upon the data held in spreadsheets."*

For Ray Brown (from Group Finance), data analysis improvement had to take the form of the further automation of existing reports and further utilisation of these reports. In other words, he predicted that the FAIS reports would not be made obsolete anytime soon because “we have come a long way in terms of introducing FAIS, even though we’ve still got a long way to go.”

Without fully explaining FAIS to Lisa Silverio (Group Finance), Alex convinced her that the current innovations would lead to her time being freed up and the executive managers would still get what they wanted. She was keen to see this happen. Her time being freed up would be proof that the system worked. Lisa shared the same perspective with Mike and said that when the new FAIS version of the reporting system was introduced, there were two main reasons for it. The first reason was to really try and reduce the amount of manual reworking, inefficiencies and the risk for error coming along with that. So they were to automate something to reduce the manual workings. The second reason was to provide quicker turnaround to answers of very high level questions that were being raised by people at Mike's level. Lisa agreed that the old BREPS was not a long-term option for Australasia, because what they needed was consistency in reporting and FAIS was really designed to put everything on a consistent platform.

The new BREPS needed to be adopted simply because there were statutory requirements. They were a listed company and they had to report to the stock exchange. Lisa Silverio reported to Mike Paterson the CFO of the division to work on projects. They were mainly special projects that she had to oversee for regions when

doing their financial reports. Under Mike, there were relationship roles filled by the regional financial controllers. They recently restructured so they currently had expanded functions. There were now financial controllers for Asia and New Zealand and Australia, with responsibility for the day-to-day routine financial controls. That was the first thing they noticed – a high oversight role in terms of how they did things and whether they were doing them effectively. Elise Fischer performed a management accounting role where she had detailed oversight of the management accounting process and responsibility of the management accounting output. She had a team that produced a very high level output for this.

Elise Fischer relates that before the current database, it was done on a manual spreadsheet that was difficult and very time consuming: "You have that many variables and have a deadline where you need to get things to the manager so the database has been a great assistance from getting things done in a much more reliable and user friendly way." For Alex Burke the existing systems produced the same level of the base reports that were built out of the FAIS system, "but it was very manual and prone to error, and very rigid." He also described how previous spreadsheet versions were tried:

> *"Prior to these spreadsheets, there were lots of approaches to solving the reporting problem. They were interconnected, and that's where the problem lies. The previous spreadsheet software had very large linked spreadsheets. We improved the quality of the reporting but we didn't improve the integrity or the processes of how we captured the information."*

Time was saved when Divisional Head Office did not have to key in the data because the country operations had already done it. The same form was used in all operations thereby saving on duplications. When it came to reports, many linked back to the

original financial information from each country operation. In the new FAIS, transactional data was extracted from the operation's base general ledger and then used in a reporting tool to generate a Head Office style report. It was extracted from the general ledger, pasted in as a data table, and reformatted and translated using a reference table.

From the point of the monthly submission process, Sally Wilson was convinced by Alex's proposal for the FAIS, because she said by standardising the commentaries through an innovative tool like the FAIS, not only did BREPS got automated, but automated so it had all the graphs and text explanations synchronised. Saving time on these tedious tasks allowed them to concentrate more on the numbers, the trends and implications and therefore enabled them to provide best advice to managers. Sally said:

> *"Getting it into the right format would reduce the time spent on the manipulation and then more time on the commentaries. The commentaries were 2–10 pages and had to be summarised into bulletins. They should be dot points that are automatically provided so that a complete report is easy to assemble."*

Sally had to read and summarise twenty-five narratives. Being fully electronic helped her a lot. Furthermore Sally felt that her commentary summaries should be found on the browser so that people could just see them by going to a web link.

Alex's primary tool for convincing Rosie, Jimmy and Helen to join was the promise of better processes. Rosie Ng as Financial Controller representing the country accountants agreed that the FAIS systems minimised data collection as best practice. She felt that this could be achieved by having in place a proper infrastructure, methodology and process so that everybody knew what to do with the data and spent

as little time as possible. Jimmy Tong, as junior monthly submission accountant who basically spent most of his time entering data, said that accuracy in data collections was the key to reducing the data-entry time and therefore converting this time reduction to potential data analysis.

Competitiveness was the main external force recognised by the accountants that made them recognise the importance of the monthly calculation process within the organisation and from outside the organisation. Rosie Ng agreed that probably the external factors would be the reasons for utilising the systems. Management wanted to know where competitors were. They wanted to know how competitors were doing. So with FAIS they could use relevant analysis to get further ahead, and try to analyse their competitors on a regular basis. Sally Wilson remembered when they started to grow – during the last days of the SE Asia business – just before they became 'Australasia' in 2002/2003. FINCO seemed to grow fast – they had a lot of assistants then. Everyone filed their reporting tool under the BREPS but it was not fully standardised. So the new assistants wanted to leave. Because they lost the old ones, it was very hard to train new people because they would look at Hong Kong and then they would look at Indonesia as different formats. Sally believed the systems they got at that time did not help so they lost assistants again which affected the team morale:

> *"At that stage you only had to give two weeks' notice, regardless of how long you had been here, although now if you have been three years you have to give a month's notice, so by the time they gave notice, the two weeks was over. Richard was not proactive enough to find someone. It would be six months before they found someone. Meanwhile the rest of the team was covering out for the missing person."*

For Sally this was all happening because they did not have a good General Ledger system. Those new assistants were "23/24 year olds straight out of uni." Sally explains:

> *"Because they have come from uni, they have come to expect great snazzy systems. But they come here and they would say, 'Oh, it's a spreadsheet. What do you mean?' At that point, the Net Underwriting Premium was manually calculated then printed out. This is ridiculous. This is circa 1970."*

Rosie, as Regional Financial Controller, agreed and understood why FAIS was introduced. It was mainly speed, to enable mass review on all operations and the results from countries. So you needed to have in place a standardised platform for everybody to see in full. That was very important for Rosie and the expectations in terms of the data quality were very high. This way, it gave them a basis with which to compare one country's results against another.

It was a common complaint by senior accountants of the Finance team that they felt they did not have enough time to analyse their data, and they presented this in their monthly commentaries. Commentaries provided very specific explanations of why and how to interpret the bottom line numbers. For example, if profit was down by 10 per cent, then the commentary indicated large claims in a particular area or a particular catastrophe event. If profit was up, then the commentary indicated whether it was due to low claims or any recent premium increases. Many managers based their forecast models on the commentaries found in their accounting reports.

Helen Goodall said that in the system, like any new system, there were advantages and disadvantages. For her it was a management decision to make the best of what was there; using systems to the best of their capabilities and still doing the things done

previously. Most of the enhancements she has seen in BREPS have been improvements to make it easier. Helen says:

> *"For users, it is better because you're not loading data manually and when needed, you can easily make adjustments that will correct the totals, depending on the length of time it takes to run the reports. So there is probably a trade off with FAIS that it may take longer to run the reports but that they're going to be accurate."*

For Jimmy, the benefit was at a personal level. He realised that the information delivered was relevant to the operation on a monthly basis. It was not any special system, but a simple accounting information system that allowed people to do their jobs. Jimmy said it just provided information that was relevant to let them know how the operation does on a monthly basis. Prior to the innovation, it was a very manual process. It would need another person to check her work. So it would take at least two persons to do the job. Now she can finish the job by herself. This gave her personal pride and achievement, even though the end-user of her information was unaware of anything new she had done. For Grant Mitchell the amount of time it took to get a piece of work done was a fraction of the time it was previously. The benefit for him was that he was under pressure before from his managers as they had to look at the results in real time. The new innovative system came as a personal relief for Scott. If the end-result was not much different and the people who benefited from the innovation referred to individualised benefits, what was the actual problem solved? For Margaret Hall, the problem is timeliness: "If somebody doesn't submit their contribution, then you don't have a full report, full stop." It also depends on the country operations and their specific problems. For example, email is unreliable in Papua New Guinea (PNG). Fiji and Philippines always have problems. Margaret's job was to consolidate. She could not consolidate unless she had all the contribution reports.

Because of constrained resources in the IT department, Barry did not think they were poised to move to a new GL. Although there were good people on board, Barry felt the need for more expertise. Barry admitted this pessimistic outlook came from a previous experience in a failed project. Barry originally worked in the X5 project from 1998–2001. He was in Singapore for two years to take the final implementation of the X5 in Singapore because it was actually in trouble. Barry was tasked to sort out the implementation problems. Barry had started to fix the problem when FINCO decided to cancel X5. His work turned to overseeing IT replacement strategies and particularly systems replacement strategies in the Asia-Pacific region including accounting IT systems. Thus to allay Barry's fears, Alex provided a close control of the project from the accounting side and assured Barry of continuous funding. With funding assurance, Barry was able to get on board. For Alex Burke, the new FAIS enabled a new process. Previously they received hardcopy reports and softcopy reports for printing. Keying that data into the Excel spreadsheets (or Lotus 1-2-3 spreadsheets before that) was prone to error. On the other hand, with FAIS they received a softcopy and detached it onto a local drive. It was already in the correct format and they just uploaded it to the system. They were able to do that for Actuals reporting each month, or as part of the budget reporting and planning process. For Alex, FAIS provided advantages – not just in the reporting and the flexibility of answering queries, but also the improvement in the process of data capture as well.

Alex explains that this solution relieved the pressure on the Finance team to improve the time in which they reported. And so, if they automated as much as possible, FAIS was the way to go. FAIS immediately reduced the monthly processing time, and it

normally required less review time, because they were putting information in once, rather than putting information into different spreadsheets which needed to be comprehensively reviewed because they came from different sources of data, creating isolated spreadsheets of information. When it was in a database with FAIS, there was only one source of information.

5.3 Building the Team and Getting the Country Operations On-side – Interessement and Enrolment

It can be seen how the major actors (such as Alex and Richard) attempted to exert their influences via the various systems with the expressed purpose of solving problems. These artefacts of influence are listed here to show how they serve as inscription devices. Included in these inscription devices are examples of the BREPS reports (in Excel) that each operational accountant had to submit to Head Office Division under considerable pressure (and controversy) every month at period end. As a centre of calculation, the FAIS month-end processing provided many inscription devices by which the country operations committed to cooperate and follow, such as producing the monthly operations report. In some cases, the devices had a linked nature that serves to strengthen the ties between the HO managers and the accountants they wish to convince. For example, a set of *country reports* from the operations that consolidated to *divisional reports* from which *business metrics* are derived to calculate FINCO's *earnings per share*, all served to ensure that actors at several levels were aware of the benefits of consolidation or the problems of non-consolidation and to cooperate because of a strengthening series of inscriptions.

Figures 5.2 to 5.4 show the artefacts from the centre of calculation that were critical to the decision to accept or reject the new FAIS innovation. From the point of view of the country operations, the FAIS artefacts provided an easy solution to deliver statutory reporting requirements in a way that relieved them of the recurring monthly pressures on their time and resources. From the point of view of Group Finance, FAIS provided a controlling device that identified which were the better performing operations and how the entire group actually performed. Figure 5.4 shows the process of consolidation as a scale of extremes. It describes details needed by the country operations on one end and the group operations on the other end. As the level of consolidation increased, the details (inscription devices) became more useful to the group and less useful to the original country operation. Therefore, selling the idea of a powerful consolidation system to the country operations was to address the needs of both actor groups.

Figure 5.2 Sample Report of Monthly Signed-off Results for Country Operation

Local currency report

Country1
Underwriting Result - Summary
Year to date as at April 2007

	Year to Date							
	Actual Prior Year	%	Actual Current Year	%	Variance against Prior Year	Budget Current Year	%	Variance against Budget
GROSS								
Gross Written Premium	175,442		165,904		(5.4%)	179,954		(7.5%)
Unearned Premium Movement	(14,766)		(27,616)			(22,958)		
Gross Earned Premium	190,208	100.0%	193,520	100.0%	1.7%	202,912	100.0%	(4.6%)
Gross Outstanding Claims Movement	(18,019)	9.5%	(4,672)	(2.4%)		-	-	
Gross IBNR Movement	-	-	-	-		-	-	
Gross Claims Paid	46,072	24.2%	61,136	31.6%		52,710	26.0%	
Gross Claims	28,053	14.7%	56,464	29.2%		52,710	26.0%	
CSC Paid	3,636	1.9%	3,819	2.0%		4,315	2.1%	
CSC Movement in accl	-	-	-	-		-	-	
Movement in CSC	3,636	1.9%	3,819	2.0%		4,315	2.1%	
Gross Claims Incurred	31,689	16.7%	60,283	31.2%	90.2%	57,025	28.1%	5.7%
Gross Commission	22,318	11.7%	22,949	11.9%	2.8%	24,781	12.2%	(7.4%)
GROSS UNDERWRITING SURPLUS	136,201	71.6%	110,288	57.0%	(19.0%)	121,106	59.7%	(8.9%)
REINSURANCE								
Reinsurance Written Premium	43,894	26.0%	46,208	27.9%	5.3%	47,017	26.1%	(1.7%)
Deferred Premium Movement	(3,980)		(323)			1,383		
Reinsurance Premium Expense	47,874	26.2%	46,531	24.0%	(2.8%)	45,634	22.5%	2.0%
Reinsurance Recoveries	5,825	12.2%	4,729	10.2%	(18.8%)	1,955	4.3%	141.8%
Reinsurance Commission Earned	-	-	442	0.9%	n.a.	-	-	n.a.
REINS. EXPENSE/(SURPLUS)	42,049	87.8%	41,360	88.9%	(1.6%)	43,679	95.7%	(5.3%)
NET								
Net Written Premium	131,548		119,696		(9.0%)	132,937		(10.0%)
Net Unearned Premium Movement	(10,786)		(27,293)			(24,341)		
Net Earned Premium	142,334	100.0%	146,989	100.0%	3.3%	157,278	100.0%	(6.6%)
Net Claims Incurred	25,864	18.2%	55,554	37.8%	114.8%	55,070	35.0%	0.9%
Net Commission	22,318	15.7%	22,507	15.3%	0.8%	24,781	15.8%	(9.2%)
NET UNDERWRITING SURPLUS	94,152	66.1%	68,928	46.9%	(26.8%)	77,427	49.2%	(11.0%)
Branch Expenses (Exc. CSC)	16,561	11.6%	17,397	11.8%	5.0%	19,658	12.5%	(11.5%)
DAC Movement	591	0.4%	992	0.7%	67.9%	922	0.6%	7.6%
Head Office Expenses - Operation	-	-	-	-	n.a.	-	-	n.a.
Head Office Expenses - Division	4,536	3.2%	9,816	6.7%	116.4%	9,816	6.2%	-
Head Office Expenses - Group	-	-	-	-	n.a.	-	-	n.a.
Total Expenses	21,688	15.2%	28,205	19.2%	30.0%	30,396	19.3%	(7.2%)
UNDERWRITING PROFIT / (LOSS)	72,464	50.9%	40,723	27.7%	(43.8%)	47,031	29.9%	(13.4%)
Investment Income - Insurance funds	2,474	4.6%	2,852	4.7%	15.3%	2,476	4.7%	15.2%
INSURANCE PROFIT/(LOSS)	74,938	55.7%	43,575	32.4%	(41.9%)	49,507	34.6%	(12.0%)
Investment Income - Allocated Funds	3,284	4.1%	4,512	5.0%	37.4%	4,512	5.0%	-
PROFIT/(LOSS) BEFORE TAX	78,222	96.6%	48,087	53.3%	(38.5%)	54,019	59.9%	(11.0%)
Tax Expense	-	-	-	-	n.a.	-	-	n.a.
PROFIT/(LOSS) AFTER TAX	78,222	96.6%	48,087	53.3%	(38.5%)	54,019	59.9%	(11.0%)
Minority Interest	-	-	-	-	n.a.	-	-	n.a.
PROFIT/(LOSS) AFT. TAX & MIN.	78,222	96.6%	48,087	53.3%	(38.5%)	54,019	59.9%	(11.0%)
NCOR	48.1%		72.8%			70.1%		
Average Insurance funds	154,598		182,074			158,219		
Opening Capital Allocation	243,237		270,731			270,731		
Period Premium Held	0.4		0.4			0.3		
Solvency	57.0%		61.4%			57.4%		
ROE	96.6%		53.3%			59.9%		

