UNIVERSITY OF SOUTHAMPTON

FACULTY OF LAW, ARTS & SOCIAL SCIENCES

School of Management

A Contingency Model of Strategy, Performance Measurement Systems and Management Accounting Practices: An Empirical Investigation in English Local Authorities

Volume 1 of 2

Alexa Louise Simm (née Brown)

Thesis for the degree of Doctor of Philosophy

February 2010

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF LAW, ARTS AND SOCIAL SCIENCES

SCHOOL OF MANAGEMENT

Doctor of Philosophy

A CONTINGENCY MODEL OF STRATEGY, PERFORMANCE MEASUREMENT SYSTEMS AND MANAGEMENT ACCOUNTING PRACTICES: AN EMPIRICAL INVESTIGATION IN ENGLISH LOCAL AUTHORITIES

by Alexa Louise Simm

Contingency based research has been used extensively within the area of accounting control (Chapman, 1997; Chenhall, 2003; Gerdin and Greeve, 2004), though there is a lacuna of contingency research within not-for-profit organisations (Chenhall, 2003), particularly in the UK. The study's overall research question is how strategic typology, resource-based capabilities, contemporary performance measurement techniques (CPMTs) and contemporary management accounting practices (CMAPs) affect the performance outcome of English local authorities. Resource-based capabilities were taken to comprise market orientation, entrepreneurship, innovation and organisational learning, consistent with prior research (Henri, 2006b). To investigate the research question, a contingency model was developed, setting out expected relationships between the study's variables. An electronic questionnaire was designed to collect data for each of the research variables, with reliance placed on existing research instruments where possible. Supplementary performance data was obtained from published Audit Commission assessments.

A cross-sectional electronic survey of English local authorities was conducted with a response of 528 completed questionnaires obtained. The data was analysed using structural equation modelling (SEM) and AMOS 7.0 software. A model generating approach was adopted, where the initial contingency model was rejected and modified. Through this modification process a revised model, based on theoretical frameworks, was identified that fitted the empirical data well. Significant direct and indirect relationships between variables within the research contingency model were identified. The results provide empirical support that the performance outcome of English local authorities is contingent upon the emphasis placed on pursuing a differentiation strategy, use of CPMTs and CMAPs, strategic capabilities of market orientation, entrepreneurship and innovation, and performance-based training.

The study combines and tailors prior research on specific variables, building these into an original contingency model which is applied to English local authorities. Overall, this study contributes both to contingency research and to the knowledge and understanding of strategy, resource-based strategic capabilities, management accounting and PMTs in English local authorities. Some areas for future research are proposed, though the results from the study provide important information for management accounting researchers, local government practitioners and policy makers.

List of Contents

Chapter 4: Contingency Theory and Management Accounting Systems

Chapter 5: Research Methodology

List of Tables

List of Figures

DECLARATION OF AUTHORSHIP

I, Alexa Louise Simm (née Brown), declare that the thesis entitled A Contingency Model of Strategy, Performance Measurement Systems and Management Accounting Practices: An Empirical Investigation in English Local Authorities and the work presented in the thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- none of this work has been published before submission

Signed:

Date:

Acknowledgements

Firstly I would like to thank my supervisor, Professor Andrew Goddard, for his guidance and support. Particular thanks go to all the local authority officers who participated in this research by responding to my questionnaire. Thanks also to the Audit Commission, CIPFA and the University of the West of England.

I would also like to thank all my friends and family who have supported and encouraged me over the years. Thanks to Karen Lee for helping me to set off down this Ph.D. road, to Jane James for continuing to be my 'life coach' and to my brother, Robin Brown, for being my IT helpline.

A special thanks to my parents for their endless support. Finally, of course, thanks to my husband, Dave, and to my Charlie.

Abbreviations

Abbreviation	Term
ABB	Activity Based Budgeting
ABC	Activity Based Costing
AIC	Akaike Information Criterion
AMOS	Analysis of Moment Structures
BSC	Balanced Scorecard
BV	Best Value
BVPI	Best Value Performance Indicator
CAA	Comprehensive Area Assessment
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CMA	Contemporary Management Accounting
CMAP	Contemporary Management Accounting Practices
CPA	Comprehensive Performance Assessment
CPMT	Contemporary Performance Measurement Techniques
EFA	Exploratory Factor Analysis
FM	Financial Management
FR	Financial Reporting
FS	Financial Standing
IC	Internal Control
IFI	Incremental Index of Fit
KMO	Kaiser-Meyer-Olkin measure of sampling adequacy
LCC	Life Cycle Costing
LGMA	Local Government Modernisation Agenda
LPSA	Local Public Service Agreement
MAP	Management Accounting Practices
MAS	Management Accounting System

MCS	Management Control System
MI	Modification Indexes
NFI	Normed Fit Index
NPFM	New Public Financial Management
NPM	New Public Management
PCA	Principal Component Analysis
PEU	Perceived Environmental Uncertainty
PI	Performance Indicator
PMS	Performance Measurement System
PMT	Performance Measurement Technique
PPA	Progressive Public Administration
RBV	Resource-Based View
RDF	Results Determinants Framework
SBU	Strategic Business Unit
SEM	Structural Equation Modelling
TLI	Tucker-Lewis Index
TMA	Traditional Management Accounting
UoR	Use of Resources
VFM	Value for Money
ZBB	Zero-based Budgeting

Chapter 1: Introduction

Contingency theory has been used extensively as a research method in the field of management accounting. However, contingency-based research has received limited application in the public sector, particularly in the UK. In this thesis it is proposed that the performance outcome of English local authorities is contingent upon their strategic typology, resource-based capabilities, performance measurement techniques (PMTs) and management accounting practices (MAPs). This study, therefore, develops an original contingency model which is used to explore the complex relationships between the multiple variables of strategic typology, resource-based strategic capabilities, MAPs, PMTs and performance outcome in English local authorities.

1.1 Theoretical Background

Management accounting involves providing information to assist an organisation's managers (Drury, 1996; McChlery, 1999) and may be considered as a collection of practices used as part of the Management Accounting System (MAS) to achieve some goal (Chenhall, 2003). In relation to local government, the exact nature of management accounting remains unclear (Jones and Pendlebury, 1989), though traditionally the management accounting emphasis has been on budget preparation and budgetary control (Bolton and Leach, 2002; Jones and Pendlebury, 1989; Pendlebury, 1994). However, accounting is not static (Lapsley, 1999) with the accounting practices adopted by an organisation expected to change over time. Historically, accounting practices in public sector organisations have been imported from the private sector (Bromwich and Lapsley, 1997; Hyndman and Eden, 2000; Jackson and Lapsley, 2003; Lapsley, 2000; Lapsley and Wright, 2004; Likierman, 1994; Pallot, 1999; Pendlebury, 1989) and this transfer links in with the New Public Management (NPM) characteristic of reducing differences between the two sectors. Indeed significant changes in the public sector since the 1980's are often classed under this all-embracing heading of NPM. The accounting based elements of NPM are referred to as New Public Financial Management (NPFM) (Guthrie *et al.*, 1999). Accounting practices have also been developing due to problems and limitations associated with the more traditional MAPs, including reliance on financial accounting and historical information (Brouthers and Roozen, 1999). Specifically in the public sector, traditional cost accounting systems have been criticised as not evolving to recognise the changes in organisations (Brown *et al.*, 1999). Despite this, the accounting techniques used by local authorities have been found to be triggered primarily by legislation and in

response to external demands, such as government initiatives (Lapsley and Wright, 2004). However, management accounting in local government remains a relatively neglected area of research with little understanding of what constitutes management accounting in the public sector or whether local government management accounting innovations are successful (Lapsley, 2000) or improve performance.

Performance management has become an important requirement in local government (Midwinter, 2001) and involves "...tracking performance against targets and identifying opportunities for improvement..." (OGC, 2005: 1). NPM provides the backdrop for the development and increasing significance of performance management in the public sector (Jackson, 1993; Leeuw, 1996), with the emphasis on assessing performance and following the private sector. Performance management incorporates performance measurement and how this complements organisational strategy (I&DeA, 2005; HM Treasury *et al.*, 2001). Regarding performance measurement, evaluation of the performance of any government activity is crucial (Jackson, 1993), with performance measurement aiming to improve both public services and accountability (Audit Commission, 2000). Similarly to MAPs, contemporary PMTs (CPMTs) have been developing to address the inadequacies of the more traditional approaches, with movement away from a predominantly financial focus towards multi-dimensional systems (Ballantine *et al*., 1998; Ittner and Larcker, 1998b). PMTs comprise a variety of practices including performance indicators (PIs), benchmarking, the balanced scorecard (BSC) and the Results and Determinants Framework (RDF) with recent initiatives promoting performance measurement in English local government including Value for Money (VFM), Best Value (BV) and the Comprehensive Performance Assessment (CPA). Such Government initiatives in the UK that encourage the use of CPMTs and contemporary MAPs (CMAPs), including benchmarking or activity-based costing (ABC), aim to improve local government performance (Anderson, 1998; Ball, 2001; Bowerman and Ball, 2000; Gerdin, 2005; Ittner and Larcker, 1998b; Merchant, 1981; Merchant, 1984; Seal, 2003).

Performance measures are developed from an organisation's strategy (Audit Commission, 2000). There are problems in trying to define strategy, though Chandler (1962: 13) provided an early definition of strategy as being "...the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action, and the allocation of resources necessary for carrying out these goals." Three levels of strategy have been identified as being corporate, business unit and operational (Johnson and Scholes, 1999), with most of the previous research concerning management control systems (MCS) and strategy focussing at the business unit level of strategy (Langfield-Smith, 1997). The majority of research exploring the relationship between MCS and strategy has applied the various strategic typologies (Otley, 1995), which view each

strategic type as having its own distinct pattern of characteristics (Hambrick, 1980). One such strategic typology proposed by Porter (1980) suggests competitive advantage is achieved through the intended strategies of cost leadership or differentiation. It has been proposed that Porter's (1980) two generic competitive strategies may be applied to local authorities (Brignall, 1993), though limited previous research into strategy in local government has been undertaken. An alternative view of strategy is resource-based, focusing on an organisation's internal resources as a source for success (Knutsson *et al*., 2008). Primary strategic capabilities to achieve competitive advantage include market orientation, entrepreneurship, innovation and organisational learning (Henri, 2006b). The wider performance management literature has increasingly focused on the link between strategy and performance, though this has not been sufficiently recognised in local government research (Kloot and Martin, 2000).

1.2 Overview of Methodology

After exploring the alternative philosophical and methodological approaches to undertaking research, it was determined to conduct this research within the functionalist paradigm. Contingency theory was adopted as the school of thought within the functionalist paradigm, with data collected primarily through the development and utilisation of a cross-sectional electronic questionnaire. The contingency model and research hypotheses were tested by applying Structural Equation Modelling (SEM) as the statistical technique to analyse the multivariate relationships.

The overall research question for the present study was whether and how strategic typology, resource-based capabilities, PMTs and MAPs affect the performance outcome of English local authorities. Porter's (1980) strategic typology of cost leadership – differentiation was adopted alongside the four resource-based capabilities of market orientation, entrepreneurship, innovation and organisational learning, consistent with Henri (2006b).

The following sections consider the research's methodological aspects of contingency theory, the questionnaire and SEM.

1.2.1 Contingency-Based Research Methodology

Contingency theory is an approach to research based on the premise that there is not one universally appropriate management accounting or control system which is applicable to

all organisations in all circumstances (Otley, 1980; Fisher, 1995; Rayburn and Rayburn, 1991; Reid and Smith, 2000). Organisational effectiveness is proposed to be dependent on matching organisational characteristics, such as the MAS, with the organisation's specific situational contingencies. Contingency theory has become a widely adopted research approach (Hartmann, 2000), used extensively in the organisational and accounting literature (Chenhall and Langfield-Smith, 1998; Gerdin and Greeve, 2004; Otley, 1980), and particularly in accounting control research (Chapman, 1997; Chenhall, 2003; Gerdin and Greeve, 2004).

Fundamental to contingency research is the concept of fit (Drazin and Van de Ven, 1985; Van de Ven and Drazin, 1985), with organisational effectiveness resulting from a fit between the variables. Of the alternative concepts of contingency fit, the systems approach is the most recent form of contingency theory and considers the contingencies, organisational factors and performance holistically (Drazin and Van de Ven, 1985; Gerdin, 2005; Selto *et al.*, 1995). The advantage of this systems approach is that it enables multiple contingencies and variables to be addressed rather than single factors within the selection and interaction approaches.

Contingency factors or contingencies may be defined as particular circumstances facing an organisation and may be categorised as relating to the external environment, technology and interdependence, organisational variables, strategy or other contingency factors (Fisher, 1995). Within the contingency model, the present study has incorporated the contingency variables of strategy and the implementation factors of training and data limitations. Strategy has been identified as being an important predictor of other organisational factors (Hambrick, 1980), with an organisation's MCS acknowledged to be designed to support its strategy (Widener, 2004). Previous research has operationalised strategy in a variety of ways. Govindarajan (1988) adopted Porter's (1980) framework of low cost and differentiation strategies and, using a systems approach to contingency theory, found that when budget evaluative style, decentralisation and the locus of control were aligned appropriately to meet the Strategic Business Unit's (SBU) strategy requirements, higher performance occurred. Subsequent research adopting Porter's (1980) strategic typology found that strategy, resource sharing between SBUs and control systems have an interactive impact on SBU effectiveness (Govindarajan and Fisher, 1990), with the importance of fit between strategic priorities, management techniques and MAPs also highlighted (Chenhall and Langfield-Smith, 1998). The second strategy variable incorporated in the present study's contingency model is the resource-based view (RBV) of strategy, which is proposed to be applicable to public organisations (Knutsson *et al*., 2008). Previous research by Henri (2006b) found the interactive use of performance measurement systems (PMSs) to be significantly and positively related to the four

strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. For the implementation contingency factors, Cavalluzzo and Ittner (2004) found training on PMTs to have a significant positive effect on PMS development and use.

The majority of previous contingency research has been carried out in the private sector and it is recognised that more contingency research is needed within not-for-profit or public sector organisations (Chenhall, 2003; Jacobs, 1997). It is currently unclear whether previous findings in the private sector are transferrable to public sector organisations. Indeed, Mia and Goyal (1991) argue that research findings from manufacturing firms are not applicable to not-for-profit organisations, due to the specific characteristics of public sector organisations such as aiming to minimise costs, comply with rigorous rules and regulations, as well as operating in a monopolistic market. In the US federal government, Cavalluzzo and Ittner (2004) examined the development, use and perceived benefits of results-oriented performance measures. They found that organisational factors, including top management commitment to the use of performance information and training in PMTs, have a significant positive influence on PMS development and use.

1.2.2 Cross-Sectional Electronic-Mail Survey

Research undertaken within the functionalist paradigm tends to generate quantitative data. Previous contingency-based research studies have primarily utilised questionnaires to collect data (Otley, 1980; Otley and Pollanen, 2000), in particular adopting cross-sectional survey methods (Chenall, 2003). Despite the widely acknowledged criticisms of the questionnaire methodology (De Vaus, 2002), there is still a valuable place for future survey-based contingency research (Langfield-Smith, 1997). Indeed, as suggested by De Vaus (2002), criticisms of the survey method should be used to improve the method not to cause abandonment of the approach. Furthermore, as Otley (1980) explains, a research methodology should not be judged against a universal standard, but assessed in relation to its ability to provide the type of data required for the research study. This research aimed to collect a large amount of quantitative data from local authorities throughout England to be analysed using the statistical method of SEM. Mailed survey questionnaires are able to cover wide geographic areas, target a large sample population and at a low cost (Bourque and Fielder, 1995; Czaja and Blair, 1996; Oppenheim, 1992). Such advantages of the questionnaire method were consequently fundamental in selecting questionnaires as the research instrument.

A variation of the traditional postal questionnaire is the electronic survey, which has the additional advantages of reduced stationery and postage costs, instantaneous delivery and being environmentally friendly (Tse, 1998; Gill and Johnson, 2002). Furthermore, electronic communication has become the norm in English local authorities so an electronic questionnaire issued by e-mail provides the professional approach expected by local authority managers. The SNAP survey software also enables questionnaire responses to be uploaded directly into the statistical packages of SPSS and AMOS, thereby avoiding the time consuming process and potential errors of manually inputting the data.

Consistent with previous contingency-based research (Chenhall, 2003; Fisher, 1995; Otley, 1980; Otley and Pollanen, 2000), the data for this study was therefore obtained primarily through devising and distributing a cross-sectional survey. However, the questionnaire for the present study was electronic, utilising the SNAP survey software. The questionnaire was designed in sections with several questions devised for each variable within the study's research contingency model. Reliance was placed on previous measuring instruments for individual variables where possible. To supplement the self-assessed performance data provided by the questionnaire respondents, objective measures of performance were obtained through the independent Use of Resources (UoR) and CPA judgements published for all English local authorities by the Audit Commission.

1.2.3 Structural Equation Modelling (SEM) Statistical Method

Multivariate statistical analysis comprises statistical methods that simultaneously analyse more than two variables with the aim being to measure, explain and predict the degree of relationship among the multiple variables (Anderson, 1984; Hair *et al*., 1998). Due to the multiple variables included within this research contingency model, multivariate statistical analysis is appropriate to interrogate the empirical data. There are a variety of multivariate statistical techniques that examine a range of single and multiple dependent or independent variables, such as multiple regression, discriminant analysis and canonical correlation. SEM is one multivariate technique that examines multiple relationships of dependent and independent variables (Hair *et al*., 1998). The unique characteristic of SEM is that it is able to simultaneously examine a series of dependence relationships (where a dependent variable becomes an independent variable in subsequent relationships within the same analysis), while also simultaneously analysing multiple dependent variables (Jöreskog *et al.*, 1999 cited by Shook *et al.*, 2004). SEM is

consequently advantageous to analysing complex contingency models where the model can be assessed in its entirety as opposed to individual relationships using alternative statistical methods.

SEM is also appropriate to be applied to studies where variable data is collected through questionnaires, as the technique allows for error variances associated with multiple item measurement to be incorporated into the model (Baines and Langfield-Smith, 2003; Schumacker and Lomax, 2004). Furthermore, SEM distinguishes between observed and unobserved variables within the research model, thereby permitting a variety of hypotheses to be tested (Kline, 2005). It is only through recent developments of the SEM software that the technique has been opened up to management accounting researchers. Indeed, the most popular SEM software packages of LISREL, EQS and AMOS have become increasingly user-friendly over recent years (Schumacker and Lomax, 2004; Ullman, 2007). AMOS 7.0 is part of the SPSS statistical software suite, enabling easy access and links to the raw data, as well as being particularly user-friendly with utilising a graphics method, thereby avoiding complex equations. The AMOS 7.0 software was consequently used in the present study to apply SEM to analyse the complex relationships included in the research contingency model.

1.3 Contributions and Principal Research Findings

The development of an original contingency model and analysis of the empirical data using SEM resulted in this research making a number of both theoretical and methodological contributions to the existing literature. As far as the author is aware this is the first contingency study exploring strategy, management accounting and performance in the UK. The study is also thought to be the first to examine this combination of variables through the adoption of SEM.

The SEM analysis reports direct, indirect and total effects of relationships between the multiple variables included within the contingency research model. Specific empirical findings from this study make valuable contributions to the existing literature, extending previous research. The study provides empirical evidence that emphasis placed on a differentiation strategy has significantly positive indirect effects on UoR, financial and non-financial performance outcomes, through the multiple mediating factors of CPMTs and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. Strategic management has been increasingly singled out as one of the primary means through which organisational performance can be enhanced (Andrews *et al.*, 2006; Andrews *et al*., 2009; Boyne and Walker, 2004). However, the

present study suggests that the relationship between strategy and performance is complicated by mediating factors, such as the use of CPMTs. In contrast to expectations, emphasis placed on a cost leadership strategy was found to have a significantly negative indirect effect on CPA performance outcome, again through multiple mediating factors.

Recent Government initiatives in the UK are based on the notion that CPMTs, such as non-financial PIs, the BSC and benchmarking, will result in improved performance (Ball, 2001; Bowerman and Ball, 2000; Ittner and Larcker, 1998b; Strategy Unit, 2002; Wisniewski and Olafsson, 2004; Woods and Grubnic, 2008). Government initiatives and legislation to improve local government performance have also encouraged the use of CMAPs, such as ABC and contemporary budgeting (Anderson, 1998; Gerdin, 2005; Merchant, 1981; Merchant, 1984; Seal, 2003). This study provides an empirical investigation exploring whether local authorities applying CMAPs, or the CPMTs of benchmarking and RDF, do actually experience improved performance. The findings suggest that there is no direct positive relationship between the extent benchmarking or RDF is used and resulting performance outcome. Although increased use of benchmarking was found to be significantly related to increased financial and non-financial performance outcome, this is only through the indirect effect of the multiple mediating variables. The use of CMAPs was not found to be positively related to performance outcome to a significant extent. Indeed, increased use of CMAPs was actually found to significantly reduce financial performance outcome.

