

The Use and Effectiveness of Management Control Systems in the Australian Public Sector

by

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CERTIFICATE OF ORIGINALITY

I hereby certify that this thesis is the result of my own research and that it has not, nor has any part of it, been submitted for a higher degree to any other university or institution. The sources of information used and the extent to which the work of others has been utilised, are acknowledged in the thesis. The thesis has also received the approval of the Ethics Review Committee (Human Research) at Macquarie University (Reference: 5201300539) (see Appendix B at the end of the thesis).

Nuraddeen Abubakar Nuhu

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LIST OF ABBREVIATIONS

ABC	Activity Based Costing
ABM	Activity Based Management
AGFI	Adjusted Goodness-of-Fit Index
AMOS	Analysis of Moment Structures
BSC	Balanced Scorecard
CBA	Cost Benefit Analysis
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CFO	Chief Financial Officer
CMAPs	Contemporary Management Accounting Practices
CMIN/DF	Ratio of Excellent Minimum Sample Discrepancy to Degrees of Freedom
FMI	Financial Management Initiative
GFI	Goodness-of-Fit Index
KPI	Key Performance Indicators
LOC	Levers of Control
MC	Management Control(s)
MCS	Management Control Systems
MI	Modification Indices
NCP	National Competition Policy
NPM	New Public Management
OECD	Organisation for Economic Co-operation and Development
RBV	Resource-Based View
ROI	Return on Investment

SCM	Strategic Cost Management
SE	Standard Error
SEM	Structural Equation Modelling
SME	Small Medium Enterprises
SPSS	Statistical Package for the Social Sciences
TQM	Total Quality Management
UK	United Kingdom
US	United States of America
VCA	Value Chain Analysis

ABSTRACT

This thesis examines the use and effectiveness of management control systems (MCSs) in the Australian public sector. In examining the use of MCSs the study considers three aspects of MCSs: management accounting practices (traditional and contemporary), the approaches to using MCSs (the interactive and diagnostic use of controls), and specific MCS characteristics (broad scope MCS information, the formality of MCSs and the tightness of MCSs). The effectiveness of MCSs is assessed based on the impact on organisational change, organisational performance, the perceived success of MCSs, and organisational capabilities (employee empowerment and strategic flexibility). Data was collected using a mail survey of 740 Australian public sector organisations with the formulated hypotheses tested using structural equation modelling (SEM).

The thesis adopts the “thesis by publication” format and identifies three related academic papers that address specific objectives. Paper One examines the extent of use of contemporary and traditional management accounting practices, and the relationship between the use of a package of contemporary and a package of traditional management accounting practices with organisational change and organisational performance. The results reveal that while the rate of usage of traditional management accounting practices was high, the usage of contemporary management accounting practices was low. In addition, while there was no association between the use of a package of traditional management accounting practices with organisational change and organisational performance, a positive association exists between the use of a package of contemporary management accounting practices with both organisational change and organisational performance.

Given the importance of contemporary management accounting practices for organisational change and performance, Paper Two examines the association between the interactive and diagnostic use of MCSs with the extent of adoption of contemporary management accounting practices, and the subsequent impact on the success of such practices. It was found that both the interactive and diagnostic approaches to using MCSs were positively associated with the adoption of contemporary management accounting practices, either as a package or independently. Furthermore, although the level of success of contemporary management accounting practices was moderate, the success of such practices was enhanced by the extent of their adoption.

Paper Three examines the mediating role of organisational capabilities (strategic flexibility and employee empowerment) in the relationship between the interactive and diagnostic approaches to using MCSs and the characteristics of MCSs (broad scope MCS information, the formality of MCSs and the tightness of MCSs) with organisational change and organisational performance. The results reveal that both strategic flexibility and employee empowerment mediate the association between the interactive approach to using MCSs, broad scope MCS information and the formality of MCSs with organisational performance, while strategic flexibility mediates their relationship with organisational change. Furthermore, employee empowerment mediates the association between the tightness of MCSs and organisational performance.

The thesis contributes to the literature from a number of theoretical perspectives. In providing an empirical insight into the effectiveness of MCSs in the public sector, the thesis contributes to the limited studies evaluating the effectiveness of MCSs in the public sector, thereby providing assistance to public sector practitioners. The study also contributes to the MCS-contingency theory research in two major ways: first in addressing the dearth of studies

examining the use of management accounting practices as a package, and secondly by considering the interdependency between aspects of MCSs in examining the association between the use of controls and the adoption of management accounting practices in Paper Two. Furthermore, the study also extends the resource-based view (RBV) perspective by highlighting the role of organisational capabilities (employee empowerment and strategic flexibility) in mediating the association between the approaches to using MCSs and the characteristics of MCSs with both organisational change and organisational performance.

CHAPTER ONE

INTRODUCTION

The role of the public sector in the economic, social and political lives of societies is substantial (Grote, 2000), with public sector organisations providing the main sources of employment in most countries (Gelb et al., 1991). The public sector is also the main provider of utilities and medium of income redistribution (Besley and Coate, 1991). Traditionally, the public sector was mandated with the “provision of social welfare, equity and equality in the delivery of services” (Boyne, 2002, 100), with “an absence of business values” (Hood, 2000, 7). Accordingly, the structure and control systems of the traditional public sector, designed based on Weberian bureaucracy (Dunleavy and Hood, 1994), were distinct from those of the private sector. Specifically, the structure and control systems were characterized by rigidity of hierarchy, centrality of authority, and formality of rules and procedures (Dunleavy and Hood, 1994; Hood, 2000; Verbeeten, 2008). However, in many countries, such systems were considered to be inefficient and ineffective, and considered to not meet the accountability requirements of the community. Further, amidst criticism of poor performance, excessive red tape, bureaucracies, redundancy and corruption, the transformation of the public sector was advocated (Hood, 2000; Mothusi, 2008).

Accordingly, the 1980s and 1990s were greeted with a series of public sector reforms in many countries (Mascarenhas, 1993) including Collaborative Public Management in the United States; the Financial Management Initiative (FMI) in the United Kingdom; and the State Sector and Public Finances Act in New Zealand (Christensen and Lægreid, 2007; Hoque and Moll, 2001; Mascarenhas, 1993), with the New Public Management (hereafter NPM) reforms dominating OECD countries (Alonso et al., 2015; van Gramberg and Teicher, 2000). The NPM reforms promote changing the traditional work environment of the public sector, with public sector organisations expected to adopt private sector management

practices and operate in a private sector-like fashion (Brunetto and Farr-Wharton, 2005). Australia, the United Kingdom and New Zealand were among the pioneers of the NPM (Hood, 1991, 1995; Lapsley, 2009), with Australia introducing a significant economic policy, the National Competition Policy (NCP) in the 1990s, which was geared toward espousing public institutions to adopt NPM ideals (Hoque and Moll, 2001). Whilst the challenges prompting the NPM-related reforms have manifested since the 1980s, the relevance of the NPM ideals have been accentuated by recent challenges facing the public sector. These include the increased influence of the global economy on the actions of governments in the early twenty-first century (Lapsley, 2009); the recent global financial crises and intensified fiscal pressures; and “the need for making best use of reduced resources in public services” (Arnaboldi et al., 2015, 2).

However, while the proponents of the NPM reforms have advocated that the implementation of such reforms will make the public sector more entrepreneurial and commercially oriented, and enhance the efficiency, effectiveness, and managerial accountability of public sector organisations (Christensen and Lægreid, 2015; De Vries and Nemec, 2013; Hood, 1995; Kominis and Dudau, 2012), there have been questions as to whether public sector organisations have really transformed and whether such reforms have yielded the intended benefits. For instance, despite the advocacy “to adopt a greater emphasis on change, flexibility, entrepreneurialism, outcomes, efficiency, and productivity” (Parker and Bradley, 2000, 125), Parker and Bradley (2000) indicated that the culture of many public sector organisations in Australia is still bureaucratic with an emphasis on control and rules, while Harrison and Baird (2015) provided empirical evidence of the lack of change in the organisational culture of Australian public sector organisations. Accordingly, given uncertainty as to whether the intended benefits of the NPM have manifested, a study investigating the effectiveness of the NPM ideals is warranted.

The objective of the NPM to transform the public sector to be more efficient, effective, accountable and better performing (Arnaboldi et al., 2015) “through the application of management techniques borrowed from the private sector” is now a policy agenda of many public sectors around the world (Alonso et al., 2015, 644). Consequently, while the control systems in the public sector have tended to be bureaucratic in nature, the NPM reforms mandate the adoption of private sector oriented systems which has enlarged the scope of management control systems (hereafter MCSs)¹ used in the public sector (Appuhami, 2011). Thus, while MCSs were introduced to meet the needs of manufacturing firms (Mohd Amir, 2014) and hence customarily regarded as relating to the private sector (profit oriented) domain (Hofstede, 1981), they are now considered to be central to the NPM reforms, due to their focus on accountability (Liguori, 2012) and their ability to efficiently and effectively control organisational resources (Mohd Amir, 2014; Umashev and Willett, 2008), and given their potential to make “public sector managers responsible and accountable for providing services in a financially efficient manner” (Nor-Aziah and Scapens, 2007, 210). However, although the central theme of the NPM is the importation of private sector management principles and practices in the public sector (Dunleavy and Hood, 1994), due to the fundamental differences in the context of the two sectors (Boyne, 2002; Parker and Guthrie, 1993; Robertson and Seneviratne, 1995), there is concern that private sector principles and practices, including MCSs, may not be effective in the public sector. Therefore, amidst debate as to whether private sector oriented principles and practices are effective in the public sector, this study aims to contribute to the limited empirical research examining the effectiveness of private sector oriented practices in the achievement of public sector reform objectives (Norman, 2001; Verbeeten and Speklé, 2015). Specifically, in response to studies calling for the evaluation of the effectiveness of public sector reform objectives (Cuganesan

¹ A MCS consists of organizational systems and processes that aid an organization to successfully implement its strategy (Merchant, 1982), influence intended behaviours (Flamholtz et al., 1985) and achieve other organizational outcomes (Kober et al., 2007).

et al., 2012; Hassan, 2005; Verbeeten and Speklé, 2015), this study contributes to the scant research examining the use and effectiveness of MCSs in the public sector.

In examining the use and the effectiveness of MCSs, the thesis focuses on three aspects of MCSs including management accounting practices (i.e. contemporary and traditional practices), the approaches to using MCSs (i.e. the interactive and diagnostic use of MCSs) and the characteristics of MCSs (i.e. broad scope MCS information, the formality of MCSs and the tightness of MCSs). These aspects have contrasting features with traditional management accounting practices, the diagnostic use of MCSs, and the formality and tightness of MCSs having bureaucratic (constraining) features, while contemporary management accounting practices, the interactive use of MCSs and broad scope MCS information are of a more flexible nature.

Considering that improving performance, undertaking changes and developing organisational capabilities are objectives promoted by the NPM reforms, the thesis evaluates the effectiveness of MCSs based on the impact on such NPM reform objectives. The focus on these NPM objectives is pertinent for a number of reasons. Firstly, the central theme of the NPM is the introduction of private sector management principles “to foster economy, efficiency and effectiveness of government-led operations” (Kominis and Dudau, 2012, 142), for the aim of improving the overall performance and accountability of government organisations (Baird, 2007; De Vries and Nemec, 2013; Hood, 1995); reducing public expenditure; and improving the quality of public services (Barretta and Busco, 2011). Secondly, the NPM lead reforms also aim to bring about changes to the operations of government organisations (Baird, 2007; De Vries and Nemec, 2013), with public sector organisations required to undertake change to adapt to the increasing changes in their business environment (Diefenbach, 2009). Finally, the NPM associated reforms promote the

development of internal capabilities in the public sector (Pablo et al., 2007), with such capabilities aiding in addressing the dwindling resources in the public sector (Bryson et al., 2013; Pablo et al., 2007). Such capabilities include increased flexibility (Verbeeten and Speklé, 2015), innovation (Orchard, 1998), and the decentralization of decisions and empowerment of public employees (Norman, 2001; Verbeeten and Speklé, 2015).

1.1 Motivation

1.1.1 What is the extent of use and effectiveness of MCSs in the public sector?

While there is a plethora of research on MCSs in the context of the private sector, the findings may not necessarily apply to the public sector, with Stoel and Muhanna (2009) identifying the type of industry or sector as an important contingency factor which may influence the use and effectiveness of MCSs. However, with the exception of performance measurement systems, studies on the various aspects of MCSs in the public sector are limited (Cuganesan et al., 2012; Verbeeten and Speklé, 2015). Accordingly, the first motivation of this thesis is to provide an insight into the extent to which the three aspects of MCSs (management accounting practices, approaches to using MCSs and MCS characteristics) are used in the public sector, thereby facilitating an understanding of the extent to which private sector oriented MCSs are prevalent in public sector organisations. This will inform policy about the degree to which public sector organisations are embracing the NPM reforms, and hence contribute to the debate as to whether the public sector is really changing as advocated by the NPM reforms (Bradley and Parker, 2006).

Furthermore, although studies in the private sector have examined the outcomes of MCSs, little is known in respect to the context of the public sector. Hence, the thesis is motivated to provide an insight into the effectiveness of the three aspects of MCSs (management

accounting practices, approaches to using MCSs and MCS characteristics) in the public sector. Specifically, the thesis examines the effectiveness of MCSs based on the perceived success (usefulness) of MCSs, as well as how such systems aid in the achievement of the NPM reform objectives including organisational change, performance improvement and the development of organisational capabilities. In addition to contributing to the knowledge concerning the effectiveness of private sector oriented systems in the public sector, such an insight will provide practitioners with an understanding of which MCS aspects to emphasize to achieve public sector reform objectives, and how to leverage on MCSs in achieving public sector reform objectives.

1.1.2 What is the effectiveness of the use of management accounting practices as a package?

Management accounting practices are broadly categorised into traditional and contemporary management accounting practices based on their distinctive features and/or period of their development. Traditional management accounting practices are those practices that were developed by the 1920s (Kaplan and Johnson, 1987) and tend to be internally and financially oriented (Chenhall and Langfield-Smith, 1998a; Pavlatos and Paggios, 2008). Conversely, contemporary management accounting practices are those management accounting practices that have been developed since the 1980s (Kaplan and Johnson, 1987), with one of their main features being the ability to relate processes with strategies (Chenhall and Langfield-Smith, 1998b). The existing studies on the effectiveness of management accounting practices have mainly examined the effect of specific management accounting practices in isolation (independently) (Bedford and Malmi, 2015; Grabner and Moers, 2013) with inconsistent findings reported. Specifically, some studies (Abernethy and Lillis, 1995; Baines and Langfield-Smith, 2003; Davis and Albright, 2004; Grafton et al., 2010; Hoque and James, 2000; Jermias and Gani, 2004; Kennedy and Affleck-Graves, 2001; Maiga and Jacobs, 2008;

Sim and Killough, 1998) have reported positive relationships between management accounting practices and organisational performance, while others (Hoque, 2004; Ittner et al., 2002; Perera et al., 1997) have reported adverse or no relationships. Similarly, studies (Abernethy and Chua, 1996; Ezzamel, 1994; Modell, 2001; Soin et al., 2002) examining the impact of management accounting practices on organisational change have reported mixed findings.

While there are assertions that management accounting practices operate as a package (Bedford and Malmi, 2015; Grabner and Moers, 2013; Luft and Shields, 2003; Speklé, 2001), there is a dearth of research examining the effectiveness of management accounting practices from a package perspective. Examining the use of management accounting practices as a package is considered important as it takes a holistic view of management accounting practices, and is based on real life, whereby multiple practices are used at the same time (Grabner and Moers, 2013). Given Chenhall's (1997) assertion that for contemporary management accounting practices to improve organisational performance such practices need to be mutually supported, the concept of management accounting practices as a package may explain the effectiveness of such practices (Bedford and Malmi, 2015; Sandelin, 2008).

The concept of a package is relatively new, with the few previous studies primarily conducted in the context of the private sector. However, due to the advocacy of the diffusion and/or coercion to use innovative management accounting practices, the use of management accounting practices as a package is also relevant for the public sector, and a number of such practices are expected to be in place. Hence, in response to the call to examine the use of management accounting practices as a package (Malmi and Brown, 2008), the second motivation of this thesis is to provide an insight into the effect of the use of a package of

traditional and a package of contemporary management accounting practices on organisational change and organisational performance in the public sector.

In addition, there are a few emerging studies (Phan et al., 2014; Pierce and Brown, 2006) that have examined the effect of the extent of adoption of management accounting practices on their success, with such studies focusing mainly on Activity Based Costing/Management, and no such studies having considered the use of management accounting practices as a package. Accordingly, the thesis is also motivated to extend the limited studies on the impact of the adoption of contemporary management accounting practices on the success of such practices, both individually and as a package. This will provide public sector practitioners with understanding as to whether deploying a number of management accounting practices at the same time will facilitate the effectiveness of such practices.

1.1.3 What is the interrelationship between different aspects of MCSs?

Contingency theory has been a dominant perspective explaining the use of MCSs in general, and the adoption of management accounting practices in particular. While the typical contingency factors examined in the literature include environmental uncertainty, strategy, organisational structure and organisational culture, based on the assertion that interrelationships exist between certain aspects of MCSs, a few studies (Agostino and Arnaboldi, 2012; Henri, 2006a) have empirically examined the association between the approaches to using MCSs and the extent of adoption of contemporary management accounting practices. These studies, however, have mainly focused on the Balanced Scorecard. While these studies provide an insight into a specific contemporary management accounting practice, there is no study which has examined the practices as a package, although in reality management accounting practices operate as a package (Grabner and

Moers, 2013). Consequently, the third motivation of this thesis is to contribute to the MCS-contingency literature by examining the association between the approaches to using MCSs (the interactive and diagnostic use of controls) and the adoption of a number of contemporary management accounting practices, both individually and as a package. The results will provide organisations with an insight on how to utilise their MCS environment to facilitate the use of contemporary management accounting practices.

1.1.4 What is the role of organisational capabilities in explaining the effectiveness of MCSs?

Informed by the resources-based view (RBV) theory², recent private sector MCS studies (Bisbe and Otley, 2004; Henri, 2006b) have investigated the mediating role of organisational capabilities in the relationship between the approaches to using MCSs and organisational performance. Developing internal capabilities enables organisations to address the problems associated with the problem of the availability of external resources, a problem facing many public sectors (Pablo et al., 2007). However, despite the increased relevance of organisational capabilities as part of the public sector reform objectives (Pablo et al., 2007), “there has been little attention to this issue in the literature” (Pablo et al., 2007, 688), while there is a dearth of research examining the relationship between MCSs and organisational capabilities in the public sector. Furthermore, while existing studies, in the context of the private sector, have focused on the impact of the interactive and diagnostic approaches to using MCSs on organisational capabilities, other aspects of MCSs may also promote organisational capabilities (Whitley, 1999). Accordingly, given these gaps in the literature, the fourth motivation of this thesis is to extend the literature by examining the mediating role of two organisational capabilities (strategic flexibility and employee empowerment) on the association between the approaches to using MCSs and MCS characteristics with

² The resource-based view perspective asserts “that valuable, costly-to-copy firm resources and capabilities provide the key sources of sustainable competitive advantage” (Hart, 1995, 986).

organisational change and performance in the public sector. This examination will provide an insight into the role that organisational capabilities play in the public sector reforms, and inform public sector practitioners as to how they can develop such capabilities in their organisations.

1.2 Aim and objectives

The aim of the thesis is to examine the use and effectiveness of three aspects of MCS (management accounting practices, approaches to using MCSs and MCS characteristics) in Australian public sector organisations.

To achieve this aim, the thesis addresses the following specific objectives:

- 1.** To examine the extent of use of management accounting practices and the association between a package of traditional and a package of contemporary management accounting practices with organisational change and organisational performance.
- 2.** To examine the influence of the approaches to using MCSs (interactive and diagnostic use of MCSs) on the adoption of contemporary management accounting practices, and the subsequent impact of the extent of adoption of contemporary management accounting practices on the success of such practices.
- 3.** To examine the mediating role of organisational capabilities in the relationships between the approaches to using MCSs (interactive and diagnostic use of MCS) and MCS characteristics (broad scope MCS information, the formality and the tightness of MCSs) with organisational change and organisational performance.

Although a number of theoretical perspectives inform studies on MCSs including economics (such as agency theory), psychology, institutional, and contingency theories, in line with the research objectives the thesis is informed by the contingency and RBV theories due to the role of such theories in explaining the use of MCSs and their effectiveness. Specifically, given that contingency theory has been a predominant theory explaining the use of MCSs (Chenhall, 2003), this theory is chosen as the theoretical lens informing the use of MCSs. Contingency theory has also largely informed studies on the effectiveness of MCSs (Chenhall, 2003). Hence, this study adopts contingency theory to explain the effectiveness of MCSs. Additionally, an emerging line of research (Bisbe and Otley, 2004; Henri, 2006a), the RBV theory, recognises that the effectiveness of MCSs could be at the capabilities level. Hence, RBV theory is used to assess the effectiveness of MCSs in this study.

1.3 Overview of the three papers

The format of this thesis is thesis by publication³. The thesis involves three individual, but interrelated papers that all emanate from the overall aims of the thesis. Each of the papers addresses specific objectives of the thesis, with an overview of the three papers presented below.

Paper One: The association between the use of management accounting practices with organisational change and organisational performance

This paper examines the extent to which public sector organisations are using traditional and contemporary management accounting practices, both individually and as a package. The paper also examines the effectiveness of a package of contemporary management accounting

³ As an alternative to a traditional thesis format, thesis by publication involves a number of interrelated academic format papers including an overall introduction, literature review, the three papers, and a conclusion based on the findings of the individual papers. A thesis by publication approach is the preferred format of a Macquarie University PhD thesis.

practices and a package of traditional management accounting practices by examining their association with organisational change and organisational performance.

The results indicate that while the extent of adoption of traditional management accounting practices was higher than that of contemporary management accounting practices, there was no association between the use of traditional management accounting practices with either organisational change or organisational performance. Alternatively, it was found that the extent to which contemporary management accounting practices were used as a package positively influenced both organisational change and organisational performance. Given the majority of the existing studies have examined management accounting practices individually, the findings contribute to the literature by examining the use of management accounting practices as a package. Specifically, the paper provides the first empirical insight into the use of management accounting practices as a package in the public sector. The paper offers practical implications to public sector practitioners by highlighting how innovative management accounting practices are effective in addressing the public sector reform objectives. Hence, it is suggested that given the low rate of usage reported, public sector organisations should endeavour to increase the use of contemporary management accounting practices.

Paper Two: The adoption and success of contemporary management accounting practices in the public sector

Given the increased advocacy for the adoption of contemporary management accounting practices and the lower adoption rates reported, this paper examines the association between the approaches to using MCSs and the extent of adoption of contemporary management accounting practices. The results indicate that both the interactive and diagnostic approaches to using MCSs have an impact on the adoption of contemporary management accounting

practices, both as a package and individually. The paper also examines the impact of the extent of adoption on the success of such practices, finding that the extent of adoption of contemporary management accounting practices, both as a package and independently, impacted the success of the practices.

The findings of this paper extend the contingency-based research on the interrelationship between aspects of MCSs. The paper also contributes to the literature with respect to the dearth of contingency research in the public sector context. In addition, the paper's findings extend the limited studies on the effect of the adoption of management accounting practices on their success. The implication of the findings for practitioners in general and public sector managers in particular is that organisations could enhance both the extent of adoption and success of contemporary management accounting practices by leveraging the relationship between aspects of MCSs.

Paper 3: The association between the approaches to using MCSs and the characteristics of MCSs with organisational change and organisational performance: the mediating role of organisational capabilities

This paper aims to address the gap in the literature examining the role of organisational capabilities in explaining the effectiveness of MCSs. Specifically, the paper examines the role of two organisational capabilities (strategic flexibility and employee empowerment) in mediating the relationship between the approaches to using MCSs (interactive and diagnostic use of MCSs) and MCS characteristics (broad scope MCS information, the tightness of MCSs and the formality of MCSs) with organisational change and organisational performance in the public sector.

It was found that strategic flexibility and employee empowerment mediate the association between the interactive approach to MCSs and organisational performance. Strategic flexibility also mediates the relationship between the interactive approach to MCSs and organisational change, while no evidence was found of the mediating effect of organisational capabilities in the relationship between the diagnostic approach to MCSs with organisational change and organisational performance. The study also found that strategic flexibility and employee empowerment mediate the association between broad scope MCS information and the formality of MCSs with organisational performance, strategic flexibility mediates the association between broad scope MCSs information and the formality of MCSs with organisational change, and employee empowerment mediates the association between the tightness of MCSs and organisational performance.

These findings advance the emerging literature on the role of the resource-based view (RBV) in explaining the effectiveness of MCSs. The findings also reinforce the competing value theory which posits that systems exhibiting flexibility and control are both needed to achieve organisational objectives. The implications of the findings are that public sector practitioners in particular and managers in general should utilise MCSs in enhancing organisational capabilities, and in turn, organisational objectives (change and performance). Similarly, the findings indicate that both constraining (bureaucratic) and flexible (less bureaucratic) MCSs are effective in public sector organisations.

1.4 Organisation of the thesis

The remainder of the thesis is organised as follows. Chapter Two provides the literature review relating to MCSs and the context of the study. Chapters Three, Four and Five then present the three individual papers with separate appendices and references provided at the end of each paper. Chapter Six provides a summary of the thesis findings and the overall

conclusion. The research instrument, the ethics approval form and references are presented at the end of the thesis.

CHAPTER TWO

LITERATURE REVIEW

2.1 Management control systems (MCSs)

Typically, MCSs are regarded as tools of implementing strategies (Simons, 1991), with Merchant (1982) defining MCSs as the processes and/or procedures taken by management to implement or modify strategies. MCSs are also perceived as the way managers use processes and procedures to promote the achievement of their organisational goals (for example, Bisbe and Otley, 2004; Kloot, 1997; Kober et al., 2007; Ouchi, 1977). For instance, Ouchi (1979) regards MCSs as tools used to achieve organisational goals through cooperation from various employees and organisational units, and Kloot (1997) refers to a MCS as a system used to enable the achievement of organisational goals through the efficient and effective use of resources. Other scholars define MCSs from a behavioural perspective, with Abernethy and Chua (1996) and Flamholtz et al. (1985) referring to the MCS as a process of influencing behaviour. Similarly, Euske and Riccaboni (1999) define the MCSs as the process of managing internal interdependencies by aligning employees' behaviour with the objectives of an organisation. Finally, Simons (1994) views the MCS as facilitating change, regarding it as a way of altering or maintaining organisational activities through formal information-based routines and procedures.

The nature of a MCS in the public sector is originally different from that of the private sector due to the principal differences between the two sectors. Specifically, while the private sector is known for its profit motive, the public sector is known for its provision of social welfare, equity and equality in the delivery of services, an “absence of competitive pressure” (Boyne, 2002, 100), and “an absence of business values and techniques” (Hood, 2000, 7). Historically, control in the public sector has occurred through political or public accountability and controls (Broadbent and Laughlin, 2003). The traditional public sector

controls and structures were designed based on Weberian bureaucracy, founded on Max Weber's famous ideal type of bureaucracy in 1911 (Dunleavy and Hood, 1994). Such controls and structures were characterized by rigid hierarchy, reliance on files and written records, centrality of authority and formalized rules and procedures (Dunleavy and Hood, 1994; Hood, 2000; Verbeeten, 2008). However, in many countries, such structures and controls were considered to be inefficient and ineffective, and considered to fail to meet the accountability requirements of society. Accordingly, a number of reforms have taken place in many public institutions in many countries including the Collaborative Public Management in the United States; the Financial Management Initiative (FMI) in the United Kingdom; and the State Sector and Public Finances Act in New Zealand (Christensen and Lægreid, 2007; Hoque and Moll, 2001; Mascarenhas, 1993). In Australia, a national legislation, National Competition Policy (NCP), was implemented in 1993, aimed at transforming the public sector towards the NPM ideals.

The NPM reform has assumed a dominant role in the reforms of the public sector in the 1980s, 1990s (Lapsley, 1999) and beyond (Lapsley, 2009; Levy, 2010), and is considered a blueprint for the transformation of the public sector in OECD (Hood, 1995) and developing countries (De Vries and Nemec, 2013; Lapsley, 2009). Although there are overlaps of what NPM entails, some commentators consider the “central element of the reform programme associated with New Public Management (NPM)” as the importation of “managerial processes and behaviour from the private sector” (Boyne, 2002, 97). In particular, Lapsley (2009) and Barretta and Busco (2011) regard NPM as the deployment of private sector management practices in an attempt to transform and modernize the public sector. Thus, many of the private sector oriented management and control mechanisms are expected and even encouraged to be diffused into the public sector (Lapsley, 2009), and as such “the past decade has witnessed various changes in the management control of public sector

organizations” (Verbeeten, 2008, 429). Accordingly, considering that the NPM “has enlarged the scope of the MCS used in the government sector” (Appuhami, 2011, 130), this thesis provides an insight into the nature of the MCSs used and their effectiveness in the public sector. This is imperative given the controversies as to whether the public sector is really transforming towards a private sector orientation and whether the private sector oriented systems and practices are yielding the expected benefits espoused by the NPM reforms.

2.1.1 Aspects of MCSs

While the terms management accounting systems and management accounting practices are used interchangeably with MCSs, the MCS is a broader concept comprising other aspects in addition to management accounting practices (Chenhall, 2003). Specifically, the various aspects of MCSs include management accounting practices, the characteristics of MCSs, the manner (approach) of using MCSs, and different typologies of control.

This thesis examines three aspects of MCSs, including management accounting practices, the approach to using MCSs and the characteristics of MCSs. These aspects of MCSs are examined due to their comprehensiveness and relevance to the context of the study. Management accounting practices are organisational information systems that provide an organisation with relevant information to add value to its customers and the organisation at large (Langfield-Smith, 2009). These practices also aid organisations to promote intended behaviour and facilitate effective decision making (Axelsson et al., 2002). Management accounting practices are broadly categorised into traditional and contemporary practices, based on the period of their development and/or their characteristics. While traditional practices are those management accounting practices that were developed prior to the 1980s (Kaplan and Johnson, 1987), contemporary management accounting practices were

developed over the last three decades. The distinctive features of traditional management accounting practices are that they are short term in focus, and internally and financially oriented (Chenhall and Langfield-Smith, 1998a; Pavlatos and Paggios, 2008). In contrast, contemporary management accounting practices are strategic in nature, focusing on the provision of both historic and future, financial and non-financial, and internal and external information (Chenhall and Langfield-Smith, 1998b; Hyvönen, 2005). The contemporary and traditional management accounting practices examined in this study are adapted from Chenhall and Langfield-Smith's (1998a) framework of management accounting practices, and include eight contemporary practices (Benchmarking, Activity Based Management, Activity Based Costing, the Balanced Scorecard, Value Chain Analysis, Total Quality Management, Key Performance Indicators and Strategic Cost Management) and seven traditional practices (Formal Strategic Planning, Budgeting for Planning and Control, Capital Budgeting, Cost Benefit Analysis, Standard Costing, Variance Analysis, and Return on Investment).