Figure 5.3 Sample Report of Aggregated Country Flash Results

AUD report

Flash Result

Year to date as at April 2007

	U/W RESULT												GWP							
	Actual				Budget				Variance to Budget				Actual		Budget			Variance to Budget		
	YTD	YTD NCOR	MTD	MTD NCOR	YTD Prior Mth	YTD	YTD NCOR	MTD	MTD NCOR	YTD Prior Mth	YTD	MTD	YTD	MTD	YTD Prior MTD	YTD	MTD	YTD Prior MTD	YTD	MTD
Region1																				
Country1	2,489	92.1%	291	96.1%	659	1,138	96.4%	479	94.2%	1,533	1,351	(182)	39,076	9,620	31,817	43,960	12,143	(2,361)	(4,884)	(2,523)
Country2	(50)	101.1%	92	90.1%	461	634	87.5%	173	86.5%	(603)	(684)	(81)	5,451	1,319	4,450	5,920	1,470	818	(469)	(151)
Country3	184	75.6%	12	93.3%	42	61	91.1%	19	89.1%	130	123	(7)	902	264	580	738	158	58	164	106
Country4	(219)	102.6%	135	94.0%	2,046	2,118	83.8%	72	96.9%	(2,400)	(2,337)	63	11,713	3,861	9,743	13,222	3,479	(1,891)	(1,509)	382
Country5		n.a		n.a	-	-	n.a		n.a	-					-	-				
Country6	(219)	102.6%	135	94.0%	2,046	2,118	83.8%	72	96.9%	(2,400)	(2,337)	63	11,713	3,861	9,743	13,222	3,479	(1,891)	(1,509)	382
Country7	57	92.1%	(13)	106.0%	203	250	78.0%	47	83.8%	(133)	(193)	(60)	3,198	777	2,387	3,042	655	34	156	122
Country8	1,674	92.4%	159	97.1%	598	849	96.4%	251	95.7%	917	825	(92)	34,196	8,838	22,132	30,949	8,817	3,226	3,247	21
Country9	(8)	n.a	(3)	n.a	702	934	70.1%	232	70.3%	(705)	(942)	(237)	-	-	3,368	4,491	1,123	(8,368)	(4,491)	(1,123)
Country10	1,666	92.4%	154	97.2%	1,300	1,783	93.3%	483	92.7%	212	(117)	(329)	34,196	8,838	25,500	35,440	9,940	(142)	(1,244)	(1,102)
Country11	852	88.5%	641	66.0%	344	520	92.5%	176	90.5%	(133)	332	465	9,895	2,973	8,093	10,071	1,978	(1,171)	(176)	995
Cputy12	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country13	9	98.3%	50	71.8%	83	87	92.9%	4	98.4%	(124)	(78)	46	1,629	212	931	1,369	438	486	260	(226)
TOTAL	4,988	93.4%	1,368	92.8%	5,138	6,591	92.4%	1,453	93.1%	(1,518)	(1,603)	(85)	106,060	27,864	83,501	113,762	30,261	(5,305)	(7,702)	(2,397)
Region2																				
Country1	1,499	73.6%	461	66.4%	1,091	1,359	72.0%	268	74.7%	(63)	140	193	7,776	2,517	5,766	7,969	2,203	(507)	(193)	314
Country2	619	80.9%	143	86.8%	50	294	90.6%	244	79.2%	426	325	(101)	8,791	838	8,399	9,072	673	(446)	(281)	165
Country3	22	n.a	(1)	n.a	(61)	(86)	n.a	(25)	n.a	84	108	24	-	-	-	-	-	-	-	-
Country4	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country5	1,197	81.5%	(35)	101.9%	484	671	87.2%	187	87.2%	148	526	(222)	11,876	2,024	7,661	9,192	1,525	2,185	2,684	499
Country6	1,929	68.3%	542	36.8%	1,201	1,759	70.6%	558	63.8%	86	110	84	8,526	1,844	8,336	11,353	3,017	(1,654)	(2,872)	(1,173)
Country7	(812)	133.8%	(693)	425.4%	156	243	69.0%	87	62.2%	225	(555)	(780)	1,037	110	910	994	84	17	43	26
Country8	482	72.3%	265	32.7%	439	548	70.2%	109	74.0%	(222)	(66)	156	1,965	587	1,503	2,100	597	(125)	(135)	(10)
TOTAL	5,436	77.5%	782	87.7%	3,360	4,788	78.1%	1,428	75.7%	1,294	648	(646)	39,971	7,920	32,581	40,680	8,099	(530)	(709)	(179)
Region3	7,112	84.1%	2,151	80.9%	2,021	3,189	91.7%	1,168	87.8%	2,940	3,923	983	49,210	18,052	29,341	46,907	17,566	1,817	2,303	486
Region4																				
Country1	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country2	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country3	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country4	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country5	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country6	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country7	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country8	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country9	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
Country10	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
TOTAL	-	n.a	-	n.a	-	-	n.a	-	n.a	-	-	-	-	-	-	-	-	-	-	-
OPERATIONS T	17,536	87.9%	4,301	88.2%	10,519	14,568	90.1%	4,049	88.9%	2,716	2,968	252	195,241	53,836	145,423	201,349	55,926	(4,018)	(6,108)	(2,090)
Country1	(287)	-2291.7%	11	0.0%	-	-	n.a	-	n.a	(298)	(287)	11	45	43	-	-	-	2	45	43
Country2	(7,945)	168.1%	(1,492)	148.2%	-	-	100.0%	-	100.0%	(6,453)	(7,945)	(1,492)	-	-	-	-	-	-	-	-
Country3	6	n.a	-	n.a	-	-	n.a	-	n.a	6	6	-	-	-	-	-	-	-	-	-
Country4	(3)	n.a	-	n.a	-	-	n.a	-	n.a	(3)	(3)	-	-	-	-	-	-	-	-	-
InsCo TOTAL	9,307	94.0%	2,820	92.9%	10,519	14,568	90.9%	4,049	89.8%	(4,032)	(5,261)	(1,229)	195,286	53,879	145,423	201,349	55,926	(4,016)	(6,063)	(2,047)
										-	-	-						-	-	-
NCOR	94.0%		92.9%		91.2%	90.9%		89.8%		3.2%	3.2%	3.1%								

Figure 5.4 Sample Report of Country Operations Performance Summary

Operational Summary

Underwriting Result (AUD)

Year to date as at April 2007

	This Month YTD		Last month YTD		Movement - Month	
	Result $'000	NCOR	Result $'000	NCOR	Result $'000	NCOR
Region1						
Country1	2,489	92.1 %	2,192	90.9 %	297	1.3 %
Country2	(50)	101.1 %	(142)	104.3 %	92	(3.2)%
Country3	184	75.6 %	172	70.1 %	12	5.5 %
Country4	(219)	102.6 %	(354)	105.8 %	135	(3.2)%
Country5	57	92.1 %	70	87.4 %	(13)	4.7 %
Country6	1,666	92.4 %	1,512	90.8 %	154	1.6 %
Country7	852	88.5 %	211	96.2 %	641	(7.7)%
Country8	9	98.3 %	(41)	111.7 %	50	(13.4)%
Country9	-	-	-	-	-	-
	4,988	93.4 %	3,620	93.6 %	1,368	(0.2)%
Region2						
Country1	1,499	73.6 %	1,038	75.9 %	461	(2.3)%
Country2	619	80.9 %	476	77.9 %	143	3.0 %
Country3	22	-	23	-	(1)	-
Country4	1,197	81.5 %	1,232	73.5 %	(35)	7.9 %
Country5	1,929	68.3 %	1,287	72.1 %	642	(3.7)%
Country6	(312)	133.5 %	381	46.9 %	(693)	86.6 %
Country7	482	72.3 %	217	83.9 %	265	(11.6)%
	5,436	77.5 %	4,654	73.8 %	782	3.6 %
Region3	7,112	84.1 %	4,961	85.2 %	2,151	(1.1)%
Region4						
Country1	-	-	-	-	-	-
Country2	-	-	-	-	-	-
Country3	-	-	-	-	-	-
Country4	-	-	-	-	-	-
Country5	-	-	-	-	-	-
Country6	-	-	-	-	-	-
Country7	-	-	-	-	-	-
Country8	-	-	-	-	-	-
Country9	-	-	-	-	-	-
Country10	-	-	-	-	-	-
	-	-	-	-	-	-
Other						
Country1	(287)	(2291.7)%	(298)	(1195.7)%	11	(1096.0)%
Country2	(7,945)	168.1 %	(6,453)	173.8 %	(1,492)	(5.6)%
Country3	6	-	6	-	-	-
Country4	(3)	-	(3)	-	-	-
	(8,229)	170.6 %	(6,748)	177.3 %	(1,481)	(6.7)%
InsCo Total	9,307	94.0 %	6,487	94.4 %	2,820	(0.4)%

As the data-entry and validation stage was practically eliminated and replaced with a click of a button, the intersection between submission/submitters and consolidation/receivers was time-compressed such that it did not matter who clicked the button. In one scenario, the operations submitted the results and a Head Office accountant pressed the button that caused the data to be uploaded to the database. Here the Head Office owned the system and made sure only authorised personnel pressed the button. The result was time-compression and central control of the system. Alternatively, the operations accountant pressed the button and submitted everything. Here, each operation owned the system and was responsible for the information in the corporate database. The benefits of time-compression were achieved, but responsibility for system maintenance appeared to be fragmented or decentralised. Eventually the choice was made towards regionalisation, where the responsibility for the database was decentralised. Decentralisation of the responsibility allowed the regional managers to have their own centre of calculation. A re-structure of the organisation became inevitable through regionalisation.

5.3.1 How Individuals Found their Roles in the Build Process

Various actors were crucial in the history of innovations in the FINCO Head Office finance function. Although there was a common goal for the finance function, each member of the team had a different purpose in adopting the innovations and therefore different reasons for accepting or rejecting the tools that were presented to them. In addition, some members from time to time, had different business skill sets as well as different familiarity with IT and technology. Alex and Richard performed many of the functions that other accountants did. These actors, even though they had differences in familiarity and skill sets, reported the same problems Alex had for their particular circumstances. Thus Alex and Richard felt that addressing these concerns within the FAIS made these other actors decide to go along with them.

Sally Wilson typified this difference in familiarity and skills sets. Sally was promoted several times then transferred back to Head Office in Sydney. She came back to Sydney to be with the group for National Division. The group had similar need for skilled resources and was able to obtain resources as Pacific Division grew. Similarly to Alex, Sally performed many of the accounting functions that Alex wanted to improve via the creation of FAIS. Thus Alex's own role was the model which Sally could be convinced to follow, as she was familiar with it. Grant Mitchell said that although he came from a business background he was not an accountant. His role was the New Zealand IT Manager and his current task was to act as the link between the IT people and the business people in NZ. His main responsibility was providing data effectively for others to report or to audit reports across the whole operation. Alex hoped that the decision to engage Barry's Sydney-based IT department convinced

Grant that the project was of high calibre and that Grant accepted the IT deliverables on behalf of New Zealand. Rosie Ng's role was that of regional financial controller for FINCO Asia. Her main responsibility was to manage Asian regions, focusing attention on FINCO offices in Asia. Her responsibilities also included Hong Kong and Macau which are the two South East Asian countries. In total, she looked after eight countries.

Elise Fischer's job in Group Finance was to manage the monthly reports for Australasia – basically to co-ordinate and make sure the correct reports were on time. Each month, she needed to do some analysis and identify what took place during the month or what happened to document any variance on the budget. Elise started this role when she was appointed in 1999, when it was just Australian national operations. The business incorporated Asia and Pacific only in 1998. She said she could handle that because having to deal with Alex Burke for FAIS from 2004–05, she became very familiar with the Asia-Pacific budgeting process. She was also indirectly involved with the monthly reports in particular. For her, that role was very cumbersome because the reporting tool was a 'rudimentary' spreadsheet base. Sometimes it did not work because of Excel linking limitations and had to be checked for issues all the time. Ray Brown remarked that it was not about looking at the profit and loss – they were looking at the balance sheets and how they impact the Profit and Loss Statement (P&L). They previously had a separate database where they kept extracts from the BREPS. Ray explained:

> *"The BREPS is basically a tool that is used by the countries to access data from the general ledger. It's a tool where the income statement numbers are found and then they allocate their branch expenses to be able to produce a final result, which is very useful for a manager to manage their business. They need to know a particular product is*

> *making this much money. The way that things were previously done was a manual process."*

Alex also hoped that Rosie, Elise and Ray were able to see the benefits of the accounting innovation as they modelled their experiences with his own at Divisional HO in managing accountants and performing accounting functions. Thus for these actors, Alex felt that they could be convinced to go along, based on a common familiarity and experiences with the accounting functions as well as IT functions.

Margaret Hall agreed that there were always problems and issues. She was involved with reviewing the old BREPS on an ongoing basis before FAIS came in. Because of the manual processes, she had the task of categorising all the results and reports. Alex provided assurance to Margaret that FAIS would be fully automatic. That was why she was convinced to join Alex. She saw that there was more consistency with the new FAIS. It was less prone to human error because previously it was necessary to link all the old spreadsheets, but because it was a straight upload there were now fewer issues.

Sally Wilson expressed some concern about lack of education if the new FAIS were deployed. In her time there was no one to help with the Lotus 123 based reporting tool. It was just emailed with some instructions, even though it was fairly easy. The new reporting tool that Alex developed could have the same issues. Sally relates:

> *"But we found that for some reason, the operations on this Lotus reporting tool when it came to the Excel reporting tool, was the same principle but different software. They really struggled with grabbing hold of the depth (or simplicity) of what they had to do."*

To convince Sally, Alex assigned her the task of ensuring that after deployment, each country operation would be visited to ensure they had the proper training. Sally found the prospect of travel not so exciting but the prospect of ensuring that each country accountant was trained was what convinced her to support the adoption of the new system.

At this point it was becoming clear that each individual joined the fact-building process because of his or her specific personal circumstances. These personal circumstances were suitably managed by Alex and Richard to entice the actors to join. For example, even if there was a common benefit of time-compression, an individual would join in for a different interpretation or application of time-compression as would another individual.

Because of the size of FINCO as a global company and a dominant finance company in Australia, there has been a lot of independence in the business community and the relationship with FINCO IT. This has resulted in the existence of multiple IT systems performing similar functions – for example multiple insurance systems, multiple general ledgers, and management information systems. Although it has been recognised that these systems need to be consolidated, it has not been easy or quick to implement common systems across divisions. One consequence of this was the emergence of IT teams with similar skill sets assigned to independent business areas. The co-location of IT teams with business areas precludes opportunities for cooperation and IT consolidation. However, if the business areas consolidated, then the IT areas were also rationalised. Keeping this in mind, IT teams had to come up with various forms of cooperation, coordination and rationalisation when the business

areas were closely related or the business areas used a common external (third-party) provided software, such as a common general system or common insurance package. This competitive and cooperative relationship was a motivating factor for creating useful and innovative systems.

Sally recalled the different systems that she used when she worked in the country operations to deliver the BREPS. At the same time, Sally observed over the years that the systems had been in constant upgrades and they were constantly being deployed over the country operations one after the other. The reasons for the upgrade were always varied and not always applicable to each country operation but the upgrade proceeded anyway. For example, Fiji still had a PC-based product system where they pulled out an extract and placed that into their reporting tool. This meant that they had an extract that could go to the client that they did not have to type in. Sally explains:

> *"It is OK currently, but there are plans to upgrade because in another operation there is a better system called Query that they can sort the data into their PC-based systems. The PC-based product system is very restrictive – and other systems can do better – which is the reason for the current upgrade. They are getting a server-based product system – called SP4000, and it has taken all this time to finally get approved. The country ops are keen for upgrades simple to get bigger and not necessarily for the additional improvement and functionality."*

To address this concern of differences in the country operations that discouraged their support, Alex sought to implement the FAIS accounting innovation to Sally and her staff at the Sydney Head Office first. Initially, the upgrade only helped the Head Office. The benefit for the operation came later. Automation of processes began after the HO finalised the reports for the operations. Barry Madsen, the IT manager, remembered discussing Alex's actions with Dave Cheung, a systems expert in the country operations to see if such a schedule was acceptable. Barry explained:

> *"To get the extracts in the format desired by all ops would have taken a year to develop and it is even doubtful if a common format and requisite processing flow exist. Even to this day not everybody is the same. Some of them have in-house processes that are crucial to how they produce their reports."*

This was how the idea for a common FAIS input system was deployed. The FAIS was all about a common way that information was received from the operations across multiple departments, multiple technology platforms and multiple processes. Previously it was done using common spreadsheets. There was performance improvement, but the process was still cumbersome because the principal process was the same. Alex used this 'common platform' approach as the main argument to convince the country operations to cooperate through many phases of the project including planning, testing and training.

Alex illustrated this process using Fiji as an example:

> *"The Fiji data was in a spreadsheet with the consolidation sheet open, with Fiji in the background; and the rest was gathered and became this one BIG sheet that almost fell over. It was huge because for each one you will see the FAIS report as the first one, then you would link it to another external file that had about three pages, and then to another external file so you would have to go on forever for each operation. Not to mention that the link got broken all the time for some reason or other."*

Another common mistake was forgetting to bring in one of the sheets in the link chain. It was very time consuming to construct and maintain. Initially, Asia, Pacific and New Zealand formed one common division and thus had a common platform approach under shared services. Shared services referred to the sharing of one common finance, HR and IT function. The FAIS project (under one of the shared services) provided the same consolidation services to the Pacific and Asia regional

centres. A common platform approach convinced actors of the same platform to join in because others of the same platform had already joined in.

It was also possible for Alex to convince actors of one platform based on the success of another in a different platform. Alex succeeded here by pointing out that even though they were different platforms it was the same analytical information that was being shared. Alex used this in the example of country operations submitting information to Divisional HO that Divisional HO subsequently submitted to Group Finance. Alex pointed out to actors that it was ideal if the artefact that the country operations submitted to Alex and Richard was the same artefact that Alex and Richard submitted to the Group Finance counterparts. Thus both country operations and Group Finance were convinced of the merit of using FAIS as the input and output of information.

To enact interessement and enrolment, Alex and Richard defined the ongoing responsibilities for all actors in the Country Ops – Divisional HO – Group Finance network. The first task was to get the Finance team interested in Alex's intention to create a new and innovative way of reporting. Alex recounts:

> *"The main reason for using the BREPS reporting system is to remove some of the inadequacies and time-consuming requirements of using a manual process. Previous we had a web of interconnected Excel spreadsheets. It was time-consuming to roll over and make ready the reports for each month. It was time-consuming to change any of the reports. It was prone to linking problems so that it required at least two or three man-days to manually print the output and the reports that came out of these to make sure that none of the links have become corrupted. And one of the main benefits of this is that we needed to build a more flexible reporting, especially because you have twenty-four countries reporting in local currency; which then get reported into Australian dollars at divisional level. You can actually question where does an expense variance come from, it is very hard using the old fashion spreadsheets, whereby in a database*

approach you can go back and analyse the FX components, you can analyse the component down to local currency and still it comes to the same variance that you are trying to explain. It's meant to be much more flexible with our reporting and querying."

To sell this, Alex compared it to what they were doing before:

"So previously we were receiving a hardcopy/softcopy reports, printing them out. Keying that data, into the Excel spreadsheets (and before that the Lotus 1-2-3 spreadsheets), which is prone to error in doing. Whereas now we can just get a softcopy and detach it onto a specific drive. It's in the correct format. And we get that and we load it in. And we'll also be able to that for Actual reporting each month, then as part of the budget reporting and planning process."

Alex explained that such an innovation is a must-have:

"Especially, when there is much pressure being put on Finance team to improve the time in which they report. And so if we can, we automate as much as possible. For one, it immediately reduces that time, and second, it normally requires less review time, because you are putting information in once, rather than putting information into different spreadsheets which may need to be fairly reviewed because they come from different sources of data creating isolated spreadsheets of information."

Also defined were the roles of the IT department who delivered the FAIS system and continuously supported it for as long as it took. Alex and Richard established the terms and conditions of the engagement between the IT department and Divisional HO. Lead developers along with other IT developers were keen to deliver a new technology. Alex and Richard presented an opportunity for them to engage in a personally rewarding and career-building experience to get them on board. Barry Madsen as IT Manager was keen to support the lead developer and ensure delivery of FAIS product so by assuring funding and budget, Alex and Richard convinced Barry to accept and support the project.

5.3.2 Dissenters Encountered – Why did People Resist?

If an important actor resisted the FAIS innovation, further development or transformation would have stopped at that point. Because of many commonalities in the accounting functions of the actors, the circumstances as to how people resisted are therefore similar. Fortunately, the resistance to the innovation was limited and objections were commonly related to lack of training or issues regarding doing new and previously untested processes.