The research also confirmed expectations that market orientation and entrepreneurship both had significant direct positive effects on performance outcome, though the relationships between the capabilities of innovation and organisational learning and performance outcome were not found to be significant. This study confirms results from prior research by Cavalluzzo and Ittner (2004) that the provision of performance-related training has significant positive effects on the use of PMTs directly, but also indirectly via strategic capabilities, MAPs and financial performance outcome. Contrary to expectations, though, data limitations were not found to significantly affect the use of PMTs.

The above key findings contribute to the existing management accounting literature by confirming, contradicting and extending prior research. Furthermore, by incorporating previously developed measuring instruments into this research's questionnaire, the study has contributed by confirming the validity of previously developed research instruments. The research was also applied to English local authorities, which little empirical research has previously targeted, thereby contributing specifically to the knowledge and

understanding in this sector. Indeed the findings have practical implications for both local authority managers and policy makers.

Finally, and perhaps most importantly, the study has made significant contributions to contingency research through the development of a novel contingency model comprising multiple variables. This contingency research adopts a systems approach, exploring the complex relationships between strategic typology, resource-based strategic capabilities, MAPs, PMTs and performance outcome. Such a systems approach responds to the criticisms of previous selection and interaction approaches to contingency research (Chenhall and Langfield-Smith, 1998; Drazin and Van de Ven, 1985; Gerdin, 2005; Van de Ven and Drazin, 1985). Additionally, this study responds to the call by Smith and Langfield-Smith (2004) for management accounting researchers to make greater use of SEM, thereby providing a valuable methodological contribution. The SEM analysis permits multiple observed variables and relationships to be simultaneously assessed, overcoming some of the limitations and criticisms of the more commonly applied regression-based statistical methods. Adopting the SEM model generating approach also enabled this research to contribute to the existing literature by producing a theorised contingency model that fits the empirical data well.

1.4 Structure of the Research Study

This research study comprises 12 chapters including this introduction. The remainder of this chapter provides an overview of the content for each chapter. Chapters 2, 3 and 4 review the existing literature. Firstly, Chapter 2 sets out the context of English local authorities before introducing the concept of NPM and providing a background to the developments in the public sector over the last couple of decades. The chapter then goes onto discuss performance measurement and identify key PMTs before reviewing strategy and the various strategic typologies. Chapter 2 also considers recent legislation and initiatives impacting on performance management and, finally, the chapter reviews prior research in the areas of strategy and performance measurement in local government.

Chapter 3 addresses management accounting and how this has changed from traditional to the more contemporary approaches. Specific MAPs are considered within the areas of budget preparation, budgetary control and costing. The chapter finally reviews previous research regarding local government within these management accounting themes.

In Chapter 4, contingency theory in relation to the MAS is explored. Initially contingency theory is explained, with particular reference to the alternative approaches to contingency

fit. The chapter then goes on to explain the theoretical context and previous research for each of the main contingency factor areas of the external environment, strategy, technology and interdependence, and organisational variables prior to also briefly considering other contingency factors. Contingency theory in relation to the public sector is then specifically addressed, with prior research being reviewed. Finally some of the advantages and criticisms of contingency theory are discussed.

Chapter 5 explores the philosophical and methodological approaches adopted in the research study. Firstly the chapter compares phenomenology and positivism as the two main research philosophies. The chapter then considers the assumptions of the four research paradigms of functionalist, interpretive, radical humanist and radical structuralist, explaining and justifying the research study being set within the positivism philosophy and functionalist paradigm. The complex research contingency model is then developed, based on the literature review summarised in Chapters 2, 3 and 4, with the dependent and independent variables introduced. The existing literature and newly developed contingency model are then brought together with research hypotheses being devised. Finally Chapter 5 justifies utilising the questionnaire research methodology for this research, as well as providing an introduction to the statistical analyses to be adopted.

Chapter 6 introduces the fieldwork for this research, explaining the research population along with the development of the research questionnaire. The chapter sets out the measurement of each variable within the research contingency model, as well as how the electronic questionnaire was practically issued. Chapter 6 then summarises the data collected by variable, before identifying issues arising from the data set to be considered in conjunction with the statistical analyses.

In Chapter 7, the brief introduction to the statistical analysis in Chapter 5 is more fully explored. The alternative approaches to multivariate statistical analysis are considered prior to the chapter concentrating on the techniques to be adopted in the present research. In particular, the chapter explains exploratory factor analysis (EFA), SEM and confirmatory factor analysis (CFA) as the three primary statistical analyses to be adopted. In relation to SEM, the key software programs are reviewed culminating with the justification for the selection of AMOS as the most appropriate for this research study.

The preliminary statistical analysis of the data collected from the questionnaire is set out in Chapter 8. Prior to undertaking SEM, it is important to ensure that the data and research instrument utilised are valid and reliable. The validity of the research questionnaire tested using Principal Component Analysis (PCA) is therefore explained with the reduction in the number of observed variables from the research questionnaire

into a smaller number of components summarised. These components form the basis of the SEM analysis in Chapters 9 and 10.

Chapter 9 sets out the first of the two steps of the SEM process. Measurement models were devised for each component identified from the PCA in Chapter 8. The model fit was assessed for each measurement model with modifications made to the measurement models where necessary. Cronbach's alpha was applied to test for reliability of the modified measurement models.

In Chapter 10 the SEM statistical process is completed with testing how well the research model fits the empirical data. The final research model comprises the modified measurement models established in Chapter 9. Chapter 10 also outlines the findings from the SEM analysis in relation to the hypotheses devised in Chapter 5, highlighting significant relationships.

Chapter 11 provides a more detailed discussion of the empirical findings from the SEM analysis. The findings from the present study are compared to the existing literature with possible explanations for the results suggested. The chapter then goes onto discuss methodological aspects of the research and sets out some of the practical implications of the findings. Finally the chapter considers the limitations of this research.

The final chapter, Chapter 12, summarises the key findings of the study with reference to the overall aim of the research. The chapter highlights the methodological and theoretical contributions of this research before suggesting some areas for future research. Finally, the study is brought to a close with some concluding remarks.

Chapter 2: Performance Management and the Public Sector

2.1 Introduction

The public sector comprises public organisations that provide essential utilities and services to the community, and which have been traditionally controlled and owned by the Government (Broadbent and Guthrie, 1992). The public sector has complex and distinctive features, including Government focussed planning, public service culture and diversity of accounting practices (Lapsley, 1988; Smith, 2000). Broadbent and Guthrie (1992) outline that the public sector is made up of central government, local government, public institutional systems such as health, and public business enterprises such as the water industry. Local government is one element of the public sector and is the focus of the present study.

Performance management is an essential area for public sector organisations to address (Midwinter, 2001) and incorporates the key elements of strategy and performance measurement (I&DeA, 2005 and HM Treasury *et al*., 2001). Focus on performance management has increased in recent years due to significant changes within the public sector, collectively termed New Public Management (NPM). Strategy basically sets out the direction for an organisation, with performance measurement aiming to assess how well the organisation has performed or the extent it has achieved its objectives. However, performance measurement and strategy are complex variables which interlink both with each other and other concepts. For local authorities, strategy links in with the overall strategic direction set by central government through legislation and initiatives, but also local priorities.

This chapter firstly sets out the context for local authorities in section 2.2 prior to reviewing administrative management arrangements and NPM developments within the public sector in section 2.3. Performance, performance management and performance measurement are all explored in relation to the UK public sector in sections 2.4, 2.5 and 2.6 respectively). The strategy element of performance management is considered in section 2.7. Legislation and initiatives within local authorities are considered in section 2.8 Previous research focussing on local authorities is considered in section 2.9 with the chapter concluding with a summary in section 2.10.

2.2 Context of Local Authorities

This research is focussed on local authorities, which are a specific type of organisation with some distinct characteristics (Ghobadian and Ashworth, 1994). Local authorities are a significant element of the public sector in the UK, with a total net current expenditure for local authorities in England for 2008/2009 of an estimated £113.1 billion (Department for Communities and Local Government, 2009). Local authorities provide a range of public services, including education, social services, housing, environmental services, highways, planning and leisure. As Mulcahy and Mulcahy (1995: 551) summarise, local government "...is a mechanism to provide the actual delivery of the most basic and essential services required by citizens."

There are 386 local authorities in England, employing around two million people to carry out an estimated 700 functions, with the local government officers being supported by approximately 21,000 elected councillors (Local Government Association, 2005). There are two structures regarding councils within England. Firstly, there are single tier councils, which include Unitary, Metropolitan or London Boroughs. These councils are responsible for all local authority services and functions. Elsewhere in England there is a two tier system, where functions and services are split between district and county councils.

2.3 New Public Management

There have been significant changes in the public sector over the last couple of decades which tend to be classed under the broad heading of NPM. Indeed Lapsley (2009: 1) describes NPM as "...one of the most significant phenomena of the late twentieth and early twenty-first centuries." Prior to the 1980s, progressive public administration (PPA) was the model dominating the public sector (Hood, 1995; Jackson and Lapsley, 2003). Hood (1995) goes on to explain that PPA comprised two primary management doctrines. These doctrines were, firstly, to keep the public sector distinct from the private sector, such as through ethos, organisational design and methods of doing business. The second doctrine involved extensive procedural rules to maintain distance between politicians and managers. This PPA model then made way for NPM (Hood, 1995).

As Broadbent and Laughlin (1998: 403) summarise, "Management change in the public sector has been occurring over a number of years in the UK…" and these changes have been broadly classed under the heading of NPM. Groot and Budding (2008) suggest the first NPM developments in the UK began following the election of Prime Minister Margaret Thatcher in 1979. NPM is an ill-defined term, but basically relates to a range of ideas

covering similar administrative doctrines (Hood, 1991). Indeed, NPM can be summarised as "...an influential set of management techniques drawing on private sector performance criteria and practices" (Lapsley, 2009:1). NPM is "...primarily a movement propelled by practitioners seeking to improve government and public administration practices..." (Groot and Budding, 2008: 2). Due to the dominance of NPM in the reforms of the public sector during the 1980s and 1990s (Lapsley, 1999), NPM provides an important context for performance management and management accounting techniques currently adopted within the public sector.

NPM is multi-faceted (Lapsley, 2008) with the following seven key elements of NPM put forward by Hood (1991). However, Hood (1995) acknowledges that this is an oversimplification and that public sector organisations may not change in all seven ways at once.

1) Hands on professional management – active discretionary control by named top managers.
2) Explicit standards and measures of performance – with definitions of targets and indicators of success.
3) Greater emphasis on output controls – resource allocation and rewards linked to measured performance, with focus on results rather than procedures.
4) Shift to disaggregation of units in the public sector – creation of manageable, decentralised units.
5) Shift to greater competition in public sector – use of contracts and tendering procedures.
6) Stress on private sector styles of management practice – move away from public service ethic.
7) Stress on greater discipline and parsimony in resource use – cutting direct costs and raising labour discipline.

These key features can be summarised to the two main areas of moving emphasis from accountability of processes to outcomes (1-3) and reducing the differences between the public and private sectors (4-7) (Dunleavy and Hood, 1994; Hood, 1995). This is, therefore, a reverse of the two main doctrines of the former PPA model (Hood, 1995). In contrast to Hood's (1991) proposed elements of NPM above, Groot and Budding (2008:4) suggest that there are three main themes of the NPM reforms, namely "(a) decentralisation, (b) improved competitiveness by increased efficiency and effectiveness,

and (c) accountability for performance." Furthermore, Lapsley (2009:2) suggests that NPM in the early twenty-first century has the following four key elements:

1) Continued reliance on management consultants in public sector transformation.
2) Digital revolution and e-government as devices of modernisation.
3) Entrenchments of audit society, particularly compliance.
4) Significance of risk management in the public sector which mitigates against social entrepreneurship.

Hood (1991) explains that NPM developed from two different approaches. The first approach was new institutional economics, linked to the post World War II development of public choice, transactions cost theory and principal-agent theory. The second approach was business type 'managerialism' in the public sector, which focussed on professional management expertise for improved organisational performance.

There is no single generally accepted explanation for the development of public sector management under NPM, with four primary possible explanations being put forward (Hood, 1995). These possible explanations include, firstly, a 'habitat lost' for the old style arising from post-industrial technology, with the new public administration model built around electronic data and networking. The second explanation is the sudden shock demise of the old model, with sudden change of ideas about organisational design from the New Right. Thirdly, it has been suggested that the extinction of PPA was self-induced extinction, with older control frameworks and accounting practices degrading the values they were designed to promote. The final possible explanation for the development of NPM is due to a new set of predator interests, with PPA being hunted into extinction by accounting firms and management consultants.

NPM is a global phenomenon and yet there are differences between individual countries (Groot and Budding, 2008; Guthrie *et al.*, 1999; Hood, 1995; Lapsley, 1999; Lapsley, 2009; Pallot, 1999). The NPM movement has also spread across the public sector but differences within the sector are apparent (Lapsley, 1999). Despite the acceptance of NPM as a global phenomenon, it has also faced criticism. Hood (1991) suggests there are four main counter-claims regarding NPM. Firstly, NPM is suggested to be all hype and no substance, as a product of the style-conscious 1980s. Secondly, it is claimed that NPM has damaged the public service and not been successful in lowering service unit costs. Thirdly, the NPM movement is claimed to be a self-serving movement to enhance careers of an elite group, as opposed to promoting cheaper and better public services. Finally, it may be considered that different administrative values have different

implications for fundamental aspects of administration design, contradicting NPM's claim of being universal.

The British public sector has experienced major changes in recent years due to the introduction of many methods associated with NPM, such as performance league tables (Hopper *et al*., 2001). Jackson and Lapsley (2003: 359) sum up by saying:

> In the past two decades the public sector has experienced a transformation. A major feature of this change has been the displacement of the old style public administration by a 'new public management' which focuses on results and measurement and in which accounting has a central role.
>
> (Jackson and Lapsley, 2003: 359)

The accounting elements of NPM, mentioned by Jackson and Lapsley (2003), are referred to as NPFM and will be further considered in the following section.

2.3.1 New Public Financial Management

A specific category of NPM is NPFM which relates to the elements of the NPM reform movement which comprise accounting based financial management techniques (Guthrie, *et al.*, 1999). Indeed, the financial management and public sector accounting reforms were crucial to the significance and development of NPM (Guthrie *et al*., 1999; Hood, 1995).

Five categories of NPFM have been proposed by Guthrie *et al.* (1999), including changes to the financial reporting system**,** such as accrual based accounting. Other categories include the development of commercially minded, market oriented management systems and structures to deal with pricing and provision of public services and the development of a performance measurement approach, including techniques such as financial and non-financial performance measures and benchmarking. The final two categories put forward by Guthrie *et al*. (1999) are the devolvement or decentralisation of budgets and changes to internal and external public sector audits, such as VFM reviews. Broadbent (1999) suggests that it is actually more appropriate to understand NPFM as an idea rather than a set of recognisable, concrete elements. This, therefore, questions the categories proposed by Guthrie *et al*. (1999) above. Nonetheless, these elements provide a useful basic framework for NPFM.

Although efforts are put into achieving NPFM, the intended outcomes cannot be assumed to occur (Broadbent, 1999). It is also recognised that the limitations of NPFM techniques

may not be widely known and that research has tended to fail to address the relationships between the various techniques and organisational principles (Guthrie *et al*., 1999). Management accounting in local authorities is further considered in Chapter 3.

2.3.2 On-going Developments

Progress and developments within the public sector since the initial rise of NPM continue. The Government published a *Modern Local Government: in touch with people* White Paper (DTLR, 1998) in 1998 which set out the basis of change for the next ten years. This Modernising Local Government initiative builds on the previous administrative reforms with a change in focus from management's agenda to user's agenda (Cabinet Office, 2005). This, therefore, further extends the NPM reforms outlined above.

2.4 Performance

The performance outcome of public sector organisations may be interpreted as the value society places on the public sector activity (Smith, 1995). However, there are difficulties in defining performance in the public sector (Jackson, 1988). Indeed, the meaning of performance varies with stakeholders and, as Carter (1991: 89) states, "…performance is a very broad, and vague, concept." Performance, though, is a crucial aspect for any organisation. Public sector organisations, in particular, have been under increasing pressure over recent years to improve their performance and to evidence this (Wisniewski and Olafsson, 2004). This has led to the increasing emphasis being placed on performance management, which is further considered in the following section (section 2.5).

2.5 Performance Management

Performance management has been defined as "…the activity of tracking performance against targets and identifying opportunities for improvement…" with a focus on the future (OGC, 2005:1). The importance of performance management is evident, with Midwinter (2001: 316) stating that "Performance management is now required, not advocated."

The Improvement and Development Agency (I&DeA, 2005), specifically in relation to local authorities, outlines that performance management is made up of achieving the goals of

the organisation and community, prioritising what gets done and making sure there are sufficient resources, ensuring local authorities provide VFM, motivating and managing staff, and providing satisfaction for users and communities. From a review of the elements of performance management (I&DeA, 2005; HM Treasury *et al*., 2001), performance measurement and strategy have been identified as being key components of performance management. These key elements will, therefore, be further explored in sections 2.6 and 2.7, respectively.

Within local government in the UK, a new performance management regime has been in place since 1998 (Strategy Unit, 2002). The Strategy Unit (2002) explain that the three key elements of this regime are BV, CPA and Local Public Service Agreements (LPSA). These initiatives will be further explored in section 2.8. More specifically, performance measures and targets are key elements of performance management (I&DeA, 2005 and HM Treasury *et al*., 2001). Indeed the Audit Commission (2000: 5) states that "Performance measurement is the essential foundation on which performance management can be built." Performance measurement will, consequently, now be further considered in the next section (section 2.6).

2.6 Performance Measurement

Performance measurement is part of an organisation's management process to inform how the organisation is doing against its intentions (CIPFA, 1998). Performance evaluation of any government activity is essential (Jackson, 1993). Two primary objectives of performance measurement have been identified as being to improve public services and improving accountability (Audit Commission, 2000). The components of performance measurement are set out in Figure 2.1. This figure shows that the basic system of performance measurement is that performance measures are developed from an organisation's strategy, with actual performance assessed against targets set.

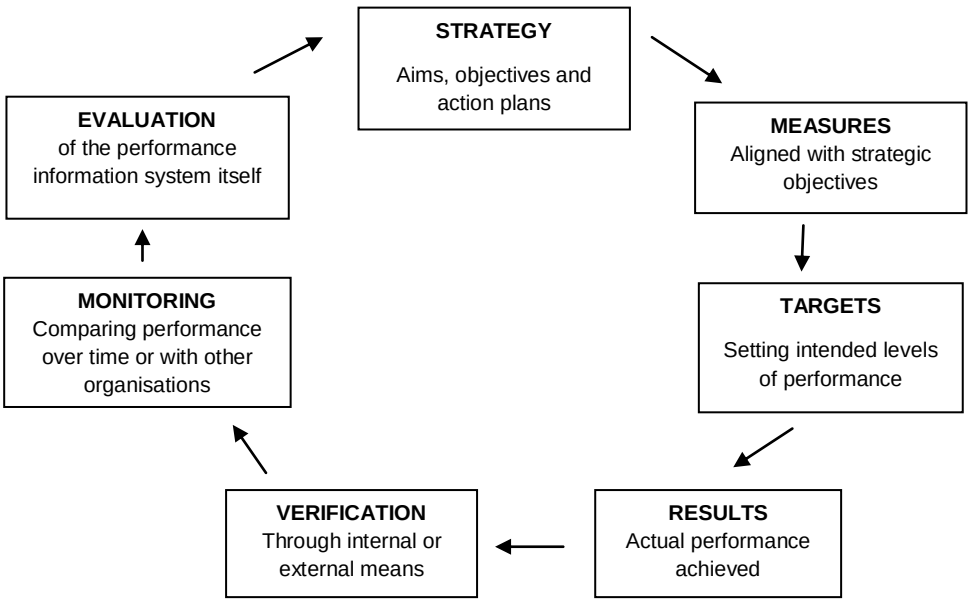


Figure 2.1: Components of Performance Measurement

(Source: Adapted from HM Treasury *et al*., 2001)

NPM, as outlined in section 2.3, provides the backdrop for the development and current significance of performance management in the public sector (Jackson, 1993; Leeuw, 1996), with performance measurement a key element of NPM (Hood, 1995; Lapsley, 2008). The belief that the public sector's efficiency would improve if it were more like the private sector, has had a significant impact on performance measurement initiatives (Flynn, 1986).

Performance measurement in UK local government rose in significance during the 1980s (Ghobadian and Ashworth, 1994; Smith, 1990; Smith, 1995), primarily due to pressure from the central government and the Audit Commission[1], greater public expectation and consumerism, compulsive competitive tendering, changing culture and attitudes among local authority managers and loss of confidence in the quality and effectiveness of local government services (Ghobadian and Ashworth, 1994). Performance measures are used in the public sector to develop league tables and to enable comparisons with other organisations, both inside and outside the public sector, and across time (Flynn, 1986).