The approach to using MCSs refers to the manner in which MCSs are used and is drawn from Simons' (1995) levers of control framework which comprises four dimensions (beliefs, boundaries, interactive and diagnostic control systems). This framework has been adopted by many MCS studies (Abernethy and Brownell, 1999; Bisbe and Malagueño, 2009; Bobe and Taylor, 2010; Henri, 2006b; Sakka et al., 2013; Su et al., 2015; Widener, 2007) and suggests that MCSs can be either used in an interactive or diagnostic manner. The diagnostic approach to using MCSs involves managers using the MCS to monitor organisational outcomes and correct any deviations from pre-standard measures. Alternatively, when MCSs are used in an interactive manner, managers personally engage with subordinates (Simons, 1995), and promote learning and opportunity seeking behaviour (Theriou et al., 2009).

In examining MCS characteristics, emphasis is placed on the extent to which the use of MCS elements varies between organisations (Whitley, 1999). In this study, three MCS characteristics are adopted from Whitley's (1999) MCS characteristics framework: formality (formalization), tightness of MCSs, and the scope of MCS information. Formality is regarded as the extent to which a firm emphasizes formal rules and procedures, implying higher institutionalization of impersonal rules. Tightness of MCSs is the extent to which group and organisational behaviour are defined and controlled. Finally, the scope of MCS information refers to the degree of broadness or narrowness of information provided by an organisation's MCSs (Whitley, 1999).

The thesis research questions on the use and effectiveness of these three aspects of MCSs were informed by a review of the MCS literature, a summary of which is provided in the remainder of the chapter. As an important organisational system, a number of studies have been conducted on MCSs, spanning across different sectors and industries. These studies can be broadly classified as those that examine the use of MCSs (see Section 2.2) and those examining its effectiveness (see Section 2.3). With respect to the use of MCSs, Paper One examines the extent of use of traditional and contemporary management accounting practices, and Paper Two focuses on the factors influencing the use of contemporary management accounting practices. Paper Three investigates the extent to which MCSs are used in an interactive and diagnostic manner, and the extent of focus on broad scope MCS information, the formality of MCSs, and the tightness of MCS. All three papers also examine the effectiveness of MCSs.

2.2 Factors influencing the use of MCSs

Studies examining the antecedents to MCSs have traditionally been informed by contingency theory. Contingency theory is based on the premise that there is no one universal way of

designing organisational systems (MCSs in particular), and consequently the use of an organisation's MCS rests on the fit between the system with internal and external factors (contextual factors) (Tuan Mat, 2010). Some of the generic contextual variables examined in contingency theory based research include structure, organisational culture, strategy, environmental uncertainty, technology, and organisational life cycle stages (Chenhall, 2003). A review of the literature reveals that there are a number of studies on the influence of such contingency factors on various aspects of MCSs including MCS characteristics, the approaches to using MCSs and management accounting practices.

With respect to MCS characteristics, using a survey Chenhall and Morris (1986) examined the influence of organisational structure including structural decentralization and organisational interdependence on specific MCS information characteristics. Among other findings, the study found that decentralization was related to a preference for aggregated and integrated information; and organisational interdependence was associated with the use of broad scope, aggregated, and integrated information. In addition, Chenhall and Morris (1986) found that perceived environmental uncertainty was positively associated with the broadness of MCSs and the timeliness of information, while Chenhall (2003) employed previous research findings to suggest that centralized control systems and formality are appropriate for organisations employing a defender, harvest and/or cost leadership strategy typology. In contrast, those organisations with an entrepreneurial orientation and/or employing a prospector, build and/or product differentiation strategy were experiencing less standardized procedures and more flexible structures and processes. Finally, Mia and Clarke (1999) found that the intensity of marketing competition influenced managers' use of MCS information.

A number of studies have also examined the relationship between contingency factors and the interactive and diagnostic approaches to using MCSs. For instance, while examining the

role of organisational factors (management characteristics) on the approaches to using MCSs, Naranjo-Gil and Hartmann (2006) found that the professionalism of top management was positively associated with the interactive use of MCSs. Bobe and Taylor (2010) investigated the influence of professional and experiential characteristics of management on the use of MCSs in Australian universities, finding that managers with longer careers in higher education used MCSs in a more interactive manner. Furthermore, in examining the antecedents of the approaches to using MCSs in a survey of project managers, Sakka et al. (2013) found that while the project managers' level of discretion positively influenced the use of project MCSs in an interactive manner, there was no association with the diagnostic use of MCSs.

The literature reveals that there are a number of studies examining the various contingency factors influencing the adoption/use of management accounting practices. For instance, while examining the relationship between organisational structure with management accounting practices, King et al. (2010) found that structure and size influenced the adoption of budgets, and Gosselin (1997) found that a high vertical differentiation structure influenced the adoption of Activity Based Costing and other Activity Based Practices, while centralization and formalization were found to be associated with Activity Based Costing. In respect to organisational culture, Baird et al. (2004) found that three organisational culture dimensions (tight/loose control, innovation, and outcome orientation) were associated with the adoption of Activity Based Practices. Similarly, in a survey of Australian manufacturing and service firms, Baird et al. (2011) found that outcome oriented and innovative cultures were related with the adoption of Total Quality Management practices, while in a survey of Chinese and Hong Kong companies Pun (2001) found a significant relationship between Chinese cultural values and Total Quality Management.

In respect to strategy, whilst examining the influence of strategic posture on the adoption of Activity Management Practices in a survey of Canadian manufacturing firms, Gosselin (1997) found that prospector organisations adopt Activity Management more than defenders and analysers. In addition, Hoque (2004) found that strategic priorities positively influenced the use of non-financial performance measures. Similarly, Cadez and Guilding (2008) found that company size and strategic choices (prospector strategy and deliberate strategy formulation) positively influenced the use of Strategic Management Accounting. Finally, Verbeeten (2006) reported a positive association between environmental uncertainties and the use of Sophisticated Capital Budgeting, while Ax et al. (2008) found that the intensity of competition positively influenced the adoption of Target Costing.

In addition to these contingency studies, based on the premise of the interrelationship between aspects of MCSs, a relatively new line of research has considered the approach to using MCSs as a potential contingency factor affecting the adoption/use of management accounting practices. For instance, Agostino and Arnaboldi (2012) found that the interactive and diagnostic use of MCSs were associated with the four dimensions of the Balanced Scorecard, and Henri (2006a) reported that the strategic and attention focusing use (interactive use) of MCSs had a positive impact on the extent of integration between financial and non-financial measures. Given the limited studies examining the interrelationships between MCSs, this thesis contributes to this contingency approach by examining the interrelationships between the approaches to using MCSs and management accounting practices. Specifically, Paper Two examines the association between the interactive and diagnostic approaches to using MCSs and the adoption of a number of contemporary management accounting practices.

2.3 The effectiveness of MCSs

Although in contingency-based research most studies regard the effectiveness of MCSs as organisational and/or managerial performance, the effectiveness of MCSs can be considered to encompass a broader range of concepts than just performance outcomes (Chenhall, 2003; Langfield-Smith, 1997). For instance, in a review of previous empirical studies on the effectiveness of MCSs, Chenhall (2003) and Franco-Santos et al. (2012) categorised the effectiveness of MCSs in respect to organisational performance, the success (usefulness) of MCSs, organisational capabilities and behavioural outcomes. Similarly, Langfield-Smith (1997) considered all organisational outcomes, not just performance, as the measure of the effectiveness of MCSs. Consequently, in line with the literature, this thesis operationalizes the effectiveness of MCSs based on broad criteria including organisational outcomes (organisational change and organisational performance), the success of management accounting practices, and organisational capabilities (strategic flexibility and employee empowerment). Specifically, in examining the effectiveness of MCSs, Paper Two focuses on the success of contemporary management accounting practices, Papers One and Three focus on organisational change and organisational performance, and Paper Three examines the impact on organisational capabilities. The following sections review the MCS literature on the success of MCSs, organisational outcomes (organisational change and organisational performance), and organisational capabilities.

2.3.1 The success of MCSs

Studies on the success of MCSs have predominantly focused on management accounting practices, with emphasis on the success of ABC/M. Such studies have defined and operationalized success in various ways including overall use and accuracy, increases in firm value, and perceived success (Byrne et al., 2007). Due to the variety in the interpretation and operationalization of success, Shields (1995) argued that it is appropriate to allow users to

rate the degree of success relevant to their objectives. Consequently, a number of studies have operationalized MCS success in respect to the perceived success of the users of specific practices.

A number of prior studies have examined organisational and behavioural factors influencing the success of management accounting practices. For instance, while examining the factors influencing the success of Activity Based Costing (ABC), Zhang and Che (2010) found that top management support was associated with the success of ABC. Similarly, while examining the influence of organisational and behavioural factors on the success of ABC, Innes et al. (2000) found that top management support was positively associated with overall ABC success, and Anderson and Young (1999) found an association between organisational factors (top management support and resources adequacy) and ABC success.

Other studies have examined alternative antecedents of success. For example, through an in-depth interview of ten organisations, Porter and Parker (1993) examined key elements that influenced TQM implementation success. Eight factors were found to be critical for the successful implementation of TQM including: necessary management behaviour; a strategy for TQM implementation; organisation for TQM; communication for TQM; training and education; employee involvement; process management; and system and quality technologies. Likewise, Baird et al. (2007) found that two organisational factors (top management support and quality) and two cultural factors (outcome orientation and attention to detail) were associated with the success of Activity Management Practices. Also, while examining factors influencing the success of the BSC in a survey of New Zealand local government organisations, Northcott and Taulapapa (2012) found that two factors, modifying BSC to fit the organisation's needs and appropriate learning, were associated with the successful implementation of the BSC.

An alternative line of contingency studies considers the influence of the extent to which management accounting practices are used on success, based on the premise that management accounting practices need to be used to a large extent to realize their benefits. Although this line of research is of practical importance, providing an insight on how organisations could enhance the success of their management accounting practices, existing studies are few (Phan et al., 2014; Pierce and Brown, 2006) and mainly focus on ABC/M. Therefore, Paper Two attempts to contribute to the literature by investigating the impact of the extent of adoption of a number of contemporary management accounting practices on their success.

2.3.2 Organisational outcomes

2.3.2.1 Organisational change

Although there is a long established view that MCSs may help or hinder organisational change (Kloot, 1997), the studies empirically examining the association between MCSs and organisational change are limited, particularly in the public sector, and the findings of such studies are inconsistent. Ford and Greer (2005) found that while control systems focusing on monitoring outcomes were associated with successful organisational change, behaviour-based controls did not influence the success of organisational change. Similarly, while examining the association between strategic control and financial control with strategic change and incremental change, Li et al. (2005) found that although both strategic control and financial control resulted in strategic change, financial control negatively impacted incremental change. Similarly, while in a theoretical study Dervitsiotis (1998) noted the role of TQM in promoting both revolutionary (drastic) and incremental changes, in a review of previous studies, Andersen (2000) noted that Strategic Planning constrains change, and Soin et al. (2002) reported no relationship between ABC and organisational change in a case study of a UK-based multinational bank.

In the context of the public sector, Kober et al. (2007) found that using MCSs interactively promoted strategic change in the case organisation. Similarly, Naranjo-Gil and Hartmann (2007) investigated the association between top management teams, the interactive use of MCSs, and the broadness of MCSs (information) with strategic change in a survey of Spanish public hospitals. They found that both the interactive use of MCSs and the broadness of MCSs were associated with strategic change, and that the interactive use of MCSs mediated the relationship between top management teams and strategic change.

Given the limited studies examining the association between MCSs and organisational change in the public sector, and the inconsistent findings in previous studies, this thesis aims to provide further evidence by examining the relationship between three aspects of MCSs (management accounting practices, the approaches to using MCSs and MCS characteristics) and organisational change. Specifically, Paper One focuses on the association between the adoption of management accounting practices with organisational change and Paper Three focuses on the association between the interactive and diagnostic use of MCSs, MCS characteristics, and organisational capabilities with organisational change.

2.3.2.2 Organisational performance

A number of previous studies have examined the association between various aspects of MCSs with organisational performance, although the findings of such studies have revealed mixed findings. With respect to management accounting practices, Peel and Bridge (1998) found a positive association between long-term budgeting and performance. However, alternatively Pike (1984) found that the degree of Capital Budgeting sophistication was negatively associated with corporate performance.

Ittner et al. (2002) examined the association between Activity Based Costing with both the operational and financial performance of manufacturing firms in a survey of manufacturing firms in the US. The study found a positive association between Activity Based Costing and operational performance (i.e. quality level, and improvements in quality and cycle time), but the relationship between Activity-Based Costing with financial performance was indirect, through quality and cycle time. In addition, a study by Maiga and Jacobs (2008) found that the extent of Activity Based Costing use was positively associated with the three dimensions of performance including cost improvement, quality improvement and cycle-time improvement. Moreover, in a longitudinal study examining the impact of ABC on firm performance over three years, Kennedy and Affleck-Graves (2001) found that ABC adopters outperformed non-adopters by around 27%. However, while examining the effect of the announcement of the adoption of ABC systems on economic benefit (stock market return), Gordon and Silvester (1999) found no association between the installation of ABC and the stock market reaction in US companies.

Similarly, in a survey of hypercompetitive industries Gómez-Gras and Verdú-Jover (2005) reported that there was no association between Total Quality Management (TQM) with performance. Alternatively, Chenhall (1997) found that higher performance was recorded when TQM programmes were combined with manufacturing performance measures, and Samson and Terziovski (1999) found that most TQM practices were related to operational performance. Furthermore, in a survey of US companies, Maiga and Jacobs (2004) examined the effect of four Benchmarking measures on organisational performance, and the study found that three of the Benchmarking measures had a positive effect on organisational performance.

In a survey of manufacturing companies in Australia, Perera et al. (1997) investigated the relationship between a customer-focused strategy and the emphasis on non-financial

(operation-based) measures, and whether the emphasis on such measures lead to enhanced performance. Although evidence of the association between the customer-focused strategy and the emphasis on non-financial performance measures was found, no relationship was found between the latter and organisational performance. Conversely, Ittner et al. (2003) found that making extensive use of a broad set of financial and non-financial measures was associated with higher stock market returns. Likewise, Baines and Langfield-Smith (2003) reported that a change in the non-financial management accounting information provided lead to an increase in organisational performance.

Hence, the review in relation to the association between management accounting practices and organisational performance indicates mixed findings, with both positive and negative associations reported. Accordingly, Paper One aims to provide an empirical insight into the relationship between management accounting practices and organisational performance, albeit from a different perspective. Specifically, while the existing studies have commonly examined individual management accounting practices in isolation (independently), there is a long held view that management accounting practices operate as a package, and hence using them in such a manner might enhance their effectiveness (Malmi and Brown, 2008). For instance, in a survey of New Zealand manufacturing companies, Adler et al. (2000) found that even though using contemporary management accounting practices individually was not associated with sales, using such practices in combination was associated with increased sales. Similarly, in a case study examining the role of integrated cost management techniques on cost reduction, Cooper and Slagmulder (2006) found that the case organisation (Olympus Optical) integrated five internal cost management practices, which yielded a cost reduction. Consequently, given the limited studies that examine the effect of using management accounting practices as a package, Paper One attempts to extend the literature

by examining the effect of using a package of traditional and a package of contemporary practices on organisational change and organisational performance.

In addition to management accounting practices, previous studies have also related other aspects of MCSs to organisational performance. For instance, in a survey of manufacturing companies in Australia, Dunk (2011) found that the manner in which the budget is used either as a planning (interactive) or control (diagnostic) mechanism led to a positive and negative impact on organisational performance respectively. Also, Abernethy and Brownell (1999) investigated the role of the manner of using MCSs (budgeting) in moderating the relationship between strategic change and organisational performance. Their study found that of the organisations that were undergoing strategic change, those that were using their MCS (budgeting) interactively recorded higher performance. Alternatively, while examining the association between the interactive and diagnostic styles of using project MCSs in a survey of project managers, Sakka et al. (2013) found a positive association between the diagnostic use of MCSs with performance, but no association in respect to the interactive use of MCS with performance. Given the inconsistent findings of these studies, and the relatively few studies which have considered the relationship between the interactive and diagnostic use of MCSs and organisational performance in the context of the public sector, Paper Three seeks to further explore this relationship.

With respect to MCS characteristics, while examining the effect of MCS characteristics on organisational performance, Mia (2000) found that the broadness of MCS information enhanced performance. Similarly, Gerdin (2005) found that the broadness of MCS information positively affected the performance of subunits. However, in a survey of Chinese executives, Li et al. (2010) found no association between the formality of control and performance. Furthermore, while Kallunki and Silvola (2008) found that the formality

of MCSs positively influenced financial performance, it had no significant relationship with non-financial performance.

In a review of MCS-strategy studies, Langfield-Smith (1997) reported that the tightness of budget goals was negatively associated with financial performance in large defender company. Similarly, Choe (1998) examined the influence of contextual factors, namely task uncertainty and organisational structure, on organisational performance. The study found that aggregated and timely information was positively associated with performance under conditions of high task uncertainty. The study also found that broad scope, timely and aggregated information had a positive effect in a less structured organisation; and higher performance was achieved when narrow scope and disaggregated information were used in mechanistic organisations. While these studies on the relationship between MCS characteristics and organisational performance report mixed findings, they predominantly focused on the private sector context. Hence, Paper Three aims to contribute to the literature by examining the association between MCS characteristics (the scope of MCS information, the formality of MCSs and the tightness of MCSs) and organisational performance in the public sector.

2.3.3 Organisational capabilities

Informed by the resource-based view (RBV) of the firm, an emerging stream of MCS studies has examined the relationship between MCSs and organisational capabilities, in particular the role of capabilities in mediating the effect of MCSs on organisational performance. In this respect, while examining the indirect effect of organic and mechanistic controls on performance, Ylinen and Gullkvist (2014) found that organic controls enhance performance through innovativeness. In addition, Grafton et al. (2010) found feedback control use was associated with the existing capabilities with a subsequent effect on organisational

performance. Likewise, while examining the mediating role of employee involvement on TQM, Pun (2001) found that the integration of TQM with employee involvement was related to organisational performance.

With respect to the approach to using MCSs, a study by Henri (2006b) examined the mediating role of four organisational capabilities (i.e., market orientation, entrepreneurship, innovativeness, and organisational learning) in the relationship between the approaches to using MCSs and organisational performance. The study found that the interactive (diagnostic) use of MCSs was positively (negatively) associated with the four capabilities. Finally, a study by Bisbe and Otley (2004) examined the mediating effect of innovation in the association between the interactive use of MCSs with performance, although no significant relationship was found.

While it is suggested that both the approach to using MCSs (Henri, 2006b) and MCS characteristics (Whitley, 1999) have a role in the development of organisational capabilities, the review of the literature indicates that previous studies have only considered the indirect effect of the approach to using MCSs on organisational performance. Given this gap in the literature, Paper Three aims to extend the MCS-RBV literature by exploring the mediating role of organisational capabilities (strategic flexibility and employee empowerment) on the association between the approaches to using MCSs and MCS characteristic with organisational performance. Furthermore, the paper considers an additional organisational outcome, organisational change.

2.4 Summary

This chapter reviewed the previous MCS literature examining the factors influencing the use of MCSs and the effectiveness of MCSs (management accounting practices, the approaches to using MCSs and the characteristics of MCSs). The following three papers aim to address the identified gaps in the literature. Specifically, Paper One will examine the association between the extent of use of management accounting practices as a package with organisational change and organisational performance. Paper Two will then examine the interdependency between the approaches to using controls and the use of contemporary management accounting practices. Paper Two also examines the association between the extent of adoption of contemporary management accounting practices and the success of such practices. Finally, Paper Three will examine the role of organisational capabilities in mediating the association between the approaches to using MCSs and MCS characteristics with organisational change and organisational performance.

In line with evidence that the survey approach is the most frequently used research method employed in contingency-based MCSs studies (Chenhall, 2003), the study develops a questionnaire to address the following research questions, identified following a review of the literature:

1. What is the relationship between the use of management accounting practices as a package with organisational change and organisational performance?
2. What is the interdependency between the approaches to using controls and the use of contemporary management accounting practices?
3. What is the relationship between the extent of adoption of contemporary management accounting practices and their success?

4. What is the role of organisational capabilities in mediating the relationship between the approaches to using MCSs and MCS characteristics with organisational change and organisational performance?

CHAPTER THREE

PAPER ONE

The association between the use of management accounting practices with organisational change and organisational performance

(A journal article based on this paper has been published in *Advances in Management Accounting*)

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Abstract

This study examines the association between the use of a package of contemporary and a package of traditional management accounting practices with organisational change and organisational performance. Data was collected based on a mail survey. The findings indicate that while the rate of usage of traditional management accounting practices was high, the usage of contemporary management accounting practices was low. While no association was found between the use of a package of traditional management accounting practices with organisational change and organisational performance, a positive association was found between the use of a package of contemporary management accounting practices with both organisational change and organisational performance, suggesting that the effectiveness of such practices is enhanced when used in combination. The findings indicate that public sector practitioners should endeavour to use contemporary management accounting practices to a greater extent.

Keywords: contemporary management accounting practices; traditional management accounting practices; organisational change; organisational performance; NPM; public sector.

1. Introduction

The public sector has experienced a significant transformation following the implementation of public management reforms around the world including the New Public Management (NPM)⁴ and national legislations such as National Competition Policy (NCP) in the case of Australia; Collaborative Public Management in the United States; the Financial Management Initiative (FMI) in the United Kingdom; and the State Sector and Public Finances Act in New Zealand (Christensen and Lægreid, 2007; Hoque and Moll, 2001). While these reforms have emphasized accountability, efficiency, and effectiveness in the public sector (Hood, 1995), the adoption of private sector management practices has also been promoted in an effort to achieve such objectives (Farneti and Guthrie, 2008; Hood, 1995; Lapsley, 2009; Parker and Gould, 1999). For instance, Lapsley (2009) indicated that the notion of NPM is built on the importation of private sector oriented accounting and management practices to derive efficiency in the public sector, with Messner (1999) noting the role of financial and management accounting practices in the achievement of managerial and public accountability. Accordingly, contemporary management accounting practices are regarded “as contributing to a better functioning of the public sector” (van Helden and Northcott, 2010, 216).

Despite the advocacy of management accounting practices, there is a dearth of empirical evidence regarding the prevalence and success of management accounting practices in public sector organisations. Hence, there are concerns about the effectiveness of such practices with Boyne (2002, 118) suggesting that “management techniques cannot be exported successfully from one sector to another because of differences in organisational environments, goals,

⁴ NPM refers to a change in the traditional work environment of the public sector, with public sector organizations adopting private sector management practices and operating in a private sector-like fashion (Brunetto and Farr-Wharton, 2005).

structures and managerial values”. Similarly, Broadbent and Guthrie (2008) and Lapsley and Oldfield (2001) indicate scepticism regarding the viability of private sector practices in the public sector due to the unique characteristics of the public sector.

Accordingly, this study aims to contribute to the public sector literature by providing an empirical insight into the prevalence and effectiveness of management accounting practices. The first objective of the study is to examine the extent to which contemporary and traditional management accounting practices are used in the public sector. While public sector organisations have tended to focus on the use of traditional management accounting practices (van Helden and Jansen, 2003), which contribute to the bureaucracy and inefficiency in the public sector (Lapsley and Oldfield, 1999), a number of scholars have noted the potential usefulness of contemporary management accounting practices⁵ in the achievement of public sector reform objectives (Chia and Koh, 2007; Lapsley and Wright, 2004). In particular, given the purported usefulness of contemporary management accounting practices in the public sector (Lapsley and Wright, 2004), the increased usage of such practices has been advocated in the public sector (Chia and Koh, 2007).

In addition, the study draws on a contingency based approach to evaluate the effectiveness of management accounting practices by focusing on the impact of both traditional and contemporary management accounting practices on organisational change and performance. While public sector organisations play an important role in every economy (Tyler, 2005), they are often stereotyped as inefficient and ineffective in their operations (Antwi et al.,

⁵ Contemporary management accounting practices (e.g. Benchmarking and the Balanced Scorecard) are those management accounting practices that are strategic in nature and financial and non-financial in orientation (Abdel-Kader and Luther, 2006; Chenhall and Langfield-Smith, 1998a). Traditional management accounting practices (e.g. Standard Costing and Variance Analysis) are those management accounting practices that are internally focused and financially oriented (Chenhall and Langfield-Smith, 1998b; Pavlatos and Paggios, 2008).

2008). Therefore, there is growing pressure to introduce change and improve the performance of such organisations (Holmes et al., 2006; Lapsley, 2009) in order to provide better delivery of public services. Such pressures have led public organisations to mimic their private sector counterparts, thereby intensifying the need for such organisations to undertake change (Schraeder et al., 2005). The importance of organisational change in public institutions is exacerbated due to the increasing competition associated with privatization, commercialization, managerialism, and the corporatization of the public sector (Durán et al., 2011).

Given their tendency to promote the status quo (Kloot, 1997), the usage of traditional management accounting practices has been considered to constrain public sector organisations' ability to undertake change (Lapsley and Oldfield, 1999). Alternatively, the use of contemporary management accounting practices is associated with the introduction of initiatives that promote the addition of value added activities and/or the deletion of non-value adding activities (Ittner et al., 2002). Such initiatives may prompt public sector organisations to undertake appropriate changes in their structures, systems, markets and services offerings (Maiga and Jacobs, 2004; Sarkis, 2001). The use of contemporary management accounting practices may also assist public sector organisations to manage costs effectively (Chenhall and Langfield-Smith, 1998a), and to improve the efficiency and effectiveness of their operations (Ashworth et al., 2009).

Despite the potential for contemporary management accounting practices to promote change and improve performance, there is a dearth of empirical research examining such relationships in the public sector. The extant studies on the role of management accounting practices in promoting organisational change and organisational performance are limited to the context of the private sector. The findings of such studies are inconsistent and

inconclusive. For instance, while some studies (for example, King et al., 2010; Maiga and Jacobs, 2008; Miller and Cardinal, 1994; Modell, 2001) have reported a positive association between the use of specific contemporary management accounting practices with organisational change and organisational performances, other studies (for example, Farragher et al., 2001; Hoque, 2004; Perera et al., 1997; Pike 1984; Soin et al., 2002) have reported no association. Hence, given the dearth of studies and the inconsistent findings in respect to the impact of contemporary management accounting practices on organisational change and performance, the second objective of this study is to examine the association between the use of contemporary and traditional management accounting practices with organisational change and performance in the public sector.

The majority of previous studies examining the effectiveness of management accounting practices have adopted the cartesian approach of contingency fit, examining the effect of specific practices in isolation (Kennedy and Widener, 2008). This approach has been criticised in the literature for assuming that the impact of such practices can be evaluated independently (Grabner and Moers, 2013). Accordingly, this study contributes to the literature by employing an alternative approach, the configuration approach of contingency fit (Gerdin and Greve, 2004), whereby the effect of employing a number of management accounting practices is examined. In this respect, Grabner and Moers (2013) regard management accounting practices and wider management controls (MC) as a system or as package. While management accounting practices as a system refers to the interdependence among practices and the fit between practices and contingency factors, management accounting practices as a package refers to having a complete set of practices in place (Grabner and Moers, 2013).

Given this study endeavours to provide an insight into the effectiveness of the management accounting practices used in the public sector, the study adopts the management accounting as a package approach instead of examining the impact of specific practices or the interdependencies between such practices. In this respect, a package of management accounting practices is regarded as a set or collection of management accounting practices in place which do not need to be intentionally coordinated (Grabner and Moers, 2013; Malmi and Brown, 2008). This approach is considered appropriate given the “the aim to provide a holistic view of the MC practices in place, not interdependence among them” (Grabner and Moer, 2013, 409), and is consistent with real life in which multiple management accounting practices are in place at the same time (Malmi and Brown, 2008). In line with Sandelin’s (2008) call for internal consistency in management control packages, confirmatory factor analysis was performed to determine the specific practices that were compatible in respect to the package of traditional and a package of contemporary management accounting practices.

While it is advised to consider the nature of how management accounting practices operate in reality by examining them as a package (Bedford and Malmi, 2015; Sandelin, 2008), there is no study to date which has examined the effect of using management accounting practices as a package in the public sector. Therefore, the purpose of this study is to address the gap in the literature by providing a preliminary insight into whether using management accounting practices as a package explains the association between the use of contemporary and traditional management accounting practices with organisational change and organisational performance in the public sector. In summary, the objectives of the study are to:

1. Examine the extent of use of contemporary and traditional management accounting practices in the public sector.
2. Examine the association between the use of a package of contemporary and a package of traditional management accounting practices with organisational change and organisational performance in the public sector.

The study's findings make a significant contribution to theory, practice and policy. The findings provide an insight into the extent to which public sector organisations are employing the private sector innovative practices advocated by the public sector reforms, contribute to resolving the inconsistent findings in regard to the effectiveness of contemporary management accounting practices in achieving organisational outcomes, and contribute to the limited studies on the use of management accounting practices as a package. The findings also inform practitioners and policy makers on how to appropriately use management accounting practices to achieve public sector reform objectives, in particular organisational change and improving organisational performance.

The remainder of the paper is organized as follows. The following section presents an integrated review of the main study constructs and develops relevant hypotheses. Section 3 then outlines the research method. Section 4 presents the empirical findings of the study while the final section discusses the findings and their implications, provides an overview of the limitations of the study, and discusses directions for future research.

2. Literature review

2.1 Management accounting practices

Management accounting practices are organisational information systems that provide an organisation with relevant information to add value to its customers and the organisation at

large (Langfield-Smith, 2009). They facilitate effective decisions and assist organisations in promoting intended behaviour (Axelsson et al., 2002). The information provided by management accounting practices can be financial or non-financial in nature (Naranjo-Gil and Hartmann, 2007). As discussed in the following section, based on the period of their development and/or their characteristics, management accounting practices are categorised into traditional and contemporary management accounting practices.