Alex Burke related how people resisted in the past when some of the members of staff were so used to Lotus 1-2-3 spreadsheets and knew how they worked. Going over to the new system which uses Excel presented a situation of "not knowing what to do." Even though there was improvement in the quality of the report (by being Excel-based), the need to overcome a learning curve was a source of possible resistance. To address the issue of resistance, other team members were engaged to spread their knowledge of Excel across the finance function. Excel became the new de-facto skill and if Excel was subsequently removed there would be similar resistance. Alex and Richard learned from this example that to convince dissenters, they had to agree to let dissenters take a wait-and-see attitude. Alex and Richard gave them assurances that the old BREPS system would still be in place if somehow the new FAIS did not perform to dissenters' expectations. Many of the dissenters were also nominated as subject matter experts and were assigned as testers and early adopters. It was crucial that if they could not be convinced fully, they should at least be convinced to participate with an open mind. Thus it was possible to continue with the project and manage the tensions that could break out at a later time. Grant Mitchell confirmed that in NZ, many of those who had done things the way they had would be resistant to

new ways to doing things. For some people it didn't really matter – they overcame the issues reasonably quickly as part of a learning curve. Thus Alex and Richard redefined the issue of a wait-and-see attitude as an additional training issue. Dissenters were convinced and put back into the fold as soon as they received training on the new FAIS. Inevitably, when the innovation was rolled out, everyone was properly trained and all dissenters converted.

Mario, who has always supported Alex and Richard, also added that he had witnessed resistance to change before. Mario believed that the important thing was for people to get used to the innovation. For Mario, "Resistance to change is a common thing because people are people. They have a comfort zone when things are changing. We need to get people to be part of the change to enable them to be successful." Ultimately the acceptance and championing of new systems centred on genuine perceptions that processing principles had not changed. This allowed actors to respond to difficulties in the same way they had responded before, and in a way as if there was no new system. Sally said this was what FAIS was all about, to provide the same processing principle as before. From the time she started in 1998 (it was Lotus 1-2-3 then), they used to actually have a consolidated Lotus file where you kept every operation and you just linked it. Then they moved to Excel but all they did from Lotus to Excel was change the application. The users were convinced to move because the principle was the same thing. Mario said he was based in Noumea and managed the operation there and looked after their interests. Basically his role had been somewhat more on the ground. He had been involved with implementing systems from day one, since 1988 when he got involved in the reporting systems. For Mario, whether they called it BREPS or FAIS or business metrics, it was just a management information

report. In some cases one was better than the other, but mainly it was just a name used to call a report. It was more or less an end-written document with a lot of input from everyone. Now that everything is Excel spreadsheet, most things are done via automated calculations. But some things still remained, such as narratives. A narrative was a composition of words that was given in bullet points, and explained or supported the result itself. Narratives have always been there even though they have changed progressively over the years. Mario has seen it become more of an Excel spreadsheet – all condensed onto the one sheet rather than on four or five manual sheets. Using Mario's suggestions, Alex and Richard convinced dissenters by allowing them to perceive that no changes occurred in the introduction of the innovations. This eventually resulted in the rejection by accountants of the FAIS label after the adoption.

5.4 Deploying the Innovation that Transforms the Organisation – Mobilisation

Because Alex and Richard were able to get everyone on board the FAIS centre of calculation, each now became a representative of the goals originally described by Alex and Richard. Alex and Richard were able to speak on behalf of the groups because each individual group now is part of a larger network. Each group is now actually a component of a bigger artefact, and to exist alone is not possible. For example, as far as delivering a report, the FAIS is only one part of the reporting process – it does not represent the complete reporting process. However, with accountants feeding data to FAIS and Divisional HO extracting reports from it to pass to Group Finance, a viable network of accounting consolidation began to emerge. No

single group spoke for itself. Instead, they were all mobilised to pursue the objectives of a community network. Mobilisation was the result of the FINCO actors mediating the accounting innovation network, stabilising it, transforming it, and eventually expanding it. Each actor was involved in mobilisation in their own unique and individual way, but nonetheless contributing each time to stabilising, transforming and expanding the network. After identifying the actors it is possible to identify the relationships that linked them to form the network. It is also possible to identify why each individual actor and their specific circumstance propelled them to join in and remain in the network of relationships. From here, it is possible to observe why the community adopted the innovation and accepted it as fact. Some of these actor mediations and their influences are detailed below.

Barry Madsen, IT Manager, explained that the financial controller of the day was certainly a major factor in influencing the adoption of any IT innovation developed by the IT department. From an IT perspective and given that Barry followed all the SDLC (software development life cycle) requirements, Barry could not see many factors that prevented adoption. So long as there was a directive from the CFO to implement the new systems, it was accepted and everyone was “very casual about it”. Rosie Ng said she has only met a few people in the organisation, but she agreed that generally everyone recognised the fact that FAIS was important. And she agreed that it should have a level of support from many different people. For Lisa Silverio, a Divisional Financial Controller, the innovation was adopted because it simply saved costs. Sally, a Regional Financial Controller, on the other hand, pointed to external factors as a driving force that affected adoption. Elise and Margaret (local accountants) pointed to internal management as the motivation for adoption. Other

initiatives like the single general ledger are pointed out as reasons for adoption. What this meant was that actors pointed to themselves as reasons for the adoption of the innovation and effectively described a self-sustaining network or community. Additional factors for adoption became part of the network later on and consequently expanded the scope of the relationships. In some cases the cascade of expanding relationship was a tidal wave of influence, especially when massive benefits (such as time-compression) were evident. In other cases, the cascade was a slow influence (such as the long-running implementation of the single GL project) into and across other divisions.

Adoption of the FAIS innovation was in effect an expansion of the network and an ever-continuing process of fact-building. Adoption of FAIS had been influenced by external factors such as statutory requirements. Helen Goodall (accountant) reminded others that there was a need to report to the stock exchange because FINCO was a listed company. Sally also explained how top management like the CEO always needed to be one step ahead of the market; therefore ad hoc requests for information from the innovative system were important. As a result these external factors resulted in "tighter than tight deadlines, and placed stress on the limited staff available, and were a lot of pressure to deliver." For Rosie, as a Financial Controller based overseas, competition was a major external influence. The company needed to know where it stood with the competition, therefore the need to have accurate and up-to-date reports of performance. The FAIS and the BREPS contributed immensely towards this need.

Similarly for Alex Burke, the factors that encouraged adoption came from Group Finance; because Group Finance would for example make a request for an analysis of

expenses. In trying to answer those questions, the actors realised the shortfalls of the old rigid reporting versions of the current system and how it could not be manipulated to easily answer them. For example, that budgeting process was used to generate a whole variety of new formatted reports that fed the essential packs required by Group. What they had to do was re-create data – that was already entered – into a new formatted report. This was very time-consuming. Alex pointed out that if they had the data in one FAIS, it would just be a matter of writing a new report, which would be applied to all the countries, rather than having to manually create a spreadsheet for each country operation based on the data held in the spreadsheets. Adoption of the new FAIS resulted in responding accurately to external factors with their 'onerous requirements'. To meet this requirement, they needed to update their processes, especially to meet the time frame that was to report in.

Sally Wilson said they used to have a reporting system called Query, similar to a data warehouse of all customer policies. However, it was very restrictive – it did not do what other systems did. This was the reason for the current upgrade. They were getting a new product sales system called STAR that took a lot of time to get approved. Sally believed that the new system would help Head Office staff initially, because the whole of the Pacific sales data came from Group's STAR system. All of Asia's data came from the old system so it was a mixed lot. Initially it helped the Head Office more than it helped the operations. Other benefits came later. Once Head Office people did reports and provided extracts from a single system. Because there was only one system people in Head Office had one basic reporting standard and there was just different data for different operations. Lisa Silverio believed that it was important to have consistency in reporting. The FAIS was designed to put everything

on a consistent platform. This was achieved completely by having a single general ledger. Ray Brown also believed that systems such as the FAIS would only be around until a complete single GL were to come along. A single GL system could do some of the things that many had always talked about, such as analysis of expenses. This is what the new BREPS did. The income numbers were pulled from the insurance system by product and the reporting tool calculated branch expense numbers and allocated them by some method. If this could be done by the single GL, then there would be no need for other systems.

Ray believed that the BREPS acted as 'gap filler' for a system which should be uniform across the regions. At that moment there was no single GL system so there were many different general ledgers in each country. They had to use an innovative tool that was adaptable to the different GLs out there. All they had to do was extract the trial balance and report on it, while the system does all the automatic allocations. Ray explains:

> *"The whole idea about the One GL Project is to have only one general ledger across the region. Instead of having many different kinds, you've got one GL such that by Work Day 3, all the countries simultaneously close the book, and then run mass allocation of all the expenses. The mass allocation is done at the local currency and it is unique. So they have funds for each country. For example, for Fiji they allocate on this percentage; for Vanuatu they'll allocate on a different percentage. Once all mass allocation is done, it might take 2–3 hours at most, they will have a product report coming from the general ledger right away. That is what the BREPS is trying to achieve at the moment that is why it is being adopted."*

Buy-in at FINCO occurred when innovative systems or processes were delivered to the business user by developers and end users accepted ownership of the risks and benefits. Buy-in initially occurred at the sponsorship level so that funding was provided. Buy-in then also occurred later at the level of end-users through training

and usage. It then became a common point of view that supported new relationships for the individuals. The FAIS innovation presented the individuals with an opportunity to establish interrelationships among human and non-human actors/actants – including processes, systems and reporting objectives. The arrival of the innovation highlighted a common goal among actors at different levels in the organisation. This common goal, the buy-in (by members of the finance community) of an IT-based deliverable happened primarily because of the impending delivery of the innovation. Lisa Silverio described how each of the actors, who currently had an existing interrelationship, were suddenly thrust into a new relationship (or in some cases existing relationships are strengthened) to implement buy-in.

Lisa described enrolment via the relationship between Mike Paterson the CFO and Elise Fischer, the Operations Finance Manager. “Mike asked for something and Elise basically made it happen.” So if Mike says “This is the information we need, what you should get from FAIS" then FAIS was structured to provide that information needed. Lisa believed that Alex would have had some difficulty convincing Mike and Elise in accepting FAIS BREPS in the past, but it is currently accepted now. There would have been “conversations and fights” and “management buy-in could have been more”. But they got management buy-in now, and any implementation issue was secondary. Lisa reminded herself that at some point she did not even think it was going ahead. But with the current enrolment level, Lisa agreed that there was going to be a problem with final acceptance. It has not happened yet but Lisa anticipated that there would be because Mike was seeing what he has seen before (in terms of reports). When Mike was presented with a different format, it was going to take a while for him to get used to that and probably going to take some convincing for Mike

to change. This was for Lisa something that definitely needed to happen as early as possible. Lisa was not sure if this did happen earlier, but believed it was something that the implementation team should have been aware of.

The building process was not a straight journey. It took many turns before reaching the final fact of the FAIS innovation. There had been other attempts to develop different innovations. These routes encountered difficulties that stopped them from happening. Elise described other databases that were used as well as other spreadsheet approaches. Alex described other approaches for solving the reporting problem, such as creating another general ledger to contain consolidated information. The innovations withstood trials simply on the basis of inadequacies of existing systems. Although these existing systems challenged the new innovations, their inherent shortcomings nevertheless allowed the building process to proceed. As other approaches were tried and discarded, the accounting process remained the same. This proved to be a great help in establishing the correctness of the solutions. For example, whether it was better to use the Lotus 1-2-3 spread sheet or the newer Excel didn't really matter because Sally did the same thing but on a different application platform. Similarly for Mario, the BREPS report looked exactly the same whether it was Lotus 1-2-3 or Excel. The only downside of this positive attitude was that the actors struggled with after-implementation support, and needed more training afterwards. Nevertheless, there was positive feedback in the building process for each stage of the innovation. This was reflected in how the actors commented on how they used the new system.

Alex and Richard encouraged the actors above to pursue their own goals and consequently mediated the network. Ultimately this resulted in continuous expansion of the accounting innovation. From this expansion and mobilisation, it was possible to observe and analyse the effects of the innovation adoption. How the innovation withstood trials was reflected on the positive comments provide by actors. Users were very honest in providing positive feedbacks, such as:

- *"It really works very fast; there is no conflict with other users. And if everyone uses this tool, the mainframe will run faster, because there will be fewer loads on the CPU and other mainframe programs will run faster."*
- *"This is a thousand times better than what I am doing now."*
- *"The FAIS download of Zebra GL data is really very good."*
- *"I've been using that download and it is very good. It is much easier to use. I tried to download some useful stuff, easily."*
- *"This is so OOOOKKK."*
- *"I use it to enquire on transactions that are over five years old. The standard enquiry does not allow you to get these transactions – only 5 years or less. These are Accounts Payable transactions. We need to enquire to get the supplier and the check number. And confirm if the invoice has been paid."*

5.5 Summary

The main findings from the building the innovation at FINCO can be summarised by the three points below:

1. Accounting and IT relationships are critical and there is a need to overcome functional silos.
2. Accounting functions are not homogeneous and total buy-in within accounting is required.
3. Process of innovation is not linear where build and acceptance is implied as in DOI or TAM, but is a process of translation where adoption is progressive and precarious.

These main findings can be deduced from evidences that are intertwined in the story of accounting innovation building and adoption at FINCO as told through Callon's four moments of translations. These evidences are further detailed below.

The first finding showed that accounting and IT relationships are critical and there is a need to overcome functional silos for the technology-based accounting innovation to succeed. Consequently, the new AIS (FAIS Project) brought in new actors and groups of actors with their own potential for new relationships and interests to be pursued. For example, the IT engagement brought in technical capabilities as well as the inter-connected organisational relationship that spanned across the Asia-Pacific business (Asia–Pacific, NZ) and the Australia business, and even potential inter-connected interests between and within IT groups in the global FINCO. Because the IT department was part of a global relationship, comprising several possibly unaligned interests of geographically dispersed IT departments, the proposed innovation (FAIS Project) was simply a common alliance in the form of "just another IT project". This relationship led to observations of how different agendas and unaligned interests appeared to merge towards a single actor (entity or agent) – in other words, how the Finance Manager, for example, related to another accountant was equally observable and analysable with how he interacted with another accountant initially with heterogeneous unaligned interests and then later on into a common aligned interest when dealing with the IT group. These heterogeneity and resulting interrelationship occurred in multiple instances considering the number of job descriptions represented within the accounting function. Each combination of interrelationship within the accounting function showed that it was not homogeneous and instead illustrated the importance and difficulty of getting buy-in for the project to succeed.

There were multiple relationships and artefacts, including the project team and IT application that related to the AIS innovation in different ways. The project team relationship was what made the lead developer pick up Richard Thames' invitation and enrol in his network of AIS innovation building. A problem emerged and Richard was a delegate that represented this problematisation. Conversely, attempts to resolve the problem passed through him to have any chance of success. The lead developer accepted interesting propositions defined by the problem. The lead developer negotiated, confirmed or introduced additional conditions as part of taking the role suggested by the problem, such as ensuring that Richard agreed to the methodologies implied when engaging IT resources. When these unique and interesting conditions had been accepted, the lead developer and other actors willingly accepted their roles and committed to the attainment of these objectives. At this point, all the crucial actors had been enrolled. But although the enrolment phase may have been completed, there was still further mobilisation that happened behind the actors and delegates. Richard, for example, represented the SE Asia HO Finance as General Manager. If this sufficiently represented the masses of the accounting community, then enrolment became active support for Richard. Similarly, if the lead developer sufficiently represented the IT project interrelationship, then the lead developer role would have active and massive support from allies in the FINCO IT community. Even though the lead developer was not a senior manager, sufficient representation (the massive support it mobilises) was possible so long as instruments and devices were in place and adhered to – such as IT project methodologies, proper documentation, budgets and funding sources.

The second finding showed that accounting functions are not homogeneous and total buy-in within accounting is required. Figure 5.5 shows the different groups within the accounting function that formed alliances and for which Alex and Richard placed obstacles to interrupt any previous link between groups and their original goals. This caused the groups to align their interests to the goals of Alex and Richard. Subsequently, this acceptance can be formalised by alliances or promises made to each other

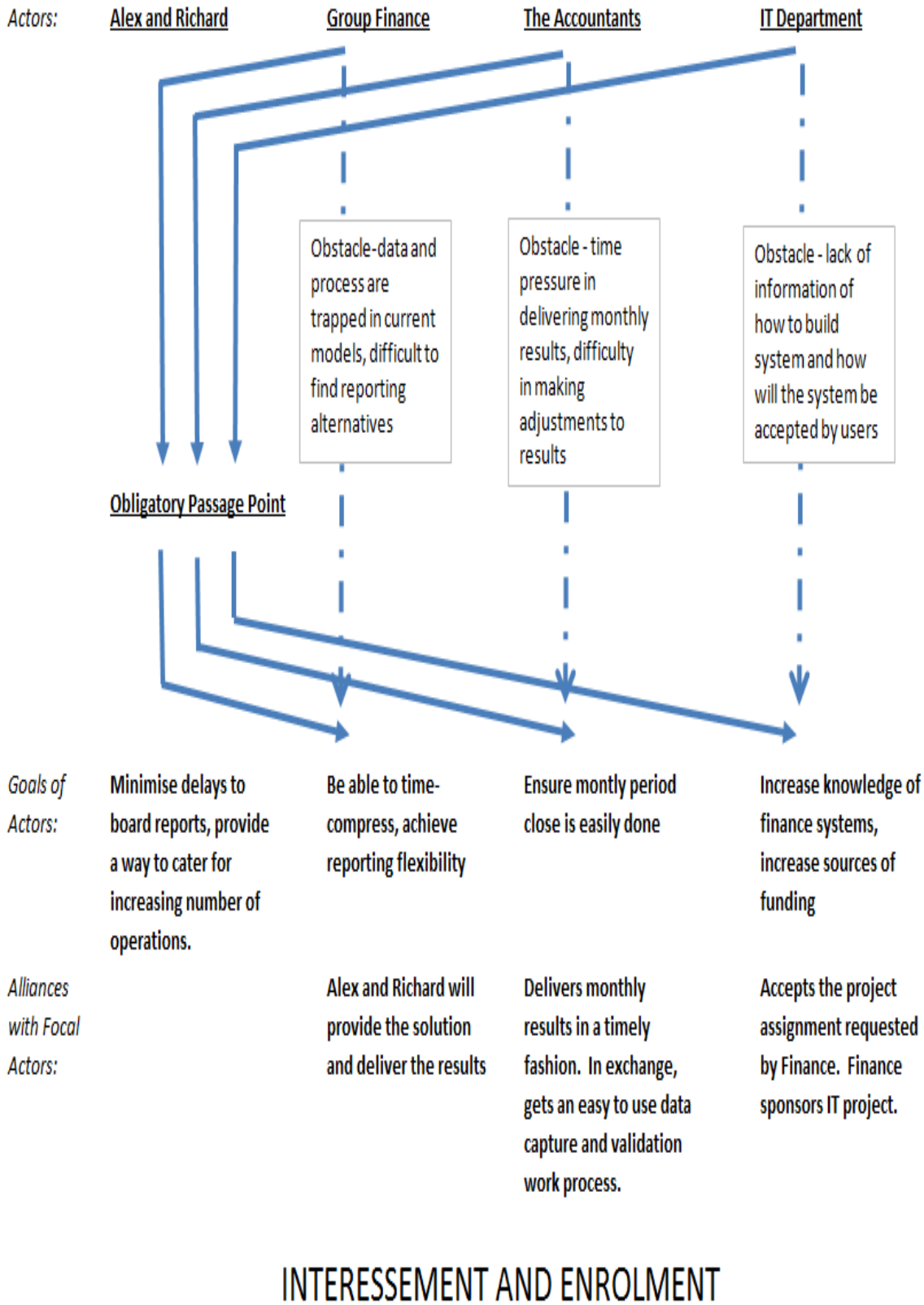
To look for answers, the main actors were followed in the innovation journey at FINCO. It was seen that Alex and Richard placed interessement devices on the path of other actors. Foremost of these interessement devices was the month-end calculation process that acted as the obligatory passage point. The four main groups of focal actors were identified as: Alex and Richard, Group Finance, Accountants, and the IT department. Each actor had private agendas, but because of the devices placed by Alex and Richard, each group cooperated and represented the goals of Alex and Richard.