There are inconsistent views among researchers on performance measurement in the public sector. Some suggest that the public sector provides the leading edge on issues of performance measurement (Jackson, 1993). Others criticise the systems that attempt to

[1] The Audit Commission is an independent body responsible for ensuring that public money is spent economically, efficiently and effectively in local government, health and criminal justice areas in England (Audit Commission, 2005b).

measure performance (Atkinson *et al*., 1997; Ballantine *et al*., 1998; Ghobadian and Ashworth, 1994). Indeed, there may be seen to be two extremes of performance measurement in the public sector (Flynn, 1986) from a concentration on what is easily measured to managers developing functional performance measures. The criticisms of PMSs in the public sector will be further explored in section 2.6.2.

Historically, performance measurement in the public sector has tended to focus on financial measures but it is generally recognised that the wider non-financial aspects of performance should also be considered (Ballantine *et al*., 1998; Ghobadian and Ashworth, 1994). Johnson and Kaplan (1991) recognised that traditional financial performance measures were inadequate. Following the criticisms of traditional PMSs, multi-dimensional systems have developed over recent years (Ballantine *et al*., 1998; Ittner and Larcker, 1998b), with the public sector under pressure to introduce more comprehensive performance systems (Ghobadian and Ashworth, 1994). Some of the key PMTs are considered in more depth in the following section (section 2.6.1).

2.6.1 Performance Measurement Techniques

A framework for performance assessment which is widely used in public sector services (Worthington and Dollery, 2000) is shown in Figure 2.2. This suggests that a collective set of indicators should be used to assess performance. However, the restricted nature of this framework has been criticised by other researchers, suggesting that economy, efficacy and equity are other elements of performance that should also be included (Jackson, 1988; Johnsen, 2005; Worthington and Dollery, 2000). Indeed, Pollitt (1986) suggests that economy and customer satisfaction are key factors that PMSs measure, as well as efficiency, effectiveness and quality.

Many approaches to measuring performance have been developed. Indeed, the perceived inadequacies of the more traditional accounting-based performance measures have led to a range of performance measurement innovations (Ittner and Larcker, 1998b). Some of these approaches are considered in the following sections.

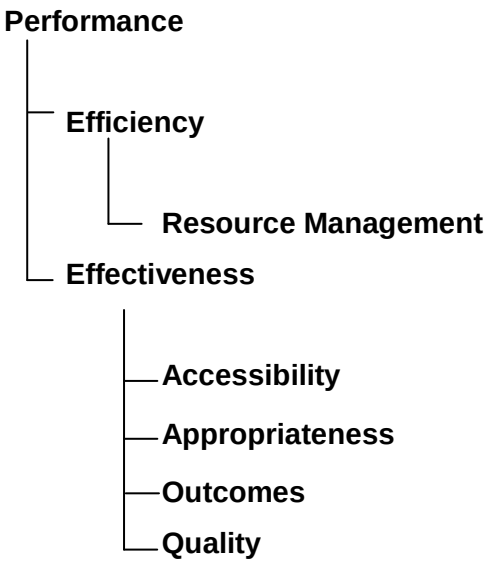


Figure 2.2: Performance Assessment Framework

(Source: Worthington and Dollery, 2000: 27)

2.6.1.1 Performance Indicators

Performance measures or indicators are measures of how well an organisation is performing against its objectives (HM Treasury *et al*., 2001). PIs basically provide an estimate or proxy measure of performance for particular activities while performance measures use a robust scale where there is a direct relationship between activity and results. Despite this distinction between performance measures and PIs, Jackson (1988) suggests that, in practice, these two concepts tend to merge. PIs consist of three components; namely a description of what is being measured, a target and a result (Thompson, 1995). Performance targets are statements of what an organisation aims to achieve in a future period (CIPFA, 1998) and the result is the performance that is actually recorded at a particular point in time.

PIs have historically been used in the public sector (Smith, 1990). However, public sector use of PIs has increased over recent years through the introduction of various initiatives. Under the Local Government Act 1992 (DETR, 1999), the Audit Commission was required to specify a set of PIs that local authorities in England and Wales had to publish annually,

as part of the Citizen's Charter[2]. BV is another initiative incorporating PIs and is further considered in section 2.8.2.

The literature suggests there are two primary types of PI schemes in the public sector to address external accountability and internal control or improvement (Freeman, 2002; Smith, 1995). Potential roles for non-profit PIs include clarifying the organisation's objectives in order to evaluate outcomes (Mayston, 1985). PIs should also indicate progress towards outcomes (Smith, 1995) and may be used for internal or external purposes (Jackson, 1988).

2.6.1.2 Benchmarking

Benchmarking involves organisations improving through sharing information, learning from others and adopting best practices (Public Sector Benchmarking Service, 2005). It is basically a method to confirm what internal management, and central government externally, already know about the positioning of public sector organisations in league tables and the need for further improvement (Ball, 2001).

As referred to in section 2.3.1, benchmarking has been identified as one of the key reforms under NPFM. Benchmarking is rooted in the 1970s development of cross authority comparative studies, undertaken by local authorities themselves (Bowerman and Ball, 2000; Bowerman *et al*., 2001). This informal benchmarking became more formalised through the establishment of the Audit Commission in 1983 and, since then, through further initiatives such as BV. The BV initiative is further explored in section 2.8.2.

2.6.1.3 Balanced Scorecard

The BSC, originally devised by Kaplan and Norton in the early 1990s, is a tool enabling the translation of a company's strategy into objectives and performance measures (Kaplan and Norton, 1992; Kaplan and Norton, 1996a; Kaplan and Norton, 1996b; Ittner and Larcker, 1998b). The BSC aims to provide a balanced picture of the organisation through measures across four perspectives of financial, innovation and learning, customer and internal business. By adopting the BSC, the number of measures used by organisations is limited to those that are most important.

[2] The Citizen's Charter comprises a series of initiatives designed to improve the quality of services to the public and make them more responsive to the needs of those who use them.

Although the BSC was initially devised for the private sector, it has since been adopted within public sector organisations. It is recognised, though, that the BSC cannot be simply applied to the public sector without adaptation (McAdam and Walker, 2003). The Accounts Commission (1998) adapted the BSC approach for public sector use and recommended the use of the BSC by Scottish local authorities. The approach proposed by the Accounts Commission (1998) is outlined in Figure 2.3 and is acknowledged to be generic and consequently should be adapted and developed for use in different organisations and at different levels within an organisation (Accounts Commission, 1998). The four perspectives, for example, may be adapted for individual organisations (Accounts Commission, 1998). Similarly, the Cabinet Office (2001) introduced the BSC as a public sector multi-dimensional framework linking objectives and measures to an organisation's strategy.

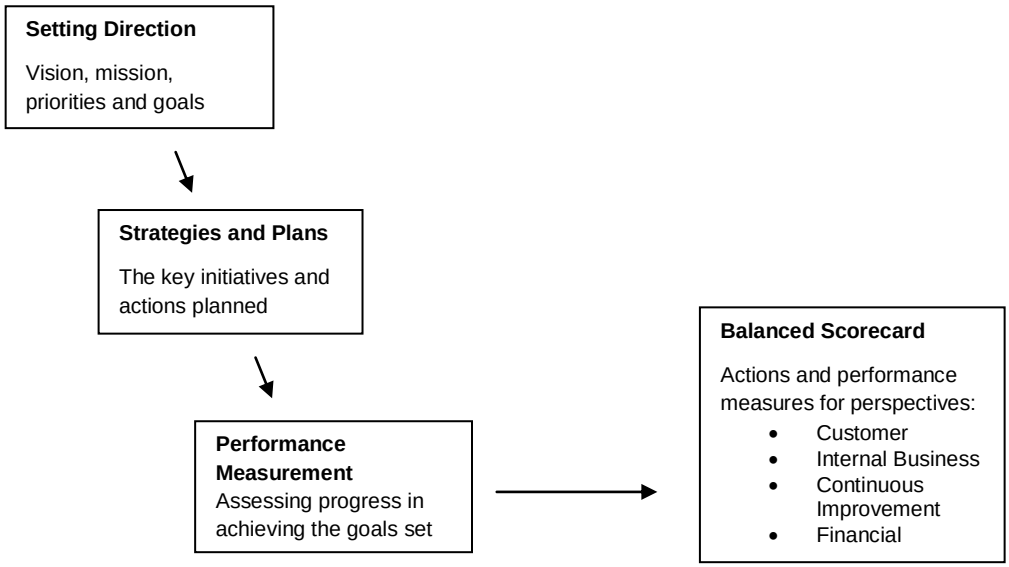


Figure 2.3: Balanced Scorecard Approach for Local Authorities

(Source: Adapted from Accounts Commission, 1998)

There has been limited empirical research into the use of the BSC in the public sector (Broad *et al*., 2007) and within the UK local government particularly (Woods and Grubnic, 2008). Wisniewski and Olafsson (2004) suggest that an increasing number of local authorities are adopting the BSC in response to the pressures to demonstrate improved performance and performance measurement. Indeed, it is proposed that the BSC has the potential to improve performance and performance management in the public sector (Wisniewski and Olafsson, 2004; Woods and Grubnic, 2008). However, Woods and Grubnic (2008) suggest that in 2007 less than 9% of English single tier or county councils were using the BSC.

Aidemark (2001) investigated the use of the BSC in Swedish health care organisations. This research found that the BSC was used more as a communication device between clinicians rather than a goal directing device. Through this means, the BSC was successful in reducing ambiguity over the meaning of performance and in moving away from financial performance management. Lawrence and Sharma (2002) explored Fijian universities and argued that the BSC is an attempt to introduce free market rhetoric into public services and results in a renewed emphasis on economic efficiency and the commodification of students and academics. In their research into performance measurement in the UK public sector, Broad *et al*. (2007) considered the performance measures adopted in comparison to the BSC terminology. Approximately 75% of performance measures used in four unitary authorities and university case studies were found to measure internal business processes, with relatively few financial or customer-related measures and almost no innovation and growth measures (Broad *et al*., 2007).

Several empirical studies have investigated the success of the BSC in the private sector with mixed results. A positive relationship was found between the use of the BSC and performance management and superior performance by Hoque and James (2000), Banker *et al*. (2000) and Davis and Albright (2004). In contrast, Malina and Selto (2001) found an indirect relationship and Ittner *et al*. (2003) found a negative relationship. All these studies, however, struggled to prove the direct cause and effect relationship between the use of the BSC and strategic success. Indeed, Norreklit (2000) questions whether the BSC can address the issues of cause and effect at all. Advocates of the BSC, though, emphasise its alignment of strategy, measures and outcome (Malina and Selto, 2001).

A collection of PIs have been used by French companies for the last three decades, in the form of the *Tableau de Bord* (Kaplan and Norton, 1996b). This approach to multiple measures of performance has been likened to the globally used BSC (Malina and Selto, 2001). However, the BSC is also deemed to be much more than simply a collection of financial and non-financial measures (Kaplan and Norton, 1996b). Indeed, the BSC is regarded as one of the most significant developments in management accounting, deserving intense research attention (Atkinson *et al*., 1997). However, inadequate research has been undertaken into the implementation and performance consequences of the BSC concept (Atkinson *et al*., 1997).

2.6.1.4 Results and Determinants Framework

The RDF was devised by Fitzgerald *et al*. (1991) in relation to performance measurement in for-profit UK service businesses. However, it has been recognised as being applicable to the public sector (Brignall, 1993) and may be applied at different organisational levels (Ballantine *et al*., 1998). The RDF comprises six dimensions of performance across the two categories of results and determinants as displayed in Table 2.1. Brignall (1993) suggests that the mix and weighting of performance measures across the six RDF dimensions will be determined by an organisation's strategy.

Table 2.1: RDF Dimensions of Performance

Category	Performance Dimension
Results	Financial performance Competitiveness
Determinants	Quality of service Flexibility Resource utilisation Innovation

(Source: Adapted from Ballantine *et al*., 1998)

2.6.2 Critique of Performance Measurement

Performance measurement is currently an important area in the public sector and one that is extensively adopted. However, there are some limitations and criticisms of performance measurement and the associated techniques.

PMSs have been criticised as measuring too many and the wrong things (Atkinson *et al*., 1997). Performance measurement in the public sector has also been accused of concentrating on what is easy to measure (Flynn, 1986). As outlined above, the traditional approach to performance measurement has been recognised as being inadequate at the neglect of considering the wider non-financial issues (Ballantine *et al*., 1998; Ghobadian and Ashworth, 1994; Johnson and Kaplan, 1991). This has resulted in the development of multi-dimensional and more comprehensive performance systems (Ballantine *et al*., 1998; Ghobadian and Ashworth, 1994). Performance measurement in the UK local government continues to rely on accounting practices, particularly budgeting, rather than non-financial performance measures (Goddard, 2005), though Modell (2004)

argues public services may be moving from a financial focus to multi-dimensional performance measurement. More research is needed, particularly in the UK public sector, to explore this possible transition (Broad *et al*., 2007).

PIs might be considered to be the most widely accepted PMT in the public sector. However, although PIs have the potential to positively affect the performance and accountability of public sector organisations (Smith, 1995), their use can also be problematic. Indeed, several unintended consequences of public sector PI systems have been identified and are summarised in Table 2.2. As Bevan and Hood (2006: 533) state, "...specification of targets and how performance will be measured almost invites reactive gaming by managers of service-providing units." A key issue is that attention is directed to the areas that are being measured at the expense of other areas, irrespective of need and priority. This can result in improved performance being reported but it is unclear whether such improvements in performance are "...genuine or offset by gaming that resulted in reductions in performance that was not captured by targets..." (Bevan and Hood, 2006: 533). Freeman (2002) explains that there is a delicate balance between coverage and practicality regarding the number of PIs adopted. These factors are considered by Carter (1991), who suggests that the usefulness of PI systems is dependent on the three factors of volume, timeliness and data design.

Table 2.2: Unintended consequences of public sector PI systems

Consequence	Description
Tunnel vision	Emphasis on phenomena quantified in the measurement scheme
Sub-optimisation	Narrow local objectives pursued, rather than organisational objectives
Myopia	Short term targets pursued
Measure-fixation	Pursuit of strategies enhancing the measure rather than the associated objective
Misrepresentation	Deliberate manipulation of data
Misinterpretation	Misleading inferences from the raw performance data
Gaming	Deliberate manipulation of behaviour to secure strategic advantage
Ossification	Organisational paralysis due to rigid performance evaluation

(Source: Adapted from Freeman, 2002 and Smith, 1995)

Although performance measures are used to undertake comparisons with other organisations and to publish league tables, there are inherent difficulties in comparative data to enable accurate and valid comparisons to be undertaken. There is also concern that league tables are published ranking authorities by performance analysed on very

narrow and possibly inconsistent measures. Benchmarking has also been criticised, as there is no current understanding of the conceptual basis of benchmarking (Ball, 2001).

Performance is acknowledged to be difficult to measure for many activities in the public sector (Jackson, 1988; Jackson, 1993; Smith, 1995). This is linked to the multiple objectives in public sector organisations, as opposed to the overriding performance measure of profit in the private sector (Jackson, 1988; Smith, 1990; Wilson, 2004), and the difficulty of measuring performance of service provision (Ghobadian and Ashworth, 1994; Leeuw, 1996). Despite these difficulties, however, Jackson (1993) warns against assuming it is not possible to measure performance in the public sector.

2.6.3 Summary of Performance Measurement Techniques

The measurement of performance in the public sector has become of increasing importance over recent years and, therefore, CPMTs have been developing to address the inadequacies of the more traditional approaches. From review of the previous literature, a classification of traditional and contemporary PMTs has been devised. This is summarised in Table 2.3. The terms ‘traditional’ and ‘contemporary’ have been adopted in the present study to reflect the changes in both PMTs and MAPs (see Chapter 3) that have developed and have been adopted over the last few decades. These traditional and contemporary terms are used in the existing literature (Bjørnenak and Olson, 1999; Brouthers and Roozen, 1999; Drury, 1996). For the term contemporary, the meaning adopted reflects the concurrent nature where the techniques are existing or in operation at the same time (Allen, 1990). This terminology recognises that benchmarking, BSC and RDF are all PMTs that exist at the time of this research and all may be adopted by local authorities. It is acknowledged that some of the contemporary practices, such as ZBB (see section 3.4.1), have been in existence for decades. However, such practices are still considered to be current in terms of their applicability, which is another meaning for contemporary (Urdang, 1991).

Table 2.3: Traditional and Contemporary Performance Measurement Techniques

Performance Measurement Technique	
Traditional	**Contemporary**
PIs • Financial focus • Measure what is easily measurable	PIs • Linked to strategy • Compared to targets • Financial and non-financial
	Benchmarking
	BSC
	RDF

2.7 Strategy

Strategy is the second key element of performance management and the complex concept of strategy is now considered in more detail. Previous research has operationalised and defined strategy in many different ways, with the multi-dimensional nature of strategy being infrequently utilised (Langfield-Smith, 1997). It is recognised that there are problems in defining strategy, with the definition of strategy in modern organisations remaining an elusive concept (Dent, 1990; Guilding *et al*., 2000; Hambrick, 1980; Wilson, 1995). One of the earliest general definitions of strategy was provided by Chandler (1962:13) as "…the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action, and the allocation of resources necessary for carrying out these goals." Other researchers have focussed on specific aspects in defining strategy, such as competition (Porter, 1980), marketing and the environment (Herbert and Deresky, 1987).

A useful contemporary definition of strategy is "…the direction and scope of an organisation over the long term: which achieves advantage for the organisation through its configuration of resources within a changing environment, to meet the needs of markets and to fulfil stakeholder expectations…" (Johnson and Scholes, 1999: 10).

Strategies exist within an organisation at the three main levels of corporate strategy, business unit strategy and operational strategy (Johnson and Scholes, 1999; Langfield-Smith, 1997). Johnson and Scholes (1999) define these three levels of strategy as:

> **Corporate strategy:** "…is concerned with the overall purpose and scope of the organisation to meet the expectations of owners or major stakeholders and add value to the different parts of the enterprise." (Johnson and Scholes, 1999: 11)

Business unit strategy: "…is about how to compete successfully in a particular market." (Johnson and Scholes, 1999: 12)

Operational strategies: "…are concerned with how the component parts of the organisation in terms of resources, processes, people and their skills effectively deliver the corporate and business-level strategic directions." (Johnson and Scholes, 1999: 13)

Much of the previous research into management control systems (MCS) and strategy has focussed on business level strategy (Langfield-Smith, 1997).

Another important distinction in strategies, that is rarely acknowledged, is between intended and realised strategies (Langfield-Smith, 1997). Intended strategies are planned but may not actually be realised, whereas realised strategies are fulfilled but may or may not develop from intentions.

Leading on from the difficulties in defining strategy, there are also difficulties in operationalising strategy. Hambrick (1980) proposed four approaches to operationalising business strategy. Firstly, textual description views strategy as a situational art, explored using in-depth case studies. Secondly, strategic behaviour is portrayed by placing reliance on one or a few key variables, known as partial measurement. The third approach is multivariate measurement, where strategy is viewed as a quantifiable interaction of a broad set of variables. Finally, typologies are an approach to operationalising strategy where each strategic type is viewed as having its own distinct pattern of characteristics. These approaches were not defined as being superior to each other, but Hambrick (1980) does emphasise the need to adopt the most appropriate approach depending on the research goals and view of strategy. Most of the empirical research examining the relationship between strategy and MCS design has used the various typologies (Otley, 1995). The primary typologies will now be explored in more detail in section 2.7.1.

2.7.1 Typologies

Typologies suggest that each strategic type has its own distinct pattern of characteristics (Hambrick, 1980). The three primary strategic typologies which dominate the literature are considered in the following sections (sections 2.7.1.1, 2.7.1.2 and 2.7.1.3). From these typologies, it can be seen that strategy research, and in particular strategy typologies, has focused on the private sector.

2.7.1.1 Miles and Snow: Organisational Types

Miles and Snow (1978) identified four primary organisational types of prospectors, defenders, analysers and reactors. Prospectors are characterised by continually searching for market opportunities and being creators of change and uncertainty to which their competitors must respond. Defenders have a narrower product range than prospectors and undertake little product or market development. Analysers combine the strongest characteristics of defenders and prospectors. Reactors frequently perceive change and uncertainty occurring in their organisational environment but are unable to respond effectively. Therefore, reactors are an unsuccessful organisational type. These four strategic types form a continuum of adaptive behaviour on which most organisations may be placed (Miles and Snow, 1978).

2.7.1.2 Porter: Intended Strategies

Porter (1980) described three intended strategies of cost leadership, differentiation and focus. An organisation following a cost leadership strategy aims to become the lowest cost producer in its industry. A differentiation strategy results in an organisation focusing on providing unique products or products with attributes that are highly valued by its customers. An organisation with a focus strategy is dedicated to a segment of the market which may have special needs that are poorly served by other competitors in the industry. Competitive advantage is achieved by cost leadership or differentiation (Langfield-Smith, 1997).