2.1.1 Traditional versus contemporary management accounting practices

Kaplan and Johnson (1987) regard traditional management accounting practices as those management accounting practices that were developed before the 1980s. These practices include Standard Costing, Variance Analysis, Return on Investment (ROI), Budgeting, and Cost Benefit Analysis (CBA), and are also referred to as conventional practices (Smith et al., 2006). In the classical book 'Relevance Lost: The Rise and Fall of Management Accounting', Kaplan and Johnson (1987) noted that management accounting practices were first developed in the early nineteenth century during the industrial revolution by rail road and textile firms. The scientific management movement, which occurred between 1880 to 1910, placed emphasis on efficiency and profitability and spurred the development of management accounting. For instance, management accounting practices that promote the achievement of efficiency such as Standard Costing were developed in this period. Furthermore, with the emergence of vertically integrated corporations and multi-divisional structured organisations, additional management accounting practices including the ROI were developed by the managers of these corporations around 1925. Such practices were developed to aid management in controlling and evaluating the performance of various organisational units.

Unlike the earlier practices which were developed in the nineteenth century and early twentieth century by industrialists, practitioners and practicing engineers of the scientific management movement, most of the management accounting practices developed between 1925 and the 1980s were promoted by academics. As their ideas were derived from logic and deductive reasoning without studying the actual problems faced by managers and their organisations, the management accounting practices developed during this period had relatively little impact on practice (Kaplan and Johnson, 1987).

Since the 1980s, the operating environment has experienced drastic changes including the quality revolution, a shortening of the product life cycle, the influx of manufacturing technology and the deregulation of the service industry (Kaplan and Johnson, 1987). This new competitive environment has made the need for accurate product costs, excellent cost control and coherent performance measurement more relevant than in the past (Kaplan and Johnson, 1987). It was considered that most traditional management accounting practices would fail to meet the needs of post-1980 managers due to their arbitrariness in allocating costs (Kaplan and Johnson, 1987). It was also thought that they would promote dysfunctional behaviour such as gaming and compromising long-term capability development at the expense of meeting short-term profitability targets (Sulaiman et al., 2005). Consequently, the relevance of traditional management accounting practices was questioned and even considered to be lost (Kaplan and Johnson, 1987).

Due to the limitations of traditional management accounting practices, a number of new management accounting practices were subsequently developed to overcome the limitations of traditional management accounting practices and to cater for the demands of the changing business environment (Wu et al., 2007). These management accounting practices are referred to as contemporary management accounting practices and include Benchmarking,

the Balanced Scorecard (BSC), Activity Based Management (ABM), Activity Based Costing (ABC), Total Quality Management (TQM), Key Performance Indicators (KPI), Value Chain Analysis (VCA), and Strategic Cost Management (SCM). Such practices are interchangeably referred to in the literature as ‘innovative’, ‘modern’, ‘recently developed’, ‘new’, ‘advanced’ or ‘innovative’ management accounting practices.

In addition to the period in which they were developed, contemporary and traditional management accounting practices are also distinguished based on their characteristics. In this respect, contemporary management practices are regarded as those management accounting practices that have the ability to relate operations, processes and/or activities with strategic outcomes (Chenhall and Langfield-Smith, 1998a; Hyvönen, 2005). Specifically, since they aid in implementing strategic priorities, contemporary management accounting practices are regarded as being strategically focused (Chenhall and Langfield-Smith, 1999; Kaplan and Norton, 2001a). They also focus on both historical and future events, and they are interorganisational in nature (Abdel-Kader and Luther, 2006). Specifically, contemporary cost management practices are those practices that have the ability to identify sources of cost, manage and reduce costs, and eliminate wasteful activities. They are also process oriented and are focused on identifying and analysing the drivers of costs (Smith et al., 2006). Contemporary budgeting practices are detailed in nature and encompass all activities and departments. Contemporary performance measurement/evaluation practices focus on issues both internal and external to an organisation. They are multi-dimensional and cover a wide range of critical success factors (Langfield-Smith, 2009), both financial and non-financial. They equally emphasize continuous improvement and benchmarking standards against external parties (Smith et al., 2006).

Alternatively, traditional management accounting practices are regarded as those management accounting practices that are short-term in focus, and internally and financially oriented (Chenhall and Langfield-Smith, 1998b; Pavlatos and Paggios, 2008). Specifically, the distinguishing features of traditional costing practices are their arbitrariness in allocating overhead costs, often using labour hours as a cost driver (Letza and Gadd, 1994). Traditional performance measurement practices emphasize financial, short-term and outcome (lagging) measures (De Waal, 2003). Traditional budgeting practices are built around independent units or departments (Langfield-Smith, 2009).

This study focuses on eight contemporary (i.e. Benchmarking, ABM, ABC, BSC, VCA, TQM, KPIs, and SCM) and seven traditional (i.e. Formal Strategic Planning, Budgeting for Planning and Control, Capital Budgeting, CBA, Standard Costing, Variance Analysis and ROI) management accounting practices. These practices were chosen as there is evidence of their use in the public sector (Jackson and Lapsley, 2003; van Helden and Jansen, 2003). They include a combination of practices encompassing all management accounting functions including the performance measurement, cost control, budgeting, costing, and cost management functions.

2.1.2 The use of management accounting practices in the public sector

Although both traditional and contemporary management accounting practices are private sector innovations (Lapsley and Wright, 2004), these practices have also diffused into the public sector (Jackson and Lapsley, 2003; van Helden and Jansen, 2003). The development of accounting in the public sector dates back to the late nineteenth century, a period that coincides with the transformation of industrialized economies (Goddard, 2002). During this period, public sector accounting was concerned with meeting state regulations rather than achieving efficiency and/or accountability, and hence accounting practices were referred to

as coercive controls (Goddard, 2002). From 1920 to 1945, the emphasis of public sector accounting shifted from a legal to a financial accounting emphasis. The use of management accounting practices then became prevalent around 1945 and during the post-World War II era. Specifically, during this period until the 1970s, rational planning techniques such as Strategic Planning and Budgeting, costing techniques and other traditional management accounting practices became widely used in the public sector (Goddard, 2002). Finally, from around the 1980s until now, the advent of new managerialism, among other associated doctrines of NPM, has resulted in the restructuring of the public sector in the form of privatized, corporatized and commercialized institutions that search for improvement in efficiency, effectiveness and quality (Parker and Gould, 1999). Accordingly, contemporary management accounting practices have become increasingly relevant in the public sector (Ter Bogt, 2008).

2.2 Organisational change

Organisational change is an important research stream in the organisational literature (Chiang, 2010; Klarner et al., 2011). As a broad concept, organisational change is defined in different ways. Simply, it can be regarded as the modification in organisational activities, structure or behaviour (Claiborne et al., 2013). Similarly, Gioia and Chittipeddi (1991) define organisational change as deviations from the existing thinking and operations of an organisation. In addition to perceiving organisational change as a modification and/or deviation from existing paradigms, it can also be regarded as the adoption of a new idea or behaviour by an organisation (Liberatore et al., 2000).

From the extant organisational change research, some studies define and conceptualize organisational change as a change in strategy, often referred to as strategic change, while

others regard it as a change in scope. With respect to organisational change as a change in strategy, some researchers (Abernethy and Brownell, 1999; Naranjo-Gil and Hartmann, 2007) regard it as merely a change in generic strategy. Hence, they define and conceptualize organisational change as a change in the strategic orientation, for example from a defender to prospector or vice versa. This conceptualization seems more relevant for purely profit-oriented entities. Alternatively, in respect to the operationalization of organisational change as a change of scope, some commentators (Brunninge et al., 2007; Goll et al., 2007; Goodstein et al., 2006) regard it as the expansion, curtailing or reorganisation of operations, activities, products and/or services of an organisation. These researchers adopt a more comprehensive view of organisational change capturing the multiple perspectives of organisational change. In response to Abernethy and Brownell's (1999) recommendation that future studies should consider change from multiple perspectives, this study operationalizes organisational change in this manner.

2.3 The association between the use of management accounting practices with organisational change and performance

Management accounting practices, depending on their nature, reinforce or alter existing organisational activities (Davila and Foster, 2005). The two categories of management accounting practices (traditional and contemporary practices) are posited to have differing effects on organisational outcomes. As shown in Table 1, a number of prior studies have examined the effect of using specific management accounting practices on organisational change and organisational performance. However, Table 1 shows that there is inconsistency in the findings of these studies.

While these studies have examined the effect of specific practices, they have not provided an insight into the effect of using management accounting practices as a package. Accordingly, this study attempts to fill this gap in the literature by exploring the association

between the use of management accounting practices as a package with organisational change and organisational performance.

2.3.1 The association between contemporary management accounting practices with organisational change and organisational performance

Ferreira and Otley (2009) contend that the effective implementation of new strategies and other changes requires the deployment of a package of controls. Specifically, using a number of contemporary management accounting practices as a package is expected to enhance their effect on organisational change, since the usage of a number of contemporary management accounting practices together yield complementary effects (Adler et al., 2000). This is supported by the general MCS literature (Malmi and Brown, 2008; Sandelin, 2008) which contends that using a number of controls to a great extent will enable the achievement of organisational goals. Specifically, contemporary practices operate as a total system solution, interacting with each other to produce intended outcomes rather than operating as individual practices in isolation (Ittner et al., 2002). For example, Sarkis (2001) stated that the implementation of Benchmarking is likely to be more effective when supplemented with KPIs. Ittner et al. (2002) also posited that the usage of ABC is more beneficial when it supplements other advanced practices, while the use of TQM is likely to be associated with a reliance on the use of non-financial measures (Kennedy and Widener, 2008).

Table 1 Summary of the relationship between management accounting practices with organisational change and organisational performance

Study	Study method and/or context	Main findings and/or conclusions
Pike (1984)	Survey of UK companies	A negative association exists between Capital Budgeting and corporate performance.
Miller and Cardinal (1994)	Empirical analysis using meta-analytic data from previous studies	Strategic Planning has a positive effect on organisational performance.
Perera et al. (1997)	Survey of Australian companies	Non-financial Performance Measures do not mediate the relationship between a customer-focus manufacturing strategy and organisational performance.
Dervitsiotis (1998)	Theoretical study	TQM promotes both revolutionary (drastic) and incremental changes.
Peel and Bridge (1998)	Survey of UK SMEs	Strategic Planning is associated with the improvement of organisational performance, as measured by sales growth.
Samson and Terziovski (1999)	Survey of Australian and New Zealand companies	There is a positive association between three of the four TQM practices and operational performance.
Andersen (2000)	Literature review	Strategic Planning inhibits change.

Modell (2001)	Interview and archival data of a Norwegian public hospital	The use of ABC and contemporary performance measurement systems has a positive effect on organisational change.
Sarkis (2001)	Concept paper	Benchmarking promotes agility, with agility serving as a capability that fosters organisational change.
Jensen (2001)	Theoretical paper	Traditional budgets lead to gaming and other dysfunctional behaviours which adversely affect the overall effectiveness of an organisation.
Farragher et al. (2001)	Mail survey of US companies	No association exists between the use of Capital Budgeting and performance.
Kaplan and Norton (2001b)	Theoretical study	<p>Within two years of implementing the BSC, the adopting organisations recorded a remarkable improvement in performance.</p> <p>However, traditional financial performance measures undermine long-term value creation and competitiveness.</p>
Pun (2001)	Survey of Chinese and Hong Kong companies	Employee involvement mediates the role of TQM in promoting organisational performance.

Ittner et al. (2002)	Survey of US companies	There is a significant association between ABC and operational performance, but no association with financial performance.
Soin et al. (2002)	A case study of a UK-based multinational bank	No relationship exists between ABC and organisational change.
Hoque (2004)	Survey of New Zealand companies	While non-financial measures mediate the relationship between strategic choice with organisational performance, they have no mediating effect on the relationship between environmental uncertainty with organisational performance.
Maiga and Jacobs (2004)	Survey of US companies	Benchmarking has a positive effect on organisational performance.
Banker et al. (2008)	Survey of US companies	ABC has no direct effect on plant performance.
Maiga and Jacobs (2008)	Survey of US plants	A positive association exists between the use of ABC and performance.
King et al. (2010)	Survey of members of the Australian Association of Practice Managers	There is a positive association between budgeting practices and organisational performance in small healthcare businesses.

Furthermore, in a case study Chenhall and Langfield-Smith (1999) found that the case organisation integrated its management accounting system to develop what is known as an integrated advanced cost-management system. The integrated system which included ABM, KPIs and Benchmarking was developed to facilitate continuous improvement. The finding indicates the potential for using a set of contemporary management accounting practices in promoting change. Accordingly, with innovative practices considered to facilitate organisational change in public sector organisations due to the strategic outlook of such practices (Damanpour and Schneider, 2009), the use of a package of contemporary management accounting practices is expected to promote organisational change in public sector organisations. Hence, it is hypothesised that:

H1: *The extent to which a package of contemporary management accounting practices is used will be positively associated with organisational change.*

With respect to organisational performance, while some prior studies have reported no relationship between the use of specific contemporary management accounting practices and organisational performance, Table 1 shows that others have reported a positive association. Moreover, organisations tend to gain greater benefits by using a set of practices together (Kaplan and Norton, 2001a). The MCS literature contends that the appropriateness of management accounting practices in achieving organisational outcomes lies in their usage as a package instead of using the practices in isolation (Sandelin, 2008). In particular, a number of scholars have advanced the potential for contemporary management accounting practices to work together to enhance outcomes. For example, Banker et al. (2008) indicated that the ability of Activity Based Practices to improve quality, efficiency and the cost of processes may require the use of other process improvement initiatives such as TQM. Drew (1997) also stated that the success of Benchmarking is only partial if it is not integrated with other practices. Similarly, the BSC, ABM and ABC are considered complementary to one another (Newing, 1995), with Activity Based Practices facilitating the measurement of all

four perspectives of the BSC (Maiga and Jacobs, 2003). Finally, Activity Analysis Practices are regarded as a foundation of VCA, with the coordination and improvement in activities across the value chain supported by the information generated by cost driver analysis (Dekker, 2003).

Cooper and Slagmulder (2006) noted that additional cost reductions will be achieved when cost management programmes/practices are integrated as opposed to using the practices in isolation. Accordingly, with public sector organisations operating under cost pressure (Bowerman et al., 2002), using a set of contemporary management accounting practices would enable such organisations to achieve effective cost management. Additionally, Adler et al. (2000) found that while individual contemporary management accounting practices exhibited no effect, when a group of the practices were examined together a positive association with sales was found. Similarly, Chenhall (1997) found that combining TQM with non-financial performance measures resulted in improved performance, because the feedback generated from the non-financial performance measures enhanced the effectiveness of TQM strategies. Accordingly, the use of a combination of contemporary management accounting practices is expected to assist public sector organisations in their search for better performance (Wisniewski and Ólafsson, 2004). It is therefore hypothesised that:

H2: *The extent to which a package of contemporary management accounting practices is used will be positively associated with organisational performance.*

2.3.2 The association between traditional management accounting practices with organisational change and organisational performance

As discussed previously, given the changing organisational environment, traditional management accounting practices have been considered to constrain behaviour (Kaplan and

Johnson, 1987). Organisational change, which is partly undertaken in response to the changes in the external environment (Wally and Becerra, 2001), needs to be supported by appropriate information regarding the external environment. However, traditional management accounting practices are unable to serve the needs of the contemporary environment (Kaplan and Johnson, 1987). Rather, such practices encourage stability and maintaining the status quo, and hence inhibit the change that is required to align with the ever changing nature of the external environment. Accordingly, previous studies (Andersen, 2000; Awerbuch et al., 1996) have highlighted the constraining effect of using specific traditional management accounting practices with respect to organisational change. While these studies highlight the effect of specific traditional management accounting practices on organisational change, using a combination of such practices may have a greater impact on organisational change.

In practice, organisations tend to use a number of traditional management practices in combination. For instance, Formal Strategic Planning exercises are typically followed by Planning and Control Budgeting as well as Capital Budgeting (Peel and Bridge, 1998). Similarly, Standard Costing and Variance Analysis are complementary. In particular, public sector organisations have been found to adopt a number of traditional management accounting practices such as Operational Budgeting, Capital Budgeting, Planning, and Variance Analysis, with such practices serving the bureaucratic and control orientation of the traditional public sector (Hofstede, 1981; van Helden and Jansen, 2003). However, with the orientation of the public sector transforming towards flexibility and change (Chia and Koh, 2007), the use of a combination of traditional management accounting practices may be detrimental to change efforts. Accordingly, as Menon et al. (2002) found that an organisation's ability to initiate change is negatively associated with the use of a number of traditional management accounting practices, the combined use of traditional management

accounting practices is also likely to constrain public sector organisations' efforts in introducing changes. Hence, it is hypothesized that:

H3: *The extent of using traditional management accounting practices as a package is negatively associated with organisational change.*

In relation to organisational performance, as summarized in Table 1, previous studies examining the effect of specific traditional management accounting practices have reported both positive and negative associations with organisational performance. For instance, traditional Budgeting for Planning and Control, with its role of promoting efficiency by ensuring standards are achieved, leads to improved performance (King et al., 2010), particularly in the short term. Alternatively, the use of traditional budgeting threatens the achievement of long-term organisational performance, as the achievement of budget targets leads to gaming and other dysfunctional behaviour which adversely affects the overall effectiveness of an organisation (Jensen, 2001). Similarly, while Standard Costing and Variance Analysis lead to enhanced performance (Modarress et al., 2005) (due to their cost control function (Cooper and Slagmulder, 2006)), their short-term focus and the dysfunctional behaviour associated with their use distorts organisational performance (Baines and Langfield-Smith, 2003). Likewise, the use of Capital Budgeting can hinder (Awerbuch et al., 1996) as well as promote (Peel and Bridge, 1998) organisational performance.

Given that traditional management accounting practices represents an established part of organisational systems, organisations are likely to use a number of traditional management accounting practices at the same time. This assertion is supported by the high usage of various traditional management accounting practices reported in previous studies (Badem et al., 2013; Chenhall and Langfield-Smith, 1998b; Sulaiman and Mitchell, 2005). In particular,

as traditional management accounting practices such as Budgeting, CBA and Variance Analysis are commonly used in the public sector (van Helden and Jansen, 2003), it is likely that public institutions use a set of these practices. However, since the use of specific traditional management accounting practices have both favourable and adverse effects on organisational performance (Awerbuch et al., 1996; Kaplan and Norton, 2001b; King et al., 2010; Miller and Cardinal, 1994), the effect of the use of a package of such practices on organisational performance may be either positive or negative (Henri, 2006). Therefore, a null hypothesis is developed stating that:

H4: *The use of a package of traditional management accounting practices is not associated with organisational performance.*

3. Method

Data was collected using the survey approach. Seven hundred and forty (740) questionnaires were distributed to public sector organisations in Australia, including local government councils, government business enterprises, government agencies/departments, and other types of public sector organisations⁶. The questionnaires were sent to the heads of the accounting and finance departments or the heads of the organisations/business units, which included Chief Financial Officers (CFOs), Financial Controllers, Chief Executive Officers (CEOs) and similarly titled employees. These executives were chosen because they were deemed to have the awareness, experience, knowledge and/or responsibility for the management accounting practices used by their business units. Business units were used as the level of analysis, since the use of management accounting practices may differ across different business units within the same organisation.

⁶ The organizations were selected from the OneSource database, which is a database providing details in respect to all organizations in Australia.

To improve the response rate the survey was designed and administered using Dillman's Tailored Design Method (Dillman, 2000). This resulted in 82 initial responses. Four weeks after the initial distribution, a reminder was sent to non-respondents resulting in another 50 responses. Hence, a total of 132 questionnaires were returned (18%). However, since 5 of these were not usable due to a large amount of missing data, there were 127 usable questionnaires (17.12%). This response rate compares favourably with previous management accounting studies (Banker et al., 2008 [6.5%]; Ittner et al., 2002 [11%]; King et al., 2010 [14.6%]).

To test for non-response bias, an independent sample t-test was carried out to compare the means of the early and late responses with respect to size and the dependent and independent variables. No significant differences ($p \geq 0.05$) were found, and hence, it is concluded that there is no non-response bias. Therefore, the representativeness of the sample is assured (Anderson and Young, 1999).

3.1 Measurement of variables

Since confirmatory factor analysis is appropriate in the context of the theoretical base (Verbeeten, 2006), confirmatory factor analysis (CFA) was conducted to evaluate the constructs of the study. Accordingly, measurement models in AMOS software were estimated for each of the constructs, and evaluated based on standard errors, t-statistics, modification indices and a number of goodness-of-fit-indices (Kaynak, 2003). Appendix A shows those items that were retained following the CFA.

3.1.1 Organisational change

The extent of organisational change was measured using a 13 item scale developed following a review of the literature (Cray et al., 1988; Dean and Sharfman, 1996; Gimbert et al., 2010;

Prahalad and Doz, 1987; Schilit, 1987). Respondents were asked to indicate the extent to which they undertook changes over the last three years on seven-point Likert scales with anchors of 1 “Not at all” and 7 “To a great extent”. A period of three years is typically used in the management and management accounting research as it is considered sufficient for the effect of implementing strategies to be manifested (Chenhall, 1997). The initial organisational change measurement model did not fit the data well (CMIN/DF = 2.731; GFI = 0.837; CFI = 0.796; AGFI = 0.771)⁷. Hence, four items (see Appendix A) were removed based on the modification indices (MI), with the resultant model fitting the data well (CMIN/DF = 2.138; GFI = 0.917; CFI = 0.923; AGFI = 0.862). The scores of the nine items retained were subsequently aggregated to reflect the extent of organisational change with higher (lower) scores reflecting greater (less) change.

3.1.2 Use of contemporary and traditional management accounting practices

The extent of use of contemporary and traditional management accounting practices was measured using an adapted version of a scale developed by Chenhall and Langfield-Smith (1998b). The scale has been used in many management accounting studies (for example, Al and McLellan, 2011; Joshi, 2001; Wu et al., 2007) and includes eight contemporary management accounting practices (Benchmarking, ABM, ABC, the BSC, VCA, TQM, KPIs and SCM) and seven traditional management accounting practices (Formal Strategic Planning, Budgeting for Planning and Control, Capital Budgeting, CBA, Standard Costing, Variance Analysis and ROI). Respondents were asked to indicate the extent to which they

⁷ As it is recommended to use a range of fit indices when evaluating model fit (Baines and Langfield-Smith, 2003), a number of the most widely used indices were used in assessing the model fit in the study. This included the Goodness-of-Fit index (GFI) which measures overall model fit, the ratio of excellent minimum sample discrepancy to degrees of freedom (CMIN/DF), Comparative Fit Index (CFI), and Adjusted Goodness-of-Fit Index (AGFI). While the GFI indices range from 0 (poor fit) to 1 (perfect fit), an acceptable minimum of 0.90 is recommended (Hu and Bentler, 1999). Similarly, with a CFI value of 0.95 considered a great fit, a minimum of 0.80 is acceptable (Hair et al., 2010). While a value of less than 5 is recommended for the CMIN/DF index (Hair et al., 2010), a more conservative value of 2 or 3 is suggested (Kline, 1998; Ullman, 2001). Finally, a minimum cut-off of 0.80 is recommended for the AGFI index (Hair et al., 2010).

used each of these practices over the last three years on seven-point Likert scales with anchors of 1 “Not at all” and 7 “To a great extent”.

To assess whether the eight specific contemporary practices and the seven specific traditional practices are compatible to be used as a package, confirmatory factor analysis was undertaken. Two measurement models, one for the eight contemporary management accounting practices and the other for the seven traditional practices were developed. The initial models for contemporary (CMIN/DF = 6.505; GFI = 0.820; CFI = 0.596; AGFI = 0.676) and traditional practices (CMIN/DF = 3.867; GFI = 0.896; CFI = 0.795; AGFI = 0.793) did not fit well, and hence based on the modification indices (MI), two contemporary practices (ABC and KPIs) and two traditional practices (Standard Costing and ROI) were removed. The revised models for both contemporary practices (CMIN/DF = 1.238; GFI = 0.973; CFI = 0.984; AGFI = 0.938) and traditional practices (CMIN/DF = 2.542; GFI = 0.961; CFI = 0.942; AGFI = 0.882) fit the data adequately, with the remaining six contemporary practices and five traditional practices aggregated to compute the extent of use of a package of contemporary and traditional management accounting respectively. This approach was undertaken in line with the recommendation of Sandelin (2008) that studies should determine management control packages based on mechanisms of internal consistency instead of the mere collection of control practices.

3.1.3 Organisational performance

Organisational performance was measured using an instrument developed from a review of the literature (Baker and Sinkula, 1999; Griffin et al., 2007; Walker and Boyne, 2006), with the items relevant for the assessment of public sector performance. The instrument required respondents to rate their performance over the last three years using a seven-point Likert scale ranging from 1 “Very Poor” to 7 “Excellent”. The measurement model was estimated

using six items (see Appendix A), with the model meeting the recommended goodness-of-fit indices values (CMIN/DF = 3.808; GFI = 0.915; CFI = 0.911; AGFI = 0.802).

4. Results

4.1 Reliability and validity of constructs

The descriptive statistics are depicted in Table 2. The reliability of the four constructs was assessed, with Table 2 showing that the Cronbach alpha values all exceeded the recommended 0.70 cut off (Nunnally, 1978). To determine the extent to which the four scales (measures) are different from one another, discriminant validity was assessed (Kaynak, 2003). Based on the correlation matrix and Cronbach alphas, it is evident that the reliability coefficients of each scale is greater than its correlation with other scales. This suggests that the study scales have high discriminant validity.

Table 2 shows that while the extent of organisational change is modest, organisational performance is relatively high. Table 2 also shows that the extent of use of the package of traditional management accounting practices is higher than that of contemporary management accounting practices.

Table 2 Descriptive statistics, Cronbach alphas, and bivariate correlations for the study constructs

Variables	1	2	3	4	Mean	Theoretical Range	Actual Range	Cronbach alpha
1 Package of contemporary management accounting practices					3.57	1-7	1.17-6.00	0.730
2 Package of traditional management accounting practices	0.402***	1			5.33	1-7	2.60-7.00	0.733
3 Organisational change	0.439***	0.275***	1		3.23	1-7	1.00-5.67	0.866
4 Organisational performance	0.207**	0.095	0.240***	1	5.32	1-7	2.00-7.00	0.842

***, ** Statistically significant at 1% and 5% respectively

4.2 The extent of use of management accounting practices

Table 3 provides a more detailed insight into the use of the traditional and contemporary management accounting practices. In particular, Table 3 shows the extent of use of each of the six contemporary and five traditional management accounting practices. The extent of use is divided into three categories: 'non-users' (response point 1); 'use to a small extent' (response points 2, 3 and 4), and 'use to a great extent' (response points 5, 6 and 7). The majority of organisations were 'non-users' or 'use to a small extent' for four of the contemporary management accounting practices - ABM, the BSC, VCA and TQM. For the other two contemporary practices, 58.4% and 46.83% of respondents used Benchmarking and SCM to a great extent. Alternatively, the results show that a high proportion of organisations indicated they used all five traditional management accounting practices to a great extent: Budgeting for Planning and Control (95.16%), Formal Strategic Planning (80.95%), Capital Budgeting (77.78%), Variance Analysis (76.38%) and CBA (49.21%).

The high usage of traditional management accounting practices relative to the contemporary management accounting practices is also evident from the average scores, with 75.9% of the respondents using traditional management accounting practices to a great extent compared to 35.85% using contemporary management accounting practices to a great extent. Similarly, while only 2.21% of organisations were not using the traditional management accounting practices, 16.42% of organisations were not using contemporary management accounting practices.

Table 3 Extent of use of specific management accounting practices

Management accounting practices	Non-users (1)	Use to a small extent (2-4)	Use to a great extent (5-7)	Mean
<i>Contemporary practices</i>				
Benchmarking	4 (3.20%)	48(38.40%)	73 (58.40%)	4.53
Activity Based Management (ABM)	16 (12.80%)	60 (48.00%)	49 (39.20%)	3.82
The Balanced Scorecard (BSC)	28 (22.22%)	61 (48.41%)	37 (29.37%)	3.16
Value Chain Analysis (VCA)	42 (33.33%)	72 (57.14%)	12 (9.52%)	2.40
Total Quality Management (TQM)	26 (20.63%)	60 (47.62%)	40 (31.75%)	3.35
Strategic Cost Management (SCM)	8 (6.35%)	59 (46.83%)	59 (46.83%)	4.16
<i>Average</i>	<i>16.42%</i>	<i>47.73%</i>	<i>35.85%</i>	
<i>Traditional practices</i>				
Budgeting for Planning and Control	0 (0%)	6 (4.84%)	118 (95.16%)	6.11
Formal Strategic Planning	0 (0%)	24 (19.05%)	102 (80.95%)	5.47
Capital Budgeting	3 (2.38%)	25 (19.84%)	98 (77.78%)	5.33
Cost Benefit Analysis (CBA)	5 (3.97%)	59 (46.83%)	62 (49.21%)	4.40
Variance Analysis	6 (4.72%)	24 (18.90%)	97 (76.38%)	5.33
<i>Average</i>	<i>2.21%</i>	<i>19.89%</i>	<i>75.90%</i>	

4.3 The association between the use of management accounting practices with organisational change and organisational performance

The association between the extent of use of the package of contemporary and traditional management accounting practices with organisational change and organisational performance was assessed using structural equation modelling (SEM). The model was first estimated using a control variable, organisational size. However, given that the control variable was not found to be associated with either organisational change or organisational performance, the variable was removed, with the results reported in Table 4. The results indicate that the model (CMIN/DF = 3.641; GFI = 0.986; CFI = 0.951; AGFI = 0.860) fitted the data well. As expected, a significant positive relationship was found between the use of the package of contemporary management accounting practices and organisational change ($\beta = 0.392$, $p = 0.000$) indicating a higher level of organisational change when the package of contemporary management accounting practices is used to a greater extent. Hypothesis 1 is therefore supported. Similarly, the association between the use of the package of contemporary management accounting and organisational performance was significant and in the predicted direction ($\beta = 0.201$, $p = 0.035$), indicating that organisational performance is higher when the package of contemporary management accounting practices is used to a greater extent. Therefore, hypothesis 2 is also supported.