Technology-based accounting innovations such as ERPs and accounting information systems rely on information technology resources for implementation in organisations. At FINCO the IT department was just one of the actors that Alex and Richard convinced to join. To ensure that everyone joined them in the obligatory passage point (OPP), Alex and Richard also needed to ensure that actors *did not* become capable of resolving their issues outside the OPP. In its basic form, the OPP was a question that everyone needed to address – will a server-based input system improve monthly close processing? To be convinced, typically, the groups would

have obstacles thrown at their path such that they must then turn towards the OPP for the correct course of action.

In creating a community of accountants centred in the FAIS innovation, Richard, the General Manager for Finance, started a new IT project (FAIS Project) where accountants came together and innovatively ‘solved a problem’ regarding monthly financial processes currently maintained by the HO Finance team. This team or accounting function comprised himself and Alex Burke, a Finance Manager (FM), and the accounting staff (AS). The team relationships in HO Finance provided Richard sufficient stability to commence the project and expected the same stability to extend to other relationships that will be built during the course of the FAIS project.

Figure 5.5 Obstacles Encountered and Alliances Formed (Callon 1986)



The third finding showed that the process of innovation is not linear where build and acceptance is implied as in DOI or TAM, but is a process of translation where adoption is progressive and precarious. It showed that the innovation was a journey of fact-building. There was a continuous process that was fragile as it was emerging, stabilising, transforming, and expanding. The process of innovation was fragile because it was based on relationships and linkages between actors. Notable linkages here are those between accountants and IT, and between accountants and other accountants (for example, between country accountants, Divisional HO, and Group Finance). This chapter listed the two core research questions and answered the first.

How active support was achieved though mobilisation of allies was the challenge faced by focal actors. The mobilisation of allies revealed the role of Alex Burke, the Finance Manager who led the accounting staff. It can be suggested that mobilisation was implicit as they accepted enrolment simply because of existing membership in the Divisional HO Finance department. However, this was not always the case with social relationships. The existing relationship was not enough – a translation had to occur and its effects observed in the wider network that was the AIS innovation.

Alex and Richard provided two basic reasons for accountants to 'stay' – firstly, because the innovation project helped them do their job more easily and secondly because the successful project was a potential for promoting everyone's career at FINCO. The first reason was just a logical consequence of being an artefact within HO Finance. However, the second reason was, significantly, a suggestion of the

existence of another relationship that was uncovered and translated. The irreversibility of HO Finance here was what caused the formation of Alex's new relationship of project development. This project development was not necessarily identical to Richard's AIS Project, but eventually translated to it. In HO Finance and the AIS Project, there was no talk of promotion, but 'project development'.

From the perspective of relationships and their translations there was a fundamental difference in irreversibility between HO Finance department and the AIS Project, even though Richard was the focal actor in both. Irreversibility of existing networks, or the loss of alternatives, seemed to be a driver for the formation of new networks (to create new alternatives that actors desired). Therefore over time, there was a natural tendency for networks, such as the AIS innovation, to reform due to other actors wishing to be focal actors, even after enrolment. 'Irreversibility' was the point where alternatives were lost, and yet it was the starting point for network formation (or reformation) all throughout the process of fact-building. Irreversibility of the HO Finance department, as revealed later, referred to the potential for the reorganisation of FINCO as a result of benefits from innovation.

To summarise the changes in relationships that have been discussed above, Figure 5.6 shows the old relationships that existed and the new relationships that arose as a result of the transformations in the network. These changes caused the network to emerge and stabilise. From the matrix it was interesting to note that the most dramatic change in relationship was probably the relationship of one actor to another such as the relationship between groups that IT department represents – such as the relationship of the programming group to the rest of the IT infrastructure. This event happened at one of the four moments in network translation. .

Figure 5.6 Transformation Matrix of Actor Relationships as Network Emerges

FROM \ TO	Alex and Richard	FAIS	IT Department	Accountants
FAIS		Before Mobilisation: "FAIS is a new system and is very disruptive to BAU and to IT ecosystem." After Mobilisation: "FAIS is adopted by users and with user sponsorship will survive in IT ecosystem."		
IT Department	Before Problematisation: "We wish to help Finance function as part of our obligation and to impress them with our skills." After Problematisation: "This is a joint effort and Alex and Richard know the way that leads to success."		Before Prob & Mob: "I represent the IT community, the challenge is how to interact with the Finance client." After Prob & Mob: "I represent Alex and Richard, the challenge is how to get pass IT gatekeepers."	Before Problematisation: "We will be able to influence and help accountants improve their processes." After Problematisation: "We will gain a lot of experience in working with accountants."
Accountants	Before Interessement: "Alex and Richard are in Sydney and do not appreciate the issues brought on by our remoteness." After Interessement: "For Alex and Richard to deliver FAIS successfully shows they understood our problem of remoteness and data reliability."	Before Mobilisation: "Any new system is just an extra load of work." "The old system has been very cumbersome and we are close to giving up on it." After Mobilisation: "This FAIS is NOT a new system as I seem to be familiar with it already." "WE (as a whole) just got better (software was just part of it.)"	Before Mobilisation: "We are very wary of IT consultants telling us what to do." After Mobilisation: "The FAIS system is ours, as it is simpy the old BREPS - IT Department really did not influence us."	

The IT department changed its relationship to itself (refer to item entry under IT Department vs. IT Department), and declared that it represented Alex and Richard rather than the IT community. It showed a big switch in allegiance to change from saying that "I represent the IT community, and the challenge is how to interact with the Finance client "to saying "I represent Alex and Richard and the challenge is to get past IT gatekeepers." This was a consequence of the Problematisation – when the IT department realised and accepted the OPP such that by the Mobilisation stage the IT department had completely changed how it looked upon itself.

In conclusion, the three main findings from the building of the innovations at FINCO support Latour's three-part model in defining Actor Network Theory (Latour 1987), specifically the first parts - Action at a Distance (Part A) and Centres of Calculation (Part B). The parts Action at a Distance and Centres of Calculation are explained below to show how the findings link back to the theory of the emergence and stabilization of technology based accounting innovations.

In Part A - Action at a Distance, Latour explains that innovation emerges from the accumulation of knowledge such as that revealed by the findings on the relationships between IT and accounting and among accounting functions. Here we see in the first finding how <u>action at a distance</u> was enacted as functional silos were overcome. The relationships among IT and accounting were continually built and reinforced in cycles of accumulation in the same way as La Perouse's mapping expedition added a cycle of knowledge from his relationship with Chinese sailors and fishermen – a cycle of knowledge that would eventually lead to complete domination of the Great Divide (Latour 1987, pp 219-221).

We also see in the second finding that cycles of accumulation are also revealed within the accounting function as they are not homogenous and that several relationship exists because of this non-homogeneity. When total buy-in is achieved within accounting, an accumulation of knowledge is also observed – thus leading to what will **emerge** as the technology based accounting innovation.

In Part B - Centres of Calculation, Latour explains that there is knowledge that is uncovered when raw information is tied together and consolidated into new orders of inscriptions. Here we see that the third finding collected and processed this knowledge in a progressing and precarious manner thus enacting the centre of calculation and leading to the **stabilisation** of the technology based accounting innovation.

The next Chapter, 6: Effects of the Innovation, will attempt to answer the second research question by discussing what happened in the organisation and specifically the accounting function as a result of building the innovation. Also, the third part Metrologies (Part C) will be explained to show that the findings of Chapter 6 also link back to Latour's three-part model of Actor Network Theory.

CHAPTER SIX

Effects of the Innovation

"Prior to FAIS… we improved the quality of the reporting but we didn't improve the integrity or processes of how we capture the information." (Alex)

6.1 Introduction

The previous Chapter 5: Building the Innovation attempted to answer the first research question of how does technology-based accounting innovation emerge and stabilise within accounting functions. This chapter will attempt to answer the second research question of what effects does technology-based accounting innovation have for and within accounting functions. This will be done by analysing the effect of the innovation when it became part of the organisation. It can be noted that the mobilisation phase resulted in the emergence of a relatively stable innovation network that was now travelling in the larger organisation. It was the spread of these networks that was followed to trace the effects of the innovation.

The effects of the innovation were found primarily in the networks that emerged and stabilised. In this section these network effects will be described from the accountant's point of view. The first effects observed as a result of the emergences of the innovations were the strengthening of existing inscriptions. There was an investigation of how the FAIS spread its influence across the organisation as it carried the text inscriptions of reports, metrics and annotations. Another effect was the calculation of new KPIs because of the improved and consolidated processes. With improved and time-compressed processes, it became possible to reorganise and create

smaller and more independent centres of calculation and this led to further effects of changes to the centre-periphery relationship between Alex and Richard versus the country operations. Then it was seen how Divisional accountants faced constant changes before and after the emergence of the network with FAIS at the centre. It was also seen how Group Consolidation achieved the reporting flexibility they had wanted as they became part of the network.

6.2 Strengthening of Inscriptions

Many of the actors who adopted the innovations insisted that nothing new was built, but rather something improved. This was typified by Helen Goodall's view that no matter what the new innovation was, it simply just made them smarter. They simply measured the effects rather than identify a new artefact. So rather than looking at the new technology that improved a familiar report, for example a report that used to be delivered using manual calculations, then got delivered using Lotus 1-2-3, then Excel, then via a database, the accountants initially recognised these behind-the-scenes innovations but eventually considered them as name changes only. The re-labelling was felt to be necessary only to recognise the strengthening of the particular inscription. In the case of BREPS, they did not even want the re-labelling and eventually abandoned the new name of FAIS and reverted back to BREPS. With time-compression, tasks simply became easier and workflow processes improved. These were the same inscriptions from before the innovations except that they were more effective and more acceptable to actors than before. As inscription devices they served for Alex and Richard as more effective controlling forms towards accountants, specifically the remotely-located country accountants. The artefacts that became stronger included existing reports/KPIs, workflow processes, deliverables and the

reliability of these deliverables. Some of the events that led to these artefacts being strengthened will be discussed below.

Alex Burke led a team of accountants that performed the monthly consolidation process for the division. Alex and his team needed to deliver a consolidated set of accounting information after each and every month. The FAIS innovation allowed them to deliver much stronger consolidated information than before. It was stronger in the sense that it was encapsulated in database tools and technology instead of the original Excel files. It travelled through communications lines that were more secure and integrated rather than just personal email transmissions. Thus its reliability strengthened the inscriptions hold on those who depended on the information. The success of the FAIS innovation meant that the work of Alex and his team had less risk, and to support this risk-aversion Alex and his team also knew that FAIS guaranteed that backup options (such as reverting to previous systems) were available in case of problems.

Even before Alex joined FINCO, there were already processes in place that performed consolidated accounting. For example, prior to Alex, consolidation processes were available in the reporting tool in its original form as Lotus 1-2-3. It was the same principle where information was “pasted into the back and all the formulas added everything”. Sally came along in 1998 when they loaded the same data into the mainframe GL. At that stage, all the branches of FINCO prepared only one client pack and one audit file and there were no subsidiaries to worry about. The wholly owned company in Fiji and Vanuatu prepared their own client pack, but the branches that made up Australasia Division submitted certain schedules and consolidated

directly to the next level of the Australasia pack. In the current situation, each branch or a subsidiary prepared their own packs. In other words, there was a continuous improvement of processes leading to the latest iteration in FAIS.

The original consolidation system extended to all of Asia by 1998. In 1999, the reporting tool comprised 70% Lotus Notes sheets and 30% Excel sheets. By 2000 everything was in Excel. That was when Alex started working in FINCO. He started in 2000 with the responsibility to create a new Reporting Tool as an extension of the consolidation system. His role was also to look at the Budget Model as it was then. He developed a new model using Excel and incorporated it into the rest of the reporting tool. They always called it BREPS – Branch Reporting. Alex's Reporting Tool reached its full potential with the deployment of FAIS. Sally surmised that this was because it worked similarly to the Branch Monthly Information report even though it was actually a Budget Model. When the Budget Model was implemented in the FAIS, it was easy to see what was wrong with the data.

Barry Madsen, IT Manager, recalled how the GL had always been part of the IT systems picture in spite of all the changes. Barry was a contractor between 1992 and 1998, working on all the systems in Pacific in those days – including some which still existed. It was fairly integrated and had its own ledger and also its own sub ledger and GL reports. For Barry it was the first time that extract and reports could be taken directly from the ledger using FAIS by the accountants without assistance from IT. Alex Burke said the technical support for using Excel could be found in the finance team. This should be the correct process with the new FAIS, as it provided them with the ability to understand where the data was coming from and then they could

manipulate it. It was seen that the strengthening of processes directly related to using the FAIS innovation also resulted in improving other processes such as IT and Excel support within the Finance group. By moving to FAIS with its database functions, Excel's spreadsheet functions became easier to use. Alex explained that this helped and improved their process because they were assured about the company when management met for discussions with the rating agencies, at least annually, to discuss FINCO's performances, strategies and risk management. This was very important, because they talked to the business directly, and that way they got comfortable with what the Group did, and where it was going. Richard Thames always reminded everyone that it was crucial that FINCO maintained its rating – for example, without an AA Best rating in the US, people did not buy insurance from FINCO. It was devastating to the business if FINCO lost its rating, or the rating was downgraded, either with or without good reason.

Prior to 2005, the accounting functions comprised groups of accountants, some of whom were involved in the establishment of the FAIS solution. This subsection will show how accountants in many levels of the division faced constant changes – in themselves, the organisation and the systems they use. It will also show an existing network that performs the accounting function even without the latest innovation and how this situation affects the organisation when the innovation is built. From below, Sally described the accounting function as if it had not changed since she started in FINCO in Fiji. By 'unchanged' she meant that the monthly reports served the same purpose today as they did twenty years ago –they provided management with a tool to run the business.

The old BREPS reporting tool has been with the accountants as far as they remembered, as Sally recalled about previous managers:

> *"It was already here before I came. He (Mario Sanchez) has also been the general manager overseas. He has been here a very long time. All that time he has been here, I think with the exception of SE Asia period where he was assisting Ramon with mergers and acquisitions. He would be general manager before for Pacific Region. He has always had that title. But he has never had a team. When I first started, BREPS was always there. It was a manual account – physical size of 60 pages by class of business. We used to fit it into an Excel spreadsheet. It was actually in Lotus then – 1993 all the way up to 1998 just like a stand-alone Excel spreadsheet. It was always called BREPS. It didn't always have a spreadsheet. They used to have those non-spreadsheet files, plus your other Head Office reports that were due on work day 2. And you sent all those off to Head Office."*

As a tool, the new BREPS became even more crucial to management, as more and more parties depended on the more reliable consolidated information, including accountants, managers, insurers, and actuaries. Many business units were now able to prepare their reporting packs on their own:

> *"I think it was 1987 that Peter White used to have the role that Chen [another senior manager] has now. He took over from Chen. He got this reporting tool that someone developed but was in Lotus – same sort of principle where you paste it into at the back and all the formulas added everything. So we used to have that and when I came 1998, we loaded into Zebra GL that reporting, by branch because at that stage, all the branches of FINCO used to do one client pack and an audit file, and no subsidiaries. The wholly owned company in Fiji and Vanuatu would do their own client pack, but the branches that made up FINCO, would submit to us certain schedules – we would prepare the consolidated pack. Now with the new BREPS [FAIS], it doesn't matter whether you are a branch or a subsidiary, everyone does their own."*

FINCO had a large international IT department with over 1000 employees. The FAIS AIS innovation was an IT project sponsored by the Australasia business area and FINCO's IT department was engaged to complete the IT project and deliver the FAIS system. The IT project team consisted of project resources assembled into a

networking group with skills fit for the purpose. Members of the IT project came from the FINCO business community as well as from the FINCO IT resources pool. As well as having core resources, the IT project interacted or inter-networked with other shared resources such as IT computer operations, office administration, IT standards team, and IT process improvement teams. As a business area, the finance function (with Richard as chairman of the Steering Committee) owned the IT project and secured its successful delivery. Even though the IT Project created an AIS innovation, the core business of FINCO was always general insurance. Therefore Alex and the accountants were always aware that they were producing accounting results for an insurance organisation. The reports and KPI metrics delivered and improved upon by the FAIS system were consumed by managers who were insurance professionals. Thus, the effects of the innovations continued on to this business community who adopted the artefacts created by the insurance accountants who adopted the FAIS innovation.

Although the IT department was relatively independent in delivering the FAIS AIS solution, the successful delivery of the project advanced the goals of IT in terms of other projects in the IT landscape. As part of a larger Finance Transformation Project, other IT projects such as new core insurance systems delivered to country operations benefited with the adoption of FAIS. Thus the old BREPS entered a change management cycle that ultimately transformed it into the new BREPS aka the FAIS. This change activity was managed by IT using the protocols of SDLC (software development life cycle) thus the need to insert the new FAIS in the IT landscape. The change management activity consisted of software development, new equipment, training, workflow changes, and ultimately functional reorganisations. Except for the

functional reorganisations, the change management process was largely invisible to the accounting functions. In fact the accountants assumed the existence of an underlying *anti-change* management process as evidenced by their dislike for new unproven ways of doing work and their interpretation of the new improved tools as simply improvements of themselves. Thus the artefact that was the FAIS was re-labelled to become simply the (new) BREPS.