2.7.1.3 Gupta and Govindarajan: Strategic Missions

Gupta and Govindarajan (1984b) classified four strategic missions on a continuum comprising build, hold, harvest and divest. An organisation with a build strategic mission aims to improve market share and competitive position, even though this may reduce earnings or cash flow in the short term. A hold strategic mission relates to an organisation aiming to maintain market share while obtaining a reasonable return on investment. An organisation with a harvest strategic mission aims to maximise short term profit and cash flow rather than increase market share. Finally, a divest strategic mission relates to where a business plans to cease operations.

2.7.2 Strategic Variables

Strategy may be operationalised and researched by partial measurement, as mentioned above (section 2.7), where one or a few key variables are viewed to portray strategic behaviour (Hambrick, 1980). Such strategic variables may also be linked to the multivariate measurement approach outlined above, where the interaction of multiple variables is considered as an overall measure of strategy. Langfield-Smith (1997) reinforces this by concluding from a review of literature that strategy can be measured using several variables. Specific aspects of strategy that previous researchers have focused on include competition (Porter, 1980), customisation (Bouwens and Abernethy, 2000), quality (Ittner and Larcker, 1997; Langfield-Smith, 1997), marketing and the environment (Herbert and Deresky, 1987). Due to the multi-dimensional nature of strategy (Langfield-Smith, 1997), there remain many other variables in relation to strategy that could be further researched, particularly in relation to public sector organisations.

Strategy has been identified as the starting point of a PMS, with measures aligned to strategic objectives (HM Treasury *et al*., 2001). This is evident from Figure 2.1. Other research has also indicated that performance measures need to relate to an organisation's aims or strategy (Accounts Commission, 1998; Audit Commission, 2000; Ballantine *et al*., 1998; Flynn and Talbot, 1996; Ghobadian and Ashworth, 1994; Audit Commission and IDeA, 2002; Kloot and Martin, 2000). This link between strategy and performance measurement is also evident from Figure 2.3, which diagrammatically shows how PMTs, such as the BSC, link back to an organisation's strategy (Accounts Commission, 1998). Ittner and Larcker (1998b) further suggest that the use and performance consequences of non-financial measures are affected by organisational strategies.

The interrelationship between MCS and strategy is not clear, though (Kober *et al*., 2007). The traditional view is that MCS is the passive outcome of organisational strategy (Kober *et al*., 2007). However, previous research suggests that the relationship between MCS and strategy may be more complex and two-way (Kloot, 1997; Kober *et al*., 2007; Macintosh, 1994). Furthermore, Henri (2006b) suggests that previous research may not have studied the relationship between MCS and strategy at the right level, proposing the link may be at the capabilities level rather than choice of strategy. This capabilities view of strategy will be further explored in the next section (section 2.7.3).

2.7.3 Resource-Based View of Strategy

The RBV of strategy focuses on an organisation's internal resources as a source for success (Knutsson *et al*., 2008). As Knutsson *et al*. (2008: 298) explain, the "...idea is that imbalances in the possession of resources and capabilities among companies explain the differences in performance over time despite the same market conditions and therefore become a determining factor of firm competitiveness." Broadly, a resource is anything an organisation uses to develop, produce or deliver goods or services (Knutsson *et al*., 2008). Organisations must have the capability to use the resources they have access to (Knutsson *et al*., 2008). Primary capabilities to achieve competitive advantage include market orientation, entrepreneurship, innovation and organisational learning (Henri, 2006b), which are defined below. Previous research suggests that although each of these four capabilities offer strengths, only collectively can they provide sustained advantages (Henri, 2006b).

Firstly, market orientation is the emphasis an organisation places on their customers' expressed needs, as well as placing increased emphasis on customers' latent needs (Henri, 2006b; Slater and Narver, 1998; Slater and Narver, 1999). Slater and Narver (1998: 1003) go on to make an important distinction that "...a marketing orientation is not a *marketing* orientation..." [emphasis as in original]. Although markets differ between the private and public sector, the basic concept of a market orientation in terms of "...understanding and satisfying customers' latent needs...." (Slater and Narver, 1998: 1001) is applicable to local authorities.

Secondly, entrepreneurship is the ability of an organisation to renew, innovate and take constructive operational risks on an on-going basis (Henri, 2006b; Miller, 1983; Naman and Slevin, 1993). Although the public sector is often perceived as being inefficient and unresponsive, entrepreneurship is being promoted in the public sector (Irani and Elliman, 2008). Indeed, entrepreneurship behaviour in the management of public services is a dimension of NPM (Lapsley, 2008). Furthermore, Osborne and Gaebler (1993) see entrepreneurialism in the management of public services, as a means of reinventing government. Entrepreneurship is seen as being about new ways to use resources in order to enhance efficiency and effectiveness, whether in the private or public sectors (Lapsley, 2008; Osborne and Gaebler, 1993). Entrepreneurship activities may include providing new services or being the first organisation to introduce new services or techniques (Henri, 2006b) and such entrepreneurial activities may be applied to local authorities. For example, a local authority may decide to extend their cardboard recycling kerb-side collections to include glass, plastic and even food waste. This provision of new recycling services also demonstrates new ways of using resources to enhance

efficiencies, with local authorities obtaining financial savings from the reduction of waste being sent to landfill sites.

Innovation is a complex concept (Walker and Jeanes, 2002; Walker *et al*., 2002) though can be considered as relating to an organisation's openness to new ideas, products and processes (Hurley and Hult, 1998 cited by Henri, 2006b). The public sector is viewed as having a risk-averse culture (Irani and Elliman, 2008), though innovation has been increasingly promoted throughout the public sector (Walker and Jeanes, 2002; Walker *et al.*, 2002). Indeed, Mulcahy and Mulcahy (1995: 581) propose that "New approaches for innovation (...) will have a profound and positive impact on the future operation of local government." Reflecting this, a national scheme to promote and recognise the benefits of innovation in local government has recently been developed in the UK. The Local Innovation Awards Scheme was jointly established by the Department of Communities and Local Government (DCLG) and the Local Government Association in 2009 (DCLG, 2010b). The scheme aims to "...identify, acknowledge and spread innovation and excellence..." (DCLG and IDeA, 2010a). Innovation awards are offered under specific themes framed around national priorities, such as community safety.

Finally, organisational learning relates to the processes of improved knowledge and understanding, resulting in improved future performance (Fiol and Lyles, 1985). Fiol and Lyles (1985) go onto distinguish between individual and organisational learning where, although individual learning is important to organisations, organisational learning is not simply the aggregate of the learning of its individuals.

Henri (2006b) explored the relationships between the use of PMSs, capabilities and performance in Canadian manufacturing firms. Interactive use of PMS was found to be significantly and positively related to the four capabilities of market orientation, entrepreneurship, innovation and organisational learning. In contrast, diagnostic use of PMS contributed negatively to the deployment of the market orientation, innovation, entrepreneurship and organisational learning capabilities (Henri, 2006b). Henri (2006b) hypothesised that there would be a indirect effect of PMS use on organisational performance through the capabilities of market orientation, innovation, entrepreneurship and organisational leadership. However, the empirical findings did not support this hypothesis.

Despite the interest in the existing literature on the relationship between MCS and strategy, there has been little consideration of the RBV of strategy (Henri, 2006b). Furthermore, the existing research on RBV relates to the private sector, though it also has applicability to public organisations (Knutsson *et al*., 2008).

2.7.4 Strategy in the Public Sector

Strategy may be considered simply as a means to improve public services (Boyne, 2003, cited in Boyne and Walker, 2004). Within the public sector, strategy is linked with external factors including central government and imposed requirements (Flynn and Talbot, 1996; Jackson, 1993). Any strategy at individual public sector bodies, therefore, needs to be considered within the national political context. However, public sector bodies and local authorities specifically, also undertake their own local strategic planning. Formal strategies in public sector organisations, with clear missions, objectives and targets, are essential in providing a focus (Hyndman and Eden, 2000). Indeed, Bolton and Leach (2002: 16) state that corporate strategy is "…a necessity not an optional extra." Although individual local authorities comply with centrally imposed requirements and legislation, they also have the freedom to plan and adopt differing local strategies. Legislation and initiatives in local government are considered in more detail in section 2.8.

Although the strategic typologies outlined in section 2.7.1 have tended to focus on the private sector, they may also have application to public sector organisations. For example, Porter's two generic competitive strategies of cost leadership and differentiation may be applied to local authorities (Brignall, 1993). Brignall (1993) explains that although council services may not be charged for, they still have a cost and managers must choose their strategy regarding the quality, flexibility and innovativeness of the service they deliver in relation to the resource and cost implications. In contrast, Boyne and Walker (2004) suggest that existing classifications of organisational strategy, such as Porter's (1980), have limited relevance to the public sector.

Boyne and Walker (2004) attempted to develop a framework to classify strategies of public organisations. The framework is based around strategy context which is defined as "...the patterns of service provision that are selected and implemented by organisations..." (Boyne and Walker, 2004: 231). Strategy content comprises strategic stance (the way an organisation seeks to maintain or improve its performance) and strategic actions (specific steps an organisation takes to operationalise its stance) (Boyne and Walker, 2004). The strategic stance concept corresponds to Miles and Snow's (1978) typology of prospector, defender, analyser and reactor (Boyne and Walker, 2004). The strategic actions concept corresponds to Porter's (1980) typology of cost leadership, differentiation and focus (Boyne and Walker, 2004). Boyne and Walker (2004) developed 14 feasible combinations of strategic stance and strategic action, though further empirical research is needed to explore the application of this framework to public sector organisations. The literature suggests that strategy content is a central influence on public service

performance (Andrews *et al*., 2006). However, there is little empirical evidence to support this proposition (Andrews *et al*., 2006).

Broad *et al*. (2007) explored the relationship between strategic management, accounting and performance management systems in local government and higher education in the UK. The two unitary authority case studies used performance measures more extensively than the universities, reporting over 300 performance measures annually. Some local authority managers were found to be concerned about the excessive number of performance measures in local government (Broad *et al*., 2007).

Strategy in public sector organisations, as in the private sector, is made up of different variables. Some of the general strategy variables from the private sector such as quality, user focus (as tailored from customisation) and competition against other public sector organisations, are relevant to English local authorities. As mentioned above, the requirements for local authorities to have strategies focusing on such issues are linked to legislation and government initiatives. How individual local authorities choose to address such issues and the requirements of legislation and initiatives, are dependent on their specific local strategies, which will vary between authorities. Some of these key legislation and government initiatives currently impacting on English local authorities will now be explored.

2.8 Legislation and Initiatives for Local Authorities

Change and improvements within local government have been a focus of central Government for many years, resulting in various legislations and initiatives being developed. The first main initiative in relation to performance measurement in local government was the Department of the Environment's guidance *Local Authority Annual Reports* in 1981 (DETR, 1981, cited in Smith, 1993). This initiative introduced a code of practice for local government publishing annual reports, which included a requirement to publish performance data compared to other similar authorities (Smith, 1990; Smith, 1995). The Audit Commission published the first set of PIs for local government in 1992 (Smith, 1993). The focus on performance measures in local government has continued to develop over the last two decades. Indeed, Flynn (1986: 389) states that "Measuring performance has become a central preoccupation in public sector organisations."

Since coming to power in 1997, the Labour Government has emphasised the need to improve the quality of public services (Wilson, 2004). The Local Government Modernisation Agenda (LGMA) has comprised more than twenty policies introduced, such

as through the *Modern Local Government: in touch with the people* (DTLR, 1998) and *Strong Local Leadership - Quality Public Services* (DTLR, 2001) White Papers. Some of the key policies and initiatives are considered in the following sections.

2.8.1 Value for Money

Performance measurement gained prominence and became more widespread in local government under VFM (Flynn, 1986; Palmer, 1993).

> Value for money is concerned with identifying wasteful and ineffective use of resources so that these resources can be made available for more productive use. (Butt, 1987: 11).

VFM has been defined as the relationship between the resources consumed and the outcomes achieved (HM Treasury *et al*., 2001). This relationship is summarised in Figure 2.4. The Local Government Finance Act 1982 imposed a duty on the external auditors of local authorities, to satisfy themselves that the authority had made proper arrangements for securing economy, efficiency and effectiveness in its use of resources. The *Code of Audit Practice for Local Government Bodies*[3] (Audit Commission, 2005b) now requires external auditors to give a conclusion on these arrangements.

Due to difficulties in measuring effectiveness and outcomes in government organisations, traditional PMSs have tended to focus on economy and efficiency (Kloot and Martin, 2000).

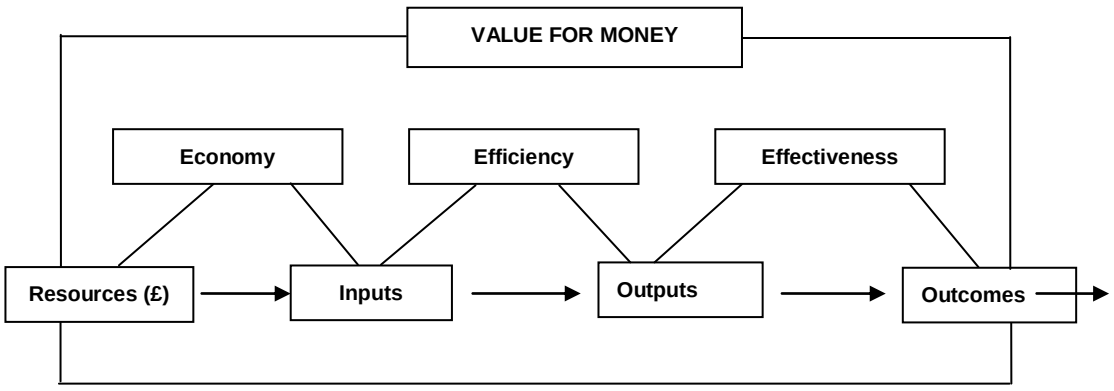


Figure 2.4: Value for Money Chain

(Source: Adapted from HM Treasury *et al*., 2001: 10)

[3] The *Code of Audit Practice* is approved by a resolution of both Houses of Parliament and sets out how external auditors will execute their functions under the *Audit Commission Act 1998* and relevant sections of the *Local Government Act 1999* (Audit Commission, 2005b).

2.8.2 Best Value

The BV regime aims to bring continuous improvement in local authority performance, assessed through service costs and standards (Boyne, 2000). The regime was introduced as an initiative to improve local government as set out by the Local Government Act 1999 (DETR, 1999), replacing the former Conservative Government's Compulsory Competitive Tendering scheme. The BV regime has been identified as the main approach for achieving the NPM goals at local government service level (McAdam and Walker, 2003). Benchmarking is an important modernisation tool contributing to the BV initiative (Bowerman *et al*., 2001).

The statutory requirements of the BV initiative took effect from 1st April 2000. The Local Government Act 1999 (DETR, 1999: section 3(1)) states that each local authority has a duty to "…make arrangements to secure continuous improvement in the way in which its functions are exercised, having regard to a combination of economy, efficiency and effectiveness." Authorities are required to produce annual BV Performance Plans and undertake service reviews, setting targets to ensure improvement ensues. These reviews involve the '4Cs' of BV, to challenge, compare, compete and consult. Benchmarking is important for the first three of these BV principles (Bowerman *et al*., 2001). The original Local Government Act 1999 (DETR, 1999) required authorities to review all services within five years. However, this has since been revoked (DTLR, 2002).

Statutory best value performance indicators (BVPIs), which authorities are required to publish, have been in place since 2000/2001. 'Top quartile' targets were identified for key BVPIs, with authorities required to set targets to match the performance of the top 25% of authorities over a five year period. The BVPIs in place from 2005/2006 have undergone an extensive review to update the previous BVPIs. The overall BV process is subject to external audit and inspection.

BV remains an important component of the Government's modernisation agenda, as reflected in Government circulars (ODPM, 2003). However, it should now be considered in conjunction with CPA (Rashman and Radnor, 2005; Wilson, 2004), which is now reviewed (section 2.8.3).

2.8.3 Comprehensive Performance Assessment

The CPA regime was introduced following the publication of the Government's White Paper *Strong Local Leadership – Quality Public Services* in 2001 (DTLR, 2001). This

White Paper outlined that the comprehensive framework would build on BV and LPSAs to bring continuous improvement in the quality of local government services (DTLR, 2001). CPA involves assessing an authority's performance through self assessment, accredited peer challenge, corporate assessment, auditor assessments and PIs. These various assessments result in an overall judgement of excellent, good, fair, weak or poor. Good and excellent authorities receive increased freedoms and reduced external inspections.

CPA was introduced to upper tier councils in England in 2002 and then rolled out to all English councils. A revised CPA methodology was released in 2005 covering CPA for 2005 to 2008. This new framework was termed '*CPA – the Harder Test'* (Audit Commission, 2005a) and included some changes to the previous framework, such as increased assessment of user focus, new explicit judgement of VFM and direction of travel statements indicating progress being made in achieving improvement.

There are connections between the BSC and CPA (Woods and Grubnic, 2008). Indeed, Woods and Grubnic (2008: 350) suggest that "In theoretical terms (...) CPA can be described as a form of BSC..." though in practice this does not mean that a local authority's BSC would be based on the CPA framework (Woods and Grubnic, 2008). CPA also links in with BV, with the outcome regarding improvement of services from CPA being fed into the BV Performance Plans (Broadbent, 2003). Though CPA was anticipated to remain the dominant performance assessment framework for many years (Wilson, 2004), it has been superseded by the Comprehensive Area Assessment (CAA) in 2009 (Audit Commission, 2009).

2.8.4 Beacon Council Scheme

The *Modern Local Government: in touch with the people* White Paper (DTLR, 1998) referred to the Government's proposals to establish the Beacon Council Scheme, which was eventually introduced in 1999. The *Strong Local Leadership – Quality Public Services* White Paper (DTLR, 2001) reaffirmed commitment to the Beacon Scheme through integration with BV and CPA.

Local authorities apply for Beacon status which is awarded to councils judged to be models of excellence within designated service themes. The scheme aims to reward high performing councils and to achieve change through sharing best practice (Rashman and Hartley, 2002; Rashman and Radnor, 2005). Rashman and Hartley (2002) go onto acknowledge that the Beacon Council Scheme is based on the assumptions that continuous improvements can be promoted by encouraging local authorities to learn from

the best practice of Beacon Councils, that the learning will lead to innovation and that this innovation will result in service delivery improvements. Following being awarded Beacon status, councils are involved with I&DeA in disseminating good practice through a range of events, such as roadshows.

2.8.5 Local Public Service Agreements

LPSAs are basically voluntary agreements between central and local government for stretching performance targets to deliver improvements reflecting national and local priorities. LPSAs aim for local authorities to deliver targets above what would be expected through BV alone, with additional financial rewards and freedom available to successful authorities. As the *Strong Local Leadership – Quality Public Services* White Paper *(*DTLR, 2001: section 1.5) states, LPSAs "…encourage councils to stretch their performance still further, in return for additional finance and the freedoms and flexibilities needed to do so." Central government and the Local Government Association see LPSAs as a key means of improving local public services (Martin and Bovaird, 2005).

The initial LPSAs were piloted in 2000, with the 'second generation' of LPSAs being announced in 2003 (ODPM, 2003), incorporating some changes. This second generation of LPSAs involve an agreement between local authorities, their partners and central government (ODPM, 2003), thereby also involving other local agencies. The revised LPSAs also include a focus on priorities for local improvement rather than on national targets.

LPSAs link in with both BV and CPA initiatives. Young (2005) explains that LPSAs can be used to achieve part of the duty of BV in working towards continuous improvement, through using some BVPIs with key targets, stretching their aspiration and being rewarded through LPSAs for their achievement. Similarly, although good and fair authorities do not receive the same flexibilities as excellent authorities under CPA, they may be able to attain them through LPSAs (Young, 2005).

2.8.6 Other initiatives

There are many other initiatives that have been introduced under the LGMA, including Local Strategic Partnerships and Electronic Government. It is beyond the scope of this thesis to explore all these initiatives.

It is evident from the discussions above, though, that there have been considerable initiatives and efforts within local government to improve performance. However, as Leeuw (1996: 93) states, “Striving for performance improvement of governments is not equal to realizing improvement.” This is an important recognition and supports the significance of performance measurement within public sector organisations. Indeed, Humphrey and Scapens (1992) suggest that the academic literature has questioned the potential of initiatives, such as those concerning PIs and VFM. More research is needed to determine whether the new PMSs will actually improve governmental performance (Ittner and Larcker, 1998b). Some of the existing research will now be considered in section 2.9.

2.9 Previous Research

There has been a limited amount of research into performance measurement and strategy within local authorities. The principal research studies are considered below.

2.9.1 Performance Measurement

There has been limited research into performance measurement in UK local authorities (Palmer, 1993). However, a few of the studies that have been undertaken are reviewed in this section. Performance measurement in local government was explored by Ghobadian and Ashworth (1994). They found that there is no typical PMS in local authorities, ranging from no formal systems to highly developed systems.