Alternatively, the association between the use of a package of traditional management accounting practices and organisational change was not significant ($\beta = 0.118$, $p = 0.173$), and hence, hypothesis 3 is not supported. While a negative association was expected, this result indicates that no association exists between the use of a package of traditional management accounting practices and organisational change. Hence, the use of a package of traditional management accounting practices does not have a detrimental impact on change. Similarly, the association between the use of the package of traditional management accounting practices and organisational performance was not significant ($\beta = 0.015$, $p = 0.875$). Hypothesis 4, stated in the null form, is therefore supported.

Table 4 Structural equation model of the association between the extent of use of a package of management accounting practices with organisational change and performance

Description of path	Path coefficient	P(Sig)
Use of package of contemporary management accounting practices → Organisational change	0.392	0.000***
Use of package of contemporary management accounting practices → Organisational performance	0.201	0.035**
Use of package of traditional management accounting practices → Organisational change	0.118	0.173
Use of package of traditional management accounting practices → Organisational performance	0.015	0.875
Goodness-of-fit indices	CMIN/DF = 3.641 GFI = 0.986 CFI = 0.951 AGFI = 0.860	

***, ** Statistically significant at 1% and 5% respectively

5. Discussion and conclusion

5.1 Discussion

The first objective of the study was to examine the extent of use of contemporary and traditional management accounting practices in the public sector. The study found that the use of traditional management accounting practices is high. In particular, almost all public sector organisations (95.16%) were using Budgeting for Planning and Control to a great extent, with the majority of organisations also using Formal Strategic Planning, Capital Budgeting, CBA, and Variance Analysis to a great extent. This is consistent with earlier private sector studies (Maliah et al., 2004; Yalcin, 2012) which have reported a high usage of traditional management accounting practices. A possible explanation for the high use of traditional management accounting practices, despite their limitations in the public sector (Lapsley and Oldfield, 1999), might be attributed to the organisations' lack of awareness and/or expertise in contemporary practices (Maliah et al., 2004). Another plausible reason might be attributed to the long term association that organisations have had with traditional management accounting practices (Joshi, 2001), with such practices consistent with the control objectives of the traditional public sector (Hofstede, 1981; van Helden and Jansen, 2003).

Alternatively, the study found that with the exception of Benchmarking and SCM, the extent of use of the remaining contemporary management accounting practices (ABM, the BSC, VCA and TQM) in the public sector organisations was quite low. Similarly, while the extent of use of the package of traditional management practices was high, the use of the package of contemporary practices was low. This finding is in line with previous public sector studies (Jackson and Lapsley, 2003; Tyler, 2005). A possible explanation for such low usage rates may be the complexity of public sector activities, with internal politics and slow decision making processes making it difficult for public sector organisations to adopt private sector practices (Baird, 2007; Lapsley and Oldfield, 2001). Similarly, the lack of flexibility and

resistance to change which hinders the implementation of new systems and practices in the public sector (Baird, 2007; Jackson and Lapsley, 2003) may explain the low rates reported. Future studies may aim to provide a more in-depth examination of the factors inhibiting the adoption of contemporary management accounting practices in the public sector.

The second objective of the study was to examine the association between the use of a package of contemporary and traditional management accounting practices with organisational change and organisational performance. Although the extent of use of the package of traditional management accounting practices was high, the use of such practices was not associated with either organisational change or organisational performance. The finding that traditional management accounting practices were ineffective in promoting organisational change and improving performance reinforces the assertion that traditional management accounting practices may have lost their relevance (Abdel-Kader and Luther, 2006; Kaplan and Johnson, 1987). Hence, as public sector managers attempt to effect change and improve performance (Holmes et al., 2006; Lapsley, 2009), they should not over-emphasize the use of traditional practices.

On the contrary, the study found that using a package of contemporary management accounting practices was positively associated with organisational change, thereby indicating that public sector practitioners should emphasize the use of contemporary management accounting practices. Unlike earlier studies (Modell, 2001; Soin et al., 2002) which have reported mixed findings when examining the effect of specific contemporary practices on organisational change in isolation, the findings of this study reveal that the use of a combination of Benchmarking, SCM, ABM, the BSC, VCA and TQM had a significant positive association with organisational change. The study also found that the use of these contemporary management accounting practices as a package was positively associated with

organisational performance. The implication of this finding is that public sector practitioners need to consider using a number of contemporary management accounting practices at the same time, rather than specific practices in isolation. This finding will assist the managers of public sector organisations in realizing the benefits of such practices (Malmi and Brown, 2008).

While contemporary management accounting practices are shown to have a role in promoting organisational change and performance in the public sector, given their low usage rates, there is scope for increasing the use of such practices in the public sector. This can be achieved in a number of ways. First, since employees play a key role in the adoption of new ideas (Iverson, et al., 1996), on-going training of public sector employees could be promoted, as through such training employees will become acquainted with the existence and mechanics of contemporary management accounting practices. Participation in professional and trade associations is another medium through which employees could enhance their awareness of contemporary management accounting practices (Midgley et al., 1992). Accordingly, public sector practitioners should encourage the participation of their employees in such associations.

In addition to employee initiatives, organisational culture also plays an essential role in the implementation of new practices (Schneider et al., 1996). Therefore, since the lack of flexibility and tendency to resist change is hindering public sector organisations from adopting private sector practices (Baird, 2007), there is a need for public sector organisations to embrace a more flexible and empowered organisational culture. This is because flexible organisations have a greater tendency to embrace new practices (Thomke, 1997) while empowered employees are less likely to resist such practices (Gal-Or and Amit, 1998). Finally, as the use of innovations in public sector organisations is to some extent determined

by government influence (Lapsley and Wright, 2004), policy makers could exert coercive measures (Ribeiro and Scapens, 2006) such as directives and legislations to promote the use of contemporary management accounting practices in public sector organisations.

5.2 Conclusion

The purpose of this study was to examine whether using management accounting practices as a package can explain the association between the use of contemporary and traditional management accounting practices with organisational change and organisational performance in the public sector. The empirical evidence has supported this inquiry in respect to the use of contemporary management accounting practices. The study's findings make a significant contribution to the literature in a number of ways. First, the study provides an insight into the state of diffusion of innovative management practices in the public sector, revealing that relative to traditional management accounting practices, the use of contemporary management accounting practices is low. This indicates that traditional management accounting practices are still the dominant management accounting practices used in the public sector. Hence, despite the increased use of innovative practices propagated by public sector reforms (Chia and Koh, 2007), public sector organisations are lagging in such effort. Secondly, by examining the use of management accounting practices as a package, the study contributes to the literature by resolving the inconsistency in respect to the effect of management accounting practices reported in previous studies which have examined specific management accounting practices in isolation. Specifically, the use of a package of contemporary management accounting practices appears to explain the positive association between such practices with organisational change and performance, thereby providing support for contingency theory examining the role of management accounting practices as a package.

The findings also have a number of practical implications. First, the study informs practitioners that in their effort to improve performance and promote change with the aid of organisational systems and practices, they should consider using a number of contemporary management accounting practices at the same time. Secondly, given that the public sector reforms have encouraged the use of innovative management practices in public sector organisations (Farneti and Guthrie, 2008; Milakovich, 1991), some practical measures are suggested in which practitioners and policy makers could promote the use of such practices in the public sector.

5.3 Limitations and direction for future research

The study is subject to the typical limitations of the survey approach including the inability to assume causality. Accordingly, future studies could employ a case study and/or longitudinal approach in assessing organisational change, its effects and antecedents. While this study is limited to only organisational change and organisational performance, the effectiveness of management accounting practices could also be assessed in alternative ways. Future studies could therefore consider examining the effectiveness of contemporary and traditional management accounting practices using other factors such as the success of using such practices. Also, given the low usage of contemporary management accounting practices reported in this study, future studies could examine the factors that promote their use. Finally, another potential research opportunity is for future studies to examine the effectiveness of management accounting practices and the association between other aspects of MCSs such as the approaches to using MCSs and the characteristics of MCSs with organisational change and performance.

Appendix A: Questionnaire, items and their sources

Those items that have been marked with the symbols (‡) are the retained items after confirmatory factor analysis.

Use of a package of contemporary management accounting practices

The eight items of this scale were adapted from Chenhall and Langfield-Smith (1998b).

1. ‡Benchmarking
2. ‡Activity Based Management
3. Activity Based Costing
4. ‡The Balanced Scorecard
5. ‡Value Chain Analysis
6. ‡Total Quality Management
7. Key Performance Indicators
8. ‡Strategic Cost Management

Use of a package of traditional management accounting practices

All items of this scale were adapted from Chenhall and Langfield-Smith (1998b).

1. ‡Formal Strategic Planning
2. ‡Budgeting for Planning and Control
3. ‡Capital Budgeting
4. ‡Cost Benefit Analysis
5. Standard Costing
6. ‡Variance Analysis
7. Return on Investment

Organisational change

All items of this scale were developed from the literature (e.g. Cray et al., 1988; Dean and Sharfman, 1996; Gimbert et al., 2010; Prahalad and Doz, 1987; Schilit, 1987).

1. Business unit vision, mission or goals
2. Restructuring
3. ‡The range of product/service lines provided
4. New technology adoption
5. ‡Research and development
6. ‡Branding and marketing strategies
7. ‡Geographic coverage
8. Human resources management (e.g. rewards systems, training, recruitment, etc.)
9. ‡Product/service quality
10. ‡Product/service pricing
11. ‡Business partnerships (e.g. strategic alliance, outsourcing relationship, etc.)
12. ‡Distribution channels
13. ‡Financing operations

Organisational performance

Items 1 and 4-6 were adapted from Walker and Boyne (2006). Items 2 and 3 were developed from Griffin et al. (2007) and Baker and Sinkula (1999) respectively.

1. ‡The quality of our output (products/services)
2. ‡The implementation of new procedures and/or practices
3. ‡The introduction of new products/service lines
4. ‡The efficiency of our operations
5. ‡The effectiveness of our operations
6. ‡The level of our customer satisfaction

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CHAPTER FOUR

PAPER TWO

The adoption and success of contemporary management accounting practices in the public sector

Abstract

This study examines the association between the interactive and diagnostic use of MCSs and the extent of adoption of contemporary management accounting practices, and the subsequent impact on the success of such practices in the public sector. Data was collected through the distribution of a mail survey of 740 questionnaires to public sector organisations in Australia. Data was analysed using structural equation modelling (SEM). The study found that both the interactive and diagnostic approaches to using MCSs exhibit a positive association with the adoption of contemporary management accounting practices, both as a package and individually. In addition, while the level of success of contemporary management accounting practices was moderate, it was found that the extent of adoption of the practices enhanced their success. The study contributes to the MCS contingency based research by highlighting the interrelationship between two aspects of MCSs, the use of controls and the adoption of management accounting practices.

Keywords: interactive use; diagnostic use; adoption; success; contemporary management accounting practices; public sector; package.

1. Introduction

Public sector organisations are currently operating in a constantly changing environment (Umashev and Willett, 2008), characterized by increasing globalization of the world economy, intensified market competition, and deregulation of state-owned enterprises (Magd and Curry, 2003). Accounting information plays a central role in this changing trend (Kurunmaki et al., 2003), with management accounting practices being one of the important sources of organisational information. However, due to the limitations of traditional management accounting practices in meeting the information needs of organisations, contemporary management accounting practices have been developed (Joshi et al., 2011). Contemporary management accounting practices offer potential benefits to organisations including enhanced effectiveness, competitiveness, improved quality and an enhanced customer focus (Joshi et al., 2011). Given the NPM reforms advocate the introduction of innovative private sector management ideas, the adoption of contemporary management accounting practices has been encouraged in public sector organisations (Magd and Curry, 2003). In particular, contemporary management accounting practices are consistent with the shifting orientation of the public sector towards performance improvement and customer orientation (Magd and Curry, 2003), managing results (Modell, 2012), and assisting in fulfilling the NPM requirements of accountability, efficiency and effectiveness (Hood, 1991).

While the adoption of contemporary management accounting practices is crucial for the transformation of public sector organisations (Chia and Koh, 2007), previous studies (Baird, 2007; Jackson and Lapsley, 2003) have reported the rate of adoption of such practices to be low. Hence, given the low adoption rate, examination of the factors associated with the adoption of contemporary management accounting practices is a research endeavour of

significant theoretical and practical importance. Previous studies examining the factors influencing the adoption of contemporary management accounting practices have predominantly been informed by institutional and contingency theories. Institutional theory studies have focused on the influences of coercive (Brandau et al., 2012; Hussain and Hoque, 2002; Lapsley and Wright, 2004; Ma and Tayles, 2009; Woodbury and Dollery, 2004); mimetic (Brandau et al., 2012; Hussain and Hoque, 2002; Ma and Tayles, 2009); and normative pressures (Brandau et al., 2012; Hussain and Gunasekaran, 2002; Hussain and Hoque, 2002; Ma and Tayles, 2009). Alternatively, contingency based studies have focused on the influence of contextual factors including the impact of organisational structure on integrated information (Chenhall and Morris, 1986) and the adoption of Activity Based Practices (Gosselin, 1997); strategy on the adoption of Non-financial Performance Measures (Hoque, 2004), Activity Management Practices (Gosselin, 1997), and Benchmarking (Tsameny et al., 2011); national culture on Total Quality Management (Pun, 2001); organisational culture on Total Quality Management (Baird et al., 2011), Activity Based Costing (Baird et al., 2004), and the degree of integration between Financial and Non-financial measures (Henri, 2006a); environmental uncertainty on Non-financial Performance Measures (Hoque, 2005); competition on the adoption of Target Costing (Ax et al., 2008) and Benchmarking (Mia and Clarke, 1999); and organisational life cycle stages on the use of Activity Based Costing (Kallunki and Silvola, 2008).

The first objective of this study is to contribute to this contingency based research by examining the association between the interactive and diagnostic use of MCSs and the adoption of a number of specific contemporary management accounting practices and the adoption of such practices as a package. The interactive use of MCSs is an approach (manner) in which management uses MCSs to manage strategic uncertainties and promote opportunity seeking and organisational learning (Bisbe et al., 2007; Henri, 2006b), while the diagnostic approach emphasizes the use of MCSs for predictable goal achievement (Theriou

et al., 2009). The examination of the association of these approaches to using controls with the adoption of contemporary practices is considered pertinent for two reasons. First, there are limited studies examining the influence of the approaches to using MCSs on contemporary management accounting practices, with the few existing studies limited to the use of the Balanced Scorecard (Agostino and Arnaboldi, 2012; Henri, 2006a). For instance, Henri (2006a) found that the strategic and attention focusing use (interactive use) of MCSs positively influenced the extent to which performance measurement (the BSC) integrates financial and non-financial measures. Similarly, Agostino and Arnaboldi (2012) reported that the use of MCSs in an interactive and diagnostic manner was associated with the four dimensions of the Balanced Scorecard. Therefore, it is expected that the use of MCSs in an interactive manner will influence the adoption of contemporary management accounting practices, given the latter are mechanisms organisations use to achieve strategic initiatives (Langfield-Smith, 2009). Similarly, given that contemporary management accounting practices are tools used to attain pre-determined objectives in an efficient and effective manner (Langfield-Smith, 2009), organisations using MCSs in a diagnostic manner are likely to emphasize the adoption of contemporary management accounting practices.

Secondly, previous studies have focused on specific management accounting practices in isolation, ignoring the theoretical contention that management accounting practices work as a package (Kennedy and Widener, 2008; Sandelin, 2008). Consequently, this study responds to the call to consider the nature of how management accounting practices operate in reality by considering the impact of the diagnostic and interactive approaches on the use of a package of contemporary management accounting practices (Bedford and Malmi, 2015; Sandelin, 2008). In particular, the study examines the influence of the approaches to using controls on the existence of a set of practices which do not need to be intentionally coordinated (Grabner and Moers, 2013; Malmi and Brown, 2008). This approach is considered appropriate “as the aim is to provide a holistic view of the MC practices in place”

(Malmi and Brown, 2008, 409), rather than considering any interdependency between the practices.

In addition to examining the factors influencing the adoption of contemporary management accounting practices, the study also examines the success of such practices. While studies on contemporary management accounting practices have primarily focused on the private sector (Modell, 2012), due to the difference in the goals and organisational environments of the two sectors (Boyne, 2002), there is ongoing debate as to whether “private sector management principles and processes are likely to work in the public sector” (Boyne, 2002, 118). Thus, given the differing views on the effectiveness of private sector practices in the public sector, research on the effectiveness of contemporary management accounting practices in the context of the public sector is warranted. There are limited empirical studies which examine the extent of success of such practices in the public sector, while studies based on the private sector have revealed that users perceive the success rate of such practices to be low (Chenhall and Langfield-Smith, 1998; Innes et al., 2000; Phan et al., 2014). The low perceived success may be interpreted as an indicator of their lack of importance, and may cause organisations to abandon or to not consider using such practices despite their potential benefits (Fei and Isa, 2010a). Therefore, given the low success rate reported, it is important to identify the factors that influence the success of contemporary management accounting practices.

While previous studies have examined the influence of organisational and behavioural factors (for example, Anderson and Young, 1999; Fei and Isa, 2010b; Innes et al., 2000; Porter and Parker, 1993) on the success of contemporary management accounting practices, few studies have focused on the extent of adoption of such practices on their success (Phan et al., 2014; Pierce and Brown, 2006). Further, the few existing studies have focused on the

impact of the adoption of Activity Based Costing/Management on its success, and little is known about other contemporary management accounting practices. Also, although contemporary management accounting are likely to be used in combination (Sandelin, 2008), there is a dearth of studies examining whether the extent to which such practices are used in combination (as a package) impacts their success. Accordingly, the second objective of this study is to provide an insight into the success of contemporary management accounting practices in the public sector and the impact of the extent of adoption of contemporary practices on the success of such practices. This association is examined in respect to the impact of the adoption of a package of contemporary management accounting practices, and the impact of the adoption of specific practices.

The remainder of the paper is structured as follows. In the following section, an overview of the approaches to using MCSs and contemporary management accounting practices is provided, together with the development of the study's hypotheses. Section 3 then describes the method adopted and discusses the measurement of the variables. In section 4, the results of the study are reported, with the final section providing the discussion and conclusion, and the limitations and direction for future research.

2. Literature review

2.1 Contemporary management accounting practices

Management accounting practices are referred to as the tools and techniques used to provide organisations with relevant information for the effective and efficient use and management of resources so as to add value to customers and shareholders (Langfield-Smith, 2009). They are categorised into traditional and contemporary management accounting practices. Traditional management accounting practices such as Cost Benefit Analysis, Return on Investment, Standard Costing and Variance Analysis, are those management accounting

practices that are financial and internal in orientation; short term focused; and involve arbitrary cost allocations (Chenhall and Langfield-Smith, 1998; Letza and Gadd, 1994; Pavlatos and Paggios, 2008). Traditional management accounting practices have been criticised for their narrowness and failure to meet information requirements to facilitate change and the challenges of the business environment. Accordingly, contemporary management accounting practices were developed (Kaplan and Johnson, 1987; Wu et al., 2007). Some of the contemporary management accounting practices that organisations commonly adopt include Benchmarking, Activity Based Management (ABM), Activity Based Costing (ABC), the Balanced Scorecard (BSC), Key Performance Indicators (KPI), Value Chain Analysis (VCA), and Strategic Cost management (SCM). These management accounting practices emphasize quality, speed, cost effectiveness/management, competitiveness and customer satisfaction (Abdel-Maksoud et al., 2012), and are considered to be relevant for the current dynamic business/operating environment (Chenhall and Langfield-Smith, 1999).

The distinguishing feature of contemporary management accounting practices is that they are strategic in nature, link operations with the strategies and objectives of an organisation, and integrate both financial and non-financial information (Chenhall and Langfield-Smith, 1999). They are hence considered as strategic management tools (Jarrar and Smith, 2014), enabling organisations to formulate and implement strategies (Langfield-Smith, 2009). The use of contemporary management accounting practices is encouraged as a means of pursuing entrepreneurial strategies (Jarrar and Smith, 2014) and lifting organisational performance to a world class level (Chenhall and Langfield-Smith, 1999).

2.2 The use of contemporary management accounting practices in the public sector

Traditional management accounting practices are more in tune with the control requirements of the traditional public sector (van Helden and Jansen, 2003), which is known for bureaucratic red-tape and standardized rules. In contrast, contemporary management accounting practices are part of the innovative private sector management practices with the NPM reforms advocating that such practices should be imported into the public sector (Lapsley and Wright, 2004). In particular, the role of the Balanced Scorecard in the public sector has been recognised, given its ability to cater for the changing orientation of the public sector from a process oriented approach to a managing results orientation (Modell, 2012). Additionally, Lapsley and Wright's (2004) findings that the majority of public sector organisations were using contemporary performance measurement systems, including the Balanced Scorecard and Key Performance Indicators, reinforced the role of contemporary performance measurement systems in achieving a "more efficient, effective and accountable public sector", which is promoted by the NPM (Nutti et al., 2013, 60).

In addition, given the aim of the NPM to transform public sector organisations to be more customer focused and quality oriented, contemporary management accounting practices, such as TQM, are considered relevant for public sector organisations (Evans and Bellamy, 1995). Similarly, the mandate to improve efficiency and accountability call for the judicious use of resources with contemporary cost management practices such as ABC/M, Strategic Cost Management and Value Chain Analysis being considered relevant. The prevalence of competitive tendering in the new public sector, which makes the need for accurate costing and the knowledge of cost drivers more relevant, also reinforces the role of contemporary cost management practices in the public sector.

2.3 Approaches to using MCSs

A number of MCS studies have been informed by Simons' (1995) levers of control (LOC) framework which comprises four dimensions including beliefs, boundaries, interactive and diagnostic control systems. There has been less focus on belief and boundary control (Tessier and Otley, 2012), with previous MCS studies (Abernethy and Brownell, 1999; Bisbe and Otley, 2004; Bobe and Taylor, 2010; Henri, 2006b; Sakka et al., 2013; Su et al., 2015) mainly focusing on the interactive and diagnostic use of MCSs. Belief and boundary systems focus on defining the strategic domain for organisational members (Bisbe and Otley, 2004). Accordingly, given this study is concerned with the operating activities within organisations, rather than only setting the strategic domain, the study focuses on the impact of the interactive and diagnostic use of MCSs on the adoption of contemporary management accounting practices.

The diagnostic approach to MCSs is concerned with the emphasis placed on the role of MCSs as feedback mechanisms, and monitoring the attainment of pre-set targets and/or goals to implement intended strategies (Busco et al., 2012; Mohd Amir, 2014; Theriou et al., 2009). The use of MCSs in this manner is cybernetic in nature, similar to management-by-exception, with top management only involved when there are deviations from the pre-set objectives (Agostino and Arnaboldi, 2012). On the other hand, when management uses MCSs to promote the emergence of new strategies and ideas and to manage strategic uncertainties, this is referred to as the interactive approach to using MCSs (Simons, 1995). The interactive use of MCSs is regarded as a positive force since it promotes opportunity seeking and organisational-wide learning (Henri, 2006b). According to Bisbe et al. (2007, 797), the interactive use of MCSs comprises five features including “an intensive use by top management; an intensive use by operating managers; a pervasiveness of face-to-face challenges and debates; a focus on strategic uncertainties; and a non-invasive, facilitating and inspirational involvement.”

2.4 The association between the approaches to using MCSs and the adoption of contemporary management accounting practices

This section develops the relationship between the interactive and diagnostic approaches to using MCSs and the adoption of contemporary management accounting practices. No formal hypotheses are developed in relation to specific contemporary management accounting practices. Rather, while the association between the interactive and diagnostic use of MCSs with specific contemporary management accounting practices is discussed, this is for the purpose of discussing the overall impact of the approaches on the adoption of contemporary management accounting practices as a package.

2.4.1 The interactive use of MCSs

The interactive approach to using MCSs is likely to facilitate the adoption of contemporary management accounting practices given its emphasis on fostering organisational learning and the stimulation of new ideas (Ferreira and Otley, 2009; Simons, 1995). Since the interactive use of MCSs involves discussion and communication, organisations using MCSs in such a manner will be more aware of and more likely to acknowledge the role of contemporary management accounting practices. Specifically, organisations that emphasize the use of MCSs in an interactive manner can utilise contemporary management accounting practices, such as Benchmarking, to achieve organisational learning and the emergence of new ideas. Furthermore, contemporary management accounting practices are tools organisations employ to adapt innovative ideas and learn from the best performing firms or units (Langfield-Smith, 2009). Additionally, with contemporary management accounting practices serving as tools for the formulation of strategies (Langfield-Smith, 2009), their adoption is likely to be greater when MCSs are used in an interactive manner. In particular, since the interactive use of MCSs fosters the development of emergent strategies (Busco et al., 2012), contemporary management accounting practices would be deployed to assist with the formulation of new strategies.

It should be noted that the use of contemporary management accounting practices such as Activity Based Costing/Management, Total Quality Management and the Balanced Scorecard enables organisations to achieve certain key success factors such as innovation (Jarrar and Smith, 2014). Given that the interactive use of MCSs promotes innovation (Henri, 2006b), organisations using MCSs in an interactive manner will be more likely to adopt contemporary management accounting practices. Additionally, given the interactive use of MCSs encourages interdependence amongst various parts of an organisation, using MCSs in an interactive manner will facilitate the adoption of contemporary management accounting practices such as Value Chain Analysis which provides the mechanism through which activities in various part of the value chain (department, units, organisation) are analysed and coordinated (Dekker, 2003).

***H1:** The interactive use of MCSs is positively associated with the extent of adoption of contemporary management accounting practices*

2.4.2 The diagnostic use of MCSs

Contemporary management accounting practices such as Benchmarking, the Balanced Scorecard and Key Performance Indicators serve as tools which enable the achievement of pre-established objectives. Accordingly, since the diagnostic approach to using MCSs emphasizes the use of MCSs as a feedback mechanism to create constraints and to facilitate compliance (Henri, 2006b; Simons, 1995; Theriou et al., 2009), contemporary management accounting practices would be adopted in organisations using MCSs in a diagnostic approach. Likewise, given the diagnostic use of MCSs is concerned with monitoring the performance of staff and/or units, contemporary management accounting practices will provide organisations with information to facilitate such monitoring.

In addition, as Songini et al. (2013) found that the diagnostic use of MCSs was positively associated with the implementation of a cost leadership strategy, given Activity Based Costing/Management and other contemporary cost management practices such as Strategic Cost Management and Value Chain Analysis are a means of achieving cost leadership through the elimination of waste and cost control, the adoption of such contemporary management accounting practices is expected in those organisations using MCSs in a diagnostic manner. Furthermore, given that Activity Based Costing/Management is a tool used by management to evaluate the effectiveness and efficiency of the use of resources (Byrne et al., 2007), organisations emphasising the diagnostic use of MCSs, which is cybernetic in nature and emphasizes the efficient achievement of goals (Agostino and Arnaboldi, 2012), will leverage tools such as Activity Based Costing/Management to ensure that resources are efficiently used to meet the set objectives and targets.

H2: There is a positive association between the diagnostic approach to using MCSs and the extent of adoption of contemporary management accounting practices

2.5 The association between the adoption of contemporary management accounting practices and success

Studies on the success of contemporary management accounting practices have tended to focus on the success of ABC/M. Such studies have operationalized success in various ways including overall use and accuracy, increases in firm value, and perceived success (Byrne et al., 2007). Due to the variety of definitions of success, Shields (1995) argued that it is appropriate to allow the users to rate the degree of success relevant to their objectives. Consequently, a number of studies have followed this approach, and similarly this study measures the success of contemporary management accounting practices by asking respondents to indicate the extent to which they perceive that specific contemporary management accounting practices are successful in their organisation.

The theoretical relationship between the extent of adoption of contemporary management accounting practices and their level of success is implied based on the premise that an organisation needs to use management accounting practices to a large extent to realize the benefits of such practices (Baird et al., 2007). For example, empirical findings indicate that the extent of adoption of Activity Based Costing/Management influenced its success (Phan et al., 2014; Pierce and Brown, 2006). Additionally, the linkage between the extent of adoption and the success of contemporary management accounting practices is plausible given that the importance attached to information provided by management accounting practices will diminish if such management accounting practices are used minimally (Noreen, 1991).

The association between the extent of adoption and the success of contemporary management accounting practices can also be explained by the system implementation literature which contends that the extent of use of a system impacts the benefits derived from using the system (Pierce and Brown, 2006). Also, the information system literature indicates that the extent to which systems are adopted influences the success of inter-organisational systems on the premise that an organisation reaps the benefits from a system when the system is adopted to a greater extent (Tuomela, 2005). Accordingly, the benefits derived from contemporary management accounting practices are expected to be higher when they are adopted to a greater extent.

***H3:** There is a positive association between the extent of adoption of contemporary management accounting practices and their success.*

3. Method

A mail survey was used to collect data. A survey was chosen as it is common for MCSs studies to provide an insight based on a number of organisations (Arjaliès and Mundy, 2013). The targeted respondents were Australian public sector organisations comprising local

government councils, government business enterprises, government agencies/departments, and other types of public sector organisations. The organisations were selected from the OneSource database, which contains the details of various organisations in Australia. Seven hundred and forty (740) questionnaires were sent to the head of the finance unit (CFOs, Financial Controllers and similar positions) or the heads of the organisations/business units (CEOs).

The questionnaire was designed and distributed following Dillman's (2000) Tailored Design Method. A total of 82 (11.08%) organisations responded within four weeks of the distribution of the questionnaires, with an additional 50 (6.77%) responses received from the follow-up mailout. Of the total of 132 (18%) questionnaire responses, five were removed due to a large amount of missing data which resulted in 127 (17.14%) valid responses. The final response rate is consistent with recent MCSs studies (Auzair, 2015 [14.9%]; Ittner et al., 2002 [11%]).

To assure the representativeness of the sample, a non-response bias test was conducted. This consisted of an independent sample t-test, comparing the scores for the interactive approach to using MCSs, the diagnostic approach to using MCSs, the extent of adoption of overall contemporary management accounting practices, the extent of overall success of contemporary management accounting practices and a demographic characteristic (organisational size) between the early and late respondents. The results of the tests indicated that no statistical significant differences ($p \geq 0.05$) existed between the early and late responding groups, thereby supporting the representativeness of the sample.

3.1 Variable measurement

The measures of the approaches to using MCSs, and the adoption and success of contemporary management accounting practices were adapted from established scales, with modifications made where necessary to suit the context of the study. The constructs were assessed through confirmatory factor analysis (CFA), with the results reported in Table 1. Accordingly, measurement models were estimated for each of the constructs, with the criteria used in evaluating the measurement models including goodness-of-fit indices, modification indices, standard-errors and t-statistics (Kaynak, 2003).