FAIS and its subsequently relabelling back to BREPS name was from a change management perspective, integrated within the Finance Transformation stream and made little visible impact as a separate change. Barry Madsen pointed out that the IT department had made many contacts with the remote country operation during FAIS development such that these same contacts were revisited when the Sirius insurance system was delivered. IT staff were reassigned to future projects that involved the Pacific countries. Even if there were new faces in IT, the old familiar faces helped introduce everyone to each other. IT staff admitted that projects such as the FAIS became personal vehicles for career improvement in FINCO. Many of the unique approaches and tools created for FAIS (for example, the use of Excel as a process-centric framework for an AIS system) were re-used for similar projects later on. There were difficulties the first time around but the second and third time became easier. This was what happened sometime after 2005 when new software from Oracle was introduced in FINCO. Each project that the IT developer successfully implemented was a feather in his cap of historical IT achievements and this current project was expected to add to this personal network. Such a level of personal benefits to Barry Madsen and his developer served to strengthen working relations between IT and accountants. The inscriptions created by Alex and Richard to convince the IT

department to join in the network had proven to be very successful and were remembered again by Barry and the lead developer when they dealt with other users in later projects and by Alex and Richard when they needed to engage IT again.

The history of FINCO showed that the HO Division accounting function grew and needed a consolidated reporting system to meet the challenges of business growth. They needed to respond immediately to management's request for crucial information. The problems were minor in themselves, but together they degraded the legacy system over time. Alex recalls:

> *"That's right. It produced the same level of the base reports that we've built out of the FAIS system. But it was difficult. I was involved, in that it was very manual and prone to error, and very rigid. Prior to these spreadsheets, there were lots of approaches to solving the reporting problem. They were interconnected, and that's where the problem lies. Prior to FAIS, they were in Lotus when I first started in the organisation in 2000, then I updated them to Excel, in the year 2000. It was 1-2-3 and very large linked spreadsheets. Yes, we improved the quality of the reporting but we didn't improve the integrity or processes of how we capture the information."*

FINCO is a wholesale and retail financial services company. As such, FINCO's external customers encompass brokers, other financial companies, banks, fund managers, state government authorities and industry regulators. Reflecting the increasing benefits of consolidations in the financial services industry the presence of international mergers and acquisitions activities expanded significantly after the mid-1990s. These market activities added to the competitive nature of the marketplace and an ever-growing demand for effective performance measurement and reporting. FINCO's mission statement referred to a list of qualities that every employee must have – such as business acumen, customer focus, thinking outside the box, utmost integrity, good personality, accountability, good planning skills and networking.

These behavioural prescriptions were found in several of the actors and formed the rationale behind their actions within the networks. For example, Alex reported that business acumen was embedded in the reasons for delivering innovative metrics for performance reporting. Similarly, Group Finance considered business acumen as an essential behaviour for success in delivering timely financial information. The country operations looked at the networking essential behaviour to cooperate with Divisional HO to work as one in proving results that consolidated to Group finance. The FAIS system, by following the prescribed IT procedures, exhibited the essential behaviour of utmost integrity by providing a transparent data processing and analysis function to all levels of users. The actors were seen to utilise the FINCO vision statement of required essential behaviours for success, as an instruction of how they behaved in forming relationships with human and non-human actors.

From the foregoing, many inscriptions were strengthened either as a direct consequence of the time-compression of data collection of information or, as the consequences when accountants adopted new processes or improved relationships with other accountants and the rest of the organisation.

6.3 Divisional Finance Calculates New Metrics

The new FAIS allowed the capture of more information and this in turn allowed for new measures and metrics to be reported on. These metrics were either integrated onto other existing reports or became new report objects themselves. An example of a new type of report metric was reports that consolidated multiple operations. They were not really possible or reliable before, and became reliable only through FAIS maintenance of a central database. An example of a ‘not new’ type of report is the Flash report that was an estimate report but delivered as early as possible. But because

the data capture was hugely time-compressed, the Flash report was massively brought forward as well to the point that it was of a much higher usefulness. Another example of a different quality of ‘newness’ was the ability to add extreme Excel formatting to reports. Prior to data capture via FAIS, large Excel files were common. This prevented the full use of Excel formatting features – because Excel ran out of memory just for the data. The new formatting features gave senior management a better tool for decision-making.

Figure 6.1 shows the new or modified systems and artefacts that could be identified during the fact building process of the FAIS innovation:

Figure 6.1 KPI Reports Affected by Adoption of Innovation

REPORTS	Used by		
	Divisional HO	Country Ops	Group Finance
FAIS – Accounting Information System	Y	Y	
CONSOL – group consolidation system	Y		Y
GL – Financial General Ledger(s)	Y	Y	
Branch monthly reporting	Y	Y	Y
Business Reports	Y		Y
Divisional Consolidation	Y		Y
Flash Reporting and other Management Reports	Y		

New KPIs were requested by all the main actors based on their functional requirements. Group Finance for example had been requesting new metrics to calculate, but Alex and Richard had been unable to provide them before because there was no more time in the long monthly period close process. Now with a time-compressed close process, there was extra time to devote to Group Finance requests for the calculation of new measures and ratios for reporting the performance of existing and new product classes. Many of these measures were initially for 'what-if scenarios' that were never considered for mainstream. Nevertheless, these new measures viewed by Group Finance as potential performance metrics for future. This resulted in Group Finance being poised for more global control of FINCO businesses worldwide.

Alex and Richard also had requirements for new reports in their roles at Divisional Head Office. An example was Flash Reporting which is an estimate report based on early returns, but gave enough transactional information that could be reported and

acted on early. Previously Flash Reporting was made available specifically on a particular day of the month regardless of how much transactional data was available. Because the data-input processes have been time-compressed, the information available is now richer and of better quality. Thus the Flash Report needed to be redesigned to reflect additional information. This requirement resulted in more effective decision-making and at a much earlier point in the business process.

The country operations also needed new reports and modifications to existing ones. Because they adopted the innovative process implemented with FAIS, they consequently handled faster moving information. Whereas, before, it took days to extract, collate, verify and upload transactional information, they now simply and reliably uploaded automatic batches of information that were self-checking. Thus the summary reports that they used were modified to show only as little verification information as needed. Their focus then went to the narratives which were explanations of trends and local events. A narrative screen was built into the reporting tool that was transmitted to Divisional HO along with the main transactional information. Previously, narrative texts were emailed separately by country accountants to Divisional HO. It was another unintended consequence of time-compression, that the narrative texts found an automatic way to be transmitted to Divisional HO with the correct matching transactional data. This resulted in a more accurate description of business performance.

Each of these artefacts was either created or re-created as part of the journey. If they existed before, none of them remained exactly as they were before the journey. They went through changes either physically or changed their roles within the FINCO

community. Some artefacts were physically different from before (for example acquired new features, new platforms) or were given the same names and same roles so that adoption became easier. During the course of the innovation building, Barry said they now had better technology. Because of the new FAIS, they now had "more specialist resources that can make it happen with more specialised people and tools." There was always a need to invest in technology. They spent money to save money. Barry believed that treating development as an investment led to cost savings and greater accuracy.

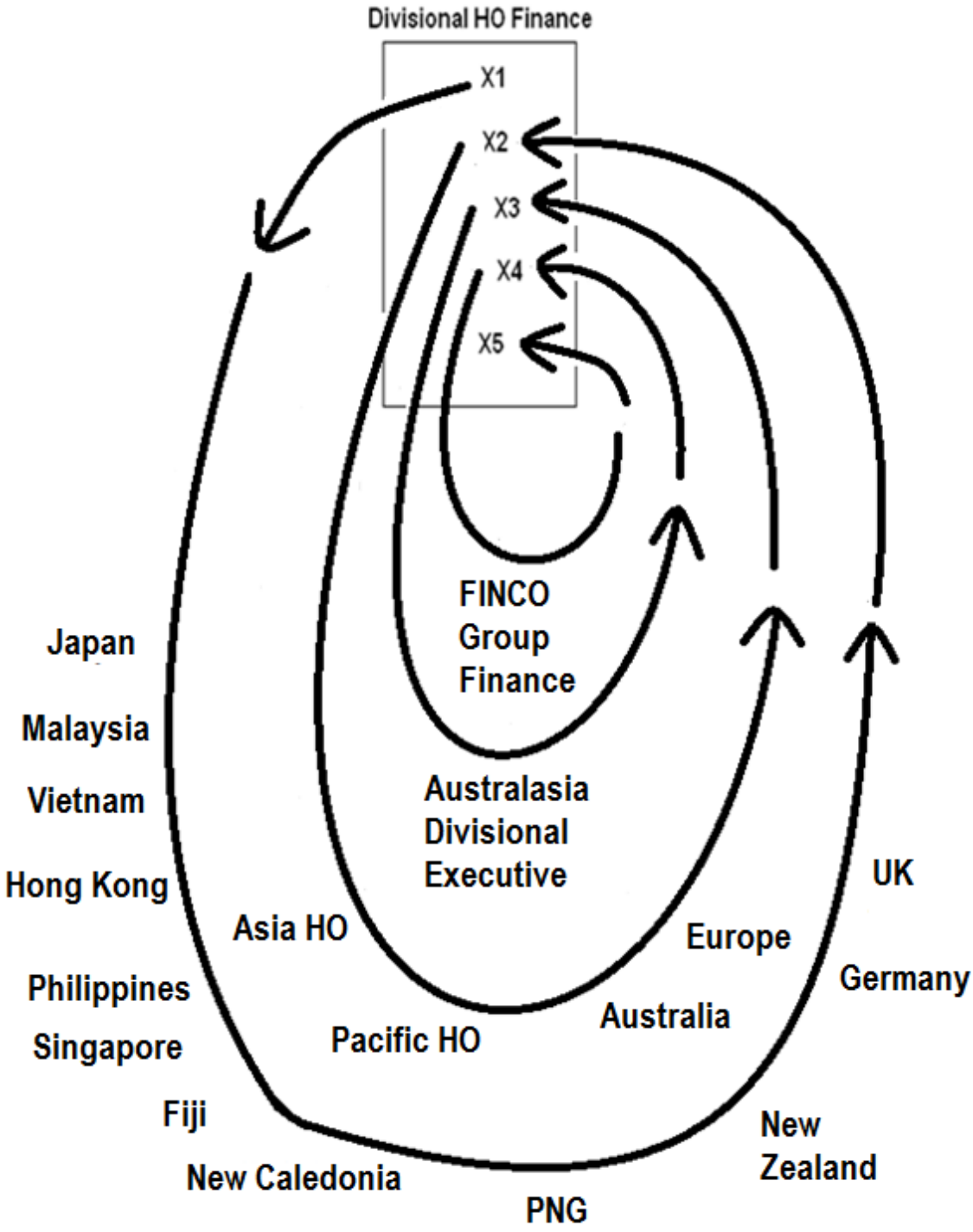
It was seen how individual actors described their roles in the building process and their transformation from the original communities into the FAIS network. This, in turn, explained how they viewed the fact-building process as smooth transformations of their current roles into new but similar roles. Each actor always saw the transformation as one of more major changes somewhere else, with only subtle and minor changes within their immediate spheres. Yet at the end of the day, the entire community transformed to something completely different and led to an innovative FAIS system. Eventually the innovation journey also encountered major influences directly from the top of the organisation. The organisational re-structure of 2006 affected every division in FINCO. Divisions were re-assigned to different Divisional Managers. But finance departments still had indirect reporting lines to Divisional and Group CFOs. Divisions (for example, Asia-Pacific, USA, Europe, and Australia) then needed to be re-organised. As a result of the re-structure and the influence of the accounting innovation, FINCO maintained competitive advantage, handled new markets and responded to strategic growth.

6.4 Emergence of New Calculation Centres and Reshaping of Centre-Periphery

Higher management therefore defined the requirements for reporting divisional results that included timing of delivery. At any given point, the delivery was agreed upon with the divisions and the stakeholders, and all available tools were taken into consideration as reports were created. Senior management knew that delivery schedules were always tight and that divisions were already compressing delivery times in the best ways possible. The innovation journey needed to transform to incorporate these new artefacts. It successfully did this by expanding the network and by utilising any new features acquired such as the FAIS innovation.

By tracing the flow of information that was collected, reconciled, signed off, and reported, it was possible to see how action at a distance was implemented by the Divisional Head Office. It acted as a centre of calculation and the country operations cooperated in achieving the goals of the focal actors Alex and Richard. Figure 6.2 shows this flow and illustrates the complete success of Alex and Richard in dominating the remote country operations. Previously, this calculation centre existed as a data-capture and data-repair centre. With data-capture wholly encapsulated in FAIS, Alex and Richard's new calculation centre now became a data-analysis centre.

Figure 6.2 Divisional Head Office as Centre of Calculation



There were indications that the FAIS innovation travelled next to the networks/translations in regional centres (for example, Asia Regional Centre, Pacific Regional Centre, and Australia Centre). How these networks reacted and who the

ultimate focal actors were was not immediately clear. The FAIS innovation kept its part in the expanded networks, as did other inscription devices that operated in the finance function. The initiators and actors in the existing accounting function (Richard Thames, Alex Burke, FAIS developer) were confident that the improved FAIS innovation travelled further than before. Alex's team accepted the central role they played in the network. Alex explained:

> *"The Head Office reporting team was looked upon as the centre of excellence. And so, it's our innovations that will be driving them and will be used in the regions or in the individual countries. So there wouldn't be anything that would come from a country operation that would drive a change in the Head Office reporting, except, we would be conscious that, if we could cater for lower requirement as well a Head Office requirement, in the new system, then we'd try and do that."*

The expansion of FINCO through mergers and acquisitions (M&A) in the Asia-Pacific region tended to create inconsistencies in financial reporting because of disparate financial systems inherited as part of acquisitions. Because of the new FAIS common platform, Alex and Richard enabled Divisional HO to speak in a consistent framework on behalf of all operations, current and to-be-acquired. Thus, they achieved the objective of having a single source of truth or information on behalf of the FINCO organisation.

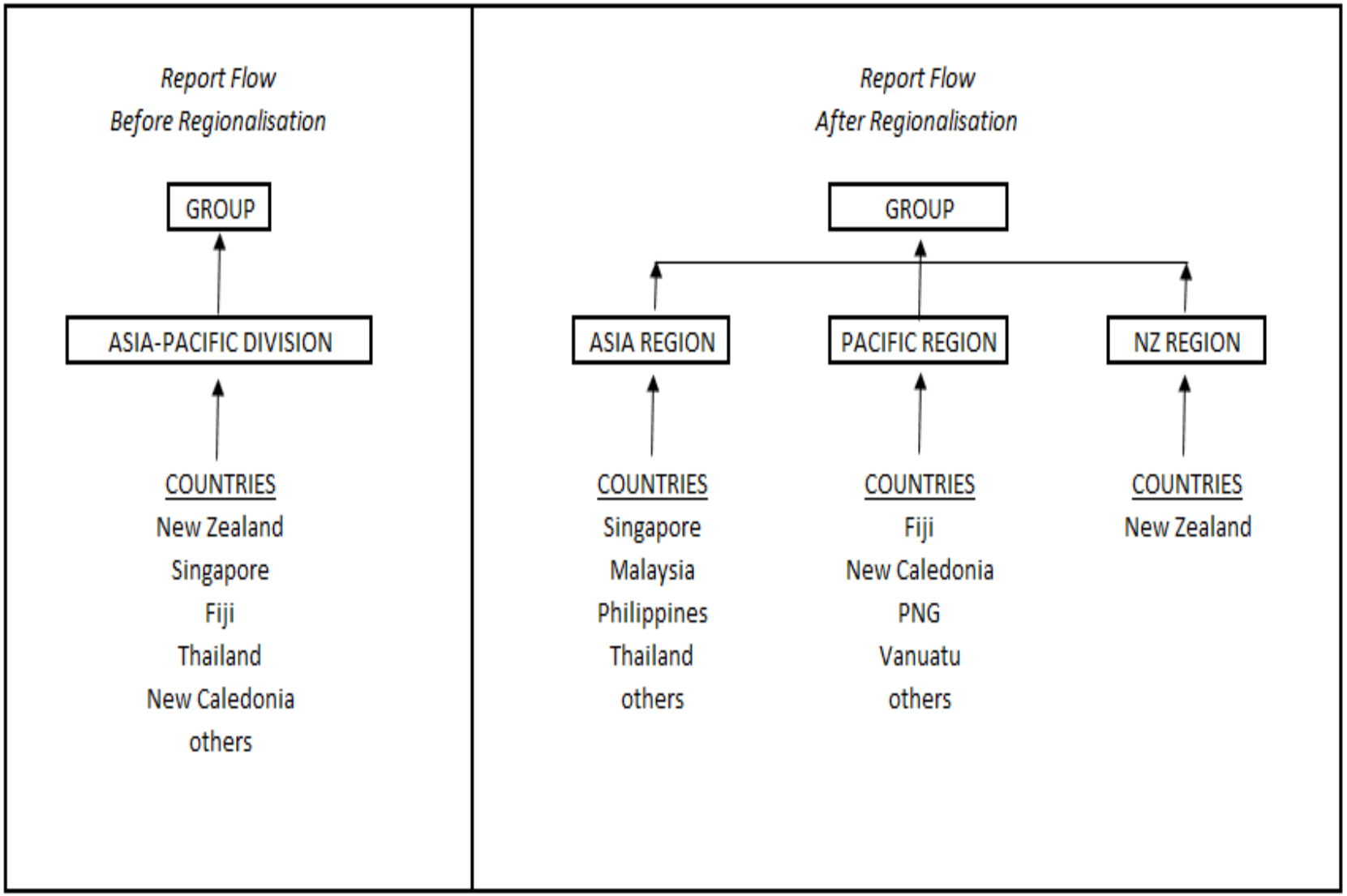
Mobilisations of the operations involved ensuring that they used the new FAIS tool in a smooth transition from the previous tool. This was not easy. It took time and travels to distant places. Sally described her experience:

> *"With Excel, we had to visit the operations and show them. To try and do it over the phone – is not very easy. We actually had to make a couple of trips with some of the operations. We would go over there for a week and just do the reporting tool – to show them the steps"*

But like other explorers that followed La Perouse in the 1700s (Latour 1987), Sally's second trips to extend influence to other operations became easier. With the arrival of the new FAIS, the network extended by replicating the consolidation effort from country operations to regional centre. Regional financial controllers were able to view comparative information of their constituent countries in the same way as Head Office was able to view the comparative information of regions and constituent countries. Figure 6.3 shows the impact of regionalisation on the original network built by Alex and Richard.