Palmer (1993) undertook an evaluation of performance measurement in UK local authorities, to assess the usage of PIs in service departments. Findings indicate that the authorities within the study undertook comparisons against time (63%), selected other authorities (56%) and a pre-set standard (65%). The study also found that departments frequently produced indicators for which no target had been set. This is an important finding, as assessing whether performance is satisfactory is only meaningful if comparing actual against a predetermined target (Jackson, 1988; Jackson, 1993). Palmer (1993) also found that service departments placed most emphasis on cost indicators, with only just over a third (38%) of authorities attempting to measure customer satisfaction. Approximately half (56%) of the surveyed authorities, measured performance at regular monthly intervals.

The use of PIs in a small sample of local authorities was explored by Tichelar (1998). This research found that local authorities were increasingly developing 'home-grown' PIs which measure outputs and outcomes, and consider quality and effectiveness, rather than focusing on inputs and economy (Tichelar, 1998). Thompson (1995) studied the use of PIs in measuring and reporting performance against objectives in public art galleries operated by councils in New Zealand. He found that the links between PIs and stated objectives were unclear or absent.

It has been acknowledged that there has been very little published contingency work on novel practices, such as BSC or non-financial PIs (Chenhall, 2003). This is especially so for the public sector and the English local government, particularly. In relation to PIs in the public sector, Smith (1995: 16) highlights that there "…is precious little research verifying the link between indicators and eventual outcome." Contingency variables affecting the use of performance measures, as well as the resulting performance consequences, is an area indicated for future research (Ittner and Larcker, 1998b). Differences between mandated and non-mandated performance measurement implementation, use and outcomes are another area deserving more research (Johnsen, 2005).

The use of various PMTs used in the Scottish public sector was explored by Jackson and Lapsley (2003). Their findings in relation to local authorities are summarised in Table 2.4. This shows that all responding local authorities use PIs, with a quarter adopting the BSC.

Table 2.4: Performance Measurement Techniques Used in Scottish Local Authorities

Performance Measurement Technique	Local Authorities using the Performance Measurement Technique	
	Number	Percentage
Key performance indicators	39	100
Balanced Scorecard	10	26

(Source: Adapted from Jackson and Lapsley, 2003)

The application of the BSC at Hertfordshire County Council was explored by Woods and Grubnic (2008), with the BSC format at Hertfordshire County Council found to be adopted at different levels throughout the council. An exploratory study into the use of the BSC as an approach to implementing BV in UK local government was undertaken by McAdam and Walker (2003). They found that the BSC can be key to BV implementation. More

broadly, though, they concluded that the BSC process must be informed by accurate and adequate organisational and environmental information (McAdam and Walker, 2003).

Bowerman and Ball (2000) recognise that, despite the history of benchmarking in local authorities, there is a paucity of literature on local authority benchmarking or in the public sector more generally. Ball (2001) explains that benchmarking is more about marginal efficiency gains rather than any real innovation. Indeed, Bowerman and Ball (2000) suggest that despite the expectation that benchmarking in local authorities will lead to enhanced organisational efficiency and effectiveness, the emphasis tends to use benchmarking to defend current performance rather than for improvement. Bowerman and Ball (2000) researched four local government authorities[4] as case studies to explore benchmarking. They found that most local authority officers interviewed perceived benchmarking as being driven by BV and to demonstrate the achievement of a certain level of performance. The case study authorities found benchmarking was beneficial, but that this was primarily intangible such as providing a 'feel good' factor. Bowerman and Ball (2000) concluded that more emphasis was required on benchmarking improving performance, rather than justifying existing performance.

The Strategy Unit (2002) undertook an assessment of local government in order to inform the strategic direction for local government over the next decade. This concluded that size of the authority is not significantly related to service outcomes, with a negative correlation of -0.23 indicating that performance decreases as size of authority[5] increases. The Strategy Unit (2002) also concludes that the new performance management regime in local government has resulted in improved performance since 1998, with managers also believing the system has raised standards. The three key elements of this performance management regime are BV, CPA and LPSA.

2.9.2 Strategy

The performance management literature has increasingly focused on the link between strategy and performance, but this has not been adequately recognised in performance management research within local government (Kloot and Martin, 2000). Limited previous research into strategy in local government has been undertaken. As Llewellyn and Tappin (2003) explain, until recently strategy has not been evident in the public sector and, consequently, there has been little academic research into strategy in this sector. Indeed,

[4] The four authorities comprised a county council, a metropolitan borough council, a metropolitan city council and a police force.
[5] Size of authority measured as number of registered electors (Strategy Unit, 2002).

strategy in government organisations is under-researched and a greater understanding is urgently needed (Boyne and Walker, 2004; Stevens and McGowan, 1983).

The first empirical test of the proposition that strategy content determines organisational performance in the public sector was undertaken by Andrews *et al*. (2006). Andrews *et al*. (2006) found that organisational performance is positively associated with a prospector stance and negatively associated with a reactor stance. Local authorities that seek new markets for their services are also more likely to perform well (Andrews *et al*., 2006).

Flynn and Talbot (1996) surveyed 392 local government organisations[6] and concluded that 72% had formal strategic planning, although this did vary by department. The main elements of strategic planning in local government have been identified as being service level agreements, corporate and departmental plans, and mission statements (Flynn and Talbot, 1996). The range of techniques in the strategy-making process was also examined by Flynn and Talbot (1996) and are summarised in Table 2.5. A wide range of techniques can be seen to be adopted by local government organisations, with cost/benefit and SWOT[7] analyses the most commonly used.

Table 2.5: Strategy Making Techniques in Local Government

Strategy Making Technique	Percentage of Local Government Organisations Using the Technique[8]
Workshops	44
Executive Information Systems	40
Market Research	47
Seven S framework[9]	29
Cost Analysis	41
Risk Analysis	44
Cost/ Benefit	52
SWOT	54
Competitors (5 forces)	23

(Source: Adapted from Flynn and Talbot, 1996)

Kloot and Martin (2000) explored the strategic link to performance management in Australian local government. They used the key elements from the BSC and RDF models

[6] Fire and police authorities are included under local government in Flynn and Talbot's (1996) study.
[7] SWOT analysis refers to analysis of strengths, weaknesses, opportunities and threats.
[8] Percentages given based on the 392 local government organisations in the study.
[9] The Seven S Framework provides a structure for proposed strategy developments by considering the interrelationships of the variables of strategy, structure, systems, style, staff, skills and subordinate goals (Lynch, 2000).

outlined in sections 2.6.1.3 and 2.6.1.4, adapted for the public sector, as the basis for their research. The main findings in relation to the four elements of the performance management process used in the research have been summarised in Table 2.6. This shows that there are some areas, such as financial performance measurement, where performance measures are linked to strategic priorities. However, overall performance management links to corporate strategy need to be further strengthened.

Stevens and McGowan (1983) undertook an exploratory study examining dimensions of managerial strategies in local government in the USA. They found that there are multiple external and internal strategic foci, including revenue, seeking state aid and cutting safety and human services. In conclusion, there is a combination of strategies rather than single approaches that tend to be adopted (Stevens and McGowan, 1983).

Kober *et al*. (2007) explored the interrelationship between MCSs and strategy in an Australian health public sector entity. This longitudinal study over a five year period supported the existing literature that the MCS shapes, and is shaped by, strategy (Kober *et al*., 2007).

Table 2.6: Performance Management in Councils and Links to Strategy

Performance Management Process	Evidence of performance management in councils	Link to Strategy?
Financial performance management	View that local government should provide VFM while maintaining service levels. Community and managerial accountability. Long term financial plans included in strategic plans.	Range of measures used and linked to strategic priorities.
Community focus management	Community focussed corporate plans with strategic priority to meet community needs. Community consultation and customer satisfaction surveys undertaken and fed into development of customer service charters.	Range of measures used and linked to strategic priorities.
Internal business process	Benchmarking, development of service charters, focus on quality of service and business improvement programmes in place.	Good examples of managing performance but not well developed and generally not linked to corporate strategy.
Managing innovation and learning	Little recognition of the need for innovation and learning in formal documents or plans. Strong emphasis on learning by individuals and staff development programmes in place.	Good examples of managing performance but not well developed and generally not linked to corporate strategy.

(Source: Adapted from Kloot and Martin, 2000)

2.10 Summary and Conclusion

The administrative management arrangements within the UK public sector have changed considerably over the last couple of decades, under what is known as NPM. NPM has included the transference of practices from the private to public sector. Such developments have led to the increased significance of performance management in local authorities, with particular focus on performance measurement and strategy. Many initiatives have emerged encouraging and requiring local authorities to embrace performance management. Although much progress has been made by local authorities, more research is needed to further understand the relationships between performance measurement, strategy and local authority performance.

Chapter 3: Management Accounting in Local Authorities

3.1 Introduction

Management accounting may be broadly defined as a collection of practices used as part of the Management Accounting System (MAS) to achieve some goal (Chenhall, 2003). The MAS is a key element of an organisation's control system (Chia, 1995; Gul and Chia, 1994; Waterhouse and Tiessen, 1978).

> Management accounting is concerned with the provision of information to people within the organization to help them make better decisions.
> (Drury, 1996:4)

Management accounting in the public sector has become an area where practices and research have continued to develop over recent years. This chapter discusses the various management accounting techniques adopted within the public sector and local authorities, in particular. Previous research in this area is also explored to ascertain the current knowledge of management accounting in local authorities, enabling areas where further research is required to be identified and providing a basis to develop a framework for empirical data collection and analysis for the present study.

In section 3.2 this chapter initially briefly considers management accounting conceptually. The chapter then goes on, in sections 3.3 and 3.4, to explore the principal traditional and CMAPs as relevant to local authorities. Previous research into management accounting in local government is reviewed in section 3.5. The chapter concludes with a summary and conclusion in section 3.6.

3.2 Background

There are various accounting practices adopted by organisations, with many management accounting innovations developing over the past couple of decades (Bjørnenak and Olson, 1999). Differences in the accounting practices used are evident both between the private and public sectors, as well as within the public sector (Lapsley, 1988). Public sector accounting has been significantly criticised by Osborne and Gaebler (1993, cited by Lapsley, 1999) who suggest most of the failures of traditional public sector bureaucracies are due to their accounting information systems.

As evident from the previous discussions in Chapter 2, reform of the public sector has been a major focus for policy makers, with accounting techniques and policies having a central role in these initiatives for change (Lapsley and Wright, 2004). Accounting practices have historically been imported into public sector organisations from the private sector (Bromwich and Lapsley, 1997; Hyndman and Eden, 2000; Jackson and Lapsley, 2003; Lapsley, 2000; Lapsley and Wright, 2004; Likierman, 1994; Pallot, 1999; Pendlebury, 1989). However, Lapsley (2000) recognises there may be some time delays in this adoption process across sectors. Such a transfer of accounting practices from the private sector links back to the NPM characteristic of reducing differences between the two sectors (section 2.3). This philosophy, though, negates the fundamental differences between the two sectors.

Management accounting is concerned with providing information to assist managers (Drury, 1996; McChlery, 1999). Within the public sector, management accounting focuses on budget preparation and budgetary control, with some use of cost accounting such as for decision-making and allocating overheads (McChlery, 1999; Pendlebury, 1985). The concept of management accounting for this study will, therefore, be split into the sub-sections of budget preparation, budgetary control and cost accounting. Budgets are used almost universally, irrespective of an organisation's sector (McChlery, 1999), providing a financial plan for expenditure, with cost accounting systems providing product and service cost information for the organisation (Brown *et al*., 1999).

Accounting is not static (Lapsley, 1999), so accounting practices adopted would be expected to change over time and across organisations. This may, for example, be a movement from traditional to CMAPs. The key characteristics of these two approaches are summarised in Table 3.1 and are further considered in sections 3.3 and 3.4.

Table 3.1: Characteristics of Traditional and Contemporary Management Accounting

Characteristics	
Traditional Management Accounting	**Contemporary Management Accounting**
Historical orientation	Future orientation
Focus on: • single entities • single decisions • single periods	Focuses on: • organisation's position relative to its competitors • sequences of decisions • multiple time periods
Data orientation	Information orientation
Financial data	Financial and non-financial data
Introspective, utilising internal data	Outward looking, utilising external data
System: • one or few • very long life time • small user involvement	System: • many • temporary life time • high user involvement

(Source: Adapted from Wilson, 1995; Wilson and Chua, 1993; and Bjørnenak and Olson, 1999)

3.3 Traditional Management Accounting

Traditional management accounting (TMA), as the term adopted in the present study, is also referred to in the existing literature as conventional management accounting. The management accounting emphasis in local government has traditionally been on budget preparation and budgetary control (Bolton and Leach, 2002; Jones and Pendlebury, 1989; Pendlebury, 1994). Although the exact nature of management accounting in local government remains unclear (Jones and Pendlebury, 1989), the MAPs traditionally adopted by local authorities are considered in the following sections under the key themes of budget preparation, budgetary control and costing techniques (section 3.3.1, 3.3.2 and 3.3.3, respectively).

3.3.1 Budget Preparation

The budget preparation technique most commonly adopted by local authorities has been using the prior year's budget as a base which is uplifted for inflation and other known changes (McChlery, 2001; Pendlebury, 1994; Skousen, 1990). This approach to budget setting is termed incremental budgeting.

3.3.2 Budgetary Control

Budgetary control in the public sector has traditionally been on a receipts and payments basis (McChlery, 1999). However, budgetary control systems in local government have been acknowledged as being inadequate (Pendlebury, 1994), with CIPFA (1991, cited in Pendlebury, 1994) reporting that the MAS and budgetary control systems in the public sector have often failed to provide the information that managers require or at the time the information is required. Key characteristics of budgetary control information include timeliness, accuracy, relevance, and comparisons of budget against actual costs and receipts (Coombs and Jenkins, 1994; McChlery, 1999).

3.3.3 Costing Techniques

The costs in public sector organisations are predominantly overheads (McChlery, 1999). McChlery (1999) goes onto explain that traditionally overheads have been allocated and apportioned across functions and departments on an arbitrary basis, utilising absorption costing. Marginal costing has tended to be adopted for decision-making purposes (McChlery, 1999).

Absorption costing: allocates and apportions the overhead costs to the centres carrying out the work, with each centre's overheads charged to services using calculated absorption rates (McChlery, 1999).

Marginal costing: costs are identified as being fixed or variable[10], with only the variable costs assigned to products.

3.3.4 Criticisms of Traditional Management Accounting

Although TMA is extensively used, associated problems are acknowledged. Indeed, TMA based on financial measurement was identified by Johnson and Kaplan (1991) as having lost its relevance. More specifically, Brouthers and Roozen (1999) identified the following short-comings of traditional financial and MASs. Firstly, they tend to rely largely on financial information and, secondly, they deal mainly with historical information. The limited future-orientation of the information provided, is usually based on simple extrapolation of the past. Finally, TMA provides internal information whilst ignoring

[10] Fixed costs remain constant over a range of activity for a specified period of time, whereas variable costs change in direct proportion to the volume of activity (Drury, 1996).

external competitor or environmental information. These criticisms are consistent with the characteristics of TMA and the differences to contemporary management accounting (CMA) as summarised in Table 3.1.

In relation to the public sector, McChlery (2001) suggests that one of the main criticisms of TMA is that management accounting techniques have not changed with the times. Specifically in relation to traditional cost accounting systems, Brown *et al*. (1999) suggest that they have not evolved to recognise the changes that have occurred in organisations. A further criticism of TMA put forward by McChlery (2001), is that the techniques have focused on the manufacturing sector, with inadequate attention directed towards the public sector.

Following on from the problems and limitations associated with TMA practices, CMA practices have been developing and are considered in section 3.4.

3.4 Contemporary Management Accounting

As explained in section 3.3.4, the TMA techniques have faced criticism over recent years. Consequently, CMA techniques emerged to address the criticisms of TMA (McChlery, 2001). However, Bjørnenak and Olson (1999) suggest that although there are differences between TMA and CMA techniques, it does not necessarily mean CMA approaches are superior. The following sections (sections 3.4.1, 3.4.2 and 3.4.3) consider some of the more CMAPs relevant to local authorities.

3.4.1 Budget Preparation

Two of the main contemporary alternatives to the traditional incremental method of budget preparation are zero-based budgeting (ZBB) and activity-based budgeting (ABB).

Zero-based budgeting: all activities are justified and prioritised before resources are allocated to each activity, with no preconceived base.

Activity-based budgeting: based on an activity based approach to cost allocation, budgets are set for activities and cost driver[11] incidences rather than functional departments.

[11] Cost drivers are the activities that cause the costs.

ZBB has been criticised by both practitioners and academics primarily due to the unrealistically time-consuming task of starting from a zero base each year (Anderson, 1998). However, the need and usefulness to consider the budget base is still widely recognised. Some organisations apply ZBB to departments on a cyclical basis, thereby reducing the burden of applying the method each year while still gaining from reviewing the budget base periodically. ABB is an aspect of activity-based management (ABM) and links in with ABC, which is considered in section 3.4.3. All techniques within the ABM umbrella consider costs on an activity basis.

3.4.2 Budgetary Control

Traditional budgetary control reports produced on a payments and receipts basis have been criticised for excluding committed costs (McChlery, 1999). Commitment accounting has been around for many years and, although most MAS include a commitment accounting module, few local government organisations have introduced it completely (McChlery, 1999). Commitment accounting may be adopted in three main ways (McChlery, 1999). Firstly, budget holders maintain their own separate commitment records to supplement the budgetary control reports. Secondly, commitments may be added to the ledger balances at the end of each period through journal transfers. Finally, the MAS recognises transactions at the point that the organisation is committed to them. Actual to date figures may also be reported for budgetary control purposes on an income and expenditure basis (Pendlebury, 1985), as an alternative between the traditional receipts and payments basis and the more advanced commitment accounting approach.

3.4.3 Costing Techniques

The simplistic and unrealistic traditional costing techniques of absorption and marginal costing have been criticised in recent years (Brown *et al*., 1999; McChlery, 2001). Consequently further techniques have emerged, with the following applicable to local authorities.

Activity-based costing (ABC): aligns the charging of overhead costs with the activities that cause the overheads to provide a fairer apportionment. The costs driven by the activities are accumulated in cost pools, with the activities that cause the costs termed cost drivers.

Life Cycle Costing (LCC): appraises all costs related to a project, from the project's conception to completion, with costs being recognised at the point of commitment (McChlery, 2001).

Target costing: as applied to the public sector, is where a benchmark cost is adopted as a best practice target, with the organisation altering procedures and provision in order to achieve this target cost (McChlery, 2001).

Functional analysis: a cost technique linked with target costing, which focuses on the functions that a product provides and uses this for cost management purposes, to aid cost reduction and product improvement (Drury, 1996; McChlery, 2001).

Strategic cost management: the use of cost information to support the formulation and communication of strategies, execute tactics to implement the strategies, and develop and implement controls to monitor the achievement of the strategic objectives (Govindarajan and Shank, 1992).

Value chain analysis: describes the activities within and around an organisation, and relates them to an analysis of the competitive strength of the organisation or its ability to provide VFM products or services (Johnson and Scholes, 1999).

Although each of the above have developed and are adopted in the private sector, they are also applicable to local authorities. Indeed, ABC for example is a key strategic management accounting initiative proposed by Smith (2000) as being useful in the public sector.

3.4.4 Summary of Management Accounting Practices

There is lack of clarity as to what comprises both traditional and CMAPs in the public sector. The elements that constitute management accounting are an area requiring further research (Lapsley, 2000). However, a classification of traditional MAPs and CMAPs has been devised from a review of the literature in sections 3.3 and 3.4 and is summarised in Table 3.2. The rationale behind the use of the terms 'traditional' and 'contemporary' is further explained in section 2.6.3.

Table 3.2: Traditional and Contemporary Management Accounting Practices

Management Accounting Element	Traditional Practices	Contemporary Practices
Budget preparation	Incremental	ABB ZBB
Budgetary control	Receipts and payments basis	Income and expenditure basis Commitment accounting basis
Costing	Marginal costing Absorption costing	ABC Life cycle costing Target costing Strategic cost management Value chain analysis

3.5 Previous Research

Prior to the early 1990s, very little was known about the current state of MAPs (Drury and Tayles, 1995). Indeed, Anthony (1989: 18) went as far as to state that "Information about management accounting practices is abysmally poor…" and argued the need for surveys into the use of MAPs. During the early 1990s, empirical studies of MAPs increased (Drury and Tayles, 1995), though these surveys tended to be based in the manufacturing industry. Hopper *et al*. (2001) explain that the focus of British management accounting research has been moving over the last two decades towards issues of strategy and performance evaluation. This links in with the focus of Chapter 2 (sections 2.6 and 2.7) on performance measurement and strategy.