3.1.1 Interactive approach to using MCSs

Based on a scale adapted from Simons (1995), the interactive use of MCSs was measured using a seven-point Likert scale ranging from 1 “Not at all” to 7 “To a great extent”. The construct was measured by asking respondents to indicate the extent to which: (i) management control systems are often used as a means of identifying strategic uncertainties and developing ongoing action plans; (ii) management control systems are used regularly in scheduled face-to-face meetings between operational and senior managers; (iii) there is a lot of on-going interaction between operational management and senior managers in management control; (iv) management control systems generate information that forms an important and recurring agenda in discussions between operational and senior managers; and (v) management control systems are used by operational and senior managers to discuss changes that are occurring within the business unit. The results of the confirmatory factor analysis (see Table 1), based on model goodness-of-fit indices, indicate that the measurement model fitted the data well. Hence, the average score of the five items was used to reflect the extent of interactive use of MCSs.

Table 1 Test results of the measurement models

Goodness-of-fit statistics^a	Measurement model for the interactive approach to MCSs	Measurement model for the diagnostic approach to MCSs	Measurement model for the adoption of CMAPs^b	Measurement model for the perceived success of CMAP^b
The ratio of excellent minimum sample discrepancy to degrees of freedom (CMIN/DF)	0.852	0.699	1.238	0.850
Goodness-of-Fit Index (GFI)	0.986	0.994	0.973	0.931
Comparative Fit Index (CFI)	1.000	1.000	0.984	0.915
Adjusted Goodness-of-Fit Index (AGFI)	0.959	0.972	0.938	0.840

^aThese indices were used in assessing the model fit in the study, as it is recommended to use a range of fit indices to evaluate model fit (Baines and Langfield-Smith, 2003). While the GFI indices range from 0 (poor fit) to 1 (perfect fit), an acceptable minimum of 0.90 is recommended (Hu and Bentler, 1999). Similarly, while a value of less than 5 is recommended for the CMIN/DF index (Hair et al., 2010), a more conservative value of 2 or 3 is suggested (Kline, 1998; Ullman, 2001). Also, whilst a CFI value of 0.95 is considered a great fit, a minimum of 0.80 is acceptable (Hair et al., 2010). Finally, a minimum cut-off of 0.80 is recommended for the AGFI (Hair et al., 2010).

^bThe abbreviation ‘CMAPs’ refers to contemporary management accounting practices.

3.1.2 Diagnostic approach to using MCSs

Similar to the interactive use of MCSs, a scale based on Simons (1995) was adapted to assess the extent of diagnostic use of MCSs. Using a seven-point Likert scale ranging from 1 'Not at all' to 7 'To a great extent', the respondents were asked to show the degree to which the following four items reflect the way their business unit uses MCSs: (i) management control systems are used to track progress towards goals and monitor results; (ii) management control systems are used to plan how operations are to be conducted in accordance with the strategic plan; (iii) management control systems are used to review performance; and (iv) management control systems are used to identify significant exceptions from expectations and take appropriate actions. The goodness-of-fit indices of the four items of the scale indicated that the measurement model fitted the data well (see Table 1). Consequently, the average score of the four items was used to measure the extent of diagnostic use of MCSs.

3.1.3 The extent of adoption of contemporary management accounting practices

A scale developed by Chenhall and Langfield-Smith (1998) and widely used in many management accounting studies (Al and McLellan, 2011; Joshi, 2001; Wu et al., 2007) was adapted to assess the extent of adoption of contemporary management accounting practices. Eight items (contemporary management accounting practices) from the original scale were adopted, including Benchmarking, Activity Based Management, Activity Based Costing, the Balanced Scorecard, Value Chain Analysis, Total Quality Management, Key Performance Indicators and Strategic Cost Management. Using a seven-point Likert scale ranging from 1 'Not at all' to 7 'To a great extent', respondents were asked to indicate the extent to which their business unit used each of these contemporary management accounting practices over the last three years.

Given that the adoption of contemporary management accounting practices was analysed both as individual practices and as a package, CFA was estimated to determine whether the eight contemporary management accounting practices were compatible to be used as a package. This is in line with the recommendation that a package of management accounting practices should be determined based on the internal consistency among the practices (Sandelin, 2008). The initial model for the package of contemporary management accounting practices ($\text{CMIN/DF} = 6.505$; $\text{GFI} = 0.820$; $\text{CFI} = 0.596$; $\text{AGFI} = 0.676$) did not fit well. Hence, based on the modification indices (MI), two contemporary practices (Activity Based Costing and Key Performance Indicators) were excluded, with the revised model fitting the data well (see Table 1). Accordingly, the average scores of the remaining six practices (see Appendix A) was used as the measure of the extent of overall adoption of contemporary management accounting practices.

3.1.4 The perceived success of contemporary management accounting practices

The perceived success of the eight contemporary management accounting practices was assessed by asking the respondents to indicate the rate of success of each practice in their business unit on a seven-point Likert scale with anchors of 1 'Very Unsuccessful' and 7 'Very Successful'. Similar to the extent of adoption, a measurement model was estimated to measure the overall success of contemporary management accounting practices. The initial measurement model did not fit the data well ($\text{CMIN/DF} = 6.666$; $\text{GFI} = 0.799$; $\text{CFI} = 0.682$; $\text{AGFI} = 0.639$). However, following the deletion of two practices (Activity Based Costing and Key Performance Indicators) based on the modification indices, the measurement model fitted the data well (see Table 1). Accordingly, the success of contemporary management accounting practices was measured as the average of the remaining six contemporary management accounting practices.

4. Results

4.1 Descriptive statistics

The descriptive statistics are shown in Table 2. The mean scores indicate that the extent to which the respondent organisations are using MCSs in an interactive (4.61) and diagnostic (4.92) manner is moderate⁸. Similarly, the extent of the perceived success of the contemporary management accounting as a package is moderate (4.09). Also, the extent of success of individual practices, as reported in Table 3, is moderate for most of the practices (Benchmarking, Activity Based Management, Activity Based Costing, Total Quality Management, and Strategic Cost Management), with the exceptions being the Balanced Scorecard (3.80), and Value Chain Analysis (3.16) which were low, and Key Performance Indicators (5.12) which experienced high success. With respect to the adoption, the results in Table 2 reveal that the extent of adoption of contemporary management accounting practices as a package is low (3.57). As shown in Table 4, with the exception of Key Performance Indicators (5.29) whose adoption is high, the extent of adoption of individual practices is either low (Activity Based Management, the Balanced Scorecard, Value Chain Analysis, and Total Quality Management) or moderate (Benchmarking, Activity Based Costing, and Strategic Cost Management).

4.2 Reliability and validity

The reliability of the four constructs of the study is assured with Table 2 showing that the Cronbach alphas of all the constructs were above the 0.70 cut off (Nunnally, 1978). Using the Cronbach alphas and correlation matrix results shown in Table 2, it is assessed that all four study scales have high discriminant validity. This is because the reliability coefficient of each scale is greater than its correlation with other scales (Crocker and Algina, 1986; Kaynak, 2003).

⁸ Mean scores of less than 4 are considered as low, 4 to 5 as moderate, and more than 5 as high.

Table 2 Descriptive statistics, Cronbach alphas, and bivariate correlations for the study constructs

Variables	Interactive use of MCSs	Diagnostic use of MCSs	Adoption of CMAP	Success of CMAP
<i>Descriptive statistics</i>				
Mean	4.61	4.92	3.57	4.09
Standard deviation	1.11	1.036	1.07	1.10
Theoretical range	1-7	1-7	1-7	1-7
Minimum	1.40	1.25	1.17	1.17
Maximum	7.00	7.00	6.00	7.00
Cronbach alpha	0.888	0.872	0.730	0.833
<i>Correlation matrix</i>				
Interactive use of MCSs	1			
Diagnostic use of MCSs	0.558**	1		
Adoption of CMAPs	0.431**	0.415**	1	
Success of CMAPs	0.513**	0.427**	0.477**	1

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3 Extent of adoption and success of specific contemporary management accounting practices

Practices	Extent of adoption (Mean)	Extent of success (Mean)
Benchmarking	4.53	4.47
Activity Based Management	3.82	4.04
*Activity Based Costing	4.02	4.31
The Balanced Scorecard	3.16	3.80
Value Chain Analysis	2.40	3.16
Total Quality Management	3.35	4.19
*Key Performance Indicators	5.29	5.12
Strategic Cost Management	4.16	4.38

Note: Activity Based Costing and Key Performance indicators were not included in assessing the overall score for the adoption and success of contemporary management accounting practices.

4.3 Structural equation modelling

This section discusses the structural equation models used to examine the hypotheses. A model was developed based on the use of the practices as a package, with eight other models developed based on the use of each individual practice. For the use of management accounting practices as a package, an initial model (Model A) was first estimated based on the formulated hypotheses, and indicated that all of the paths were significant. However, given that the model did not fit the data perfectly (CMIN/DF = 11.382; GFI = 0.924; CFI = 0.839; AGFI = 0.618), the model was revised by adding the path between the interactive use of MCSs and the extent of success of contemporary management accounting practices. This path was added based on the statistical recommendation of modification indices (MI). This revised model was estimated following the recommendation of Anderson and Gerbing (1988) to arrive at a revised model by constraining (deleting) least significant paths⁹ and

⁹ None of the paths were deleted, since all of the paths were significant in the initial model.

adding theoretically feasible ones. This approach was used by previous management studies (Medsker et al., 1994; Wayne et al., 1997) and extant MCS studies (Abernethy and Lillis, 2001; Grafton et al., 2010). The goodness-of-fit indices of the revised model (CMIN/DF = 2.209; GFI= 0.991; CFI = 0.991; AGFI = 0.914) fitted the data well (see Table 4 and depicted in Figure 1).

In addition to utilizing the overall scores of the extent of adoption and the extent of success of contemporary management accounting practices, the hypotheses were also analysed based on the extent of adoption and success of individual contemporary management accounting practices. This involved estimating eight structural equation models (one for each contemporary management accounting practices) relating the approaches to using MCSs with the extent of adoption of each specific practice, and the extent of adoption of each specific practice with the extent of success. The results of the revised models, showing only the significant paths and the goodness-of-fit indices, are reported in Table 5.

4.3.1 The association between the approaches to using MCSs and the adoption of contemporary management accounting practices

The study hypothesised that both the interactive and diagnostic approaches to using MCSs would be positively associated with the overall extent of adoption of contemporary management accounting practices. As reported in Table 4, the SEM results indicate that positive associations exist between both the interactive ($b = 0.279$, $p = 0.002$) and diagnostic ($b = 0.259$, $p = 0.007$) use of MCSs and the extent of adoption of contemporary management accounting practices, thereby supporting both Hypothesis 1 and Hypothesis 2.

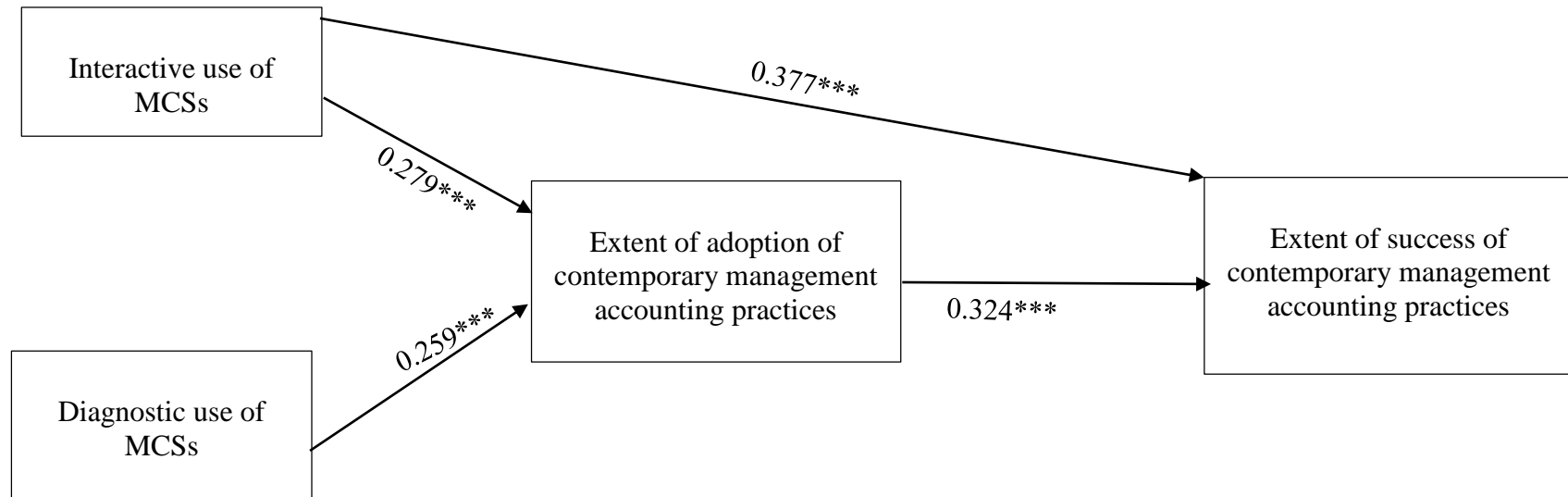
Table 4 Results of the structural equation model for a package of contemporary management accounting practices

Description of path	Model A	Model B		
	Base (initial) model path coefficient	P(Sig)	Revised (alternative) model path coefficient	P(Sig)
Interactive use of MCSs → Adoption of CMAPs	0.279	0.002***	0.279	0.002***
Diagnostic use of MCSs → Adoption of CMAPs	0.259	0.007***	0.259	0.007***
Adoption of CMAPs → Success of CMAPs	0.493	0.000***	0.324	0.000***
^a Interactive use of MCSs → Success of CMAPs	-	-	0.377	0.000***
Goodness-of-fit indices	CMIN/DF = 11.382 GFI = 0.924 CFI = 0.839 AGFI = 0.618		CMIN/DF= 2.209 GFI= 0.991 CFI= 0.991 AGFI = 0.914	

*** Statistically significant at 0.01 level (2-tailed).

^a This is an added path in the revised model.

Figure 1 Results of the structural equation model for a package of contemporary management accounting practices



*** Statistically significant at 0.01 level (2-tailed).

Goodness-of-fit indices:

CMIN/DF = 2.209

GFI = 0.991

CFI = 0.991

AGFI = 0.914

Table 5 Results of the structural equation model for specific contemporary management accounting practices

Models	Description of path	Revised (alternative) model path coefficient	P(Sig)	Goodness-of-fit indices
Benchmarking	Diagnostic use of MCSs → Adoption of Benchmarking	0.527	0.000***	CMIN/DF = 1.462; GFI = 0.989; CFI = 0.992; AGFI = 0.992
	Adoption of Benchmarking → Success of Benchmarking	0.346	0.000***	
	Interactive use of MCSs → Success of Benchmarking	0.386	0.000***	
Activity Based Management	Diagnostic use of MCSs → Adoption of ABM	0.470	0.001***	CMIN/DF = 3.770; GFI = 0.959; CFI = 0.918; AGFI = 0.865
	Adoption of ABM → Success of ABM	0.362	0.000***	
Activity Based Costing	Diagnostic use of MCSs → Adoption of ABC	0.366	0.018***	CMIN/DF = 2.498; GFI = 0.972; CFI = 0.953; AGFI = 0.906
	Adoption of ABC → Success of ABC	0.389	0.000***	
The Balanced Scorecard	Interactive use of MCSs → Adoption of BSC	0.342	0.000***	CMIN/DF = 4.326; GFI = 0.954; CFI = 0.910; AGFI = 0.846
	Adoption of MCSs → Success of BSC	0.528	0.000***	
Value Chain Analysis	Interactive use of MCSs → Adoption of VCA	0.341	0.002***	CMIN/DF = 2.617; GFI = 0.971; CFI = 0.931; AGFI = 0.903
	Adoption of VCA → Success of VCA	0.232	0.000***	
Total Quality Management	Interactive use of MCSs → Adoption of TQM	0.474	0.000***	CMIN/DF = 3.489; GFI = 0.961; CFI = 0.926; AGFI = 0.871
	Adoption of TQM → Success of TQM	0.413	0.000***	
Key Performance Indicators	Interactive use of MCSs → Adoption of KPI	0.518	0.000***	CMIN/DF = 2.628; GFI = 0.971; CFI = 0.964; AGFI = 0.903
	Adoption of KPI → Success of KPI	0.636	0.000***	
Strategic Cost Management	Diagnostic use of MCSs → Adoption of SCM	0.428	0.001***	CMIN/DF = 2.055; GFI = 0.984; CFI = 0.980; AGFI = 0.921
	Adoption of SCM → Success of SCM	0.378	0.000***	
	Diagnostic use of MCSs → Success of SCM	0.394	0.000***	

*** Statistically significant at 0.01(2-tailed)

Additionally, based on the extent of adoption of specific contemporary management accounting practices, the SEM results reported in Table 5 reveal that the diagnostic use of MCSs was positively associated with Benchmarking, Activity Based Management, Activity Based Costing, and Strategic Cost Management, and the interactive use of MCSs was positively associated with the Balanced Scorecard, Value Chain Analysis, Total Quality Management and Key Performance Indicators.

4.3.2 The association between the extent of adoption of contemporary management accounting practices and the success of contemporary management accounting practices

It was hypothesised that the extent of adoption of contemporary management accounting practices would be positively associated with the success of contemporary management accounting practices. The results in Table 4 indicate that the path between the overall extent of adoption with the success of contemporary management accounting practices is positively significant ($b = 0.324$, $p = 0.000$), thereby supporting Hypothesis 3. Likewise, based on the analysis using specific contemporary management accounting practices, Table 5 shows that the extent of adoption of all of the eight contemporary management accounting practices exhibits a positive association with the extent of success.

5. Discussion and conclusion

5.1 Discussion

The first objective of this study was to investigate the association between the approaches to using MCSs and the extent of adoption of contemporary management accounting practices. The study found that the extent to which contemporary management accounting practices are used is influenced by the extent to which MCSs are used in both an interactive and diagnostic manner. This finding is novel, providing an empirical linkage between the

approaches to using MCSs and the extent of adoption of contemporary management accounting practices. The findings hence provide support for the interrelationship between MCSs aspects, a theoretical insight with long established recognition that has received little empirical attention (Bedford and Malmi, 2015; Malmi and Brown, 2008).

Although the interactive and diagnostic approaches to using MCSs have varying features, the finding that they are both associated with the extent of adoption of contemporary management accounting practices is plausible. This finding can be explained by the competing value theory which maintains that systems exhibiting both flexibility and control, with the interactive and diagnostic approaches exhibiting these features respectively, are effective in the achievement of organisational objectives (Ancarani et al., 2009; Quinn and Rohrbaugh, 1983). The finding is also consistent with Simons' (1995) levers of control framework which contends that a tension is created when interactive and diagnostic controls are used together, indicating that the effectiveness of MCSs is enhanced by balancing the competing demands of predictable goal achievement aided by the diagnostic use, and creative innovation and strategic initiatives facilitated by the interactive use of MCSs (Henri, 2006b; Kominis and Dudau, 2012).

One practical implication of the finding is that public sector organisations, in their effort to increase the use of contemporary management accounting practices as advocated by the public sector reforms, should leverage the interrelationship between aspects of MCSs by increasing the intensity in which they use their MCSs in an interactive and diagnostic manner. In particular, given the use of MCSs in the public sector is traditionally more diagnostic in nature (Norman, 2001), the findings highlight the relevance of interactive MCSs in the public sector, reinforcing the suggestion for supplementing the dominant

diagnostic use with the interactive use in the sector (Batac and Carassus, 2009). Hence, as both the diagnostic and interactive use of MCSs are effective in public sector organisations (Norman, 2001) and given that the interactive use of MCSs was reported to be lower, public sector organisations should place more emphasis on increasing the use of MCSs in an interactive manner (Berry et al., 2009).

The second objective of the study was to provide an insight into the level of success of contemporary management accounting practices in the public sector, and whether the perceived success of contemporary management accounting practices is influenced by the extent of adoption. The study reported a moderate level of success of contemporary management accounting practices in the public sector, which represents an improvement on the low rates reported in earlier studies (Chenhall and Langfield-Smith, 1998; Shields, 1995; Zawawi and Hoque, 2010). This implies that public sector organisations are finding contemporary management accounting practices beneficial, which is plausible as these practices are consistent with the efficiency, effectiveness and outcome mandates of contemporary public sector organisations. The findings also support the assertion that the extent of adoption of contemporary management accounting practices enhances the level of success. This finding is consistent with the few emerging management accounting studies (Phan et al., 2014; Pierce and Brown, 2006) that have revealed the effect of the extent of ABC/M adoption on success. The results support and extend these findings, indicating that in addition to ABC/M, the degree to which organisations use other contemporary management accounting is associated with their perceived success. This is supported both in respect to specific contemporary management accounting practices and the combination (package) of such practices. The moderate level of success of contemporary management accounting practices reported indicates that public sector organisations have room for improvement to enhance the success of such practices. Therefore, given the success of

contemporary practices is higher when the extent of their adoption is higher, public sector organisations should endeavour to increase their extent of adoption of such practices.

5.2 Conclusion

In line with the transformation agenda of the public sector, the use of contemporary management accounting practices is promoted in the sector. This study highlights the factors contributing to the increased adoption and success of contemporary management accounting practices in the public sector, with the findings contributing to the literature and providing implications for practitioners.

The findings contribute to the literature in two major ways. First, the study extends the management accounting literature on the contingency factors influencing the adoption of contemporary management accounting practices, highlighting the contribution of the interactive and diagnostic approaches to using MCSs as contingency factors influencing the adoption of contemporary management accounting practices. The findings also reinforce the premises of the competing value theory, given that both the interactive and diagnostic approaches to MCSs, systems exhibiting contrasting features, were found to promote the extent to which organisations adopt contemporary management accounting practices. Secondly, the study extends the previous management accounting studies on factors influencing the success of contemporary management accounting practices, revealing that the extent of adoption of various contemporary management accounting practices influences their success.

The study also offers a number of practical implications, particularly for public sector practitioners. The moderate levels of success and low rate of adoption of contemporary

management accounting practices experienced by public sector organisations implies that such organisations are falling short in meeting the expectations of the public sector reforms in respect to the adoption and success of private sector practices. Accordingly, by intensifying the use of MCSs in a more interactive and diagnostic manner, public sector organisations are more likely to adopt contemporary management to a greater extent, with the subsequent increase in the extent of adoption of such practices found to exacerbate their success.

5.3 Limitations of the study and directions for future research

This study has similar limitations to all survey research including the failure to account for causality. Given this limitation, future studies could replicate this study by adopting alternative research approaches. Additionally, as the study indicated that a relationship exists between the approaches to using MCSs with the adoption of contemporary management accounting practices, other aspects of MCSs such as MCS characteristics could be examined in respect to their influence on the adoption of contemporary management accounting practices.

Appendix A: Questionnaire, items and their sources

The questionnaire items marked with the symbols (‡) were retained after confirmatory factor analysis.

The interactive approach to using MCSs

All items of this scale were adapted from Simons (1995).

1. ‡Management control systems are often used as a means of identifying strategic uncertainties and developing ongoing action plans.
2. ‡Management control systems are used regularly in scheduled face-to-face meetings between operational and senior managers.
3. ‡There is a lot of on-going interaction between operational management and senior managers in management control.
4. ‡Management control systems generate information that forms an important and recurring agenda in discussions between operational and senior managers.
5. ‡Management control systems are used by operational and senior managers to discuss changes that are occurring within the business unit.

The diagnostic approach to using MCSs

All items of this scale were adapted from Simons (1995).

1. ‡Management control systems are used to track progress towards goals and monitor results.
2. ‡Management control systems are used to plan how operations are to be conducted in accordance with the strategic plan.
3. ‡Management control systems are used to review performance.
4. ‡Management control systems are used to identify significant exceptions from expectations and take appropriate actions.

The extent of adoption of contemporary management accounting practices

The eight items of this scale were adapted from Chenhall and Langfield-Smith (1998).

1. ‡Benchmarking
2. ‡Activity Based Management
3. Activity Based Costing
4. ‡The Balanced Scorecard
5. ‡Value Chain Analysis
6. ‡Total Quality Management
7. Key Performance Indicators
8. ‡Strategic Cost Management.

The extent of success of contemporary management accounting practices

All items of this scale were developed from Chenhall and Langfield-Smith (1998).

1. ‡Benchmarking
2. ‡Activity Based Management
3. Activity Based Costing
4. ‡The Balanced Scorecard
5. ‡Value Chain Analysis
6. ‡Total Quality Management
7. Key Performance Indicators
8. ‡Strategic Cost Management.

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CHAPTER FIVE

PAPER THREE

The association between the approaches to using MCSs and the characteristics of MCSs with organisational change and organisational performance: the mediating role of organisational capabilities

Abstract

This study examines the role of organisational capabilities in mediating the relationship between the interactive and diagnostic approaches to using management control systems (MCSs) and MCS characteristics with organisational change and organisational performance. Data was collected based on a mail survey of public sector organisations in Australia, and analysed using structural equation modelling (SEM). While no evidence was found of the mediating effect of organisational capabilities in the relationship between the diagnostic approach to MCSs with organisational change and organisational performance, it was found that strategic flexibility and employee empowerment mediate the association between the interactive approach to MCSs with organisational performance, and strategic flexibility mediates the relationship between the interactive approach to MCSs with organisational change. The study also found that strategic flexibility and employee empowerment mediate the association between broad scope MCS information and the formality of MCSs with organisational performance, strategic flexibility mediates the association between broad scope MCSs information and the formality of MCSs with organisational change, and employee empowerment mediates the association between the tightness of MCSs with organisational performance. These findings advance the emerging literature on the role of the resource-based view (RBV) in informing the effectiveness of MCSs, and support the competing value theory which maintains that systems exhibiting flexibility and control are simultaneously needed to attain organisational objectives. The findings also offer practical guidance to public sector practitioners.

Keywords: MCSs; organisational change; organisational performance; organisational capabilities; NPM; public sector.

1. Introduction

To adapt to the changing business environment which is typified by fierce competition, intense globalization, continual changes and economic crises (Ax et al., 2008; Chiang, 2010; Huang, et al., 2012; Martin et al., 2006; Modarress et al., 2005), public sector organisations are undertaking organisational change (Diefenbach, 2009). The need for organisational change in the public sector is becoming more paramount due to the marketization and corporatization of the sector following the public sector reforms, particularly the NPM (Diefenbach, 2009). While the NPM reforms highlight the need for change and improvements in the performance of public sector organisations (Kober et al., 2007; Naranjo-Gil and Hartmann, 2007), which are often criticised due to their inefficiency and ineffectiveness (Drake et al., 2007; van Helden, 2005), their success hinges significantly on their internal systems (Andrews et al., 2006; Kober et al., 2007). Accordingly, research on the impact of organisational systems in the public sector has been advocated (Ashworth et al., 2009).

An organisational system with the potential to both promote and hinder organisational change and performance in public sector organisations is the management control system (MCS). MCSs are processes and procedures used by organisations to facilitate the implementation of strategies (Simons, 1991) and the achievement of organisational objectives (outcomes) (Bisbe and Otley, 2004; Kloot, 1997; Kober et al., 2007; Ouchi, 1977), with certain aspects of MCSs thought to promote intended behaviour and/or facilitate dysfunctional behaviour (Auzair and Langfield-Smith, 2005; Henri, 2006a). For instance, the interactive approach to using MCSs and some characteristics of MCSs such as broad scope MCS information facilitate strategic initiatives and the emergence of new ideas (Abernethy and Guthrie, 1994; Bouwens and Abernethy, 2000; Henri, 2006a), while the diagnostic use of MCSs and the formality and tightness of the MCS are considered to

constrain and control organisations (Kald et al., 2000; Kamminga and van der Meer-Kooistra, 2007; Langfield-Smith and Smith, 2003; Simons, 1990).

Although the effectiveness of various aspects of MCSs has been examined in a number of private sector studies, the results of these studies may not necessarily be applicable to the public sector. This is due to the contextual differences of the two sectors. For instance, whilst public sector organisations are subjected to the same competitive pressures as their private sector counter parts, they are more insulated from competition and the principal objectives of the two sectors differ (Boyne, 2002). Therefore, the systems that work well in the private sector may not necessarily yield the same results in the public sector (Boyne, 2002). Accordingly, research on the impact of MCSs on organisational change and performance in the public sector is paramount.

Previous studies, predominantly in the private sector, have investigated the effect of different approaches to using MCSs (Abernethy and Brownell, 1999; Bobe and Taylor, 2010; Henri, 2006a; Sakka et al., 2013; Su et al., 2015; Widener, 2007) and specific MCS characteristics (Abdel-Kader and Luther, 2008; Gerdin, 2005; Kallunki et al., 2011; Li et al., 2010; Sharma et al., 2006). However, there are only a few studies which have examined the impact on organisational change (Kober et al., 2007; Naranjo-Gil and Hartmann, 2007), while those studies examining the impact on organisational performance have reported mixed findings. For instance, Abernethy and Brownell (1999) reported that the interactive use of MCSs was positively associated with organisational performance, and Sakka et al. (2013) and Widener (2007) found a positive association between the diagnostic use of MCSs and organisational performance. Alternatively, Widener (2007) and Henri (2006a) found a negative association between the interactive and diagnostic use of MCSs and organisational performance.

Similarly, in respect to the effect of MCS characteristics, while some studies have reported a positive association between broad scope MCS information (Gerdin, 2005; Sharma et al., 2006) and the formality of MCSs (Kallunki et al., 2011) with organisational performance, other studies reported no association between broad scope MCS information (Abdel-Kader and Luther, 2008) and the formality of MCSs (Li et al., 2010) with performance.

In examining the effectiveness of MCSs and their impact on organisational performance, in line with the resource-based view (RBV) theory¹⁰, recent studies (Bisbe and Otley, 2004; Henri, 2006a) have examined the impact of MCSs on organisational capabilities and the subsequent impact on organisational performance. This theory is based on the premise that the impact of MCSs on organisational outcomes is at the capabilities level (Henri, 2006a). However, these emerging studies have focused mainly on the mediating role of organisational capabilities in the relationship between the approaches to using MCSs and organisational performance (Bisbe and Otley, 2004; Henri, 2006a), ignoring other aspects of MCSs and other organisational outcomes. In particular, MCS characteristics are considered to be an important aspect of MCSs with the potential to impact organisational capabilities (Whitley, 1999), and the ability to influence other organisational outcomes including promoting organisational change.