In 2006, a major reorganisation took place in FINCO. Pacific and Asia was formally regionalised and each one had an opening for the role of Regional Financial Controller. New roles were created for regional accountants located in the country operations and these were taken up by the local country accountants. Initially it was feared that a regional role conflicted with the country submission role to Alex and Richard Divisional HO. Instead, the country submission role became localised within the regions and did not have to be received by the Sydney-based Divisional HO. As the regions accepted the innovative consolidation technology, it was transformed to an exclusive regional tool and the centre of calculation relocated to the regions. The regions posed as potential betrayers (hijackers) of the technological innovation. As an alternative interpretation, regionalisation simply led to an organic extension of the network. Eventually Alex and Richard's data-analysis centre was replaced by the new regional centres of calculation shown in Figure 6.3. It became clear that Alex and Richard had lost their power and yet the country operations' periphery was not really affected, at least from the country operations view point.

Figure 6.3 Change in Reporting Relationships with Regionalisation



Although the changes due to regionalisation did not affect the periphery operations, it certainly affected the centre as it was not clear where the centre was at this point. The mix of actors had changed dramatically. Whereas there used to be these actors – Alex and Richard, FAIS, IT department, and Country Operations – there were now Group Finance, Regional Centre, FAIS and Country Accountants. The roles of Alex and Richard had gone and soon the role of the IT department itself was also gone. This showed that the innovation network was continuously transforming. There was no pause at all. Alex and Richard took a lot of effort to get to this point and yet it was inevitable that regionalisation took it all away and transformed it to something else. The Alex and Richard journey (with three other main actors) was only a snapshot of the innovation network that was continuing its journey. It is not even recognised that the new centre-periphery relationship between Group Finance, regions, and country operations is final; it has merely stabilised.

The previous sections identified some of the main actors in the network and how networks form and re-form. The FAIS innovation was followed as it travelled within the FINCO accounting network. The various transformations of actors and artefacts were depicted as a 'travel' with a network of relationships. From the initial network of HO Finance accountants, the FAIS innovation was observed in the form of the original BREPS reporting system. The FAIS innovation then travelled and re-formed as an IT project or, possibly, it was 'cloned' to exist in both the IT project and HO Finance. The reason it travelled to the HO Finance and to an IT project was because in its previous formation (as the BREPS reporting system) it had inherent shortcomings (for example tedious data-entry/data validation) and was unable to

move any further except through some re-invention (problem solving calculation centre) manifested as the FAIS.

Richard Thames allowed his original idea to travel from HO Finance to become an FAIS (IT) project, believing that he was still the focal actor in both translations, and thus his purposes are still served. As in the FAIS project, it was seen that new alliances were formed (for example the IT team is engaged to deliver a project), and the existing alliances were affected (for example the IT department, the project team, and the business managers.) The beneficial outcome was that the FAIS project itself became the new process for the Finance divisions. Focal actors such as Alex and Richard were also expected to form new relationships. Existing relationships were affected because Alex and Richard created artefacts in the form of workflow rules and the emergence of systems and devices acted on others.

As an innovation, FAIS was passed on and travelled through the new and existing members of the community (IT resources, group accountants, operational accountants, financial controllers, managers.) As an IT application, the AIS innovation was significantly re-invented. Because of this it was clear where the AIS innovation travelled next, for example, joined up or re-emerged with the BREPS reporting system. The existing translations (IT department, Project Team, and Project Management) did not re-invent the AIS innovation as an IT application but played a significant role in preventing the AIS innovation from becoming or travelling to something other than what was desired.

From its various forms and involvement in IT applications, project development, IT department, project team and project management, the AIS innovation re-emerged

back in HO Finance, and combined with the existing BREPS reporting. Two actors, the BREPS reporting system and the new FAIS with improved data-entry/data storage, became a collective, that is, a new actor travelling in the original network HO Finance, but able to travel further than before. Next, the AIS innovation travelled beyond Richard's SE Asia accounting function to a new broader network, comprising the regional accounting functions. At this point, Richard was promoted to senior management (as Group Risk Officer). Alex Burke became the person in charge (focal actor) of HO Finance. HO Finance was therefore re-formed, possibly among other reasons because of the successful re-invention of the FAIS innovation/BREPS Reporting. The continuing re-formation of HO Finance had a major impact on the AIS innovation as an actor although the full impact remained unclear. Sometime after Richard's promotion, HO Finance re-formed again and Alex Burke's role became redundant to make way for the complete regionalisation of the accounting function. In other words, work done by Alex and the accounting staff (AS) was reviewed then re-assigned to overseas regional centres.

During the innovation translation, FINCO management had been implementing an organisational culture. At this highest control role of FINCO, network FINCO executive (that is, FINCO senior management) affected all other networks and actors, including Divisional HO Finance and Group Finance. Thus Richard's promotion, regionalisation, and continuing Divisional HO Finance re-formation were technical artefacts created by the FINCO executive to entice FINCO staff's enrolment to the broader FINCO organisation. Thus, even if the FAIS innovation did not travel fully in the network it was visible to the broader organisation and impacted on how the broader organisation changed, how the innovation changed (re-formed) and how the broader organisation eventually accepted the innovation. This was only a small

picture of how relationships transformed in FINCO. It only covered the FAIS innovation itself and its physical impact on the organisation. There were the relationships that existed and the relationships that emerged from each and every actor in the network. This will be covered in detail in the next Chapter 7: Conclusions.

6.5 Summary

The main findings on the effects of the innovation at FINCO can be summarised by the points below:

1. Technology-based accounting innovation has the potential to transform accounting work through strengthening of existing inscriptions and enabling new inscriptions.
2. Technology-based accounting innovation can lead to unintended consequences in terms of changing of existing centre-periphery relations (empowerment) and creation of new centre-periphery relations (regionalisation).

These main findings can be deduced from intertwined evidences in observing the effects the technology-based accounting innovation as adopted at FINCO. These evidences are further detailed below.

The first finding showed that technology-based accounting innovation has the potential to transform accounting work through the strengthening of existing inscriptions such as data reliability and enabling of new inscriptions such as new KPIs and reports. This chapter discussed the effects of the innovation within the larger organisation. It was seen that the network of Alex, Richard and the accounting

community emerged and other networks with FINCO (such as the insurance community and global managers in Group Finance) were affected. In some cases, the network (of Alex and Richard) influenced others and in some cases it was influenced by others. On the whole, everyone appeared to attain their interests even though each was different from the others. Group Finance achieved its goal of additional flexibility as it defined new reports and imposed them on the Divisional levels. Divisional HO improved data reliability, minimised data input and maximised data analysis because of the server-based data input and centralised reporting. The Country Operations finally felt confident that they were in the loop because of the accurate feedback of the centralised reports. They were also allowed more opportunities to amend financial data because of newly time-compressed data input and data validation processes. Thus Divisional HO's story unfolded from here. Divisional HO received better quality and more timely information from the country accountants. Divisional HO was able to request and receive additional KPIs. Before FAIS there were all manner of complaints and negotiations whenever Divisional HO tried to change or improve the monthly reporting process.

Group Finance was able to test many 'what-if scenarios' for the global FINCO when they requested Divisional HO for more KPIs and more reliable reports. As an example, Richard Thames (from Divisional HO) assured the Group CEO that the NCOR (net core operating ratio) shown in the board reports he received was directly printed from the FAIS database and not calculated manually. Thus Group Finance had better confidence in board decisions made, another unintended consequence of data-input time-compression.

As described in Emsley (2005), the FINCO accountants had a similar dual role involvement on the effects of accounting innovations, because the FINCO accountants performance of their functional role led to a change in their business unit roles – as a direct effect of adopting the accounting innovation. This happened when they no longer reported to Divisional HO and became regional centres instead. The consequences of the time-compression of data collection also included expanding the capabilities of country accountants and Divisional HO to the point that they provided Group Finance with additional flexibility and improved KPI/metrics. Group Finance in turn improved organisation performance at a global level with better and more reliable decision-making tools.

The second finding showed that technology-based accounting innovation can lead to unintended consequences in terms of changing of existing centre-periphery relations (empowerment) and creation of new centre-periphery relations (regionalisation). Divisional HO, through its role as centre of calculation, exercised a stronger control over multiple remote operations and remote operations accepted this and considered it as a necessary consequence for the smooth flow of information. There was evidence of the emergence of forms from other networks that impacted on the current network, such as the effects of regionalisation. Regionalisation was a program attempted at global level; however its success was just an unintended consequence of Alex and Richard's fact-building process. The success of regionalisation was viewed as a part of the unfolding story of a technology-based accounting innovation.

Chapter 5 began the story of FAIS time-compressing – a previously tedious data-collection process – using a new innovative technology. This story continued onto this

chapter – as time-compression paved the way for empowerment of the country operations and that subsequently resulted in regionalisation. As a result of time-compression, the country operations handled not just more information but different information that they passed on to Divisional HO. Thus, with FAIS, Divisional HO perceived they had better *control over the country operations.* Divisional HO also perceived that they performed their obligations to Group Finance better. Group Finance also had a similar story unfold.

With the strengthening of the capabilities of the country operations it became possible for them to take on more responsibilities and develop into regional centres. Thus regionalisation owed its success to FAIS time-compression as country accountants created the packs that Group Finance required without assistance from Divisional HO. As they were turned into self-sufficient regional centres it was possible to cut off relationships with Alex and Richard's Divisional HO, thus creating a new centre-periphery landscape.

Thus, the effect of the accounting innovation was an unfolding story that had a major impact on the entire FINCO accounting function from country accountants to Division HO to Group Finance. There were unintended consequences such as transforming accounting roles in the organisation, empowering country accountants and transforming centre-periphery relations with the success of regionalisation.

In conclusion, the main findings on the effects of the innovation at FINCO also support Latour's three-part model in defining Actor Network Theory (Latour 1987), specifically the third part Metrologies (Part C). Below is an explanation that shows how the findings link back to the theory of the effects to the technology based accounting innovation.

In Part C - Metrologies, Latour explains that with the emergence of the innovation via action at a distance *towards the centre* and the stabilisation of the innovation resulting from the creation of *nth* degree inscriptions from *inside the centres*, there is a search for universal measurements *towards the world* (Latour 1987); such as that indicated in this Chapter's first finding where accounting work is transformed through enabling of new inscriptions. These new inscriptions in the form of new reports and new metrics provide a way to observe the **effects** of the technology based accounting innovation.

Furthermore these effects included unintended consequences as revealed from this Chapter's second finding; as the networks extended even further and formed newer and newer metrological chains (Latour 1987). For example, the changes in existing centre-periphery relations (empowerment) and creation of new centre-periphery relations (regionalization) both extended the world of influence for the accountant and consequently defined the technology based accounting innovation.

CHAPTER SEVEN

Conclusions

"Pecten maximus *anchors" (Callon 1986, p. 12)*

7.1 Introduction

Previously, the concept of actor network theory was presented as the more suitable lens through which to conduct the research case. It was proposed that ANT is the better theory than Innovation Diffusion because of the imperative to explore the relational and processual nature when studying innovation adoption with accountants, accounting information systems (AIS) and the organisational community that they can be found in. In the previous two chapters, the research case of FINCO was analysed, and the focal actors were followed. It was possible to trace and identify the members of the FINCO finance community in how they formed networks and transformed in a way that seems analogous to the four moments of translation. In this chapter, the main findings of the thesis are synthesised and conceptualised in relation to practice and research. Section 7.2 will discuss the thesis summary and look back at what was originally set out to be done. Section 7.3 will present the main conclusions from the analysis in Chapters 5 and 6. Section 7.4 will describe some important limitations of this thesis so that the reader can interpret the conclusions properly. Section 7.5 will offer some possible directions for future research and other opportunities that may exist. Section 7.6 will end this thesis with some concluding remarks.

7.2 Thesis Summary

In Chapter 1 Thesis Overview, a background for the thesis was established. Then two core research questions were posed in the investigation of the case study within an ethnographic setting. Also established was the significance of the thesis for a Doctorate of Business Administration (DBA) degree which the thesis aimed to achieved.

In Chapter 2: Literature Review, the extant literature was reviewed to establish the state of existing knowledge. This review established that prior literature focused on measures, metrics and contents in the studies of the adoption of accounting innovations by organisations. Consequently, the following gaps were found to exist. The potential gap in the literature was identified to be the need to further investigate the *processes* involved in the adoption of accounting innovations in a case study such as the current research. Here it is possible to identify an imperative to uncover the processual and relational nature of technology-based accounting innovations in accounting functions, and therefore there is a need to identify a suitable theoretical model to describe these relationships.

In Chapter 3 Theory, ANT was identified as the theory that can be used as the suitable lens to study the socially-constructed relationships in this research case. After looking at other theoretical models such as Diffusion of Innovations (DOI) and based on the literature gap identified, it was shown that ANT is the more suitable model to describe how processes and relationships are explained, specifically using the four moments of network translation, centres of calculation, and inscription devices.

With the ANT model selected, Chapter 4: Methodology established a suitable way to collect the research data. It was identified that the ethnographic method was suitable for capturing data when observing accountants and accounting artefacts within the Finance community of the FINCO organisation, primarily because ANT was about "being faithful to the insights of ethnomethodology" (Law & Hassard 1999, p. 19). Ethnography was well suited to collecting and generating complex data to be analysed using ANT. The chapter described some of the instruments used to capture data such as the open-ended interview schedules. The ethnographic experiences allowed collection of data by the main researcher in his role as part of the team that developed the innovations and engaged the accountants during the adoption process. Using this research methodology the empirical data was collected and analysed in two chapters: Building the Innovation (Chapter 5) and Effects of the Innovation (Chapter 6).

Chapter 5 focused on the main observations during the building process of the accounting innovation. It followed four main actors involved in the building of the FAIS innovation. By following the actors it was possible to see the translation of the innovation network from the point of view of the four moments – problematisation, interessement/enrolment, and mobilisation. In problematisation, the chapter showed that the focal actors Alex and Richard created an OPP (posed as a question of whether the FAIS innovation can improve monthly reporting) that inter-defined the other main actors. In interessement and enrolment, the main actors continued to accept their roles and enact them. Their issues and challenges constitute the transactions that enabled them to enact the roles defined for them. In mobilisation, the innovation network stabilises and is adopted by the finance function as well as the rest of the organisation. Chapter 5 concluded by pointing out that the emergence of the network was not some

major event but the summation of small transformations of relationship. A matrix of network transformation showed that each main actor had small interrelationship changes before and after the moments of translation.

In Chapter 6, the focus was on the effects on the organisation of the innovation built in Chapter 5. Chapter 6 points out the major effects: strengthening of inscriptions, calculation of new KPIs, emergence of new calculation centres, and the re-shaping of centre-periphery relationships. Inscriptions were strengthened simply because the innovation improved the processes of reporting, thus Alex and Richard are able to control the reporting country accountants much better than before. New KPIs were created because more information was captured onto the database. An example of this is the immediate consolidation achieved as a result of all countries posting to the same database without re-keying of data. A new centre of calculations also emerged because when the remote operations streamlined their data-entry it was not necessary to re-enter or re-check the information. Instead, new centres of calculation created at the regional level were possible as there was no more need for higher level processing for data accuracy. Along with the new centres of calculation there was also a reshaping of the centre-periphery relationships. Periphery countries reported to different centres once these new centres emerged.

7.3 Contributions to Practice

This thesis can contribute to accounting and management practice in three ways:

C1: By helping to deliver technology-based accounting innovations (TBAI) to business areas by indicating how innovation adoption

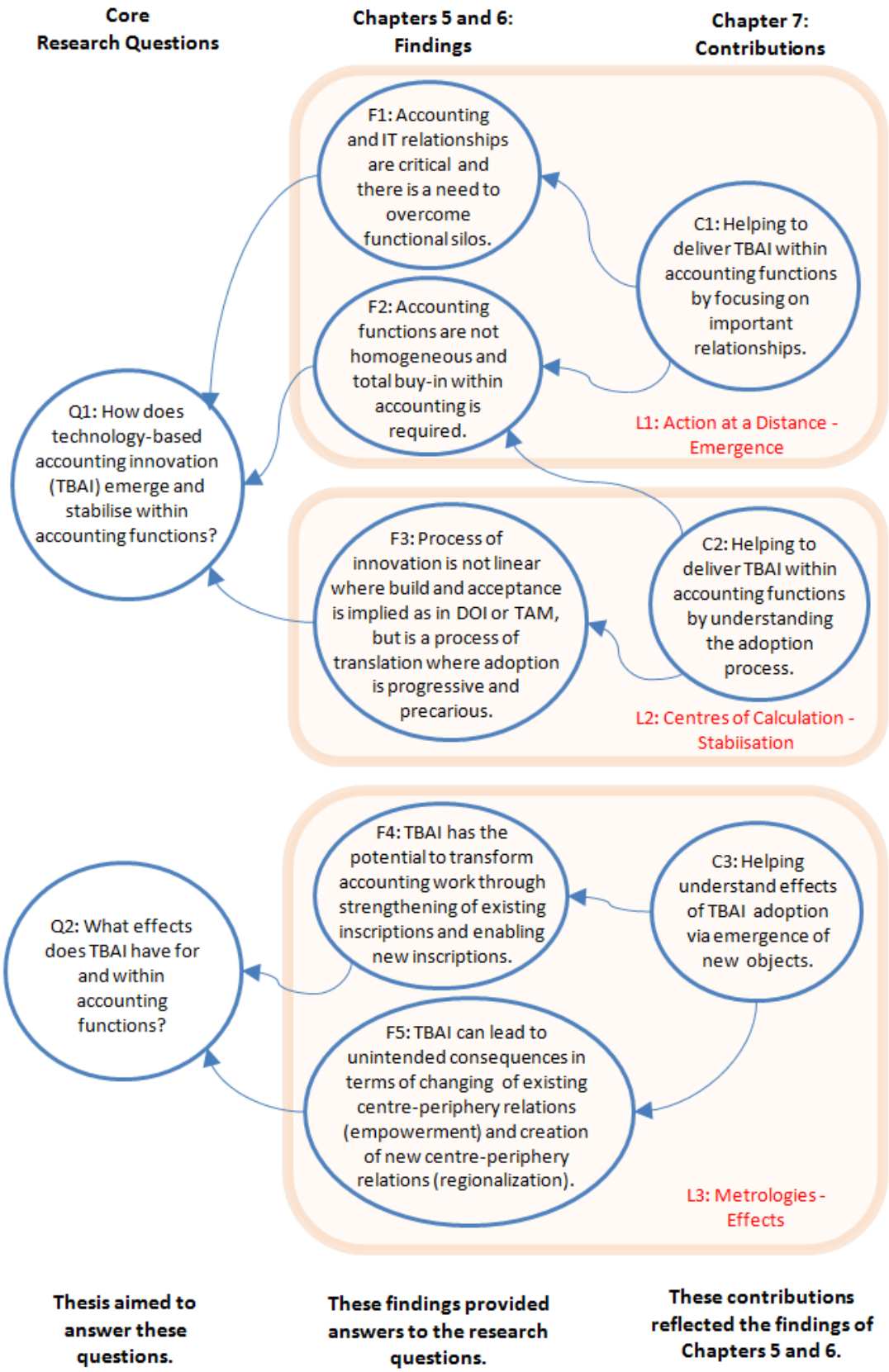
progressively occurs and in particular at the mobilisation stage of an ANT network translation where important relationships are focused, rather than at product completion or product delivery;

C2: By helping to deliver technology-based accounting innovations (TBAI) by understanding the adoption process and the crucial factors of what makes accountants (and users in general) accept innovative technologies. Accountants accept innovations in a process of translations and network transformation where adoption is continuous, incremental and precarious. It is the small changes in organisational relationships that matter as they contribute to the network fully transforming.