The accounting techniques used by local authorities have been found to be triggered primarily by legislation and in response to external demands, such as governmental pressures to cut costs and improve information flows (Lapsley and Wright, 2004). The BV initiative is a recent example, promoting new techniques such as ABC (Lapsley and Wright, 2004). Lapsley (2001) highlights the significance of the BV initiative in emphasising the importance and need for contemporary MAS, embracing non-financial PIs, to aid provision of efficient public services.

Chenhall and Langfield-Smith (1998) examined how combinations of management techniques and MAPs enhance organisational performance. They found that many firms gained high benefits from both TMA and CMA practices, including when adopted

together[12]. Traditional accounting techniques were found to provide higher benefits in comparison to the CMA practices, although only a limited number of TMA practices were examined. It should be noted that this research involved manufacturing organisations, so it is uncertain how applicable the findings are to public sector organisations.

Alternative budgeting approaches may be used by government organisations to improve service provision through improving efficiencies and effectiveness (Anderson, 1998). The recent legislative developments and the continuous and rigorous regime of inspection challenge the traditional budgetary practices adopted in local government (Seal, 2003). Seal (2003) goes on to suggest that changing practices in local authority budgeting linked with the Government's on-going reforms is a valuable area for future research. The key existing research into budget preparation and budgetary control approaches are reviewed in sections 3.5.1 and 3.5.2, respectively.

The importance of researching accounting practice is supported by the literature (Spicer, 1992). However, management accounting in government has been identified as a neglected research area, such as conceptualising what constitutes management accounting in the public sector and whether management accounting innovations are successful in local government (Lapsley, 2000). More research into public sector accounting is needed (Broadbent, 1999). It has been suggested that accounting research in local government may be undertaken at the two levels of considering local government as an entity and focusing on individual functions or departments of local government (Broadbent and Guthrie, 1992). The public sector context of accounting practice has changed in recent years due to the NPM movement, with new structures and management systems (Jackson and Lapsley, 2003). However, Jackson and Lapsley (2003: 359) explain that "…there remains a lack of detailed knowledge of accounting practices themselves..." and more research is consequently required.

3.5.1 Budget Preparation

Previous research has criticised the traditional, incremental budgeting technique for being unsophisticated, where the only justification to fund an activity is because it has been funded in the past (Anderson, 1998). This criticism highlights the primary advantage of ZBB, which justifies every part of the budget each year.

[12] TMA practices were taken to include budgeting systems for planning and control, performance measures such as Return on Investment, and cost-profit-volume techniques for decisions. CMA practices include benchmarking, activity-based techniques (such as activity based costing) and strategic planning. (Chenhall and Langfield-Smith, 1998)

A cross-sectional survey of local authority budgeting practices was undertaken by Pendlebury (1985), in response to little being known about management accounting use in the UK. Pendlebury (1985) found that base budget estimates were reviewed each year by 48% of the responding councils. Similarly, Skousen (1990) found that approximately half (54%) of the responding local authorities indicated that they annually reviewed the base element of their budget. From this finding, Skousen (1990) concludes that there is an increased awareness of the need to review the base budget and, although there was little evidence of ZBB being implemented, suggests that the philosophy of ZBB will be increasingly used in local authorities. Indeed, ZBB continues to be used in many state and federal agencies in the USA, with the approach being legislated in Washington state, for example (Anderson, 1998).

In 1989, Jones and Pendlebury stated that despite discussions, few serious attempts had been made to apply ZBB to local government in the UK. The use of MAPs in the Scottish public sector was investigated by Jackson and Lapsley (2003) and their findings in relation to budgeting techniques adopted by Scottish local authorities are summarised in Table 3.3. Almost a third (28%) of Scottish local authorities were found to be applying ZBB, with 81% of local authorities using ZBB, resource management or activity-based management budgeting techniques. This suggests other budgeting techniques are also utilised by many authorities. These findings on the use of ZBB are also consistent with Skousen's (1990) suggestion that use of ZBB would increase in local authorities.

Table 3.3: Budgeting Practices Used by Local Authorities

Budgeting Technique	Local Authorities Using the Budgeting Technique	
	Number	Percentage
Zero-based budgeting	11	28
Resource management	6	15
Activity-based management[13]	15	38

(Source: Adapted from Jackson and Lapsley, 2003)

Seal (2003) explored budgeting approaches in local government, undertaking a detailed case study of an English metropolitan council as well as considering the influence of the BV regime and the LGMA. From his research, Seal (2003) suggests that legislation, such as BV, has gradually been impacting on budgeting in local authorities, with budgets

[13] Activity-based management (ABM) has been defined by Devine et al (2000) as being the use of ABC concepts to facilitate the identification and reduction of non value-added activities.

responding to policies and priorities rather than incremental budgeting based on the prior year. However, Seal (2003) remains cautious in claiming the end of incremental budgeting, but does support Leach and Charteris's (2000) view that the dominance of incremental budgeting in British local government has been challenged.

Budgeting in local authorities has traditionally been financially focussed. This is supported by empirical research, with both Pendlebury (1985) and Skousen (1990) finding that few local authorities incorporated non-financial output measures in their annual budgets (16% and 24%, respectively). The application of ABB to the UK central government has been considered by McChlery (2001), who suggests that even advocates of activity-based methods in central government suggest that ABB is too complex to be cost-effective in this sector, although may contribute to budget requirements. Such cost-benefit arguments may also apply to English local authorities and even limit the adoption of such techniques.

3.5.2 Budgetary Control

Pendlebury (1985) highlighted that budgetary control information in local authorities was frequently inadequate, such as through lack of timeliness and non-financial output measures being ignored. Skousen (1990) replicated Pendlebury's (1985) study and found that although some improvements were evident, many of the inadequacies remained. Both Pendlebury (1985) and Skousen (1990) also explored the basis of budgetary control information. They both found that the primary basis for reporting budgetary control information was receipts and payments, although this declined from 66% in 1983 (Pendlebury, 1985) to 54% in 1988 (Skousen, 1990). There were corresponding increases in the reporting of budgetary control information on both income and expenditure and commitment accounting bases.

3.5.3 Costing Techniques

Jackson and Lapsley (2003) explored the use of costing techniques by Scottish local authorities, with their findings summarised in Table 3.4. Approximately 8% of responding local authorities utilised target costing and strategic cost management techniques, with just 5% using functional analysis. ABC was found to be the most widely adopted costing technique, with 54% of the authorities surveyed utilising this. McCabe et al. (2002) found 38% of Scottish local authorities had implemented ABC, though just 3% had implemented

ABC corporately. In contrast, Arnaboldi and Lapsley (2003) found 24 out of 32 Scottish local authorities had rejected ABC outright, with a further 4 rejecting ABC after a pilot.

Table 3.4: Costing Techniques Used by Local Authorities

Costing Technique	Local Authorities Using the Costing Technique	
	Number	Percentage
Target costing	3	8
Activity-based costing	21	54
Strategic cost management	3	8
Functional analysis	2	5

(Source: Adapted from Jackson and Lapsley, 2003)

The Institute of Public Finance (IPF, 2008) explored views and experiences within local authorities in the UK regarding the collection and calculation of unit costs, including ABC. Local authorities who have started to use ABC are in the minority, though there is a strong interest in the idea of ABC contributing to improvements (IPF, 2008). Where ABC has been appropriately used by local authorities, the cost of collection was outweighed by the value of the data collected (IPF, 2008). In contrast, the cost allocation techniques used by Dutch municipalities were explored by Groot and Budding (2004), focusing specifically on costing of garbage collection and contracting of marriages services. ABC had never been used by 95% of the responding municipalities. The direct allocation method, where a common overhead charge is applied to a department's direct costs, was used 'nearly always' by 25% of municipalities. This 'direct allocation method' is equivalent to absorption costing outlined in section 3.3.3. Groot and Budding (2004) concluded that most municipalities use common service department cost allocation methods, like the direct allocation method or absorption costing, with more sophisticated cost allocation systems like ABC, rarely adopted. This categorisation may be seen to be comparable to the TMA and CMA distinction set out in sections 3.3 and 3.4.

The use of contemporary costing techniques in health care organisations in the USA was considered by Devine *et al*. (2000). Devine *et al*. (2000) recognised that health care organisations in the USA were facing a changing environment where the focus is increasingly on cost reduction, whilst maintaining quality. This focus is also increasingly relevant to English local authorities, such as due to the requirement for efficiency savings of 2.5% to be made each year, following the Gershon review (Gershon, 2004; House of

Commons, 2009). Devine *et al*. (2000) concluded that the adoption of CMAPs including ABC, LCC and value chain analysis, would improve cost management.

Following its introduction in the private sector, ABC has been increasingly embraced by the public sector as a tool to improve the efficiency of government operations (Brown *et al*., 1999; McChlery, 1999; Mullins and Zorn, 1999). However, it is uncertain how useful ABC is for government and the public sector more generally (Brown *et al*., 1999; Mullins and Zorin, 1999). Indeed, relatively little is known about ABC in government (Brown *et al*., 1999). This area needs further exploration, as "…it is still unclear (…) whether it is even appropriate to use ABC in government…" (Brown *et al*., 1999: 3). This doubt comes from the fact that the roots of ABC are in the manufacturing industry and that governmental organisations do not tend to sell their services (Brown *et al*., 1999). The public sector often adopts management tools several years after the private sector and Brown *et al*. (1999) suggest that US government is becoming increasingly aware of and interested in ABC. The reasons for this suggested by Brown *et al*. (1999), of competitive pressures and growing availability of literature, are also applicable to local authorities in England. Controversially, Mullins and Zorin (1999) suggest that ABC in government does not possess any inherent advantage over traditional information systems.

Brown *et al*. (1999) reviewed the current arrangements in an US city government, trying to bring conversion to ABC. Although due to the timescales and restrictions of the exploratory research this conversion to ABC for the sample council was not achieved, Brown *et al*. (1999) highlighted both advantages and disadvantages associated with the realities of implementing ABC. Brown *et al*. (1999) conclude that there are intriguing possibilities for using ABC in government, with more accurate cost data for services and associated improved management. However, clearly more research is required to substantiate such assertions. Indeed, the linkage between ABC and performance is inconclusive from existing research (Maiga and Jacobs, 2008).

The challenges facing successful ABC execution in the public sector was explored by Mullins and Zorn (1999) through a local government case study at the City of Indianapolis, USA. The focus of the research was on use of ABC in relation to privatisation of local government services. The authors concluded that ABC was not up to the challenge of providing local governments with the tool necessary to evaluate services in determining candidates for privatisation. This is proposed to be due to ABC not being appropriate to the nature of publicly provided services and may result in inaccurate cost allocations (Mullins and Zorin, 1999). These findings are contrary to the more general claims that ABC can greatly enhance the evaluation of delivering more efficient services in the public sector. Mullins and Zorin (1999) suggest that there are obstacles to overcome before

ABC can be effectively implemented in local government. Additional research is needed concerning ABC in local government (Brown *et al*., 1999).

Maiga and Jacobs (2008) investigated the relationship between the extent ABC is used and financial performance through intervening variables. They found that the extent of ABC use is significantly and positively associated with quality, cost and cycle time improvements in US manufacturing plants. Plant operational performance measures were found to act as intervening variables between the extent ABC is used and profitability. However, Maiga and Jacobs (2008) found no significance for the direct relationship between extent of ABC use and manufacturing plant profitability.

There has been very little published contingency work on novel MAPs, such as target costing or LCC (Chenhall, 2003), particularly in the public sector and English local government. Indeed, the existing research on LCC, relates primarily to the private sector. However, even in relation to the private sector, management accounting research has not focused on the extent LCC is adopted in organisations or factors that may influence its use (Dunk, 2004). This is despite the extensive benefits of LCC (Dunk, 2004). Further research into the adoption of LCC is, therefore, needed. Limited research relating to LCC in English local government has been identified. Taylor (1981) considered LCC in relation to asset management in local authorities, specifically undertaking a case study at Kent County Council. Taylor (1981) suggests that LCC's value as a management tool is unquestionable, offering immense possibilities for asset management. However, he does also acknowledge that these possibilities have been largely ignored by both the private and public sectors, with further studies required to explore LCC further.

3.6 Summary and Conclusion

Management arrangements within the UK public sector have changed significantly over the last couple of decades, under NPM. Accounting has been key to the NPM developments. This has led to the development of CMAPs, in favour of the previously criticised TMA practices. Although many of these CMAPs have emerged from the private sector, their applicability and usefulness to local authorities is recognised. However, there is an inadequate understanding of the use of MAPs within local authorities in England. More research is also needed to further understand how the adoption of alternative MAPs may impact on local authority performance.

Chapter 4: Contingency Theory and Management Accounting Systems

4.1 Introduction

Contingency theory is an approach to research based on the premise that there is no one universally appropriate management accounting or control system which is applicable to all organisations in all circumstances (Otley, 1980; Fisher, 1995; Rayburn and Rayburn, 1991; Reid and Smith, 2000). Contingency theorists propose that the effectiveness of an organisation is dependent on matching organisational characteristics, such as the MAS, with the organisation's specific circumstances, such as their environment or size. Particular circumstances or contingencies dictate the best choice of MAS in each particular circumstance (Reid and Smith, 2000).

Contingency theory has been used extensively in the organisational and accounting literature (Chenhall and Langfield-Smith, 1998; Gerdin and Greeve, 2004; Otley, 1980) and has become a widely adopted research approach (Hartmann, 2000). In particular, contingency-based research has a long tradition in the research area of accounting control (Chapman, 1997; Chenhall, 2003; Gerdin and Greeve, 2004).

This chapter firstly considers approaches to contingency theory (section 4.2), with a review of the principal contingency factors in section 4.3. The application of contingency theory within the public sector and local government specifically is then reviewed in section 4.4. A critique of contingency theory is undertaken in section 4.5, along with consideration of the advantages of the approach. A summary draws the chapter to a close in section 4.6.

4.2 Approaches to Contingency Theory – concept of fit

The underlying proposition of contingency theory is that organisational effectiveness results from a fit between variables, such as organisation characteristics and the context or situation. This concept of fit is fundamental in contingency research (Drazin and Van de Ven, 1985; Van de Ven and Drazin, 1985). Different approaches to classifying forms of fit have been proposed and are considered in section 4.2.1. These alternatives to fit are crucial in developing a contingency model and undertaking the subsequent research (Drazin and Van de Ven, 1985).

4.2.1 Alternative Approaches to Contingency Fit

Selection, interaction and systems are three conceptual approaches to contingency fit that have been put forward by Van de Ven and Drazin (1985) and they include the majority of interpretations adopted in previous research. However, these three approaches are not exhaustive and are not mutually exclusive. Although Van de Ven and Drazin (1985) considered alternative approaches to the concept of fit in relation to structural contingency theory, they acknowledge that these approaches apply to contingency theories in general. Each of these approaches significantly alters the essence of contingency theory and the research undertaken.

The three approaches to fit of selection, interaction and systems will now be briefly considered in sections 4.2.1.1, 4.2.1.2 and 4.2.1.3, respectively.

4.2.1.1 Selection Approach

Early studies adopted the basic interpretation of fit that the organisational context causes organisational design, with the organisation adapting in order to survive or be effective (Drazin and Van de Ven, 1985; Van de Ven and Drazin, 1985). Fit is therefore defined in terms of correlations between pairs of organisational variables. It is assumed only good performers survive and consequently the relationship with performance is not considered within this selection approach (Selto *et al*., 1995). In comparison to private firms, survival of only good performing organisations may be considered to have limited applicability to public sector organisations, as their existence is required to provide public services and so, to some extent, is guaranteed.

4.2.1.2 Interaction Approach

The interaction approach to contingency theory sees fit as being the interaction effect of organisational structure and context on performance (Drazin and Van de Ven, 1985). The interest is, therefore, in the impact of the interaction between these factors, rather than the possible cause and effects between organisational context and design.

There are practical difficulties in using an interaction approach to analysing fit which may have contributed to the mixed research findings that have occurred (Drazin and Van de Ven, 1985; Van de Ven and Drazin, 1985). Despite alternative methodological strategies emerging, there are still several concerns regarding the application of the interaction

approach (Van de Ven and Drazin, 1985). Contingency theorists are consequently encouraged to avoid adopting an interaction approach in favour of a systems approach (Chenhall and Langfield-Smith, 1998; Drazin and Van de Ven, 1985; Gerdin, 2005; Van de Ven and Drazin, 1985).

4.2.1.3 Systems Approach

The systems approach is based on and uses the conceptual framework of systems theory (Van de Ven and Drazin, 1985). It is the most recent form of contingency theory and takes a holistic approach to studying interdependencies in organisations (Selto *et al*., 1995). This is in comparison to the selection and interaction approaches that reduce organisational elements into separately examinable components (Drazin and Van de Ven, 1985). The basic premise of the systems approach is that in order to understand performance relationships, the contingencies, organisational factors and performance must be considered holistically (Drazin and Van de Ven, 1985). Therefore, multiple contingencies and design elements are addressed rather than single factors under the selection and interaction approaches.

There are two main approaches to fit in the systems approach; pattern analysis and equifinality (Van de Ven and Drazin, 1985). Pattern analysis basically involves hypothesised patterns on a series of dimensions with deviation from the ideal pattern resulting in reduced performance. Equifinality is a view of fit which considers that there are several equally effective and feasible design options for given contexts. This is in contrast to the assumption in the selection, interaction and pattern approaches to fit, that there is one best way. Although such holistic approaches remain in their infancy, the potential of systems approach in applying contingency theory remains to be fully explored (Gerdin, 2005).

4.3 Contingency Factors

Contingency factors or contingencies are basically particular circumstances facing an organisation. Related contingency factors may be grouped into categories to aid the interpretation of previous contingency research and various classifications of contingency factors have been adopted by researchers (Fisher, 1995; Thomas, 1991; Gordon and Miller, 1976; Hayes, 1977; Waterhouse and Tiessen, 1978). The possible contingency variables are numerous and interrelated and, therefore, the categories should not be

considered exhaustive or independent (Chenhall, 2003; Fisher, 1995). Technology, environment and organisation structure are three prominent contingency variables within previous research (Otley, 1980; Reid and Smith, 2000). However, these basic categories have been further extended over recent years, with the following five categories adapted from those used by Fisher (1995). The key contingency factors will be considered under the broad categories of external environment, strategy, technology and interdependence, organisational variables and other contingency factors in sections 4.3.1, 4.3.2, 4.3.3, 4.3.4 and 4.3.5, respectively.

4.3.1 External Environment

The external environment has been identified as being an important contingency variable, at the foundation of contingency-based research (Chenhall, 2003), impacting on MAS design (Mak, 1989). The theoretical context for this contingency variable and previous research are summarised in sections 4.3.1.1 and 4.3.1.2, respectively.

4.3.1.1 Theoretical Context

The environment of an organisation may be characterised by three key dimensions of dynamism, heterogeneity and hostility (Gordon and Miller, 1976)[14]. The contingency variables related to external environment which have been most researched, relate primarily to the level of uncertainty (Chenhall, 2003; Fisher, 1995). Indeed, uncertainty has been referred to as the critical contingency which organisations must deal with in order to be effective (Galbraith, 1973; Thompson, 1967). Uncertainty has been defined as "…the difference between the amount of information required to perform the task and the amount of information already possessed by the organization…" (Galbraith, 1973: 5).

The importance of uncertainty as a contingency variable in relation to MCS has been reiterated by Chapman (1997) and Hartmann (2000). As environments become more uncertain, decision makers must process more information (Gordon and Narayanan, 1984).

[14] Dynamism relates to stable or predictable compared to a constantly changing environment; heterogeneity refers to similar or very diverse characteristics; and hostility results from threatening actions from competitors or governmental regulations (Gordon and Miller, 1976).

4.3.1.2 Previous Research

There is considerable research suggesting that environmental uncertainty influences organisation structure and MAS design (Thomas, 1991). Several historic research studies have concluded that mechanistic forms of organisations are usually associated with stable environments while organic forms of organisations tend to succeed in dynamic environments (Burns and Stalker, 1961; Chenhall, 2003; Lawrence and Lorsch, 1967; Leifer and Huber, 1977). This is because the flexibility inherent in organic structures enables the increased information-processing capability required by uncertain environments (Rayburn and Rayburn, 1991).

In a study examining the relationship between an organisation's environment, structure and information system, Gordon and Narayanan (1984) found that information systems are related to PEU. These results suggest that an organisation seeks more external, non-financial and *ex ante*[15] information and moves towards a more organic structure, as perceived environmental uncertainty increases. This supports the previous historic research outlined above. In contrast, Chenhall and Morris (1986) examined the effect of PEU on MAS design, in terms of perceived usefulness of MAS information characteristics. The information characteristics comprised broad scope, timeliness, aggregation and integration[16]. The results found PEU to be associated with broad scope and timely information. There was also an indirect effect for aggregated information through decentralisation. Developing Chenhall and Morris' (1986) study further, Gul (1991) examined the interacting effects of MAS and PEU on small business managers' perceptions of their performance in Austrailian manufacturing firms. The same four dimensions of MAS information were adopted as by Chenhall and Morris (1986). However, Gul (1991) consolidated them into an overall measure of sophistication of MAS information. Additionally, due to examining the impact on performance, Gul (1991) included the perceived extent MAS information was provided as well as its perceived usefulness. This is a necessary extension to the Chenhall and Morris' (1986) measure as it is the actual availability of the MAS information that will affect performance. A clear contingency relationship was found, with sophisticated MAS information contributing to performance in high PEU situations, but hampering performance under low PEU situations (Gul, 1991).