Therefore, given the limited studies on the mediating role of organisational capabilities in the relationship between aspects of MCSs with organisational performance and organisational change, this study explores such relationships. Considering the pressure to improve performance and undertake change in the public sector, strategic flexibility and

¹⁰ The resource-based view theory asserts “that valuable, costly-to-copy firm resources and capabilities provide the key sources of sustainable competitive advantage” (Hart, 1995, 986).

employee empowerment are examined due to their potential to promote both organisational change and performance (Gal-Or and Amit, 1998; Lee, 2001; Nadkarni and Narayanan, 2007). In particular, since the reforms taking place in the public sector emphasize the need for flexibility in public sector organisations (Drake et al., 2007; Parry and Proctor-Thomson, 2002), and given that strategic flexibility enables an organisation to be more receptive to changes (Nadkarni and Narayanan, 2007) and serves as a source of competitiveness (Lee, 2001), those organisations that emphasize strategic flexibility are more likely to initiate change and attain higher performance. Such public sector reforms also promote the adoption of employee empowerment in the public sector as a management approach with the potential to mitigate the bureaucracy associated with the traditional public sector (Fernandez and Moldogaziev, 2012). Furthermore, employee empowerment is a management approach that could foster improved performance (Fernandez and Moldogaziev, 2010, 2012), with the ability to support organisational change (Gal-Or and Amit, 1998). Therefore, the study aims to examine the role of two organisational capabilities (strategic flexibility and employee empowerment) in mediating the relationship between the approaches to using MCSs (interactive and diagnostic use of MCSs) and MCS characteristics (broad scope MCS information, the tightness of MCSs and the formality of MCSs) with organisational change and organisational performance in the public sector.

The findings of the study are expected to make a significant contribution to theory and practice. Specifically, the findings will contribute to the limited and emerging RBV literature on the role of organisational capabilities in explaining the effectiveness of the approaches to using MCSs and the characteristics of MCSs. For practitioners, the findings are expected to provide an understanding of how to appropriately use MCSs so as to develop appropriate capabilities that aid in effecting organisational change and improving performance in the public sector.

The remainder of the paper is structured as follows. The next section provides an overview of the nature of management control systems and organisational capabilities, and develops the relevant hypotheses. Section three then describes the research method. Section four presents the results of the study, with the final section presenting the discussions and implications, conclusion, and limitations and suggestions for future research.

2. Literature review

2.1 Management control systems (MCSs)

While “management control systems are viewed typically as tools of strategy implementation” (Simons, 1991, 49), there are various definitions of MCSs in the extant literature. According to Ouchi (1979), an MCS is a means of achieving organisational goals through cooperation from various employees and organisational units, with Kloot (1997) regarding MCSs as systems used to enable the achievement of organisational goals by the efficient and effective use of resources. Similarly, several other researchers (for example, Bisbe and Otle, 2004; Kober et al., 2007; Ouchi, 1977) have also regarded MCSs as the way managers use processes and procedures to promote the achievement of their organisational goals.

This study focuses on the approaches to using MCSs and the specific characteristics of MCSs, due to the potential linkages of these aspects of MCSs with organisational capabilities (Henri, 2006a; Whitley, 1999). The approach to using MCSs (i.e. the interactive and diagnostic use of MCSs) is operationalized based on Simons’ (1995) levers of control framework, and the characteristics of MCSs are operationalized based on Whitley’s (1999) framework (i.e. the scope of MCS information, the formality of MCSs and the tightness of MCSs).

2.1.1 Approaches to using MCSs

An MCS can be used in either an interactive or diagnostic manner (Kober et al., 2007). The interactive approach to using MCSs refers to using MCSs in order to promote learning and opportunity seeking behaviour (Theriou et al., 2009) as well as to engage managers and their subordinates (Bobe, 2012; Simons, 1994). Using MCSs in an interactive manner entails continual dialogue and debate through which competitive pressures are internally developed, enabling an organisation to adapt (Kober et al., 2007) so as to manage the uncertainties in their operating environment (Ramos and Hidalgo, 2003). Using MCSs interactively stimulates the emergence of initiatives and new ideas, and encourages lower level employees to partake in strategic processes (Henri, 2006a).

The diagnostic use of MCSs refers to the use of MCSs as a feedback mechanism for performance monitoring and correction (Bobe, 2012; Ramos and Hidalgo, 2003; Simons, 1994). The diagnostic use is the traditional ‘cybernetic function’ of MCSs for the achievement of pre-set objectives by using MCSs to correct deviations from pre-set objectives (Henri, 2006b). The use of MCSs in a diagnostic manner also facilitate the achievement of key performance metrics by monitoring, assessing and rewarding the achievement of key performance metrics (Ferreira and Otley, 2009). However, using MCSs in this manner constrains innovation and opportunity seeking as it emphasizes the achievements of predictable goals (Simons, 1991).

2.1.2 MCS characteristics

Whitley (1999) classifies MCS characteristics into four categories including formality; tightness of MCSs; the scope of MCS information; and the extent of employee/subunit involvement in target setting, monitoring and the evaluation of performance. These MCS

characteristics, except the latter which is synonymous with the organisational capability employee empowerment, are considered in this study.

Broad scope MCS information is referred to as information that is external, non-financial and future oriented (Bouwens and Abernethy, 2000; Mia and Chenhall, 1994; Naranjo-Gil and Hartmann, 2007). MCS information that is broad in nature is strategic in orientation and gives management a variety of options to consider in making decisions (Bouwens and Abernethy, 2000).

An MCS is also characterized based on the degree of its formality (i.e., whether a control is used in a formal or an informal manner) (Auzair and Langfield-Smith, 2005; Kallunki et al., 2011; Tsamenyi et al., 2011). Formal controls are those MCSs that emphasize the strict achievement of results through rules, plans, standard operating procedures and budgeting systems (Chenhall, 2003; Langfield-Smith and Smith, 2003; Whitley, 1999). In essence, the greater use of formal controls implies higher institutionalization of impersonal rules and procedures in controlling and/or managing the behaviour, processes and results of employees (Ramaswami, 1996).

The tightness of MCSs depends on the extent to which deviations from performance standards are tolerated (Amigoni, 1978; Anthony et al., 1992; Auzair and Langfield-Smith, 2005; Kald et al., 2000; Tsamenyi et al., 2011). Specifically, MCS tightness refers to the emphasis placed on evaluating the performance of employees or units based on their ability to achieve predetermined objectives (Anthony et al., 1998; Poister and Streib, 1999; Spano and Asquer, 2011; van der Stede, 2001). It also involves intense planning and budgeting particularly on a short term basis, and greater management involvement in the regular activities of employees (Kald et al., 2000).

Although both the formality and tightness of MCSs entail using MCSs in a constraining manner, they are distinct. While the former entails controlling the behaviour and results of employees in an impersonal manner, the latter is about using controls, which could be formal or informal, to assure that employees achieve the set targets precisely and timely (Auzair and Langfield-Smith, 2005).

2.2 Organisational capabilities

The concept of organisational capabilities has been developed within the resource-based view of the firm (RBV) theory (Maritan, 2001; Ulrich and Lake, 1991). Unlike economic theory which contends that competitiveness and performance arise from external factors such as market structure and/or the attractiveness of the market/industry, the focus of the RBV is based on the internal characteristics of the firm (Carter and Toms, 2010). Specifically, a firm's attainment of competitive advantage and subsequent superior performance arises from internal, firm-specific and intangible resources and capabilities (Bobe, 2012; Maritan, 2001; Ulrich and Lake, 1991).

Accordingly, organisational capabilities are referred to as internally developed attributes that enable organisations to coordinate and utilise their resources to perform tasks and/or activities (Ulrich and Lake, 1991). Important features of organisational capabilities include that they are skill and knowledge based; value (culture) oriented; firm-specific; and internally developed rather than acquired from factor markets (Bobe, 2012; Maritan, 2001). Based on the RBV, organisational capabilities strengthen organisations' competitive advantage and drive organisational outcomes (Ulrich and Lake, 1991). Two organisational capabilities are examined in this study, strategic flexibility and employee empowerment.

2.2.1 Strategic flexibility

According to Sanchez (1997), strategic flexibility is the ability of an organisation to adapt to environmental changes. Young-Ybarra and Wiersema (1999) and Nadkarni and Herrmann (2010) define strategic flexibility as the ability of a firm to respond to both anticipated and unanticipated changes, and to adapt to the consequences of those changes. Hence, strategic flexibility is the ability of an organisation to depart from what was originally intended (Evans, 1991) and promptly adapt to a changing operating environment, for the purpose of creating and sustaining competitive advantage (Zhang, 2005).

2.2.2 Employee empowerment

“Employee empowerment¹¹ is the process of decentralizing decision-making in an organisation, whereby managers give more discretion and autonomy to the front-line employees” (Brymer, 1991, 59). The concept of employee empowerment is broadly defined or categorised based on the psychological and situational (managerial) perspectives (Yang and Choi, 2009). While the psychological perspective perceives employee empowerment as the cognition or the state of mind of employees, the managerial perspective regards employee empowerment as delegating power from top to lower level employees by involving the lower level employees in decision making (Drake et al., 2007; Yang and Choi, 2009). Since the latter definition involves the role of management in developing an empowerment culture, this study adopts this approach given that the organisation is the study’s unit of analysis and the use of MCSs is a managerial domain.

¹¹ In the literature, employee empowerment is defined in various ways with terms such as employee involvement, employee participation and individual development considered to have a similar meaning as employee empowerment (Honold, 1997).

2.3 The association between the approaches to using MCSs and organisational capabilities

2.3.1 The association between the interactive use of MCSs with strategic flexibility and employee empowerment

Since using MCSs in an interactive manner enables an organisation to be adaptable (Kober et al., 2007) and strategic flexibility involves the ability of an organisation to adapt to environmental changes (Young-Ybarra and Wiersema, 1999), a positive association is expected between the interactive use of MCSs with strategic flexibility. In line with this, Naranjo-Gil and Hartmann (2006) posited that the interactive use of MCSs promotes flexibility. Similarly, since using MCSs in an interactive manner entails stimulating opportunity seeking and deviation from routines (Bisbe and Otley, 2004; Bruining et al., 2004), the interactive use of MCSs is synonymous with flexibility. The ability of the interactive use of MCSs to promote strategic flexibility can also be explained through innovation. This is because using MCSs in an interactive manner stimulates innovation (Bisbe and Otley, 2004), with an innovative culture associated with increased strategic flexibility (Hitt et al., 1998). Additionally, due to the ability to enable an organisation to shift direction and capture unexpected opportunities (Simons, 1991), as well as bestowing subordinates the autonomy of flexible targets (van der Stede, 2001), using MCSs interactively makes an organisation more flexible.

H1a: *The interactive use of MCSs is positively associated with strategic flexibility.*

The interactive use of MCSs also promotes information and knowledge sharing through involving employees in organisational dialogue and debating (Henri, 2006a; van der Wiele et al., 2011). Therefore, the interactive use of MCSs has the capacity to promote employee empowerment. Similarly, as employee empowerment involves relinquishing more power to lower level employees by enabling them to partake in more decision making, the interactive use of MCSs has the potential to aid employee empowerment. This is because lower level

employees are involved in decision making when MCSs are used interactively (Webster, 2006).

H1b: The interactive use of MCSs is positively associated with employee empowerment

2.3.2 The association between the diagnostic use of MCSs with strategic flexibility and employee empowerment

Studies grounded in the RBV suggest that the diagnostic use of MCSs constrains organisational capabilities. In the same vein, Henri (2006a) posited and found that the diagnostic use of MCSs negatively affected some organisational capabilities, including market orientation, entrepreneurship, organisational learning and innovativeness. Accordingly, the diagnostic use of MCSs stifles flexibility (Tessier and Otley, 2012), as using MCSs in a diagnostic manner discourages deviation from pre-set standards and promotes conformance with the status quo (Henri, 2006a). Similarly, in discouraging learning and innovation (Henri, 2006a), which are all associated with strategic flexibility (Bierly and Chakrabarti, 1996; Zhou and Wu, 2010), the diagnostic use of MCSs constrains strategic flexibility. Furthermore, since using MCSs diagnostically constrains an organisation by inducing compliance with the status quo and impeding the pursuit of new opportunities and innovative ideas (Gond et al., 2012; Henri, 2006a), the diagnostic use of MCSs is expected to constrain strategic flexibility.

H2a: The diagnostic use of MCSs is negatively associated with strategic flexibility.

While employee empowerment involves giving lower level employees decision making authority (Liden et al., 2000; Moye and Henkin, 2006), the diagnostic use of MCSs constrains and dictates the extent and mode of operation to employees (Tessier and Otley, 2012). This could hence curtail employees' involvement in certain activities in their organisations. Similarly, the diagnostic use of MCSs, with its emphasis on performance

monitoring and correction, has the tendency to curtail the autonomy of employees (Ramaswami, 1996), and since autonomy is consistent with employee empowerment, the diagnostic use of MCSs constrains employee empowerment.

H2b: The diagnostic use of MCSs is negatively associated with employee empowerment.

2.4 The association between MCS characteristics and organisational capabilities

2.4.1 The association between broad scope MCS information with strategic flexibility and employee empowerment

As strategic flexibility entails environmental scanning to identify changes in the environment for an appropriate response, broader MCS information can support strategic flexibility through the provision of the required external information (Ahrens and Chapman, 2010). Accordingly, Naranjo-Gil and Hartmann (2007) posit the role of broad scope MCS information in facilitating organisational flexibility. Secondly, the relationship between broad scope MCS information with strategic flexibility could also be drawn from the information literature, which contends that the ability of an information system to provide a wide range of information enables a system to enhance organisations' flexibility in pursuing a variety of available options (Lucas Jr and Olson, 1994). Accordingly, Abdel-Maksoud et al. (2005) found that non-financial information, a dimension of broad scope MCS information, was associated with flexibility.

H3a: Broad scope MCS information is positively associated with strategic flexibility.

Broad scope MCS information entails the provision of information on various aspects of an organisation, both internal and external (Bouwens and Abernethy, 2000; Mia and Chenhall, 1994; Naranjo-Gil and Hartmann, 2007), with the provision of detailed information facilitating the delegation of tasks. Thus, considering that empowered employees are bestowed with decision making capacity they require greater information access on different

aspects of an organisation to make sound decisions (Honold, 1997). Hence, given broad scope MCS information provides detailed information, it is expected that broad scope MCS information will be associated with the level of employee empowerment.

***H3b:** Broad scope MCS information is positively associated with employee empowerment.*

2.4.2 The association between the formality of MCSs with strategic flexibility and employee empowerment

The formality of MCSs appears to constrain strategic flexibility. As the use of MCSs in a formal way entails greater emphasis on rules and regulations in order to achieve objectives (Ramaswami, 1996), employees' propensity to initiate changes in response to their changing environment is likely to be limited. In this respect, Chenhall (2003) asserted that using MCSs in a more formal way will not support flexibility. Similarly, while strategic flexibility demands taking initiatives and departing from the status quo when necessary (Nadkarni and Herrmann, 2010), greater formality of MCSs stifles such actions. This is because more formal MCSs emphasize adherence to routine operations and following defined responsibilities (Naveh, 2007). Creativity and innovation, other features of strategic flexibility, are also deterred by the formality of an organisation's MCSs (Sakka et al., 2013). Accordingly, the formality of MCSs, which encourage rigidity by following the formalized procedures for the attainment of specified objectives, with little tolerance for adjustment to unforeseen circumstances (Sakka et al., 2013), appears to limit strategic flexibility.

***H4a:** The formality of MCSs is negatively associated with strategic flexibility.*

With respect to employee empowerment, its presence is more likely in those organisations that provide subordinates with an opportunity to make discretionary choices and decisions (Honold, 1997). Hence, given the formal use of MCSs implies controlling employees through impersonal rules and standard operating procedures, employees' choice and

discretion is stifled (Henkel et al., 2007). The formal use of MCSs is hence not supportive of employee empowerment. Likewise, given that the formality of MCSs emphasizes specifying to employees the explicit sequence of how to execute processes and what to do (Naveh, 2007), the autonomy demanded in an employee empowered environment would be stifled by greater formality.

H4b: The formality of MCSs is negatively associated with employee empowerment.

2.4.3 The association between the tightness of MCSs with strategic flexibility and employee empowerment

Using MCSs in a tight manner entails strict achievement of targets with frequent monitoring and involvement by management (Anthony et al., 1992; Kald et al., 2000). Using MCSs in such a manner promotes risk aversion, stifles creativity and discourages experimentation (Auzair and Langfield-Smith, 2005; Morris et al., 2006; Shih and Yong, 2001), which is inconsistent with flexibility. In this regard, Kamminga and van der Meer-Kooistra (2007) found that the tight controls imposed by parent companies restricted the flexibility of their subsidiaries. Similarly, while strategic flexibility improves the ability to depart from the normal course when the need arises (Nadkarni and Herrmann, 2010), tighter control ensures low tolerance for target deviation (van der Stede, 2001).

H5a: The tightness of MCSs is negatively associated with strategic flexibility.

Given that provision of increased power and decision making capacity to lower level employees are some of the features of employee empowerment (Hales and Klidas, 1998; Liden et al., 2000; Moya and Henkin, 2006; Pelit et al., 2011), using MCSs in a tight form, which involves constant involvement by management in the activities of subordinates, would curtail the subordinates' decision making authority (Kald et al., 2000). Therefore, since

tightness of MCSs limits the freedom accorded to individuals (van der Stede, 2001) using MCS in a tight manner limits their autonomy in making decisions.

H5b: The tightness of MCSs is negatively associated with employee empowerment.

2.5 The association between employee empowerment and strategic flexibility with organisational change

As organisational capabilities, both strategic flexibility and employee empowerment promote organisational outcomes. Employee empowerment is an important management approach, with the potential to promote organisational change. Chang and Liu (2008) posited that empowered employees tend to have new and innovative ideas which enable them to adapt to the changes in their work environment. In addition, Gal-Or and Amit (1998) attributed those organisations with an empowered employee culture to be more capable of undertaking changes in response to environmental changes. In particular, empowered employees are more committed and more willing to be flexible, show initiative, and devote effort towards their organisation (Iverson, 1996). Furthermore, by empowering employees they are less likely to resist change initiatives (Kappelman and Richards, 1996). Similarly, Lawler (1994) asserted that the involvement of employees is vital for the implementation of radical change, and Lamm and Gordon (2010) found that employee empowerment promotes behavioural support for organisational change.

Similarly, strategic flexibility has been considered to be a facilitator of organisational change (Feletto et al., 2011), with Tienari and Tainio (1999) noting that in the current turbulent operating environment an organisation's ability to undertake change is determined by its flexibility. Since strategic flexibility refers to the ability of an organisation to quickly adapt to environmental changes (Nadkarni and Narayanan, 2007), an organisation where a strategic flexibility culture is emphasized is unlikely to resist change and be more likely to

anticipate and effect required changes. Accordingly, Dunford et al. (2013) asserted the need for flexibility in undertaking organisational change.

***H6:** Employee empowerment and strategic flexibility are positively related to organisational change.*

2.6 The association between employee empowerment and strategic flexibility with organisational performance

As the central theme of the resource based view theory is enhancing the competitiveness of a firm through the development of capabilities (Peteraf, 2006), both employee empowerment and strategic flexibility are expected to enhance organisational performance. It should be noted that the fundamental concept of employee empowerment is about bringing changes in work attitudes to subsequently improve performance (Wall et al., 2002). A number of studies empirically support this notion (Drake et al., 2007; Seibert et al., 2004; Wall et al., 2002). While employee empowerment can be directly related to organisational performance, it can equally be related through its impact on a number of performance antecedents such as job satisfaction, organisational commitment and innovation (Drake et al., 2007). In this respect, employee empowerment has been advocated by management and accounting researchers as a means of promoting employee motivation (Drake et al., 2007), with motivated employees likely to generate higher performance (Sigler and Pearson, 2000). Also, given that empowered employees have more authority to execute their primary tasks (Wall et al., 2002), they tend to be more responsive to customer demands and are more satisfied with their jobs (Lashley, 1996), with such behaviour contributing toward organisational performance (Men, 2011). In a similar vein, Srivastava et al. (2006) found the role of empowerment on performance, via the development of knowledge and team efficiency.

Strategic flexibility also has an impact on organisational performance (Nadkarni and Narayanan, 2007). This is because those organisations that emphasize strategic flexibility

have the ability to adapt their processes and products to the changing circumstances, with the adaptation of processes and products found to be associated with organisational performance (Nadkarni and Herrmann, 2010). Consequently, a number of studies (for example, Hitt et al., 1998; Sanchez, 2007) have confirmed the role of strategic flexibility in enhancing organisational performance. Similarly, the ability of strategic flexibility to enable an organisation to capture opportunities results in higher performance (Sanchez et al., 1996).

***H7:** Employee empowerment and strategic flexibility are positively related to organisational performance.*

2.7 The mediating role of employee empowerment and strategic flexibility in the association between the approaches to using MCSs and the characteristics of MCSs with organisational change and organisational performance

Based on the discussion in the foregoing sections, the two organisational capabilities (strategic flexibility and employee empowerment) were hypothesised to be influenced (either positively or negatively) by the approaches and the specific characteristics of MCSs. Additionally, these organisational capabilities were hypothesised to positively influence organisational change and performance. This implies that organisational capabilities mediate the relationship between the approaches and characteristics of MCSs with organisational change and organisational performance.

***H8a:** Employee empowerment and strategic flexibility mediate the association between the approaches to using MCSs and the characteristics of MCSs with organisational change*

***H8b:** Employee empowerment and strategic flexibility mediate the association between the approaches to using MCSs and the characteristics of MCSs with organisational performance.*

3. Method

A mail survey was used to collect the data. This approach was considered appropriate due to its ability to generate a representative sample and its use in MCS research (Sulaiman et al., 2005). The questionnaire was designed and administered following the Dillman Tailored

Design Method, which provides guidance on formatting and styling of survey questions, personalization of the survey, and the distribution of surveys (Dillman, 2000). The OneSource database¹² was used as the sampling frame to obtain the contact details of public sector organisations in Australia, comprising local government councils, government business enterprises, government agencies/departments, and others. A sample list of 740 respondents was used.

The questionnaire was administered to the head of the finance unit or the head of the organisation/business unit including CFOs, Financial Controllers, CEOs, or related titles. It was expected that these respondents would have the knowledge concerning the study's constructs. A total of 82 responses were received within four weeks of the mailout. A reminder was sent after four weeks to non-respondents with an additional 50 responses received. Hence, a total of 132 (18%) questionnaires were received. Five questionnaires were not included, due to large missing data, yielding 127 (17.14%) usable questionnaires which compares favourably with previous management control system studies (Auzair and Langfield-Smith, 2005 [15.5%]; King et al., 2010 [14.6%]).

A non-response bias test was conducted by carrying out an independent sample t-test, comprising the mean values of the business unit demographic characteristics and the independent, mediating and dependent variables between the early and late respondents. The results of the test showed no significant difference ($p \geq 0.05$) between the two groups, providing evidence of the absence of non-response bias, and hence assuring the representativeness of the sample.

¹² This is a publicly available database that provides the details of all organizations in Australia.

3.1 Measurement of variables

The two approaches to using MCSs (interactive and diagnostic), three MCS characteristics (broad scope MCS information, the formality of MCSs and the tightness of MCSs) and the two organisational capabilities (strategic flexibility and employee empowerment) were assessed using established scales, with amendments to account for the context of the study. The organisational change and organisational performance scales were developed following a review of the literature. All nine constructs were evaluated using confirmatory factor analysis (CFA) (see Appendix A). Using AMOS 22 software, the measurement models for each of the constructs were estimated, and assessed based on a number of criteria including goodness-of-fit indices, standard errors, t-statistics and modification indices (Kaynak, 2003).

3.1.1 Interactive use of MCSs

The interactive use of MCSs was assessed using a five item scale adapted from Simons (1995). Using a seven-point Likert scale ranging from 1 'Not at all' to 7 'To a great extent', respondents were asked to indicate the extent to which each of the following items reflect the use of MCSs in their business units: (i) management control systems are often used as a means of identifying strategic uncertainties and developing ongoing action plans; (ii) management control systems are used regularly in scheduled face-to-face meetings between operational and senior managers; (iii) there is a lot of on-going interaction between operational management and senior managers in management control; (iv) management control systems generate information that forms an important and recurring agenda in discussions between operational and senior managers; and (v) management control systems are used by operational and senior managers to discuss changes that are occurring within the business unit.

The results of the CFA indicate that the measurement model fitted the data well, with the model goodness-of-fit indices (CMIN/DF = 0.852; GFI = 0.986; CFI = 1.000; AGFI = 0.959)¹³ meeting the recommended values. Accordingly, the average score of the five items was used to reflect the extent of interactive use of MCSs.

3.1.2 Diagnostic use of MCSs`

A seven-point Likert scale ranging from 1 'Not at all' to 7 'To a great extent' was adapted from Simons (1995) to measure the extent of diagnostic use of MCSs. Specifically, respondents were asked to indicate the extent to which they agreed with the following statements in respect to the use of management control systems in their business units: (i) management control systems are used to track progress towards goals and monitor results; (ii) management control systems are used to plan how operations are to be conducted in accordance with the strategic plan; (iii) management control systems are used to review performance: and (iv) management control systems are used to identify significant exceptions from expectations and take appropriate actions.

The result of the measurement model for the four items of the scale indicated that the model fitted the data well, as the goodness-of-fit indices (CMIN/DF = 0.699; GFI = 0.994; CFI = 1.000; AGFI = 0.972) met the recommended cut off points. Accordingly, the average score across the four items was used to reflect the extent of diagnostic use of MCSs.

3.1.3 Broad scope MCS information

Three items from the scale developed by Chenhall and Morris (1986) were adapted to measure the extent of broad scope MCS information. The items were assessed on a seven-

¹³ The recommended threshold guidelines for the assessment of the fit of the structural equation model are CMIN/DF <5; CFI>0.80; GFI>0.90; AGFI >0.80 (Hair et al., 2010; Hu and Bentler, 1999).

point Likert scale with anchors of 1 'Not at all' and 7 'To a great extent' with respondents required to indicate the extent to which their business unit's information system provides the following information: (i) future-oriented information; (ii) external information; and (iii) non-financial information. The estimated measurement model for the construct fitted the data well, with satisfactory goodness-of-fit indices (CMIN/DF = 1.625; GFI = 0.992; CFI = 0.991; AGFI = 0.950). Thus, the average score of the three items was used as the score for broad scope MCS information.

3.1.4 Formality of MCSs

The formality of MCSs was assessed using a seven-point Likert scale adapted from Morris et al. (2006) with respondents required to indicate the extent to which their business unit's management control systems had the following characteristics: (i) the management control system promotes strict conformance to standards of conduct regarding how employees interact with customers, suppliers, and outside parties; (ii) the management control system facilitates administrative consistency throughout the business unit; (iii) the organisational structure is very clearly defined and delineated; (iv) the lines of command clearly allocate authority and responsibility to each business unit/department; and (v) authority is effectively distributed throughout the business unit to the level where it is most needed.

As the initial measurement model did not fit perfectly¹⁴, one item (item i) was removed based on the modification indices. The revised model achieved goodness-of-fit indices of CMIN/DF = 0.602; GFI = 0.995; CFI = 1.000; AGFI = 0.977 and hence fitted the data better. Consequently, the remaining four items were averaged to measure the extent of formality of MCSs.

¹⁴ The goodness-of-fit indices for the initial model are CMIN/DF = 5.584; GFI = 0.921; CFI = 0.912; AGFI = 0.762.

3.1.5 Tightness of MCSs

An eight item scale adapted from Baird et al. (2004) was used to measure the tightness of MCSs. A seven-point Likert scale ranging from 1 ‘Strongly disagree’ to 7 ‘Strongly agree’ required respondents to indicate the extent to which they agreed or disagreed that each of the following items represent current practices in their business unit: (i) employee expectations are specified in detail; (ii) desired results are explicitly defined; (iii) work rules and/or specific work policies are widely used; (iv) direct supervision of employee activities takes place frequently; (v) frequent monitoring of employee performance takes place; (vi) performance measures are precise and timely; (vii) performance reviews are detailed, comprehensive, and frequent; and (viii) there is a strong link between the penalties imposed or rewards provided and the performance measures used.

The result of the initial measurement model indicated that the model did not fit perfectly.¹⁵ Accordingly, based on the modification indices, two items (items i and iii) were removed with the revised model fitting the data better (CMIN/DF = 3.863; GFI= 0.920; CFI = 0.917; AGFI = 0.814). The remaining six items were averaged as the score for the extent of tightness of MCSs.

3.1.6 Organisational capabilities

An adapted version of the instrument developed by Del Val and Lloyd (2003) was used to measure employee empowerment. The instrument used a seven-point Likert scale with anchors of 1 ‘Not at all’ and 7 ‘To a great extent’. Respondents were required to indicate the extent to which the following four items apply to front line staff in their business unit: (i) they have a high level of collaboration/involvement in decision making; (ii) there are

¹⁵ The goodness-of-fit indices for the initial model were CMIN/DF = 5.715; GFI= 0.806; CFI = 0.793; AGFI = 0.651.

official channels or certain norms or rules to guarantee their participation in the decision making process; (iii) they contribute directly to the decision making process, rather than through intermediaries (e.g supervisors); and (iv) they have authority/power to make and implement decisions about tasks. The measurement model for these four items met the goodness-of-fit indices (CMIN/DF = 0.697; GFI= 0.994; CFI = 1.000; AGFI = 0.972). Hence, the model was considered to fit the data well and the extent of employee empowerment was measured as the average score of the four items.

Strategic flexibility was measured using an established scale adapted from Celuch and Murphy (2010). The five item scale was measured using a seven-point Likert scale with anchors of 1 'Not at all' to 7 'To a great extent' with respondents required to indicate the extent to which their business units have the ability to respond to each of the following: (i) resource reallocation needs; (ii) the need to modify business partnerships (e.g. strategic alliance, outsourcing relationship, etc.); (iii) emerging market opportunities; (iv) changing environmental conditions; and (v) changing technology needs. The initial measurement model for these five items did not fit the data well.¹⁶ Following the deletion of one item (item i) based on modification indices, the revised measurement model fitted the data well with goodness-of-fit indices of CMIN/DF = 4.520; GFI = 0.969; CFI = 0.942; and AGFI = 0.847. The extent of strategic flexibility was subsequently measured as the average score of the remaining four items.