C3: By helping organisations understand the effects of accounting innovation adoption for and within accounting functions by observing the emergence and/or strengthening of new relationships, new functionalities and new flexibilities brought on by accounting innovations.

Figure 7.1 shows how the contributions (C1-C3) relate to the core research questions (Q1-Q2) and the findings (F1-F5) identified in Chapter 5 Building of the Innovation and Chapter 6 Effects of the Innovation. It also shows the justification for using Latour's ANT lenses (L1-L3) from Chapter 3 Theory to view the case study and thereby locate the findings and contributions in a theoretical context.

Figure 7.1 Contributions and Findings addressing the Core Research Questions



The three contributions are discussed in detail below by describing their implications, how these implications differ to the extant literature, how they reflect the empirical findings and how they relate to the core research questions.

7.3.1 Helping Organisations Deliver Technology-Based Accounting Innovations: Relationship Focus

This research study found in FINCO that IT had a crucial relationship with accounting, not just in building FAIS and in the obligation to deliver projects to Alex and Richard but in playing the processual roles defined by Alex and Richard. It was this relationship that was critical in delivering FAIS to the accounting function and its subsequent adoption by accountants.

These findings differ from the extant literature as the literature generally showed that ERPs resulted in adoption that consequently had after-effects or impacts to the organisation (Jazayeri & Scapens 2008; Kallunki, Laitinen & Silvola 2011; Teittinen, Pellinen & Jarvenpaa 2012; Wagner, Moll & Newell 2011) – without focusing on the much-earlier supply-side processes present during the building of the accounting innovations that ultimately resulted in adoption by accountants.

The implication of these findings in practice is that other organisations can leverage the relationship of IT vis-a-vis accounting to enact ownership claims of IT-based innovations by ensuring (through the processes during the supply of innovations) that the supply-side of IT recognises that ownership must belong to accountants if there is to be successful adoption. This recognition will allow, for example, accounting users to consider the new system as actually the same old system, and that it was accountants who improved it.

The observations in this researcher's ethnographic encounters with Alex and Richard suggest how the accounting function succeeded in delivering innovative technology products to business areas, by providing insight into progressive nature of innovation adoption in particular the mobilisation stage of an ANT network translation, rather than adoption at the point of product completion or product supply. These observations are further described below.

At FINCO there was a preoccupation with generating monthly reports in time for incorporation in the next higher level of consolidation. For years, a solution needed to be found that would provide the right tools to analyse financial data in a timely fashion and with the ability to cater in the future, using the same level of staff, for additional analysis, new metrics and methodology that seemingly took only as much time and resources as the current set of work..

Therefore, it can be seen that Alex did not consider 'his problem' purely in the realm of financial or accounting systems, as it had a particular innovative non-accounting IT aspect. Nor did he consider the IT-based solution as purely a generic IT project that ceased at implementation or delivery. In contrast to the extant literature of IT project life cycles Alex's innovative IT project has crucial post-delivery adoption criteria for success. He did not consider the IT project to be complete until its calculative role was recognised, proven and adopted. This non-standard approach to the project life cycle provided a source of criticism for being unproven until after its complete adoption. The IT project team responded innovatively by also considering that the IT

project also had an accounting consultancy / report writing aspect as part of a prolonged post-delivery support phase.

While the organisational aspect of the problem was the dominant stream at FINCO, both accounting and IT streams were also represented prominently. It can be argued that the dominant organisational aspect is merely a dominant 'view' because it is what Group Finance sees. Indeed, from a longer-term point of view, the dominant stream is the opportunity to create new metrics in the future and the newly acquired ability to deliver these in a timely fashion.

To summarise, the following are first two findings from the empirical research:

F1: Accounting and IT relationships are critical and there is a need to overcome functional silos.

F2: Accounting functions are not homogeneous and total buy-in within accounting is required when delivering technology-based accounting innovations.

These two findings suggest a possible course of action in management and accounting practice to help deliver technology-based accounting innovations – to focus attention on important relationships such as accounting and IT partnerships (during the mobilisation stage in the ANT network translation) and on how opportunities to engender these might be developed where IT provided representation for accountants in the IT gate-keeping infrastructure, and accountants provided similar representation to render IT complications invisible within the accounting function. Furthermore, these two findings provide some answers to the first research question of how TBAI emerge and stabilise within accounting functions.

7.3.2 Helping Organisations Deliver Technology-Based Accounting Innovations: Process Focus

This research study also found that accountants are not homogeneous. Within the accounting function at FINCO the accounting group appeared to be heterogeneous, geographically diverse, and consisted of three sub-groups: Country Accountants, Divisional HO Accountants and Group Accountants – showing that accountants at different levels in the organisation have different agendas. They have different agendas that may or may not conflict with each other at different points in time. It is the mediation in these inter-relationships that ultimately shapes the network. Multiple accounting groups in FINCO also provided the environment for the emergence of a centre-periphery and thus showed the richness of relations between multiple peripheries and a centre of calculation rather than a single homogeneous group that hid any internal processes.

These findings differ from the extant literature, as the literature generally showed that accountants acted as one because most case studies reflected only the results of adoption of innovations. However, when supply-side perspective is utilised (Emsley 2005) to view the processes that led to adoption, then multiple heterogeneous actors are revealed to be mediating a network.

The implication of these findings in practice is that other organisations can use them to build more robust networks of accounting innovations built and adopted by all members of the accounting community. By recognising multiple actors with potentially different agendas, mediation and negotiation can be used to minimise

delays and the chances of failures. This recognition of differentiation will usher cooperation and synergy that could reduce costs further.

Chapter Five described the emergence of the AIS innovation that formed the centre of the network and what objects (actors and actants) made up the periphery and why (and how) these objects came together or became what they are. On analysis of the ethnographic setting, the actors and actants, as well as devices, clearly formed several heterogeneous groups of interested parties that formed a centre-periphery relationship through network translation.

From a community of accountants, operations, the trusty typewriter, and the need to 'work smarter', things led to a tidal wave of adoption of the technologies that allowed the Sydney Head Office to control, grow and mobilise the periphery of the Pacific and Asian operations from the Australian centre. The spreadsheets evolved from simple to complicated Lotus 1-2-3 macros to the new Excel features and then to big and complex multi-file spreadsheets. Then finally to the AIS innovation which is a spreadsheet-hosted large database that has the same complexity but is simpler to administer.

Alex initially found himself in the position of pressure from Group Finance to submit the divisional consolidated performance reporting and consequently Alex passed on this pressure to the country operations to deliver to him the country results to be consolidated. This three-way mediation towards the stability of the network inevitably concluded with a transformation to a smoother controlled environment because data entry (and re-entry) was eliminated between country operations and divisional head-

office. Alex thus transformed a series of transactions into a ‘centre of calculation’. The operations in turn interpreted this as a ‘time-compression of the monthly period close’. Group Finance interpreted this as an opportunity for additional metrics now and in the future. Alex’s objective to comfortably control the centre of calculation was practically unnoticed and therefore not resisted. The technological change behind the value-chain was interpreted differently by those who supplied Alex with information and those who consumed Alex’s reports. The calls to introduce technological changes can mean many things to different parts of the organisations; thus knowing their behaviour is crucial to the success of the adoption of these innovations.

Alex achieved centre-periphery control by transforming a ‘centre’ problem into a ‘periphery’ problem and solving this by aggregating his area of control into a bigger area of control by including an area that is usually the domain of the country operations. He transformed a small problem into a bigger ‘macro problem’, and consequently solved the bigger problem using the innovative technology of backwardly integrating the data-entry process. To illustrate, while Alex found it difficult to submit on time to Group Finance, the country operations also found it difficult to submit to Alex. When Alex proposed to re-design the submission process as *identical templates*, supplied and maintained from the Head Office, and filled in by the operations then emailed to Alex, he strengthened the inscriptions of the country operations. This simultaneously expanded his control over the country operations, and also allowed for a more direct and visible role by the country operations within the reporting framework. They now have to ensure that they use only Alex’s templates and must continually conform to any changes introduced in the template. Whereas before the operations, they prepared their summary results based on how close they

reflected their current country operations with only a prescriptive control that conformed to a common standard, now it was based exactly on how Alex defined the results format as found in the templates. There is no room for deviation because of the presence of an IT-based technology that needs to accept and validate the data directly from the template. At the same time the country accountants can be more assured that what they have filled in goes directly to senior management.

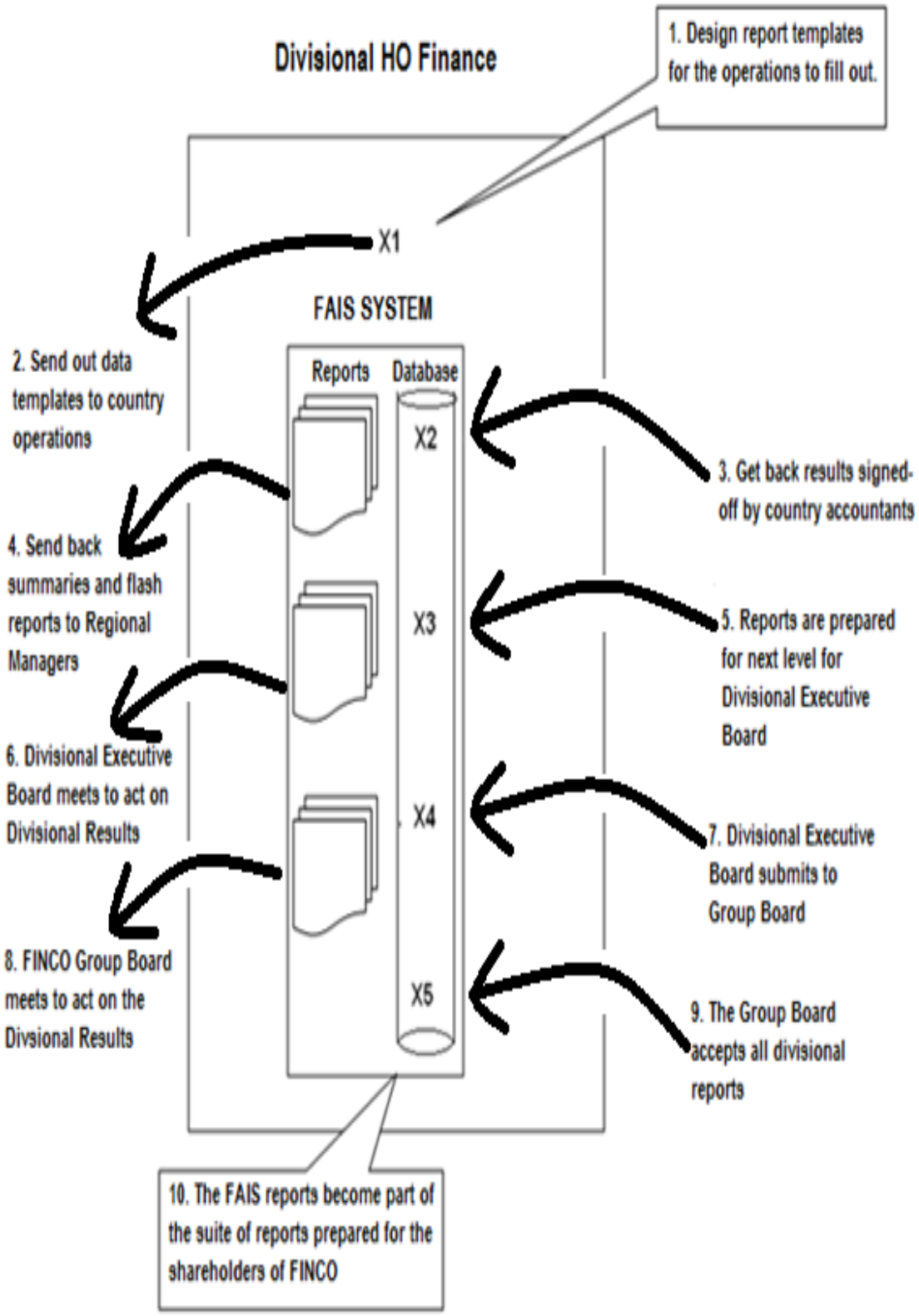
On one hand, it sounds very restrictive for the country operations as it does not seem to allow for individual differences due to the local country management and accounting practices as well as local regulatory requirements. However, this is simply the definition of the 'macro problem' that Alex had created, with himself as part of the 'macro solution'. The other parts of the macro solution included the country operations' finance community and the innovative Accounting Information System (AIS) as the technological solution. Together, three powerful forces cooperated to act as one to solve the problem at hand.

Similarly, if the innovative AIS system is introduced by Alex without the support and full adoption of the country operations, implying that there is only a two-way relationship between Alex and the AIS innovation, then it would not be possible to eliminate the data entry re-processing as the country operations would still submit individual/ un-validated results to be re-entered and validated by Alex at Head Office. Each element, human and non-human, has symmetrical reasons for why they cooperated. Each has an advantage they expect to get in joining the cooperative. Thus a symmetric treatment of both human and non-human elements provides this research with a powerful lens to study accountants in the organisations facing technological

changes that is simultaneously as ‘technical’ as it is ‘social’, as if they face other accountants in the organisation.

Alex Burke and Richard Thames instigated a network that transformed itself through a journey of translation covering four moments – problematisation, interessement, enrolment and mobilisation. The centre of calculation allowed them to exercise control (acting at a distance) over the country operations by implementing an innovation project that made it easy for country accountants to complete their monthly processing. The benefits offered by the FAIS innovation made it easy to enrol and mobilise the remotely-located country operations. Figure 7.2 shows the centre of calculation operated as an iterative process of collecting and improving accounting information, beginning from the branch results submitted by the operations up to the same results being consolidated at group level.

Figure 7.2 Country Accountants Periphery Empowered by Calculation Centre



It can be seen that Alex is able to mobilise the operational accountants to his cause in adopting an innovative calculation process Although the calculation regime introduced benefits to the individuals, it is not these benefits that facilitated interessement, but the relationships between the actors. The calculations themselves did prevail as facts for the operational accountants and Alex rendered these calculations onto Group Finance but ultimately the calculation facilitated the organisational change as a consequence.

To summarise, the following is the third finding from the empirical research:

> *F3: The process of innovation is not linear where build and acceptance is implied as in DOI or TAM, but is a process of translation where adoption is progressive and precarious.*

This finding suggests a possible course of action in management and accounting practice to help deliver technology-based accounting innovations – to understand and act accordingly that the process of adoption as not linear, but instead continuous and incremental. Thus, this finding also provides some answers to the first research question of how TBAI emerge and stabilise within accounting functions.

7.3.3 Helping Organisations Understand Effects of Technology-Based Accounting Innovation Adoption

This research study also found in FINCO that successful accounting innovations provided much-needed flexibility and strength for the entire accounting community by providing better controls and providing a catalyst for organisational change through regionalisation. The success of the accounting innovation had the unintended consequence of ushering organisational change through the strengthening of the

centre-periphery. Regionalisation succeeded because the country accountants in the periphery became strong enough to withstand an attempt to reshape the relationship and create a regionalised centre-periphery.

These findings differ from the extant literature as the literature generally shows results only after achieving stability in the centre-periphery (How & Alawattage 2012) providing a descriptive perspective rather than a prescriptive tool for organisational change. Although the literature provided studies that call for networks that are continuously evolving (Vasarhelyi & Alles 2008), the findings in FINCO indicate that this continuity is enacted through unintended consequences from the adoption and use of the innovations.

The findings of this study on the benefits of accounting innovations to the accounting function concur with the findings of Kanellou and Spathis (2013) in regards to improved data collection, time-compression of monthly period close, flexibility for new reporting, improved accounting controls, and reduction of personnel in the accounting function. The difference with the findings of Kanellou and Spathis (2013) lie in the approach to identifying what precisely caused the benefits. This study examined directly the processes that happened early in the building of the accounting innovation; whereas Kanellou and Spathis identified the benefits based on the accountant's perceived impact after adoption. This study thus presents an additional perspective for organisations in validating and understanding the effects of accounting innovation adoption.

The implication of these findings in practice is that other organisations can use this to increase confidence to continue to implement other accounting innovations and that they may have unintended consequences that could benefit other projects in the organisation. Success in the adoption of accounting innovations empowers the organisation with a tool for organisational change such as regionalisation.

During the four moments of translation a durable network emerged and FINCO Divisional Finance function found itself in a strong position of control where they and all the actors had achieved their objectives. It is possible to describe the implications of certain observations made on the actors that were followed closely.

At FINCO, Alex was able to convince members of the accounting community about his accounting reporting regime. Those who were being convinced also completely accepted their roles and yet Alex's accounting reporting regime eventually led to the formation of regional centres that were not in his control. It may be unfortunate for Alex as consequently he was dislodged in his job role; but it could be argued that this can be better explained in terms of 'network stability' rather than a form of hijacking, as typical of the quandary of a fact-builder who enrols others but is unable to control their behaviour causing the techno-science to be transformed beyond recognition.

Although Alex was able to enrol the Head of FINCO and executive management to his claims he was unable to completely mobilise these allies in heading off the emergence of the regional centres. Other forces in the organisation – external competition, cost cutting measures and reorganisations – had major influences on the calculation regime. Alex attempted to expand his centre of calculation but the socio-

technical network foundation on which it stands had not fully stabilised. Thus this concept of 'network stability' underneath a calculative regime offers an insightful lens to investigate accounting and the adoption of innovative accounting information systems.

Finally, Group Finance's main purpose of reporting organisational performance played a role in the organisational change resulting from the adoption of AIS innovations. Although the consequences of the timely delivery of metrics and the creation of new measures were part of the objectives of performance reporting, the socio-technical behaviours observed towards the adoption of the new calculation process suggest support for the growing interest in non-traditional performance reporting with its unique metrics and methods as well as questioning the traditional balance sheet based on historical cost.