[15] *Ex ante* information relates to future events, compared to *ex post* information which relates to past events (Gordon and Narayanan, 1984).

[16] Scope of MAS information refers to the dimensions of focus, quantification and time horizon. Timeliness relates to the frequency and speed of reporting. Aggregation involves the use of analytical or decision models and a combination of data over time periods and/or functional areas. Integration refers to the information that is required to be generated to reflect the impact of the interacting effects of the various functions in the organisation and the formulation of targets. (Chenhall and Morris, 1986; Gul, 1991)

4.3.2 Strategy

Strategy may be viewed as an important predictor of other organisational factors (Hambrick, 1980). Specifically, an organisation's MCS is widely accepted to be designed to support its strategy (Widener, 2004).

4.3.2.1 Theoretical Context

The theoretical context of strategy was covered in Chapter 2 (section 2.7), outlining the alternative ways of defining and operationalising strategy, as well as the three primary strategic typologies of organisational types (Miles and Snow, 1978), intended strategies (Porter, 1980) and strategic missions (Gupta and Govindarajan, 1984b). Primary capabilities to achieve competitive advantage under the RBV of strategy were also considered; namely market orientation, entrepreneurship, innovation and organisational learning. The following section (section 4.3.2.2) on previous contingency-based research incorporating strategy should be considered with reference to section 2.7.

4.3.2.2 Previous research

Simons (1987) investigated the relationship between business strategy and accounting based control systems, adopting Miles and Snow's (1978) typology which was outlined in section 2.7.1.1. The study suggests that firms following different strategies employ accounting control systems in different ways. High performing prospector organisations were found to rely on the importance of using forecast data in control systems, as well as frequent reporting. Defenders tend to use their control systems less intensively (Simons, 1987).

Porter's (1980) strategy framework of low cost and differentiation strategies was adopted by Govindarajan (1988) to examine the implications of matching administrative mechanisms to the competitive strategy being followed by a business unit. It was found that high managerial locus of control and low emphasis on meeting a budget were associated with high performance in SBUs employing a differentiation strategy. Although the bivariate results did not support the interaction between SBU strategy, decentralisation and effectiveness, a systems approach did indicate that when budget evaluative style, decentralisation and the locus of control were aligned appropriately to meet the SBU strategy requirements, higher performance occurred (Govindarajan, 1988). Research undertaken by Govindarajan and Fisher (1990) also adopted Porter's framework, finding

that strategy, resource sharing between SBUs and control systems have an interactive impact on SBU effectiveness.

Hyvönen (2007) investigated the relationship between organisational performance, customer-focused strategies and performance measures, where the customer-focused strategies is equivalent to Porter's (1980) differentiation strategy. The research by Hyvönen (2007) identified a significant positive relationship between customer-focused strategies and contemporary performance measures in forest, metal and electronic firms in Finland. This research by Hyvönen (2007) also demonstrated that a fit between customer-focused strategy and financial performance measures improves customer performance.

Chenhall and Langfield-Smith (1998) undertook a study examining how combinations of management techniques and MAPs enhance the performance of organisations under particular strategic priorities. They adopted Porter's (1980) framework for classifying strategic priorities as product differentiation and low cost production, and highlighted the importance of fit between strategic priorities, management techniques and MAPs. The main findings are summarised as:

- Little difference found in benefits gained from traditional accounting techniques between high and low performing organisations, irrespective of strategy adopted.
- Activity-based techniques associated with higher performance in firms adopting low price strategy.
- Higher performing firms adopting product differentiation strategy gained higher benefits from CMAPs.

Previous research studies have examined the implementation of strategic missions within firms. For example, Gupta and Govindarajan (1984a) found greater marketing experience, greater willingness to take risks and greater tolerance for ambiguity to contribute to effectiveness in the case of build business units but hampered it in harvest business units. Govindarajan and Gupta (1985) also found greater reliance on long-run criteria for bonus determination had a positive influence on effectiveness for build business units but a negative effect on harvest business units.

Bouwens and Abernethy (2000) examined the relationship between strategy, in the form of customisation, interdependence and MAS. Four dimensions of MAS of scope, integration, aggregation and timeliness were adopted, in line with previous research by Chenhall and Morris (1986). These dimensions were treated as being conceptually

distinct, although it is recognised that there is potentially some overlap between the dimensions. Little support was obtained for a direct relationship between customisation and MAS dimensions, after controlling for interdependence. Relationships were found between customisation and both integration and timeliness, but these were either weak or only for some departments. It was consequently concluded that the main effect of customisation on MAS is via interdependence (Bouwens and Abernethy, 2000). Interdependence as a contingency variable is further considered in the next section.

4.3.3 Technology and Interdependence

Technology is seen to have an important effect on the way in which an accounting system functions. As Reid and Smith (2000: 444) state technological uncertainty "…is viewed as a key contingency in the extant literature." Perrow (1967:194-195) even regards technology as the "…defining characteristic of organizations." Interdependence has been identified by organisational theorists as an important component of technology (Fisher, 1994).

4.3.3.1 Theoretical Context

Technology is an important and long standing mediating variable in control system design (Fisher, 1994; Otley, 1980). It has been noted that definitions of technology and environment in contingency theory research have often varied and the distinction between these two contingency factors has not been clear (Schoonhoven, 1981; Waterhouse and Tiessen, 1978). Consequently there may be some overlap with the contingency variable of environment which was considered in section 4.3.1. Technology was initially proposed as a key contingency variable by Woodward in 1965 (cited by Reid and Smith, 2000).

Although technology has different meanings in organisational behaviour, it may be simplified into the three generic types of complexity, task uncertainty and interdependence (Chenhall, 2003). Complexity relates to standardisation of work, with Woodward (1980) identifying three categories of increasing technical complexity of unit and small batch, large batch and mass, and process production. Task uncertainty has been conceptualised as an aspect of technology by Perrow (1967: 195), who defines technology as "…the actions that an individual performs upon an object." Perrow (1967) categorises technology as routine or non-routine, based on the number of exceptions that must be handled and the degree to which search is an analysable or unanalysable

procedure. Task uncertainty may also be defined in terms of Galbraith's (1973) definition of uncertainty specified in section 4.3.1.1. Finally, interdependence refers to the extent to which departments depend on each other for resources to accomplish their tasks (Gerdin, 2005). Although an organisation may be composed of interdependent parts, each part may not be dependent on, or support, every other part in a direct way (Thompson, 1967). Thompson (1967) identifies three types of interdependence as being pooled, sequential and reciprocal. Pooled interdependence is where each part provides a discrete contribution to the whole, but each part is interdependent from other parts of the organisation (Thompson, 1967 and Fisher, 1994). Sequential interdependence is where there are direct interdependencies between units and the direction of the interdependency can be specified. Reciprocal interdependence relates to where the outputs of each unit become the inputs for others. These three types of interdependence are proposed by Thompson (1967) to be cumulative, which means that all organisations have pooled interdependence, an organisation with sequential interdependence also has pooled interdependence and the most complex organisations have all three types.

4.3.3.2 Previous Research

Chenhall and Morris (1986) examined the effect of organisational interdependence on MAS design, in terms of perceived usefulness of MAS information characteristics. The information characteristics comprised broad scope, timeliness, aggregation and integration. The results showed organisational interdependence to be associated with broad scope, aggregated and integrated information. The results were, in part, indirect through decentralisation.

The relationship between strategy, interdependence and MAS was examined by Bouwens and Abernethy (2000). Four dimensions of MAS of scope, integration, aggregation and timeliness were adopted, in line with previous research (Chenhall and Morris, 1986). The findings indicated significant relationships between interdependence and MAS dimensions of integration, aggregation and timeliness. No relationship was found to exist between scope and interdependence, which is contrary to Chenhall and Morris' (1986) findings outlined above.

Reid and Smith (2000) examined the applicability of contingency theory to MAS design and use in small firms. They concluded that the complexity of the MAS is explained by sub-unit interdependence, market dynamics and work methods. However, they found that technological uncertainty was not important in determining organisational form, where organisational form was measured in terms of weighted headcount. This unexpected

finding is thought to be due to the study involving small firms, rather than previously researched large, technologically intensive firms (Reid and Smith, 2000).

Macintosh and Daft (1987) undertook a study to investigate the relationship between departmental interdependence and the design and use of three elements of a management control package (operating budget, periodic statistical reports and standard operating policies and procedures). They found that departmental interdependence is related to the emphasis placed on each MCS element. When departmental interdependence was high, the role of the MCS elements diminished (Macintosh and Daft, 1987).

The interactive effects of MAS design and task uncertainty on managerial performance was investigated by Chong (1996), where the extent of use of broad scope MAS information was taken as the measure of MAS design. The extent of use of broad scope MAS information under high task uncertainty was found to lead to effective managerial decisions and improved managerial performance. Conversely, managerial performance was found to be low when broad scope information was used by managers in low task uncertainty situations. The findings, therefore, support that task uncertainty and the extent of use of broad scope MAS information have an interactive effect on managerial performance.

4.3.4 Organisational Variables

Organisational variables are considered to include contingency factors such as organisational structure, diversification and size as well as others. These organisational variables are considered from a theoretical and research perspective in sections 4.3.4.1 and 4.3.4.2, respectively

4.3.4.1 Theoretical Context

Organisational structure relates to "...the formal specification of different roles for organizational members, or tasks for groups, to ensure that the activities of the organization are carried out" (Chenhall, 2003: 144). Various definitions of organisational structure have been adopted. For example, Lawrence and Lorsch (1967) refer to structure as the way in which an organisation is differentiated and integrated.

Differentiation[17] involves decentralisation authority and integration involves operating procedures and committees (Chenhall, 2003). Other researchers have referred to structure in terms of mechanistic and organic approaches (Burns and Stalker, 1961) or bureaucratic and non-bureaucratic approaches (Perrow, 1970).

Decentralisation may be taken as "…the extent to which decisions are made at the lower levels of corporate hierarchy" (Merchant, 1981: 818) or "…one type of organizational structure which refers to where decisions are taken within the organization, i.e., the level of autonomy that is delegated to managers for their decision-making" (Chia, 1995: 813).

The contingency MCS research has tended to focus on larger organisations, with size seen to have an important effect on the way in which an accounting system functions (Chenhall, 2003).

4.3.4.2 Previous Research

The organisational variables of size, diversity and decentralisation were considered at the corporate level by Merchant (1981). The results indicated that larger firms tend to make increased use of more formal controls. Larger, diverse firms were more decentralised, used sophisticated budgets in a participative way and employed more formal communications. The more formal budgeting processes in larger firms were also positively linked with performance.

Budgeting approaches adopted at the departmental level were examined by Merchant (1984), with the results suggesting that budgeting is related to departmental size and functional differentiation. Larger, more diverse departments tend to place greater emphasis on formal budgeting.

Gordon and Narayanan (1984) examined the relationship between an organisation's environment, structure and information system. Their results supported the hypothesis that perceived importance of external, non-financial and *ex ante* information is positively associated with organic forms of organisation. However, after controlling for environmental effects, they found no relationship between information systems and organisational structure.

Chenhall and Morris (1986) examined the effect of organisational structure in the form of decentralisation on MAS design, in terms of perceived usefulness of MAS information

[17] Differentiation is the difference in cognitive and emotional orientation among managers in different functional departments (Lawrence and Lorsch, 1967: 11).

characteristics. The information characteristics comprised broad scope, timeliness, aggregation and integration. The results indicated decentralisation to be associated with a preference for aggregated and integrated information. Miah and Mia (1996) highlighted that the findings by Gordon and Narayanan (1984) and Chenhall and Morris (1986) were, therefore, inconsistent. They go onto to suggest from their empirical findings that the inconsistent findings are due to the researchers examining different management levels.

The role of broad scope MAS information on enhancing managerial performance was investigated by Mia and Chenhall (1994) as an extension of the previous studies by Chenhall and Morris (1986) and Gordon and Narayanan (1984). They found that differentiation of activities moderates the association between the extent to which managers use broad scope MAS information and performance.

Decentralisation has been found to significantly interact with the MAS information characteristics of broad scope, aggregation, integration and timeliness, to positively enhance performance (Chia, 1995). Increased decentralisation was found to be linked with an increased impact of the sophistication of MAS information on managerial performance for each of the four MAS information characteristics included in the study, but only up to a point of inflection. Although high degrees of sophistication of information characteristics were found to have a positive effect on managerial performance where decentralisation is high, the impact on performance is negative where decentralisation is low (Chia, 1995).

The interaction effects of PEU, decentralisation and MAS design on managerial performance was studied by Gul and Chia (1994). Broad scope and aggregation were taken as the elements of MAS design. The approach by Chenhall and Morris (1986) was adapted to consider the availability of the MAS information as opposed to perceived usefulness, in order to investigate the link with performance. Gul and Chia (1994) found decentralisation and the availability of MAS information characteristics of broad scope and aggregation to be associated with higher managerial performance under conditions of high PEU. Conversely, under conditions of low PEU, decentralisation and the availability of MAS broad scope and aggregated information were associated with lower managerial performance (Gul and Chia, 1994).

Gerdin (2005) adopted a multiple contingencies model to examine the combined effect of departmental interdependencies and organisation structures on MAS design. The organisational structure variable included size, differentiation and decentralisation. Broadly, the results supported the notion of a combined effect of departmental interdependence and organisational structure on MAS design.

4.3.5 Other contingency factors

The fifth category of contingency factors put forward by Fisher (1995) concerns knowledge and observability. Knowledge relates to the evaluator understanding the process of transforming inputs into outputs and, therefore, being in a position to specify the actions required of the evaluatee (Fisher, 1995). Observability of outcomes or behaviours implies that control can only be placed on variables that are at least partially observable by the evaluator (Fisher, 1995).

There are also other contingency factors that do not fit directly in the above four main categories, such as culture. For example, Henri (2006a) used a contingency approach to investigate the relationship between organisational culture and PMS in Canadian manufacturing firms. The PMS element focussed on diversity of measurement and nature of use. Henri (2006a) found flexible managers used more performance measures to focus organisational attention, support strategic decision-making and legitimate actions to a greater extent than more controlling managers.

Bisbe and Otley (2004) examined the relationships between MCS, product innovation and performance in Spanish manufacturing firms. The empirical evidence did not support Bisbe and Otley's (2004) hypothesis that the interactive use of MCS would have an indirect effect on performance through product innovation. However, a complex relationship is suggested where the impact of the interactive use of MCS on product innovation varies depending on the level of product innovation.

There are many contingency factors that have been considered to date in previous research, though these factors are not exhaustive. As Reid and Smith (2000) explain, the scope of the contingency framework continues to expand.

4.4 Contingency Theory and the Public Sector

Contingency theory is a general approach to research and may be adopted in a variety of settings, including both the private and public sectors. The majority of contingency research that has been undertaken to date has been within the private sector. Indeed, Miah and Mia (1996) explain that previous research into the design and use of accounting control systems have been in profit-oriented private manufacturing firms. In order to enrich our knowledge and understanding of contingency relationships and further develop contingency theory, the need for more contingency research within not-for-profit organisations has been recognised (Chenhall, 2003). Specifically the need for further

research into the role of accounting control systems in public sector organisations has been identified (Jacobs, 1997).

Early work on contingency theory, such as Burns and Stalker's (1961) work on technological uncertainty related to very large, technologically intensive firms (Reid and Smith, 2000). Reid and Smith's (2000) findings, based on the examination of the applicability of contingency theory to small firms, suggests that the scope and emphasis of contingency theory is limited or reduced by moving from larger to smaller firms. However, their study, which is one of the first involving small firms, did support specific aspects of contingency theory of management accounting adapted to the small firm context. This is an important issue, particularly with the limited amount of previous research applying contingency theory to the public sector. It does raise questions, though, as to whether contingency theory and the related findings from previous studies are directly applicable to other settings or organisations.

This generalisability of findings between sectors was an issue considered by Mia and Goyal (1991), who put forward several reasons why they did not believe findings from previous research into private sector, manufacturing firms were applicable to not-for-profit organisations. These arguments put forward by Mia and Goyal (1991) regarding New Zealand public hospitals have been considered in relation to English local authorities as the focus of this research:

1) Government organisations aim to minimise costs and maximise benefits (as in services) to the public. This is in contrast to private commercial organisations which aim to maximise profit with or without cost minimisation.

2) Government organisations are usually subject to more rigorous rules, regulations and public scrutiny imposed by central government. Compliance to such rules and regulations tends to require adherence to predetermined record keeping formats. This may be linked to more focus on internal and historical information than in private organisations.

3) Government organisations generally operate in monopolistic markets with low competition.

Therefore, results from contingency theory studies undertaken in the private sector may not be simply transferable to public sector organisations, such as local government. More research is needed to assess previous findings within the public sector. There has, however, been some contingency theory research in the public sector and some of these key studies are reviewed in the next section (section 4.4.1).

4.4.1 Previous Research

There have been a limited number of contingency theory research studies undertaken within the public sector which will now be briefly reviewed. Mia and Goyal (1991) investigated the impact of subunit supervisors' span of control and their perceived task interdependence on their perceived usefulness of MAS information in New Zealand public hospitals. This study adopted the same dimensions of MAS information as Chenhall and Morris (1986), namely scope, aggregation, integration and timeliness. Significant, positive relationships were found between perceived task interdependence and perceived usefulness of all four MAS information characteristics. These findings may be considered to be reasonably consistent with Chenhall and Morris (1986) who found organisational interdependence to be associated with broad scope, aggregated and integrated information (section 4.3.3.2).

The Macintosh and Daft (1987) study outlined in section 4.3.3.2 included organisations from service and public sectors in an attempt to ensure that the sample represented a cross section from both private and public sectors. The public sector organisations included appear to be a university and hospital.

Abernethy and Stoelwinder (1991) tested the three-way interaction between task uncertainty, budget use and system goal orientation in Australian not-for-profit hospitals. The findings supported previous research, with performance being significantly higher when task uncertainty is low.

Rayburn and Rayburn (1991) examined the impact new accounting technology introduced by the Prospective Pay System had on hospital accountant's position and authority in public, not-for-profit and proprietary hospitals in the United States. It was found that contingency theory can explain some of the different influences the new payment system, in terms of PEU, has on the various types of hospitals.

Argote (1982) explored the relationships between input uncertainty, means of co-ordination[18] and organisational effectiveness of emergency units in not-for-profit hospitals. Input uncertainty was adopted as a bridge between environmental and task uncertainty, as applicable to hospital emergency units, where uncertainty is basically incomplete information. It was concluded that uncertainty does have an effect on the effectiveness of hospital emergency units (Argote, 1982).

[18] Means of co-ordination refers to the categorisation of co-ordination methods into programmed and non-programmed means, where co-ordination involves fitting together the interdependent activities of the organisation members (Argote, 1982).

The contingency theory research in the public sector outlined above has tended to focus on the health sector. However, there is also a limited amount of previous contingency theory research in local government which will now be reviewed.

4.4.1.1 Local Government

Within the limited contingency theory accounting research in the public sector, there is a lacuna of research examining local government. One key study is Cavalluzzo and Ittner (2004) who examined the development, use and perceived benefits of results-oriented performance measures in the US federal government. They found that organisational factors, such as top management commitment to use of performance information, decision-making authority, and training in PMTs have a significant positive influence on PMS development and use. Greater use of performance information was positively associated with the extent of performance measurement and accountability (Cavalluzzo and Ittner, 2004).

Goddard (1997) applied contingency theory to explore the relationship between organisational culture and financial control within a county council in the UK. A correlation between organisational culture and budget-related behaviour was found, particularly concerning budgetary participation and the usefulness of budgets to support the managerial role. However, some tension between culture and the financial control system in operation was also identified.

A contingency framework for the public sector was developed by Woods (2009) using an exploratory case study of the risk management system at Birmingham City Council. Woods (2009) applied contingency theory using variables specific to the public sector, concluding that risk control systems in Birmingham City Council are contingent upon organisational size, information and communication technology, as well as central government policy.

The relationship between decentralisation, accounting controls and performance in central government departments in New Zealand was examined by Miah and Mia (1996). They found an increased level of decentralisation of decision making to be associated with an increased use of accounting control systems, which is also associated with increased performance. This is consistent with previous findings by Chenhall and Morris (1986) outlined in section 4.3.4.2. No direct relationship was identified by Miah and Mia (1996) between decentralisation and performance.

As mentioned previously, the majority of contingency theory research undertaken to date has been in the private sector. The transferability and applicability of such findings to public sector organisations is not presently clear.