3.1.7 Organisational change

Following a review of the literature (Cray et al., 1988; Dean and Sharfman, 1996; Dos and Prahalad, 1987; Gimbert et al., 2010; Schilit, 1987), a thirteen item scale was developed to

¹⁶The goodness-of-fit indices for the measurement model are CMIN/DF = 5.228.; GFI= 0.929; CFI = 0.857; AGFI = 0.786.

assess the extent of organisational change. Respondents were required to indicate the extent to which they undertook organisational change over the last three years with respect to each of the following items on a seven-point Likert scale ranging from 1 'Not at all' to 7 'To a great extent': (i) business unit vision, mission or goals; (ii) restructuring; (iii) the range of product/service lines provided; (iv) new technology adoption; (v) research and development; (vi) branding and marketing strategies; (vii) geographic coverage; (viii) human resources management (e.g. rewards systems, training, recruitment, etc.); (ix) product/service quality; (x) product/service pricing; (xi) business partnerships (e.g. strategic alliance, outsourcing relationship, etc.); (xii) distribution channels; and (xiii) financing operations.

The results of the CFA indicated that the initial measurement model did not fit the data well.¹⁷ Consequently, based on the modification indices four items (items i, ii, iv and viii) were deleted and a revised model was estimated using the remaining nine items. The revised model fitted the data well, with goodness-of-fit indices of CMIN/DF = 2.138; GFI = 0.917; CFI = 0.923; AGFI = 0.862. Accordingly, the average score of these nine items was used to measure the extent of organisational change.

3.1.8 Organisational performance

Following the review of the literature (Baker and Sinkula, 1999; Griffin et al., 2007; Walker and Boyne, 2006), a six item scale was developed to measure organisational performance. Respondents were asked to rate the extent of their organisation's (business unit's) performance on a seven-point Likert scale ranging from 'Very Poor' to 'Excellent' over the last three years in respect to the following: (i) the quality of our output (products/services);

¹⁷ The goodness-of-fit indices for the initial model are CMIN/DF = 2.731; GFI = 0.837; CFI = 0.796; AGFI = 0.771.

(ii) the implementation of new procedures and/or practices; (iii) the introduction of new products/service lines; (iv) the efficiency of our operations; (v) the effectiveness of our operations; and (vi) the level of our customer satisfaction.

The results of the CFA indicate that the measurement model fitted the data well, with the goodness-of-fit indices meeting the recommended threshold (CMIN/DF = 3.808; GFI = 0.915; CFI = 0.911; AGFI = 0.802). The average score of the six items was subsequently used to measure the extent of organisational performance.

4. Results

4.1 Reliability and validity

The descriptive statistics of the study's variables and the correlation matrix are shown in Table 1. The results provide evidence that the respondents, based on the mean scores, are using MCSs in both an interactive (4.61) and diagnostic (4.92) manner to a moderate extent.¹⁸ Regarding MCS characteristics, while participants' responses indicate a moderate level of broad scope MCS information (4.13) and tightness (4.40), the formality (5.26) is high. The mean scores for the organisational capabilities, strategic flexibility (4.03) and employee empowerment (3.61) are moderate and low respectively. With respect to the dependent variables, while the extent of organisational performance (5.32) is high, the extent of organisational change (3.23) is quite low.

The reliability and validity of the study constructs were both assessed. The internal consistency (reliability) of the items of each scale was assessed using the Cronbach alpha

¹⁸ Mean scores of less than 4 are considered as low, 4 to 5 as moderate, and more than 5 as high.

scores. As reported in Table 1, it is evident that all of the study's constructs' are reliable as their Cronbach alpha coefficients exceed the minimum cut-off of 0.7 (Nunnally, 1978). The convergent validity was assessed based on the standard errors of the loading factors and their t-values. With the coefficients of each construct more than twice their standard errors and their t-values significant, the convergent validity of each construct was ascertained (Anderson and Gerbing, 1988; Kaynak, 2003). Similarly, the discriminant validity, a measure of the degree to which a construct is different from others, was assessed by comparing the Cronbach alphas (reliability coefficients) of each construct with their correlation coefficients with other constructs (Kaynak, 2003). As shown in Table 1, the Cronbach alphas of all the constructs are greater than their correlations with other constructs, thereby ensuring their discriminant validity. Finally, the face validity of the constructs was assessed by pre-testing the questionnaire among a number of academic staff prior to administration.

4.2 Structural equation modelling

Structural equation modelling (SEM) using AMOS 22 software was used to test the hypotheses. SEM is a powerful model, with the analytical ability to develop and test theories (Li et al., 2005). The default maximum likelihood estimation technique, with its assumption that data is missing at random was used in estimating the structural relationships among the study constructs. The model utilised the summated scores computed in the SPSS software as the latent variables for all the study constructs.

Table 1 Descriptive statistics, Cronbach alphas, and bivariate correlations for the study constructs

Variables	1	2	3	4	5	6	7	8	9
<i>Descriptive statistics</i>									
Mean	4.61	4.92	4.13	4.40	5.26	4.03	3.61	3.23	5.32
Standard deviation	1.10	1.04	1.29	1.03	1.02	0.98	1.22	1.19	0.82
Theoretical range	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7
Minimum	1.40	1.25	1.00	1.17	2.25	1.25	1.00	1.00	2.00
Maximum	7.00	7.00	7.00	6.50	7.00	6.50	6.00	5.67	7.00
Cronbach alpha	0.888	0.872	0.723	0.843	0.838	0.754	0.883	0.866	0.842
<i>Correlation matrix</i>									
1 Interactive use of MCSs	1								
2 Diagnostic use of MCSs	0.558**	1							
3 Broad scope MCS information	0.312**	0.267**	1						
4 Tightness of MCSs	0.433**	0.457**	0.275**	1					
5 Formality of MCSs	0.518**	0.560**	0.373**	0.588**	1				
6 Strategic flexibility	0.223*	0.205*	0.452**	0.269**	0.334**	1			
7 Employee empowerment	0.078	0.122	0.087	0.274**	0.221*	0.311**	1		
8 Organisational change	0.373**	0.240**	0.262**	0.211*	0.149	0.375**	0.143	1	
9 Organisational performance	0.379**	0.454**	0.290**	0.529**	0.549**	0.389**	0.278**	0.240**	1

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

First, two base (initial) models were estimated in line with the theoretically hypothesized relationships, one for the approaches to using MCSs and the other for the characteristics of MCSs. The results are shown as model A in Tables 2 and 3 respectively. Since respecifying the base (initial) model is recommended in circumstances where the model does not fit the data well (Byrne, 2013; Widener, 2004), the initial models for both the approaches to using MCSs and MCS characteristics were revised by estimating alternative (revised) models, with the results reported as model B in Tables 2 and 3 and depicted in Figures 1 and 2 respectively¹⁹. The alternative models were arrived at based on Anderson and Gerbing's (1988) recommended approach, as utilised by earlier management accounting (Abernethy and Lillis, 2001; Grafton et al., 2010) and general management research (Medsker et al., 1994; Wayne et al., 1997). This approach involves estimating a series of nested models by constraining (deleting) the most least significant paths by setting its path coefficients to zero until all the remaining paths are significant, and adding some significant paths (strategic flexibility to employee empowerment, and the interactive use of MCSs to organisational change and organisational performance) that were not earlier hypothesised but are theoretically feasible (Abernethy and Lillis, 2001). The resultant revised models are considered more parsimonious (i.e. the models with the constrained path), for they are better fitting (Abernethy and Lillis, 2001). It should be noted that even though this process involves constraining some paths, the variables used in the nested models were the same as those used in the initial (base) models.

With respect to the approaches to using MCSs model (Table 2), while the goodness-of-fit indices for the base model are CMIN/DF = 8.431; GFI = 0.886; CFI = 0.672; AGFI = 0.601,

¹⁹ Organizational size was initially included as a control variable. However, as it was not found to be statistically significant in both models, it was excluded in the reported models.

the equivalent indices for the revised model are CMIN/DF = 1.894; GFI = 0.968; CFI = 0.954; AGFI = 0.903. Similarly, while the base model goodness-of-fit indices of CMIN/DF = 6.852; GFI = 0.897; CFI = 0.761; AGFI = 0.641 indicate a poor fit for the MCS characteristics model (Table 3), the equivalent indices of the revised model (CMIN/DF = 4.340; GFI = 0.914; CFI = 0.812; AGFI = 0.782) show that the model fits the data well.

4.2.1 The association between the approaches to using MCSs and the characteristics of MCSs with organisational capabilities

The hypotheses predicted that the interactive (diagnostic) approach to using MCSs would exhibit a positive (negative) association with the two organisational capabilities, strategic flexibility and employee empowerment. The results in Table 2 and Figure 1 show a positive association between the interactive use of MCSs with strategic flexibility ($\beta = 0.222$, $p = 0.011$). Hypothesis 1a was hence supported. However, the path between the interactive use of MCSs with employee empowerment was not significant, indicating that Hypothesis 1b was not supported. Also, given that the paths between the diagnostic use of MCSs with strategic flexibility and employee empowerment were not significant, Hypothesis 2a and Hypothesis 2b were not supported.

Regarding the relationships between MCS characteristics and organisational capabilities, a positive association was hypothesized between broad scope MCS information with strategic flexibility and employee employment. As reported in Table 3 and depicted in Figure 2, the path between broad scope MCS information and strategic flexibility is positively significant ($\beta = 0.381$, $p = 0.000$). Hence, Hypothesis 3a was supported. However, as the path between broad scope MCS information and employee empowerment is not significant, Hypothesis 3b was not supported.

Table 2 Results of the structural equation model for the approaches to using MCSs

Description of path	Model A		Model B	
	Base (initial) model path coefficient	P(Sig)	Revised (alternative) model path coefficient	P(Sig)
Interactive use of MCSs → Strategic flexibility	0.157	0.132	0.222	0.011**
Diagnostic use of MCSs → Strategic flexibility	0.117	0.263	n/a	n/a
Diagnostic use of MCSs → Employee empowerment	0.113	0.289	n/a	n/a
Interactive use of MCSs → Employee empowerment	0.015	0.888	n/a	n/a
Strategic flexibility → Organisational change	0.369	0.000***	0.308	0.000***
Strategic flexibility → Organisational performance	0.341	0.000***	0.269	0.001**
Employee empowerment → Organisational performance	0.176	0.032**	0.170	0.034**
Employee empowerment → Organisational change	0.051	0.540	n/a	n/a
^a Strategic flexibility → Employee empowerment	-	-	0.311	0.000***
^a Interactive use of MCSs → Organisational performance	-	-	0.304	0.000***
^a Interactive use of MCSs → Organisational change	-	-	0.303	0.000***
Goodness-of-fit indices	CMIN/DF = 8.431 GFI = 0.886 CFI = 0.672 AGFI = 0.601		CMIN/DF= 1.894 GFI= 0.968 CFI= 0.954 AGFI = 0.903	

***, **, * Statistically significant at 0.01, 0.05, 0.10 levels respectively (2-tailed).

n/a indicates the absence of coefficient for the deleted paths in the revised model.

^a These are added paths in the revised model.

Table 3 Results of the structural equation model for the MCS characteristics

Description of path	Model A		Model B	
	Base (initial) model path coefficient	P(Sig)	Revised (alternative) model path coefficient	P(Sig)
Formality of MCSs → Strategic flexibility	0.148	0.138	0.192	0.022**
Tightness of MCSs → Strategic flexibility	0.078	0.420	n/a	n/a
Formality of MCSs → Employee empowerment	0.096	0.380	n/a	n/a
Tightness of MCSs → Employee empowerment	0.218	0.040**	0.204	0.017**
Broad scope MCS information → Employee empowerment	-0.009	0.923	n/a	n/a
Broad scope MCS information → Strategic flexibility	0.376	0.000***	0.381	0.000***
Strategic flexibility → Organisational change	0.367	0.000***	0.385	0.000***
Strategic flexibility → Organisational performance	0.340	0.000***	0.335	0.000***
Employee empowerment → Organisational performance	0.176	0.032**	0.173	0.041**
Employee empowerment → Organisational change	0.029	0.726	n/a	n/a
^a Strategic flexibility → Employee empowerment	-	-	0.258	0.002***
Goodness-of-fit indices	CMIN/DF = 6.852 GFI = 0.897 CFI = 0.761 AGFI = 0.641		CMIN/DF = 4.340 GFI = 0.914 CFI = 0.812 AGFI = 0.782	

***, **, * Statistically significant at 0.01, 0.05, 0.10 levels respectively (two-tail).

n/a indicates absence of coefficient for the deleted paths in the revised model.

^a These are added paths in the revised model.

Furthermore, while the hypotheses predicted negative associations between the formality of MCSs and the tightness of MCSs with strategic flexibility and employee empowerment, the results in Table 3 show a positive association between the formality of MCSs and strategic flexibility ($\beta = 0.192$, $p = 0.022$). The results also show a similar relationship between the tightness of MCSs and employment empowerment ($\beta = 0.204$, $p = 0.017$). Although these findings are contrary to Hypothesis 4a and Hypothesis 5b, the paths are significant. Finally, the results indicated that the paths between the formality of MCSs and employee empowerment and between the tightness of MCSs and strategic flexibility were not statistically significant. Hence, Hypothesis 4b and Hypothesis 5a were not supported.

4.2.2 The association between organisational capabilities with organisational change and organisational performance

Hypotheses 6 and 7 proposed a positive relationship between the two organisational capabilities (strategic flexibility and employee empowerment) with organisational change and organisational performance respectively. Although no association was found between employee empowerment and organisational change, Tables 2 and 3 show that the path coefficients between strategic flexibility and organisational change are significant [$(\beta = 0.308$, $p = 0.000)$ and $(\beta = 0.385$, $p = 0.000)$]. Hypothesis 6 was hence partially supported. As hypothesized, the path coefficients between strategic flexibility and organisational performance as shown in Tables 2 ($\beta = 0.269$, $p = 0.001$) and 3 ($\beta = 0.335$, $p = 0.000$) were significant. Similarly, the associations between employee empowerment and organisational performance in Table 2 ($\beta = 0.170$, $p = 0.034$) and Table 3 ($\beta = 0.173$, $p = 0.041$) were also significant. Hence, Hypothesis 7 was fully supported.

4.2.3 The mediating role of strategic flexibility and employee empowerment in the association between the approaches to using MCSs and the characteristics of MCSs with organisational change and organisational performance

Based on the structural equation model results, indirect relationships exist between the interactive use of MCSs, broad scope MCS information and the formality of MCSs with organisational change through strategic flexibility. This is because the paths between the interactive use of MCSs, broad scope MCS information and formality of MCSs with strategic flexibility are positively significant, and likewise the path between strategic flexibility and organisational change is positively significant. These satisfy the criteria of establishing an indirect (mediating) relationship²⁰. Hence, Hypothesis 8a is supported. Similarly, indirect positive relationships exist between the interactive approach to using MCSs and three MCS characteristics (the formality of MCSs, the tightness of MCSs and broad scope MCS information) with organisational performance. Specifically, while strategic flexibility and employee empowerment mediate the positive relationship between the interactive use of MCSs, strategic flexibility mediates the association between broad scope MCS information and the formality of MCSs with organisational performance, and employee empowerment mediates the relationship between the tightness of MCSs with organisational performance. These findings lend support to Hypothesis 8b.

Additionally, although no hypotheses were formulated for the direct relationships between the two approaches to using MCSs and three MCS characteristics with organisational change and organisational performance, a positive direct relationship was found between the

²⁰ Mediation is claimed when the path(s) between the independent variable(s) (approaches and characteristics of MCSs in this study) and the mediator variable (s) (strategic flexibility and employee empowerment), as well as the path(s) between the mediator variable(s) (strategic flexibility and employee empowerment) and the dependent variable(s) (organizational change and organizational performance) are both significant (James et al., 2006; Nadkarni and Herrmann, 2010). In addition to these conditions, to claim a full mediation, the path between the independent variable and the dependent variable must not be significant (Baron and Kenny, 1986).

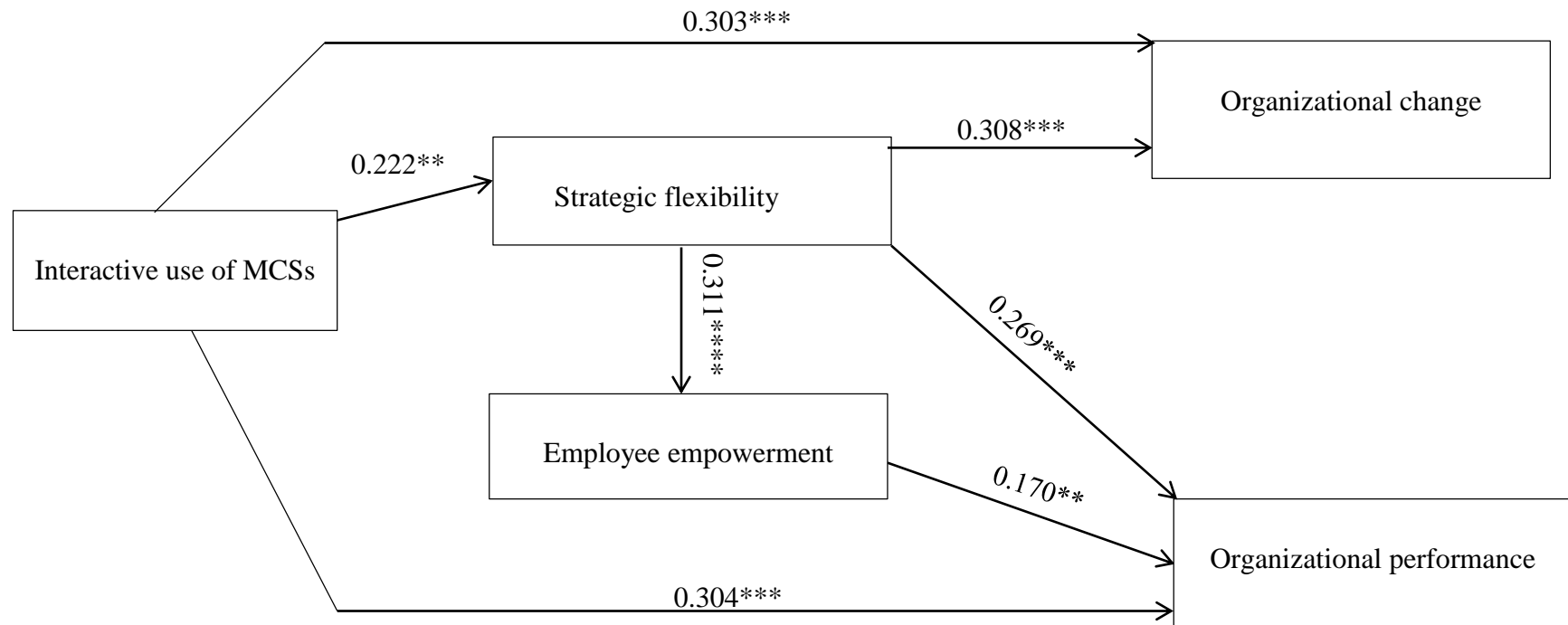
interactive use of MCSs and both organisational change ($\beta = 0.303$, $p = 0.000$) and organisational performance ($\beta = 0.304$, $p = 0.000$).

5. Discussion and conclusion

5.1 Discussion

This study investigated whether organisational capabilities mediate the relationship between the approaches to using MCSs and MCS characteristics with organisational change and organisational performance in the Australian public sector. The findings provide confirmation of the important role of organisational capabilities, with the interactive approach to using MCSs and MCS characteristics (broad scope MCS information, the formality of MCSs and the tightness of MCSs) found to influence organisational capabilities, which subsequently impact on both organisational change and organisational performance. These findings supports previous studies (Bisbe and Otley, 2004; Henri, 2006a) which maintain that the effectiveness of MCSs is enhanced by organisational capabilities.

Figure 1 Results of the mediation structural equation model for the approaches to using MCSs



***, ** Statistically significant at 0.01, 0.05 levels respectively (2-tailed).

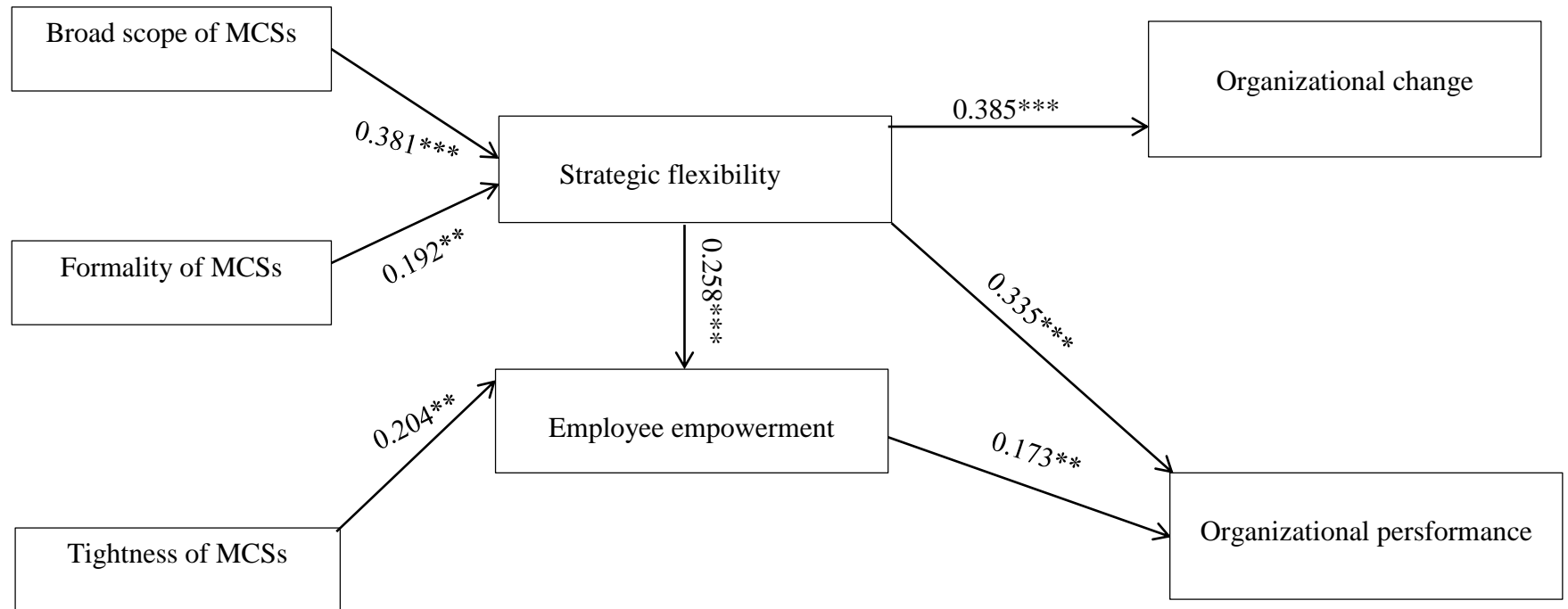
CMIN/DF= 1.894

GFI= 0.968

CFI= 0.954

AGFI = 0.903

Figure 2 Results of the mediation structural equation model for the MCS characteristics



***, ** Statistically significant at 0.01, 0.05 levels respectively (2-tailed).

Goodness-of-fit indices:

CMIN/DF= 4.340

GFI= 0.914

CFI= 0.812

AGFI = 0.782

In particular, the study found that strategic flexibility, as the mediator of the relationship between broad scope MCS information, the interactive use of MCSs, and the formality of MCS with organisational change, promotes organisational change. The study also reveals that both strategic flexibility and employee empowerment impact on organisational performance, mediating the association between broad scope MCS information, the interactive use of MCSs, and the formality and tightness of MCSs with organisational performance. The findings regarding the impact of strategic flexibility and employee empowerment on organisational performance are consistent with earlier private sector studies (Nadkarni and Herrmann, 2010; Patterson et al., 2004; Yuan et al., 2010), thereby supporting the role of organisational capabilities in the achievement of organisational objectives in the public sector. Hence, in their efforts to address the pressure from various stakeholders to improve performance (Holmes et al., 2006; Lapsley, 2009), public sector organisations should endeavour to develop organisational capabilities, particularly strategic flexibility and employee empowerment. Although no association was found between employee empowerment and organisational change, the finding that strategic flexibility leads to organisational change is both novel and plausible. In essence, since strategic flexibility reflects the ability of an organisation to adapt to environmental change (Nadkarni and Herrmann, 2010), organisations exhibiting strategic flexibility should be more prepared to undertake organisational change.

Given the role of strategic flexibility and employee empowerment in promoting organisational performance and that of strategic flexibility in promoting organisational change in the public sector, leveraging the development of these capabilities could aid public sector managers in achieving public sector reforms. The importance of developing organisational capabilities in the public sector is further highlighted due to the low rate of employee empowerment and moderate level of employee strategic flexibility reported in the

sample of public sector organisations. Hence, public sector organisations should endeavour to develop such capabilities to a greater extent.

Further, in addition to highlighting the need to enhance organisational capabilities, the findings indicate that public sector practitioners could promote the development of relevant capabilities through the appropriate use of MCSs, with various MCS characteristics and the interactive use of MCSs found to promote employee empowerment and strategic flexibility. First, a positive association was found between broad scope MCS information with strategic flexibility and employee empowerment. This finding is plausible given that the ability of an organisation to adapt to uncertainty requires environmental scanning (Elenkov, 1997), with the wide range of information provided by broad scope MCSs serving this need. Consequently, in an effort to transform the public sector from a bureaucratic red tape approach to a more flexible posture (Gualmini, 2008), public sector practitioners could consider using MCSs that provide a wide range of information, capturing both the internal and external dimensions of an organisation.

Secondly, consistent with Henri (2006a) who reported a positive association between the interactive use of MCSs and organisational capabilities, a positive association was found between the interactive use of MCSs with strategic flexibility and with employee empowerment through strategic flexibility. The finding that the interactive use of MCSs promotes strategic flexibility is plausible as using MCSs in an interactive manner enables an organisation to be adaptable (Kober et al., 2007). Hence, by increasing the use of MCSs in this manner, public sector organisations that are operating in an increasingly changing environment (Brown et al., 2003) will be better equipped to adapt to such environmental changes. Specifically, the interactive use of MCSs can provide public sector organisations

with the ability to deviate from routines when necessary (Bisbe and Otley, 2004; Bruining et al., 2004), a behaviour that is consistent with adaptation to the changing environment.

Thirdly, a positive association was also found between the tightness of MCSs and employee empowerment. Although not in line with the hypothesis, this finding is plausible. This is based on the evidence that decentralization could be demonstrated by emphasizing tighter budgetary control while allowing subordinates the autonomy to respond to the necessary market changes (Shih and Yong, 2001). Furthermore, since “most individuals can tolerate a few restrictions if they are allowed some autonomy” (Merchant and van der Stede, 2007, 225) and as control can be “tight on objectives and core values but loose on procedures” (Merchant and van der Stede, 2007, 225), this indicates that both tightness of control and empowerment can be emphasized concurrently. Hence, given the low level of employee empowerment in the public sector organisations reported in this study, it is suggested that the use of MCSs in a tighter manner could enable public sector organisations to enhance employee empowerment. Finally, the finding that the formality of MCSs was positively associated with strategic flexibility, although contrary to the expected hypothesis, is plausible. One possible explanation is that the objectives of efficiency and flexibility, though competing, can be simultaneously achieved with the use of the formalization of controls designed with such objectives in mind (Ahrens and Chapman, 2010).

5.2 Conclusion

The purpose of this study was to examine whether organisational capabilities mediate the effectiveness of the approaches to using MCSs and MCS characteristics on organisational change and organisational performance in the Australian public sector. The study’s findings contribute to the literature in two major ways. First, the study advances the emerging literature on the role of the RBV in informing the effectiveness of MCSs. The findings

indicate that organisational capabilities play a mediating role in respect to the association between MCSs in the achievement of public sector reform objectives, notably organisational change and performance. This finding extends previous MCS research on the RBV and the role of organisational capabilities in promoting organisational outcomes.

The second contribution of the study is that MCSs exhibiting flexible features (the interactive use of MCSs and the broad scope of MCSs) and constraining features (the formality of MCSs and the tightness of MCSs) can be effective, with MCSs exhibiting both features found to be associated with organisational change and organisational performance through the development of organisational capabilities. This finding is consistent with the project development literature which contends that both firmness and flexibility processes (controls) are effective for project success (Tatikonda and Rosenthal, 2000), and the competing value theory which maintains that internal systems exhibiting flexibility and control are simultaneously needed to attain organisational objectives (Ancarani et al., 2009). Hence, flexible MCS features are not substitutes but rather complementary to constraining features.

The findings offer significant implications for practitioners. In particular, the approach to using MCSs and the characteristics of MCSs have significant roles in achieving public sector reform objectives, through the development of organisational capabilities. Public sector organisations should hence focus on developing their organisational capabilities, particularly given the low level of organisational capabilities found in the organisations examined. They can achieve this in particular by tailoring their MCSs to facilitate the required capabilities.

5.3. Limitations and direction for future research

Typical with all survey studies, the study suffers from the inability to establish causation, as only associations can be claimed based on the theoretical relationships between the variables.

Given these limitations and the empirical insights from the findings of the study, there are potential opportunities for future research. First, to account for the lack of causality, further studies could replicate this study using a longitudinal approach. Also, while two capabilities were examined, other organisational capabilities such as innovation and organisational learning could be considered as possible mediators. Finally, in addition to the approaches to using MCSs and MCS characteristics, other aspects of MCSs, such as the use of contemporary versus traditional management accounting practices may explain the effectiveness of MCSs on organisational change and performance.

Appendix A: Questionnaire items and CFA statistics

These are the retained items after confirmatory factor analysis. The first item of each scale has no t-value since it has a fixed parameter in AMOS.