To summarise, the following are the fourth and fifth findings from the empirical research:

> *F4: Technology-based accounting innovations have the potential to transform accounting work through the strengthening of existing inscriptions and the enabling of new inscriptions.*
>
> *F5: Technology-based accounting innovations lead to unintended consequences in terms of changing of existing centre-periphery relations (empowerment) and creation of new centre-periphery relations (regionalisation).*

These two findings suggest a possible course of action in management and accounting practice to help understand the effects of TBAI adoption – to watch out for the

emergence of new objects that will have unintended consequences in the organisation. Thus, these two findings provide some answers to the second research question of what effects TBAI has for and within accounting functions.

7.4 Contributions to Theory

The contributions of this thesis can be stated in theoretical abstract terms by reviewing the findings and restating them in the framework of Latour's three-part model of defining Actor Network Theory.

As described in Chapter 5, the findings from the building of the innovation at FINCO support Latour's three-part model of defining Actor Network Theory. Specifically, findings F1 and F2 reveal how Action at a Distance (Part A) is enacted as functional silos are overcome and as knowledge is accumulated when total buy-in is achieved. Consequently, when organisations focus on the important relationships to deliver TBAI within accounting functions, they are enacting action at a distance causing actor networks to emerge.

Similarly, findings F3 reveal how Centres of Calculations (Part B) are enacted when knowledge is collected and processed in a progressive and precarious manner. Consequently, when organisations focus on understanding the processes involved in delivering TBAI within accounting functions, such as the formation of allies through common interests - they are creating centres of calculations ensuring that the actor networks are stabilised.

Finally, Chapter 6 explained that the findings from the effects of the innovation at FINCO also support Latour's three-part model specifically Part C Metrologies, where findings F4 and F5 showed that *nth* order inscriptions - such as the new reports and metrics generated - enabled the creation of metrological chains. Consequently, when organisations understand the effects of the emergence of new objects on the adoption of TBAI, they are extending the actor networks even further and revealing its ultimate effect.

Based on these theoretical descriptions of the contributions of this thesis, it can be argued now that Actor Network Theory can also be understood within the context of organisations delivering TBAI within accounting functions and based on this new understanding there are important implications for accountants and organisations.

7.5 Limitations of the Thesis and Directions for Future Research

The findings and conclusions of this research have some important limitations that need to be considered when interpreting these results. Three of them are detailed below.

Firstly, although the research focused on accountants, the accounting community, and the artefacts and systems that affected or were affected by these actors, many of these actors also have memberships in other networks that were not followed or studied as thoroughly by the research. An example is the senior accountant in New Caledonia, who also holds the position of HR Manager. She highlighted this role when she explained that the problems of the previous BREPS were so bad that the staff actually approached her as a HR Manager and not as the chief accountant, to complain how difficult it was to use. The research did not fully follow the journey of this actor in terms of her role as HR Manager to other accountants in the branch. ANT only assumes the net effect of relationships with other actors and actants. The risk in this situation may be that the net result may be counter-intuitive if it was based on those other non-accounting relationships that were not considered.

Secondly, the researcher's role as a participant observer necessarily limited the capture of data to only those within the involvement of the artefacts that were available to him and to those that he observed and/or interviewed. Important events may have happened, in extremes behind the scenes, and he is only able to experience and record the net effect of these events. There is a saying accountants remember when having problems with reconciling debits and credits. If they balance to zero then

everything is fine. But if there is a discrepancy of $1, it is hard to know whether there is a missing $1,000,001.00 debit and a missing $1,000,000.00 somewhere else. This risk is again mitigated with ANT able to take the net result in consideration.

Thirdly, even though this was longitudinal research, it may be possible to see different results if the study were to be extended even further into the future. The networks are constantly transforming for as long as the community still exists. Therefore it must be kept in mind that the findings and conclusions could be revisited, if there are major external influences to the organisation in future.

Notwithstanding the limitations of this thesis, there could be several avenues of research to be followed in the future. Three of these are detailed below.

Firstly, future research could be undertaken about how accountants genuinely consider IT-based innovations as something of the 'old' before they are taken as something new and useful. Many actors were followed on their different journeys – thus it has been quite intriguing to see that many respondents gave this common point of view. It may very well have something to do with the nature of accounting processes and principles. It would be good to undertake research to confirm this or identify another possible interpretation of the relevant network translation.

Secondly, future research could be undertaken as to how organisations' centre of calculations could improve in exerting their influence over off-shore or physically remote locations through 'action at a distance'. From a practice perspective this issue becomes increasingly important as firms implement regional or global financial

offices managing geographically dispersed and culturally diverse teams. This further research could focus on the use of technology as an accounting device for the successful influencing of remote operations away from the centre of accounting excellence in iterative processes.

Finally, future research could be undertaken about an overlap between technology and accounting. When developing IT-based projects it has been suggested that that social networks be accounted for as a measure within the software development life-cycle (SLDC) process. This overlap could be investigated from the IT view point as a positive tool for ensuring successful outcomes for IT developers. In particular, additional research could be undertaken to verify and validate the counter-intuitive result that the adoption of technology-based innovation appears not linked to the completion of a technology product (FAIS) and its insertion into the IT ecosystem, but to the crucial events that happen during mobilisation.

APPENDIX

A.1 Additional List of Organisational Artefacts

The list below shows the examples of actors/actants encountered in this case study.

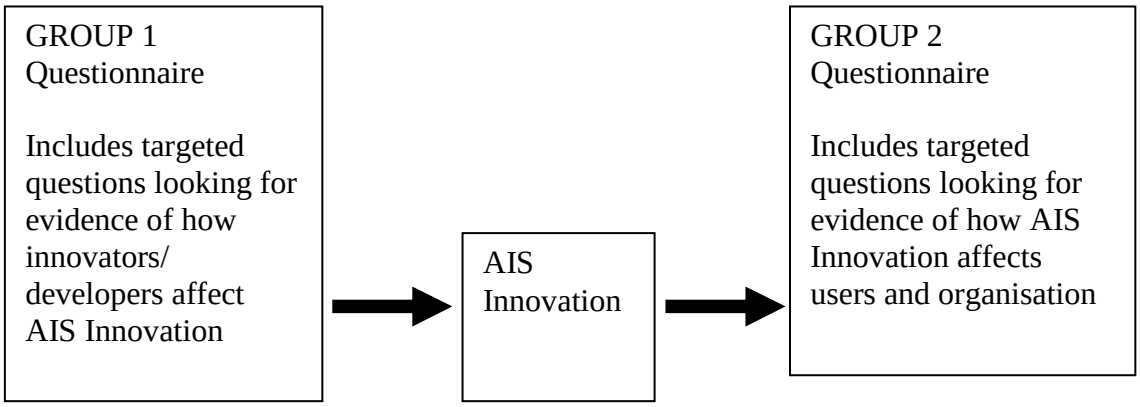
Actor	Artefact Type
IT Management	Collectivity of humans
CMMI Process Improvement	Graphical representation
Centralised IT vs. Regionalised IT	Technical artefact
Regionalisation – Asia, Pacific, Aust.	Graphical representation
IT Infrastructure	Technical artefact
Global IT Communications Network	Technical artefact
Rejected IT Innovations	AIS Innovations
Other IT Developers	Humans
FAIS developer	Humans
Regional Managers	Humans
Other Regions – US, UK, Americas	Collectivity of humans
Other IT Projects	Technical artefact
Regional Accountants	Humans
Other Regions – US, UK, America	Graphical representation
FAIS Accountants	Humans
FAIS – Reporting Software	AIS innovation
Country Accountants	Humans
Global Insurance Industry	Graphical representation
Richard Thames, GM Finance	Human
BREPS Financial Reports	AIS innovation
Board Reporting/ Market Reporting	AIS innovation
Australian Insurance Industry	Graphical Representation
Alex Burke, Finance Manager	Human
Organisation Culture	Graphical Representation
"The FINCO Way" of doing things	Texts
Mike Paterson, CFO Australasia	Human
Pre-2003 9/11 share price $14.90	Graphical Representation
Present Share price $62.	Graphical representation
Group / Senior Management	Collectivity of humans
FINCO Board	Collectivity of humans
Sharemarket	Graphical representation

A.2 Questionnaires

The patterns of innovation described in this thesis are from the researcher's initial observation and knowledge of FINCO from his role as the Lead Developer of the FIS Development project. However, observations represent only one actor's viewpoint. Other instruments such as texts, graphics, documents, emails and software, are available. These artefacts can be inspected to provide evidence of the existence of networks, and whether the networks resemble the descriptions in this chapter. Evidence can also be collected first-hand from the actors themselves, through interviews that could, themselves, be a form of inscription that is related to the translation to which the actor/interviewee belongs. The focal actors, for example, will constantly reinforce their control, and to document this is to express their perceptions that they have existing control of the network. Such a survey would call for a questionnaire that indirectly asks for evidence supporting the networks. With several kinds of networks envisioned, different questions may be relevant only to a specific network or network actors.

Two sets of questions were used in order to cater for the different actors and their roles relative to the AIS innovation: one for the initiators/creators of the AIS innovation, and one for those who will use it. The first group (creators/developers) consist of actors who mainly act upon the AIS innovation (an inscription device), and the second group comprises actors upon whom the AIS innovation primarily acts. Those actors who are early adopters/testers have dual roles as users and developers, so they were asked to respond to both questionnaires.

Two sets of survey questionnaires



Two sets of questions were devised for the accounting function. The first was designed for the innovator and early adopter group, those actors who created/promoted the BREPS reports and invited the project to improve the system. The second set was for the end-users of the innovation, those who utilise the AIS innovation in the course of their jobs. Listed below are the questions used in the survey.

A.2.1 Interview Questionnaire for USERS

INTRODUCTION:

This survey is a semi-structured interview regarding the AIS innovations that you are in the process of adopting. Some examples in FINCO that can be viewed as AIS innovations are: new general ledgers, BREPS Reporting, and FIS implementation of BREPS, Group Consolidation Processes, new insurance systems (as new subsidiary ledgers) and others.

PART 1: Background and Perspectives

1. Describe yourself and your role relative to the current AIS innovation. What skills and experience do you think you have that will be relevant to successful adoption of an AIS innovation and the eventual realisation of benefits to the organisation?
2. What are your views on the organisation's needs and directions regarding FINCO's Financial and Management Reporting (e.g. BREPS), or any other AIS innovation? What do you think are the goals of innovative AIS? What are the issues that you see in achieving the full potential of BREPS Financial and Management reporting for the organisation?

PART 2: AIS Innovation Projects and Diffusion Process

3. Describe the history and background of the AIS innovations you are involved with. What were the circumstances that got you personally involved in the innovation project? What do you think are the elements (e.g. people, tools, processes, organisation attributes, etc.) that are important in the development and subsequent adoption of that AIS innovation?
4. What other innovative accounting, reporting, financial, or information systems are you currently aware of? What other parts of the organisation are involved in these other projects.
5. How do these other projects/ systems relate to the current AIS you are involved in?
6. What do you think is the current level of acceptance, if any, of all innovation projects by end users and management? What is the level of acceptance that you see in the future? Can you mention any anecdotes/quotes that would characterise the adoption or non-adoption of other AIS innovations in the organisation?

PART 3: Role of Innovators, Adopters, Adoption Process and the Broader Organisation

7. As a user and potential adopter, what do you think will make yourself and others adopt the innovation? What do you have to gain personally if the AIS innovation is adopted? What would you or the organisation lose, if it were not adopted?
8. What do you think are the impacts to other organisational elements (people, systems, processes, culture) from the adoption or non-adoption of the AIS innovation? What are the issues you see as a potential adopter?
9. What actions/interventions do you think can be devised to increase acceptance of these innovative projects? Are there external influences that are increasing/ decreasing the adoption of your AIS project?
10. Where do you see the organisation in the future in regards adopting innovative changes in financial and management reporting?

Additional Question for Testers/Users

11. Do you see yourself more of an "innovator" or "end-user" of the product? Why? Which do you feel is more important?

THANK YOU FOR YOUR TIME!

A.2.2 Interview Questionnaire for INNOVATORS

INTRODUCTION:

This survey is a semi-structured interview regarding the AIS innovations that you are in the process of adopting. Some examples in FINCO that can be viewed as AIS innovations are: new general ledgers, BREPS Reporting, and FIS implementation of BREPS, Group Consolidation Processes, new insurance systems (as new subsidiary ledgers) and others.

PART 1: Background and Perspectives

1. Describe yourself and your role relative to the current AIS innovation.
2. What skills and experience do you think you have that will help or will be relevant to development of an AIS innovation and the work required ensuring its adoption.
3. What are your views on the organisation's needs and directions regarding FINCO's Financial and Management Reporting (e.g. BREPS), or any other AIS innovation? What do you think are the goals of innovative AIS? What are the issues that you see in achieving the full potential of BREPS Financial and Management reporting for the organisation?

PART 2: AIS Innovation Projects and Diffusion Process

4. Describe the history and background of the AIS innovations you are involved with. What were the circumstances that got you personally involved in the innovation project? What do you think are the elements (e.g. people, tools, processes, organisation attributes, etc.) that are important in the development and subsequent adoption of that AIS innovation?
5. What other innovative accounting, reporting, financial, or information systems are you currently aware of? What other parts of the organisation are involved in these other projects.
6. How do these other projects/ systems relate to the current AIS you are involved in?
7. What do you think is the current level of acceptance, if any, of all innovation projects by end users and management? What is the level of acceptance that you see in the future? Can you mention any anecdotes/quotes that would characterise the adoption or non-adoption of other AIS innovations in the organisation?

PART 3: Role of Innovators, Adopters, Adoption Process and the Broader Organisation

8. As an innovator, what do you think will make others adopt your innovation? What do you have to gain personally if your AIS innovation is adopted? What would you or the organisation lose, if it were not adopted?
9. What do you think are the impacts to other organisational elements (people, systems, processes, culture) from the adoption or non-adoption of the AIS innovation? What are the issues you see as an innovator?
10. What actions/interventions do you think can be devised to increase acceptance of these innovative projects? Are there external influences that are increasing/ decreasing the adoption of your AIS project?
11. Where do you see the organisation in the future in regards adopting innovative changes in financial and management reporting?

THANK YOU FOR YOUR TIME!

A.2.3 Pre-Survey Instrument

A pre-survey instrument was created and discussed with the Australasia Finance Manager (Alex Burke). The discussion was analysed to help generate a preliminary interview approach and prepare the final instrument for the rest of the respondents.

Interview Questionnaire

1. What is your name? What is your title/role in the organisation? What is your background?

2. What are your views on the organisation's value drivers regarding financial and management reporting?

3. What are the issues that you see, that prevent the full potential of financial and management reporting for the organisation?

4. What new projects are you aware of, that improve financial and management reporting? Which ones are you involved in?

5. At what stage of completion are these projects in, towards improving financial and management reporting?

6. What is the current level of acceptance, if any, of these projects by end users and management? What is the level of acceptance that you see in the future?

7. What role do you play in the adoption of these projects? What role do you see others in your organisation, play in the adoption of these projects? (Choose from the following what best describes a role: innovator, adopter, change agent, late adopter, early adopter, or others as you see fit.)

8. What actions/interventions have you observed that were used to increase acceptance of these innovative projects?

9. What suggestions do you have to best increase acceptance of innovative projects?

10. Where do you see the organisation in the future in regards adopting innovative changes in financial and management reporting?

THANK YOU FOR YOUR TIME!

A.3 Interview Schedule

Function	Title	Location	Type
Group Consolidation			
	Financial Controller 1 – HO	Sydney	Formal
	Financial Controller 2 – HO	Sydney	Formal
	Management Accountant 1	Sydney	Formal
	CFO 1	Sydney	Informal
	Accountant 1	Sydney	Informal
	Financial Controller 3	Sydney	Informal
Divisional Consolidation			
	Accountant 2	Sydney	Formal
	Financial Controller – Asia	Asia Regional (Singapore)	Formal
	Management Accountant 2	Sydney	Formal
	Accountant 3	Sydney	Formal
	GM - Pacific	Sydney	Formal
	Financial Controller – Pacific	Sydney	Formal
	Finance Manager – Asia-Pacific	Sydney	Formal
	CFO 2	Sydney	Informal
	Divisional GM	Asia Regional (Singapore)	Informal
	CFO 3	Sydney	Informal
Country Operations			
	Chief Accountant – Vanuatu	Vanuatu	Formal
	GM – New Zealand	NZ	Formal
	Financial Controller – Singapore	Singapore	Formal
	Chief Accountant – New Caledonia	New Caledonia	Formal
	Accountant 4	Singapore	Informal
	Accountant 5	Singapore	Informal
IT Department			
	IT Manager – Sydney	Sydney	Formal
	IT Manager – NZ	NZ	Formal
	CIO	Sydney	Formal
	IT Manager 1	Sydney	Informal
	IT Manager 2	Sydney	Informal
	IT Manager 3	Sydney	Informal
	IT Developer	Sydney	Informal
	IT Manager 4	Sydney	Informal

A.4 Final Ethics Approval Letter

MACQUARIE
UNIVERSITY ~ SYDNEY

Mr Antonio Elinon
68 Darcey Road
Castle Hill NSW 2154

6 June 2006

Dear Mr Elinon

FINAL APPROVAL LETTER

Title of Project: Implementing accounting information systems (AIS) using innovation diffusion approach
Reference Number: HE24JUN2005-D04176

Thank you for your correspondence dated 20 July 2005. Your responses have satisfactorily addressed the outstanding issues raised by the Committee. You may now proceed with your research. Approval has been granted, effective 20 July 2005.

Please note the following standard requirements of approval:

1. Approval will be for a period of twelve months. At the end of this period, if the project has been completed, abandoned, discontinued or not commenced for any reason, you are required to submit a Final Report on the project. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. The Final Report is available at http://www.ro.mq.edu.au/ethics/human/forms.
2. However, at the end of the 12 month period if the project is still current you should instead submit an application for renewal of the approval if the project has run for less than five (5) years. This form is available at http://www.ro.mq.edu.au/ethics/human/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 (see Point 1 above) 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).
3. Please remember the Committee must be notified of any alteration to the project.
4. You must notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that might affect continued ethical acceptability of the project.
5. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University (http://www.ro.mq.edu.au/ethics/human)).
6. If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide Macquarie University's Grants Officer with a copy of this letter as soon as possible. The Grants Officer will not inform external funding agencies that you have final approval for your project and funds will not be released until the Grants Officer has received a copy of this final approval letter.

Yours sincerely

P. Thez

P.P. **Dr Margaret Stuart**
Director of Research Ethics
Chair, Ethics Review Committee (Human Research)

CRO File: 05/953

ETHICS REVIEW COMMITTEE (HUMAN RESEARCH)
MACQUARIE UNIVERSITY (E11A)
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http://www.ro.mq.edu.au/eth_hum.htm

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