1) *The approaches to using MCSs*

Constructs and items	Factor Loading	t-value	SE	Cronbach alpa
<i>Interactive use of MCS</i>				0.888
Management control systems are often used as a means of identifying strategic uncertainties and developing ongoing action plans.	0.665***	NA	NA	
Management control systems are used regularly in scheduled face-to-face meetings between operational and senior managers.	0.766***	7.475	0.151	
There is a lot of on-going interaction between operational management and senior managers in management control systems.	0.797***	7.725	0.167	
Management control systems generate information that forms an important and recurring agenda in discussions between operational and senior managers.	0.834***	8.001	0.161	
Management control systems are used by operational and senior managers to discuss changes that are occurring within the business unit.	0.852***	8.124	0.170	
Goodness-of-fit: CMIN/DF = 0. 852; GFI= 0. 986; CFI = 1.000; AGFI = 0.959				
<i>Diagnostic use of MCSs</i>				0.872
Management control systems are used to track progress towards goals and monitor results.	0.843***	NA	NA	
Management control systems are used to plan how operations are to be conducted in accordance with the strategic plan.	0.677***	8.101	0.101	
Management control systems are used to review performance.	0.835***	10.588	0.092	
Management control systems are used to identify significant exceptions from expectations and take appropriate actions.	0.826***	10.466	0.099	
Goodness-of-fit: CMIN/DF = 0.699; GFI= 0.994; CFI = 1.000; AGFI = 0.972				

2) MCS characteristics

Constructs and items	Factor Loading	t-value	SE	Cronbach alpa
<i>Broad scope of MCS information</i>				0.723
Future-oriented information	0.665***	NA	NA	
External information	0.652***	6.310	0.163	
Non-financial information	0.652***	6.311	0.163	
Goodness-of-fit: CMIN/DF = 1.625; GFI = 0.992; CFI = 0.991; AGFI = 0.950				
<i>Formality of MCSs</i>				0.838
The management control systems facilitate administrative consistency throughout the business unit.	0.595***	NA	NA	
The organisational structure is very clearly defined and delineated.	0.813***	6.682	0.205	
The lines of command clearly allocate authority and responsibility to each business unit/department.	0.874***	6.852	0.220	
Authority is effectively distributed throughout the business unit to the level where it is most needed.	0.728***	6.257	0.216	
Goodness-of-fit: CMIN/DF = 0.602; GFI = 0.995; CFI = 1.000; AGFI = 0.977				
<i>Tightness of MCSs</i>				0.843
Desired results are explicitly defined.	0.519***	NA	NA	
Direct supervision of employee activities takes place frequently.	0.564***	4.751	0.241	
Frequent monitoring of employee performance takes place.	0.790***	5.716	0.310	
Performance measures are precise and timely.	0.804***	5.759	0.303	
Performance reviews are detailed, comprehensive, and frequent.	0.849***	5.883	0.358	
There is a strong link between the penalties imposed or rewards provided and the performance measures used.	0.605***	4.961	0.287	
Goodness-of-fit: CMIN/DF = 3.863; GFI = 0.920; CFI = 0.917; AGFI = 0.814				

3) *Organisational capabilities*

Constructs and items	Factor Loading	t-value	SE	Cronbach alpa
<i>Strategic flexibility</i>				0.754
The need to modify business partnerships (e.g. strategic alliance, outsourcing relationship, etc.)	0.557***	NA	NA	
Emerging market opportunities	0.591***	4.767	0.237	
Changing environmental conditions	0.814***	5.336	0.282	
Changing technology needs	0.677***	5.156	0.237	
Goodness-of-fit: CMIN/DF = 4.520; GFI= 0.969; CFI = 0.942; AGFI = 0.847				
<i>Employee empowerment</i>				0.883
They have a high level of collaboration/involvement in decision making.	0.880***	NA	NA	
There are official channels or certain norms or rules to guarantee their participation in the decision making process.	0.716***	9.397	.092	
They contribute directly to the decision making process, rather than through intermediaries (e.g supervisors).	0.912***	13.321	.082	
They have authority/power to make and implement decisions about tasks.	0.740***	9.868	.092	
Goodness-of-fit: CMIN/DF = 0.697; GFI = 0.994; CFI = 1.000; AGFI = 0.972				

4) *Extent of organisational change*

Constructs and items	Factor Loading	t-value	SE	Cronbach alpa
<i>Organisational change</i>				0.866
The range of product/service lines provided	0.692***	NA	NA	
Research and development	0.600***	6.101	0.140	
Branding and marketing strategies	0.586***	5.966	0.154	
Geographic coverage	0.604***	6.144	0.132	
Product/service quality	0.643***	6.503	0.129	
Product/service pricing	0.618***	6.270	0.145	
Business partnerships (e.g. strategic alliance, outsourcing relationship, etc.)	0.691***	6.946	0.150	
Distribution channels	0.765***	7.602	0.150	
Financing operations	0.655***	6.618	0.170	
Goodness-of-fit: CMIN/DF = 2.138; GFI = 0.917; CFI = 0.923; AGFI = 0.862				

5) *Organisational performance*

Constructs and items	Factor Loading	t-value	SE	Cronbach alpa
<i>Organisational performance</i>				0.842
The quality of our output (products/services)	0.663***	NA	NA	
The implementation of new procedures and/or practices	0.613***	5.963	0.219	
The introduction of new products/service lines	0.525***	5.196	0.218	
The efficiency of our operations	0.799***	7.371	0.219	
The effectiveness of our operations	.0792***	7.329	0.202	
The level of our customer satisfaction	0.708***	6.731	0.195	
Goodness-of-fit: CMIN/DF = 3.808; GFI = 0.915; CFI = 0.911; AGFI = 0.802				

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CHAPTER SIX

CONCLUSION

Following the implementation of the NPM reforms there has been greater emphasis placed on the adoption of private sector oriented systems and practices in the public sector. MCSs play a key role in implementing public sector reforms, with the nature and scope of MCSs used in the public sector having changed significantly (Appuhami, 2011). However, given concerns that private sector oriented systems may not be effective in the public sector due to the difference between the two sectors (Boyne, 2002; Parker and Guthrie, 1993; Robertson and Seneviratne, 1995) and the dearth of empirical research evaluating the effectiveness of private sector oriented systems in the public sector, this thesis was motivated to examine the use and effectiveness of MCSs in the public sector.

In essence, the study aimed to address the following research questions in relation to the use and effectiveness of MCSs in the public sector: 1) What is the relationship between the use of management accounting practices as a package with organisational change and organisational performance? 2) What is the interdependency between the approaches to using controls and the use of contemporary management accounting practices? 3) What is the relationship between the extent of adoption of contemporary management accounting practices and their success? 4) What is the role of organisational capabilities in mediating the relationship between the approaches to using MCSs and MCS characteristics with organisational change and organisational performance?

With respect to the extent of use, the thesis examined the prevalence of three aspects of MCSs: the extent of use of management accounting practices, the approach to using MCSs (interactive and diagnostic use of controls) and MCS characteristics (broad scope MCS, the formality of MCSs, and the tightness of MCSs) in the public sector. Specifically, Papers One

and Two provided understanding of the use of management accounting practices, both individually and as a package, in the public sector. Papers Two and Three provided an insight into the prevalence of the interactive and diagnostic approaches to using MCSs. Finally, Paper Three also provided an insight into the specific characteristics of MCSs (broad scope MCS information, the formality of MCSs and the tightness of MCSs) in the public sector.

All three papers were motivated to fill the gap in the literature examining the effectiveness of MCSs in the public sector, with effectiveness assessed based on the impact of MCSs on organisational change, organisational performance, the success of MCSs and organisational capabilities. First, to address the dearth of studies examining the association between the use of management accounting practices as a package and the effectiveness of such practices, Paper One examined the impact of the extent of adoption of a package of contemporary and a package of traditional management accounting practices on organisational change and performance. Paper Two then contributed to a line of research examining the impact of the extent of adoption of management accounting practices on their success (Phan et al., 2014; Pierce and Brown, 2006). Specifically, the paper examined the impact of the extent of adoption of a number of contemporary management accounting practices, both individually and as a package, on their success. Finally, the thesis was motivated to contribute to the limited studies on the role of organisational capabilities in explaining the effectiveness of MCSs. Specifically, Paper Three developed hypotheses relating to the role of organisational capabilities in mediating the association between the approaches to using MCSs and the characteristics of MCSs with organisational change and organisational performance.

The remainder of the chapter is organised as follows. Section 6.1 provides a summary of the findings of the three papers. In Section 6.2, the theoretical contributions and practical

implications of the empirical findings of the thesis are discussed. Finally, the limitations of the thesis and directions for future research are discussed in Section 6.3.

6.1 Summary of findings

The rate of adoption of contemporary management accounting practices in the public sector was found to be low, with only 35.85% of the organisations using contemporary management accounting practices to a great extent. In particular, with the exception of Benchmarking and Strategic Cost Management whose rate of adoption were higher, it was found that the majority of the public sector organisations surveyed were using contemporary management accounting practices including Activity Based Management, the Balanced Scorecard, Value Chain Analysis and Total Quality Management to a small extent. These findings are in line with earlier public sector studies (Jackson and Lapsley, 2003; Tyler, 2005) reporting the low adoption of contemporary management accounting practices. The findings also provide the first empirical insight into the extent of adoption of contemporary management accounting practices as a package in the public sector, reporting that the use of the practices as a package was low. Interestingly, while the rate of adoption of contemporary management accounting practices was low, it was found that the extent of adoption of contemporary management accounting practices, both individually and as a package, was influenced by both the diagnostic and interactive use of MCSs. This reinforces the findings of Agostino and Arnaboldi (2012) and Henri (2006b) who focused solely on the Balanced Scorecard, and provides a new insight in respect to the use of other contemporary management accounting practices both individually and as a package. Conversely, it was found that the extent of adoption of traditional management accounting practices was high, consistent with earlier studies (Chenhall and Langfield-Smith, 1998; Malia et al., 2004; Yalcin, 2012). In particular, the study revealed that all five traditional management accounting practices examined including Budgeting for Planning and Control, Formal

Strategic Planning, Capital Budgeting, Variance Analysis, and Cost Benefit Analysis were used to a great extent. Also while as many as 75.9% of the organisations were using traditional management accounting practices to a great extent, only 2.21% of organisations were not using traditional management accounting practices at all.

With respect to the approaches to using MCSs, it was found that the interactive use of MCSs was moderate. Alternatively, in line with Kominis and Dudau's (2012) findings, the use of MCSs in a diagnostic manner was found to be higher than the interactive use, thereby contributing to the limited studies on the interactive and diagnostic use of MCSs in the public sector. Additionally, while broad scope MCS information was found to be moderate, the tightness of MCSs was higher. The formality of MCSs was also found to be high. These findings indicate that public sector organisations still place greater emphasis on the constraining features (traditional management accounting practices, the diagnostic approach to using MCSs, and the formality and tightness of MCSs) of MCSs than more flexible features (contemporary management accounting practices, the interactive approach to using MCSs and broad scope MCS information).

In relation to the effectiveness of MCSs, the study provided an empirical insight into the impact of the use of management accounting practices as a package. While no association was found between the use of a package of traditional management accounting practices with organisational change and organisational performance, a positive association was found between the use of a package of contemporary management accounting practices with both organisational change and organisational performance. These findings reinforce the importance of examining contemporary management accounting practices as a package in explaining their effectiveness (Maiga and Jacobs, 2003), and provide the first empirical

insight into the effectiveness of using management accounting practices as a package in the public sector. It was also found that the extent of adoption of management accounting practices as a package and individually had a positive influence on the success of such practices, thereby extending previous studies which have focused on the impact of the extent of adoption of practices on their success (Phan et al., 2014; Pierce and Brown, 2006).

The study further revealed that organisational capabilities contribute to the effectiveness of MCSs, supporting previous RBV studies (Bisbe and Otley, 2004; Henri, 2006a) and providing further insight into the role of organisational capabilities in the public sector. Specifically, the study found that both strategic flexibility and employee empowerment mediated the association between the interactive use of MCSs, broad scope MCS information and the formality of MCSs with organisational change and organisational performance. It was also found that strategic flexibility mediated the relationships between the interactive use of MCSs, broad scope MCS information and the formality of MCSs with organisational change. Additionally, the study revealed that employee empowerment mediated the association between the tightness of MCSs and organisational performance. Overall, these findings indicate that constraining (the formality of MCSs and the tightness of MCS information) and flexible MCS features (the interactive used of MCSs and broad scope MCS information) are effective in the development of organisational capabilities.

6.2 Contributions and implications

The findings of the thesis contribute to a number of theoretical perspectives including the public sector literature, the MCS-contingency theory research, the MCS-RBV perspective, and competing value theory. The contingency theory has provided an insight into the use and effectiveness of MCSs. In particular, the RBV perspective provides an insight into the

role of organizational capabilities in explaining the effectiveness of MCSs. In addition, the competing value theory provides an explanation of the influence of both flexible and constraining MCS features on the effectiveness of MCSs in the public sector. The main contributions to the literature are discussed in section 6.2.1 while section 6.2.2 discusses the practical implications for practitioners and policy makers.

6.2.1 Contribution to the literature

Firstly, amid discussion concerning the viability of importing private sector systems and practices in the public sector and the limited studies evaluating the effectiveness of such systems and practices in this sector, the thesis contributes to both the public sector literature and the general MCS literature by providing empirical evidence on the use and effectiveness of various aspects of MCSs in the public sector. Notwithstanding the low prevalence of contemporary management accounting practices, broad scope MCS information and the interactive use of MCSs in the public sector, the study highlights that flexible MCSs are effective in the achievement of various NPM reform objectives. Specifically, the use of contemporary management accounting practices promotes organisational change and organisational performance, while both the interactive use of MCSs and broad scope MCSs facilitate organisational capabilities which have a subsequent impact on organisational change and organisational performance.

The thesis also contributes to the MCS-contingency literature, a dominant theoretical perspective informing the use of MCSs, in two major ways. First, the finding that the use of contemporary management accounting practices as a package has a positive effect on organisational change and organisational performance contributes to the literature explaining the effectiveness of such practices. This finding further contributes to the literature conceptualizing MCSs as package of controls, which is scant in private sector

studies and non-existent in public sector research. Secondly, informed by the contingency theoretical perspective on the interdependency between aspects of MCSs, the thesis extends an emerging line of research which considers the approach to using MCSs as a contingency factor influencing the adoption of management accounting practices (Agostino and Arnaboldi, 2012; Henri, 2006b). Specifically, the thesis reveals that both the interactive and diagnostic use of MCSs promote the use of a package of contemporary management accounting practices. Furthermore, the interactive use of MCSs was associated with the adoption of Benchmarking, Value Chain Analysis, Total Quality Management, and Key Performance Indicators, and the diagnostic use of MCSs was associated with the adoption of Benchmarking, Activity Based Management, Activity Based Costing and Strategic Cost Management.

In addition, the thesis reinforces and extends the extant MCS-RBV line of research on the role of organisational capabilities in explaining the effectiveness of MCSs. While previous literature is limited to the influence of the approaches to using MCSs on organisational capabilities and the impact on organisational performance (Bisbe and Otley, 2004; Henri, 2006b), it was found that other aspects of MCSs (broad scope MCS information, the formality of MCSs and the tightness of MCSs) promote organisational capabilities, while organisational capabilities are shown to impact an alternative organisational outcome, organisational change.

Finally, the finding that MCSs exhibiting both flexible characteristics (contemporary management accounting practices, the interactive use of MCSs and broad scope MCS information) and constraining features (the formality of MCSs and tightness of MCSs) aid public sector organisations in achieving public sector reform objectives provides support for

the competing value theory which posits that systems exhibiting flexibility and control are both effective in the achievement of organisational objectives (Ancarani et al., 2009; Quinn and Rohrbaugh, 1983). Similarly, the finding that both the diagnostic and interactive use of MCSs have a positive impact on the adoption of contemporary management accounting practices supports the competing value theory and reinforces Simons' (1995) proposition to balance the diagnostic and interactive use of MCSs.

6.2.2 Practical implications

The findings concerning the relationship between the aspects of MCSs, organisational capabilities, organisational change and organisational performance provide guidance to public sector practitioners and policy makers as to how to leverage such relationships to enhance the achievement of the public sector reform objectives.

First, the finding that organisational capabilities promote organisational change and organisational performance indicates that the development of organisational capabilities will help public sector organisations to achieve public sector reform objectives. Accordingly, given the low level of employee empowerment and strategic flexibility reported in this study, public sector practitioners should make a concerted effort to enhance the development of these capabilities. For instance, by adapting their managerial orientation from a more centralized focus to a more decentralized focus public sector organizations could provide lower level employees with increased operational responsibility and decision making authority on issues pertaining to their jobs, thereby enhancing employee empowerment. Similarly, curtailing excessive red tape in decision making will make public sector organisations more responsive and adaptable, and enhance strategic flexibility. The empirical findings of the study provide an insight into how public sector organisations could

leverage their MCSs to enhance both employee empowerment and strategic flexibility. In particular, public sector organisations should emphasize the interactive approach to using MCSs, the formality of MCSs and broad scope MCS information to enhance both strategic flexibility and employee empowerment, while the tightness of MCSs can enhance employee empowerment.

Secondly, the finding that the use of a package of six contemporary management accounting practices promotes organisational change and organisational performance, and the success of the practices also has important implications for practitioners. Specifically, organisations should consider using more contemporary management accounting practices, rather than specific practices in isolation, as the benefits of practices are enhanced when a number of them are used at the same time (Malmi and Brown, 2008). In particular, in their effort to promote the use of innovative management accounting practices in the public sector, policy makers and practitioners should take cognizance of the importance of not promoting the use of isolated practices but rather the use of such practices as a package. Furthermore, given that the functionality of a package of practices appears to depend on internal consistency between the practices (O'Grady and Akroyd, 2005, 40), in using a combination of management accounting practice organisations should integrate practices that appear coherent in achieving the organisational objectives intended.

Thirdly, while the findings in relation to the impact of the tightness of MCSs and the formality of MCSs on organisational capabilities suggest constraining features of MCSs are effective in public sector organisations, the findings highlight the important role of the flexible features of MCSs in promoting organisational capabilities, organisational change and organisational performance. Accordingly, as it is commonly acknowledged that public

sector organisations have tended to focus on more traditional bureaucratic based controls with less emphasis placed on flexible features, it is suggested that they should place greater emphasis on implementing more flexible features.

However, while encouraging public sector organisations to introduce more flexible MCSs including adopting more contemporary management accounting practices, and emphasizing broad scope MCS information and the interactive use of MCSs, policy makers and practitioners should be conscious of the barriers to the diffusion of innovative practices (Lapsley and Wright, 2004). For instance, given scepticism concerning the effectiveness of innovative management accounting practices may be a barrier for their implementation in the public sector, policy makers should highlight the benefits of these practices for public institutions. While coercive measures (Ribeiro and Scapens, 2006) such as directives and legislation could be exerted to promote the use of contemporary management accounting practices in public sector organisations, focusing on highlighting the benefits may reduce the resistance associated with embracing such innovations. Another potential barrier for the increased use of innovative management accounting practices and other private sector oriented MCSs in the public sector may be the lack of experience in the mechanics of the practices and systems (Pettersen, 2001). Accordingly, there is a need for further training of public sector employees on the operation of such practices. This could be achieved through staff-training seminars, encouraging staff to pursue further study, and engagement with professional associations and other networks to keep up to date with the latest developments (Lapsley and Wright, 2004).

Similarly, given the diffusion of innovations may be facilitated through the “geographical movement of skilled workers into areas where their skills are not in abundance” (Jackson

and Lapsley, 2003, 364), public sector organisations may adapt their human resource management policy to employ people with private sector experience so as to benefit from their understanding and experience in the operation of private sector oriented systems and practices. The need for communication among related parties is also paramount in facilitating the adoption of new practices (Lapsley and Wright, 2004). Therefore, policy makers should encourage the exchange of ideas among public sector practitioners through seminars, workshops and the secondment of public sector employees.

6.3 Limitations and suggestions for future research

This thesis has a number of limitations. First, while the NPM-related reforms are a global trend the thesis only examined the use and effectiveness of MCSs in the context of one country, Australia. Hence, future studies could consider examining the issues involved in this study in other countries so as to provide more evidence on the use and effectiveness of MCSs in the public sector. Secondly, the study suffers the typical methodological limitations associated with survey research including social desirability bias, and common method bias, although Harman's (1967) single factor test indicated that common method bias was not a concern with a maximum of 38.33% of the variance accounted for by any factor in the three papers. Furthermore, the survey method prohibits the assertion of causality. Accordingly, future studies could consider alternative approaches including experimental and/or longitudinal research methods to account for causality. Similarly, to account for the inability to probe respondents' responses, further studies could consider case study research which provides the opportunity to interview respondents. Thirdly, while there are various aspects of MCSs, the study was limited to three aspects of MCSs. Hence, future research could extend this study by examining other aspects of MCSs including the types of controls. Finally, given the study only focused on the mediating role of two organisational capabilities,

future studies could consider the mediating effect of other organisational capabilities such as innovation and organisational learning in the public sector.

Appendix A

Survey Questionnaire

As an expression of gratitude, for the participants in this survey we offer a special prize, an opportunity to win one of three \$100 RedBalloon gift vouchers, subject to a lucky draw following the completion of the survey process.



Please complete this questionnaire with respect to a business unit in your organisation. A business unit is defined as a logical segment of an organisation representing a specific business function. It has a definite place on the organisational chart, under the direction of a manager. It is also sometimes referred to as a department, division or functional area. In some cases, the organisation may be the business unit.

1 Which of the following best describes the chosen business unit?

- ☐ Government Agency/Department ☐ Government Business Enterprise/Body
☐ Local Government Council ☐ Other (please specify) _____

2 What is the approximate number of employees within the business unit?

3

Please indicate the extent to which the following management accounting practices have been used in your business unit over the past three years.

	Not at all					To a great extent	
Benchmarking (e.g. quality, cost, practices and procedures)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Activity based management	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Activity based costing	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
The balanced scorecard	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Value chain analysis	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Total quality management	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Key performance indicators	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Strategic cost management	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Formal strategic planning	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Budgeting for planning and control	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Capital budgeting	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Cost benefit analysis	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Standard costing	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Variance analysis	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Return on investment	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

4

Please rate the success of the following management accounting practices in your business unit.

	Very Unsuccessful					Very Successful	Not Applicable
Benchmarking (e.g. quality, cost, practices and procedures)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Activity based management	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Activity based costing	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
The balanced scorecard	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Value chain analysis	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Total quality management	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Key performance indicator	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Strategic cost management	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

5

Please indicate the extent to which your business unit's management control systems have the following characteristics.

	Not at all							To a great extent						
Management control systems are often used as a means of identifying strategic uncertainties and developing ongoing action plans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management control systems are used regularly in scheduled face-to-face meetings between operational and senior managers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a lot of on-going interaction between operational management and senior managers in management control systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management control systems generate information that forms an important and recurring agenda in discussions between operational and senior managers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management control systems are used by operational and senior managers to discuss changes that are occurring within the business unit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6

Please indicate the extent to which your business unit's management control systems have the following characteristics.

	Not at all							To a great extent						
The management control systems promote strict conformance to standards of conduct regarding how employees interact with customers, suppliers, and outside parties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The management control systems facilitate administrative consistency throughout the business unit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The organisational structure is very clearly defined and delineated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The lines of command clearly allocate authority and responsibility to each business unit/department.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Authority is effectively distributed throughout the business unit to the level where it is most needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7

Please indicate the extent to which your business unit's management control systems have the following characteristics.

	Not at all							To a great extent						
Management control systems are used to track progress towards goals and monitor results.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Management control systems are used to plan how operations are to be conducted in accordance with the strategic plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Management control systems are used to review performance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Management control systems are used to identify significant exceptions from expectations and take appropriate actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

8

Below is a list of eight practices that may be used to describe the nature of the work environment in business units. For each item please indicate the extent to which you agree or disagree that the item represents current practices within your business unit.

	Strongly Disagree			Neutral			Strongly Agree		
Employee expectations are specified in detail.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Desired results are explicitly defined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work rules and/or specific work policies are widely used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct supervision of employee activities takes place frequently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequent monitoring of employee performance takes place.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performance measures are precise and timely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performance reviews are detailed, comprehensive, and frequent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a strong link between the penalties imposed or rewards provided and the performance measures used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9

Please indicate the extent to which your business unit's information system provides the following information:

	Not at all					To a great extent	
Future-oriented information	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
External information	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Non-financial information	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

10

Please indicate the extent to which your business unit has the ability to respond to each of the following:

	Not at all					To a great extent	
Resource reallocation needs	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
The need to modify business partnerships (e.g. strategic alliance, outsourcing relationship, etc.)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Emerging market opportunities	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Changing environmental conditions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Changing technology needs	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

11

Please indicate the extent to which the following applies to front line staff in your business unit. Front line staff are defined as employees working in the lowest level of the hierarchy within your business unit.

	Not at all					To a great extent	
They have a high level of collaboration/involvement in decision making.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
There are official channels or certain norms or rules to guarantee their participation in the decision making process.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
They contribute directly to the decision making process, rather than through intermediaries (e.g. supervisors).	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
They have authority/power to make and implement decisions about tasks.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

12

Please rate the performance of your business unit over the past three years in relation to the following aspects:

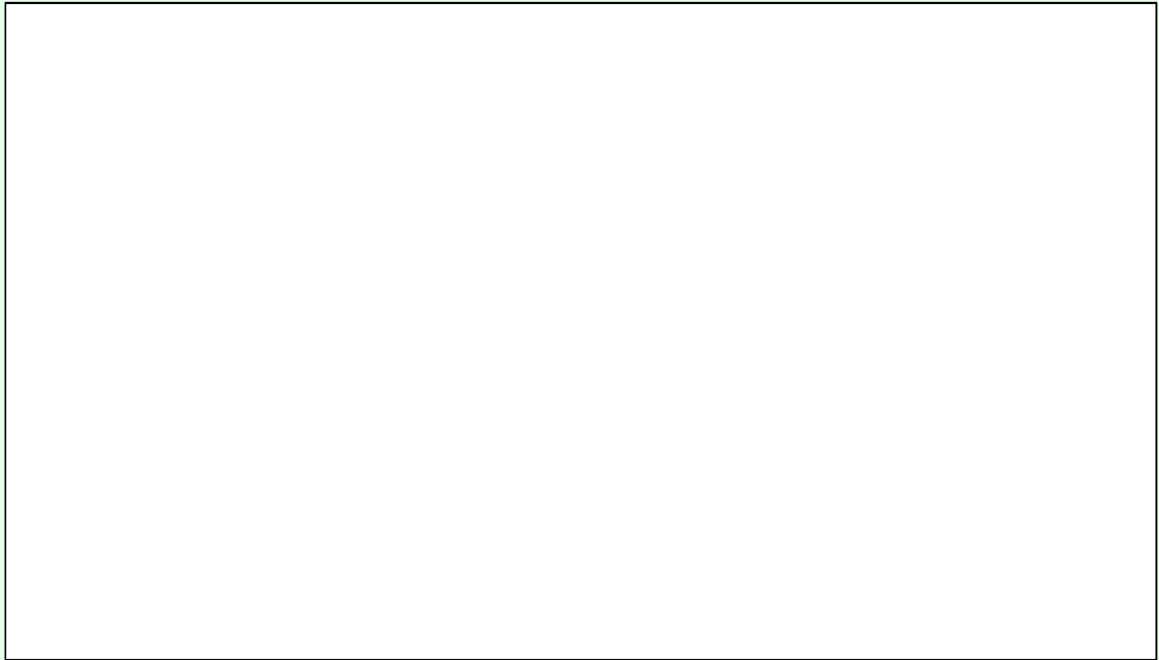
	Very Poor					Excellent		Not Applicable
The quality of our output (products/services)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/>
The implementation of new procedures and/or practices	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/>
The introduction of new products/service lines	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/>
The efficiency of our operations	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/>
The effectiveness of our operations	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/>
The level of our customer satisfaction	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/>

13

Please indicate the extent to which your business unit has undergone change during the past three years with respect to each of the following:

	Not at all					To a great extent	
Business unit vision, mission or goals	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Restructuring	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
The range of product/service lines provided	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
New technology adoption	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Research and development	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Branding and marketing strategies	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Geographic coverage	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Human resources management (e.g. rewards systems, training, recruitment, etc.)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Product/service quality	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Product/service pricing	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Business partnerships (e.g. strategic alliance, outsourcing relationship, etc.)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Distribution channels	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
Financing operations	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

Thank you for taking the time to complete this survey. Your assistance in providing this information is very much appreciated. If there is any suggestion or comment you would like to tell me in relation to the survey please do so in the space provided below.



Please return your completed survey in the enclosed envelope to:

Nuraddeen Abubakar Nuhu, C/o Dr. Kevin Baird, Department of Accounting and
Corporate Governance
Macquarie University, NSW 2109.

The return of the questionnaire will be regarded as consent to use the information for research purposes. Could you also please return the enclosed postcard separately in the mail. The receipt of the postcard will alert me that your survey has been returned and prevent a reminder survey being sent to you.

If you wish to enquire about the survey or if you need any assistance in completing the survey, please contact Nuraddeen Abubakar Nuhu at the Department of Accounting and Corporate Governance, Macquarie University, Sydney at nuraddeen.nuhu@students.mq.edu.au

Appendix B

Approval from ethics review committee



MACQUARIE
University

NURADDEEN NUHU <nuraddeen.nuhu@students.mq.edu.au>

Approved - 5201300539

1 message

Mrs Yanru Ouyang <yanru.ouyang@mq.edu.au>

Wed, Aug 14, 2013 at
10:12 AM

To: Mr Kevin Baird <kevin.baird@mq.edu.au>

Cc: Mr Ranjith Bala Appuhamilage <ranjith.bala-appuhamilage@mq.edu.au>, Mr Nuraddeen Abubakar Nuhu <nuraddeen.nuhu@students.mq.edu.au>

Dear Mr Baird,

Re: 'The impact of management control systems on organizational change and organizational performance in the Australian public sector.'

Reference No.: 5201300539

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Business & Economics Human Research Ethics Sub Committee. Approval of the above application is granted, effective "14/08/2013". This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Mr Kevin Baird

Mr Nuraddeen Abubakar Nuhu

Mr Ranjith Bala Appuhamilage

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).

2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 14th Aug. 2014

Progress Report 2 Due: 14th Aug. 2015

Progress Report 3 Due: 14th Aug. 2016

Progress Report 4 Due: 14th Aug. 2017

Final Report Due: 14th Aug. 2018

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in

an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>
http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of approval to an external organisation as evidence that you have approval, please do not hesitate to contact the FBE Ethics Committee Secretariat, via fbe-ethics@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely,

Parmod Chand
Chair, Faculty of Business and Economics Ethics Sub-Committee
Faculty of Business and Economics
Level 7, E4A Building
Macquarie University
NSW 2109 Australia
T: +61 2 9850 4826
F: +61 2 9850 6140
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