4.5 Critique of Contingency Theory

As with many research methods contingency theory has both its supporters and critics (Mak, 1989). The reported criticisms and advantages of contingency theory are summarised in sections 4.5.1 and 4.5.2, respectively.

4.5.1 Criticisms of Contingency Theory

Although contingency theory is a well accepted and frequently adopted research approach, it is not without criticism (Mak, 1989). Indeed management accounting contingency theories have been subjected to the same criticisms as contingency theories of organisational structure (Otley, 1980; Rayburn and Rayburn, 1991). It has also been proposed that such criticisms may explain the conflicting findings that have emerged in contingency based research (Mak, 1989). Criticisms put forward include that when faced with contingency variables that give conflicting recommendations, the design of MAS has not been fully addressed and that there have been problems in operationalising contingency variables. Further criticisms include that the links with organisational effectiveness are tentative at best and that the nature of appropriate contingency variables has not been properly explained.

Schoonhoven (1981) considered the problems with contingency theory and put forward some weaknesses to account for the mixed empirical findings. These weaknesses included a lack of clarity in theoretical statements which do not differentiate between contingency variables, a lack of explicit recognition of the fact that contingency arguments produce interactive propositions and a lack of an explicit statement relating to the precise mathematical function of the implied interaction. A tendency to rely on the general linear model and correlational procedures and an implicit assumption that contingency relationships are symmetrical were further drawbacks of contingency theory suggested by Schoonhoven (1981). Although these weaknesses were put forward by Schoonhoven in 1981, they are considered to remain valid (Rayburn and Rayburn, 1991). Otley and Pollanen (2000) similarly recognise the need for further development of better measures in contingency theory research.

These reported weaknesses of contingency theory will be considered in Chapters 5 and 6 in devising the research contingency model and operationalising variables, to attempt to address and overcome some of the contingency theory weaknesses for the present research study.

4.5.2 Advantages of Contingency Theory

As evident from previous sections within this chapter, contingency theory has been widely adopted within accounting research and has become a generally accepted approach. The acceptance of such an approach must be at least partially due to the advantages contingency theory offers. The contingency approach, for example, recognises situational differences which are overlooked by the universalistic approaches (Miles and Snow, 1978). The advantages of adopting a contingency approach may also be linked to it being a school of thought within the functionalist paradigm. The functionalist paradigm is further explored in Chapter 5. However, positive elements of such an approach include application of a scientific approach and having a theoretical basis by formulating and then testing a model and hypotheses. Large samples may also be used, enabling many organisations to be investigated and enhancing the generalisability of the results. Further advantages of adopting such an approach include the generation and use of specific, precise and quantitative data, enabling statistical analysis and the structured research methodology enables replicability.

Two reasons suggested by Mak (1989) to explain the wide acceptance of contingency theory approaches in management accounting research are that contingency theory is intuitively appealing and that there was a need to reconcile conflicting empirical findings based on universalistic theoretical models. Contingency theory remains an important research approach which may be applied to the many management accounting areas still requiring research. Indeed, three specific paths have been suggested to offer potential for future progress in adopting contingency theory research for MCS design (Otley and Pollanen, 2000). Firstly, the continuation of the traditional contingency-based research approaches, although more careful specification and measurement of variables is required. Secondly, studies of single organisations aimed at elucidating the impact of different accounting control practices within their wider context. A final potential path for future contingency theory research is the study of the new developments in organisational control practices that have been reflected in changes of MAPs (Otley and Pollanen, 2000).

4.6 Summary and Conclusion

Management accounting contingency theory has developed from universalistic approaches and organisational theory. Contingency theory has become the dominant approach for research on control systems design (Dent, 1990). Many contingency factors have been researched, including strategy, interdependence and organisational variables, although the findings of these previous studies are not definitive. The majority of contingency research undertaken to date has been in the private sector, with limited studies investigating public sector organisations.

Contingency theory is an accepted research approach set within the functionalist paradigm. This methodology, therefore, provides the advantages of adopting a scientific basis to research. The need for further contingency research, particularly in relation to public sector organisations has been recognised.

Chapter 5: Research Methodology

5.1 Introduction

The previous chapters (Chapters 2, 3 and 4) reviewed the existing contingency literature concerning strategy, performance measurement and management accounting. There has been limited contingency research into these areas, within the public sector and English local authorities specifically. This study, therefore, extends the existing literature on the contingency relationships between strategy, performance measurement, MAPs and performance outcome in the public sector. Specifically, this research attempts to identify and investigate the contingency relationships between these variables in English local authorities.

This chapter sets out and justifies the philosophical and methodological approaches to be adopted within this research project (section 5.2). All research is based on philosophical assumptions and it is deemed useful to determine the theoretical and methodological approaches to be adopted prior to undertaking the research project (Ardalin, 2003; Laughlin, 1995). The more detailed aspects of the research methods develop, subsequently, from the underlying methodological assumptions and approaches.

The remainder of the chapter develops the research contingency model, including both dependent and independent variables (section 5.3), and develops the research hypotheses to be tested (section 5.4). The questionnaire methodology is explored in section 5.5 and section 5.6 discusses the statistical analysis for this research. Finally, the chapter ends with a summary and conclusion (section 5.7).

5.2 Methodological Assumptions

This section outlines the alternative approaches to management research, the differing philosophical traditions and the approach to be undertaken within this research.

5.2.1 Approaches to Management Research

There are acknowledged to be many different, acceptable philosophical and methodological approaches to undertaking research. These alternative approaches are not superior to each other but alternative approaches may be used more effectively and appropriately to study different issues. Gill and Johnson (2002) refer to this as

'methodological pluralism'. It is, therefore, important to consider the alternative assumptions and approaches in relation to the research to be undertaken. The consideration of the issues within this chapter, consequently, leads on from the broad research area of strategy, performance measurement and management accounting in local government covered in Chapters 2, 3 and 4.

According to Gill and Johnson (2002) the two main approaches to management research are induction and deduction. Deduction involves the development of a conceptual and theoretical structure which is tested by observation. In comparison, theories are developed from the observation of empirical reality within the inductive approach. This categorisation by Gill and Johnson (2002) of deductive and inductive approaches can also be linked to the two primary research philosophies of positivism and phenomenology, respectively (Easterby-Smith *et al*., 1991). A comparison of these two main philosophical traditions is outlined in Table 5.1. These approaches will be further explained in the remainder of this chapter.

Table 5.1: Comparison of Two Main Research Philosophies

Phenomenology	Positivism
World is socially constructed and subjective	World or reality is external and objective
Observer is part of what is observed	Observer is independent
Small samples	Large samples
Focus on meanings and to understand what is happening	Focus on facts and look for causality and fundamental laws
Develop ideas through induction from data	Formulate and then test hypotheses
Tends to produce qualitative data	Tends to produce quantitative data
Data is rich and subjective	Data is specific and precise
Low reliability, high validity	High reliability, low validity

(Adapted from Easterby-Smith *et al*., 1991 and Hussey and Hussey, 1997)

5.2.2 Research Paradigms

The underlying premise of the two main philosophies of positivism and phenomenology are further explored by Burrell and Morgan (1979) through assumptions of the nature of social science and nature of society. Burrell and Morgan (1979) go on to conceptualise the nature of social science into four assumptions of ontology, epistemology, human nature and methodology, making up a 'subjective-objective' continuum. The nature of society includes the two extreme perspectives of regulation and radical change. These two continuums (subjective-objective and regulation-radical change) result in Burrell and

Morgan (1979) devising four paradigms which set out four fundamentally different perspectives for social research.

The term paradigm "…can be regarded the same as worldview, or way of seeing reality…Paradigms are defined and characterized by a set of fundamental assumptions, which, in turn, translate into certain rules and standards for scientific practice. These are common among the theorists and researchers who share the same paradigm." (Ardalan, 2003: 203)

The four paradigms devised by Burrell and Morgan (1979) are functionalist, interpretive, radical humanist and radical structuralist. Their positions on the continuums outlined above are diagrammatically displayed in Figure 5.1. The following sections (5.2.2.1 and 5.2.2.2) consider the assumptions of the nature of social science and nature of society in more detail.

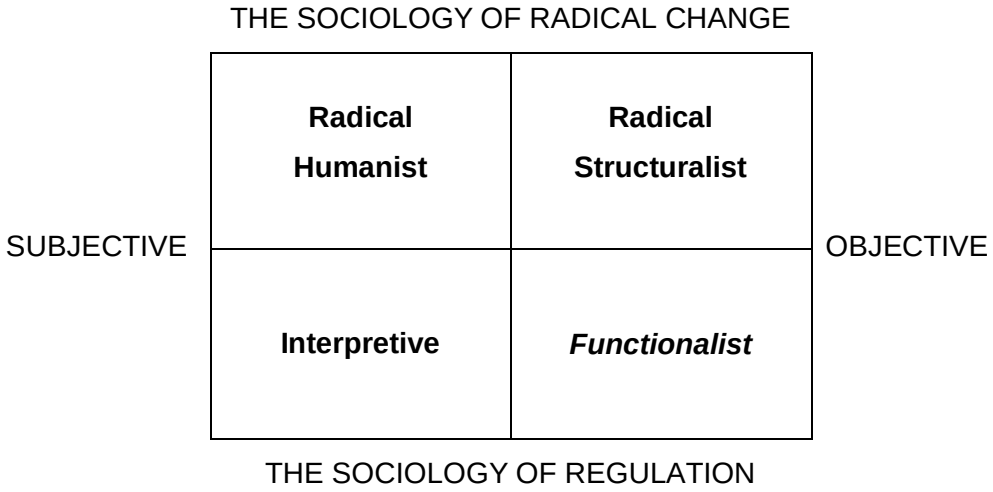


Figure 5.1: Four paradigms for social research

(Adapted from Burrell and Morgan, 1979: 22)

5.2.2.1 Nature of Social Science

The nature of social science comprises the four assumptions of ontology, epistemology, human nature and methodology (Burrell and Morgan, 1979). These assumptions which make up the subjective – objective continuum are now further discussed below and summarised in Table 5.2.

Ontology is concerned with the nature of being. For example, whether reality is seen to exist materially and externally to individuals or whether reality is viewed as being a product of an individual's mind. These are the two extremes on the objective and subjective continuum, respectively (Burrell and Morgan, 1979).

Epistemology relates to how knowledge can be obtained and communicated. The objective viewpoint is that knowledge may be gained through observation of hard, real facts in the social world, with the researcher being independent. This is in comparison to the subjective extreme where knowledge is experienced and, consequently, individualistic with the researcher interacting with the phenomena being researched (Burrell and Morgan, 1979).

The human nature assumption is concerned with the relationship between human beings and their environment. The two extreme viewpoints of the objective and subjective perspectives, respectively, see human beings as being completely determined by their environment or having complete free will, creating and controlling their environment. Burrell and Morgan (1979) also permit an intermediate standpoint allowing for the influence of both situational and voluntary factors in accounting for human activities.

The positions adopted on the ontology, epistemology and human nature assumptions determine the methodology approach, which is the fourth element of nature of social science as put forward by Burrell and Morgan (1979). The subjective assumptions lead to the adoption an ideographic method, where qualitative data is generated, with the focus on gaining an understanding of individuals within the social context through primarily unstructured approaches. In comparison the objective assumptions give rise to a nomothetic method, where quantitative data is generated and analysed by causal relationships in testing previously devised hypotheses or theories through structured techniques. This is linked to the adoption of methods from the natural sciences.

5.2.2.2 Nature of Society

There are two primary theories of society which Burrell and Morgan (1979) term as regulation and radical change. These theories were adapted by Burrell and Morgan (1979) from the historic sociological order-conflict debate. The regulation view point is concerned with explaining society's underlying unity, cohesiveness and the need for regulation in human affairs. The alternative radical change perspective is concerned with finding explanations for the radical change, conflict and modes of domination which are seen to characterise society. These assumptions of the nature of society theories are summarised in Table 5.2.

Table 5.2: Assumptions of the Four Paradigms for Social Research

Assumption	PARADIGM			
	Functionalist	**Radical Structuralist**	**Interpretive**	**Radical Humanist**
NATURE OF SCIENCE	**Objective**		**Subjective**	
Ontology	Material reality external to individuals		Reality viewed as subjective product of individual's mind	
Epistemology	Knowledge gained through observation of hard facts in social world. Researcher independent from phenomena being researched.		Knowledge is experienced and individualistic. Researcher interacts with phenomena being researched.	
Human Nature	Human beings are determined by their environment.		Human beings have free will and create or control their environment.	
Methodology	Nomothetic methods, generating quantitative data.		Ideographic methods, generating qualitative data.	
NATURE OF SOCIETY (Gioia and Pitre, 1990)	**Regulation** Orientation toward stability or maintenance of the status quo	**Radical change** Ideological orientation toward radically changing constructed realities.	**Regulation** Concern with regulation or lack of concern with changing the status quo.	**Radical change** Ideological orientation toward radically changing constructed realities.

(Source: Burrell and Morgan, 1979; Gioia and Pitre, 1990)

5.2.3 Alternative Approaches – an updated position

The above review of research approaches is primarily based on the historic perspectives proposed by Burrell and Morgan (1979). Although the framework and components remain valid, the work by Burrell and Morgan is now quite dated and it is unsurprising that alternative analyses have been put forward as research methodologies continue to advance. These will now be briefly considered in the following sections.

5.2.3.1 Continuum versus Mutual Exclusivity

The four paradigms proposed by Burrell and Morgan (1979) are seen to be mutually exclusive (section 5.2.2 and Figure 5.1). However, the subjective-objective and regulation-radical change dimensions may also be seen to be on continuums rather than being dichotomous. Hopper and Powell (1985) adopt this continuum perspective for the subjective-objective dimension in proposing three primary categories of functionalist, interpretive and radical. Burrell and Morgan's (1979) radical humanist and radical structuralist paradigms are consequently merged into a single radical category. Hopper

and Powell's (1985) interpretive category is placed on the boundary between Burrell and Morgan's functionalist and interpretive paradigms in Figure 5.1, in order to enable the continuum.

The continuum nature of the paradigms is also argued by Gioia and Pitre (1990) who suggest that the boundaries between Burrell and Morgan's (1979) paradigms are blurred, with difficulty distinguishing where one paradigm ends and another commences. Gioia and Pitre (1990) suggest that the boundaries between the paradigms may be more appropriately interpreted as transition zones.

5.2.3.2 Middle Range Thinking

Laughlin (1995) re-classifies Burrell and Morgan's (1979) five part schema of ontology, epistemology, human nature, methodology and nature of society, into three broad bands termed theory, methodology and change. The theory dimension relates to ontology and epistemology issues, methodology is comparable to Burrell and Morgan's (1979) human nature and methodology assumptions and change compares to the nature of society. The position chosen on each of the three dimensions is taken to be as part of a continuum. However, Laughlin (1995) puts forward three positions (high, medium and low) for each of the three dimensions in classifying alternative schools of thought. This could be argued to result in several proposed approaches that would actually be untenable philosophically as positions on each of the dimensions cannot contradict underlying beliefs.

A case for 'middle range' thinking is put forward by Laughlin (1995), adopting a medium position on the theory, methodology and change dimensions, thereby suggesting that a position could be adopted mid way between Burrell and Morgan's (1979) mutually exclusive paradigms. However, this 'middle' position proposed by Laughlin is open to criticism as he suggests that the middle range thinking recognises "…a material reality distinct from our interpretations…" (Laughlin, 1995: 81). Such an ontological view point could be argued as being objective and thereby, not 'middle range'. Laughlin's 'middle range' position could, therefore, be interpreted as still being within Burrell and Morgan's (1979) functionalist paradigm.

5.2.3.3 Multiparadigm Perspectives

As the paradigms discussed in the previous sections are based on fundamentally different assumptions, research undertaken tends to be based within one paradigm. However, it is

acknowledged that empirical research undertaken within any one paradigm will provide an incomplete and narrow view of the social world being researched (Gioia and Pitre, 1990; Laughlin, 1995). Consequently, there are arguments for undertaking a multiparadigm approach to research. Gioia and Pitre (1990) argue for the adoption of multiparadigm research utilising methods across paradigms, thereby involving a form of triangulation.[19] Atkinson *et al*. (1997) also emphasise the importance of a multi-paradigm, multi-method approach to management accounting research.

5.2.4 Approach to be adopted in this research

The consideration of the elements of the nature of society and nature of social science, above, leads through to an understanding of the researcher's underlying beliefs and the relevant approach to be adopted for the present research study. In relation to the individual assumptions above, this research project will adopt the following positions:

Ontology: view reality as existing materially and externally to individuals. Individual's conscience and moral aspects in relation to strategy, performance measurement and management accounting will be excluded.

Epistemology: hard facts regarding performance and MAPs within local authorities will be generated and enable knowledge to be gained in testing relationships through proposed hypotheses.

Human nature: human beings are seen to be determined by external circumstances, but with recognition that human beings also have an element of free will. This, therefore, adopts a position on the continuum between the two extremes.

Methodology: hypotheses will be devised from previous research and tested through structured techniques, quantitative data and statistical analysis.

In regards to the nature of society, the proposed research is consistent with the regulation viewpoint with strategy, performance measurement and MAPs seen as contributing to the maintenance of social order and involving social consensus.

Based on the above assumptions, it is concluded that the research will be undertaken within the functionalist paradigm, which is situated towards the objective and regulation ends of the continuums proposed by Burrell and Morgan (1979). The position of the

[19] Triangulation is the "…use of different research methods in the same study to collect data so as to check the validity of any findings." (Gill and Johnson, 2002: 229)

functionalist paradigm is evident from Figure 5.1. Previous research in management and finance has been predominantly undertaken within the functionalist paradigm (Ardalan, 2003; Gioia and Pitre, 1990). The functionalist paradigm is rooted in the positivist philosophical approach (section 5.2.1).

5.2.5 Schools of Thought

Each of the four paradigms outlined above consist of different schools of thought, which are alternative ways of studying a shared reality (Ardalan, 2003). Each is valid for particular research projects. Schools of thought outside the functionalist paradigm will not be explored here, as the primary choice for research is by paradigm and then by schools of thought within the chosen paradigm. The two key functionalist schools of thought currently adopted in accountancy research are agency and contingency theories. These two theories will briefly be considered below and then other schools of thought within the functionalist paradigm will also be outlined.

5.2.5.1 Agency Theory

The objective of agency theory is to explain the behaviour of individuals as economic agents through a model (Ryan *et al.*, 1992). Agency theory has been primarily applied to financial reporting and auditing, rather than in relation to management accounting. Anthony (1989) explains that in management accounting, agency theory refers to the contractual relationship between managers and their subordinates. Such an approach is not concluded to be appropriate for the area of interest in the present research study. The current study is concerned with the relationship between strategy, management accounting and performance within the local authority. This is in contrast to the individual level which is the focus of agency theory.

5.2.5.2 Contingency Theory

Contingency theory is an approach to research based on the premise that there is no one universally appropriate management accounting or control system which is applicable to all organisations in all circumstances (Otley, 1980; Fisher, 1995; Rayburn and Rayburn, 1991; Reid and Smith, 2000). Contingency theory suggests that the effectiveness of an organisation is dependent on matching organisational characteristics, such as the

management accounting system, with the organisation's specific circumstances, such as their size. Contingency theory has become a widely adopted research approach (Hartmann, 2000) and has been used extensively in both the organisational and accounting literature (Chenhall and Langfield-Smith, 1998; Gerdin and Greeve, 2004; Otley, 1980). Contingency theory is concluded to be the school of thought within the functionalist paradigm to be adopted for this research study and explored in more detail, along with existing contingency research, in Chapter 4.

5.2.5.3 Other Schools of Thought

There are several other schools of thought that are included within the functionalist paradigm, under the sub-section of social systems, to which contingency theory also belongs (Hopper and Powell, 1985). These have not been adopted much in management research recently but are briefly considered here for completeness.

Accounting dysfunctions: individuals or groups in organisations strive towards different goals which may be in conflict to the organisation's formal goals (Hopper and Powell, 1985).

Psychological theories: views individuals as imperfect information processors, resulting in dysfunctional consequences through messages being misinterpreted (Hopper and Powell, 1985).

Social psychological theories: similar to psychological theories above, but focuses on motivation rather than information processing (Hopper and Powell, 1985).

Structural studies: concerned with how the social structures of organisations may affect processes (Hopper and Powell, 1985).

Consideration of these less popular functionalist schools of thought further support that contingency theory is the most appropriate approach to be adopted for the present research study.

5.3 Research Contingency Model

Determination of the variables to be considered is central to undertaking contingency theory research. These variables are brought together in a research contingency model demonstrating the potential relationships to be tested. The research contingency model

for this project is displayed in Figure 5.2 and is explained and justified in the following sections.

The selection, interaction and systems approaches to contingency theory were explored in Chapter 4 (section 4.2). These methods apply different approaches to the concept of contingency fit and are distinct to the nature of the research being undertaken. The selection approach sees fit in terms of correlations between pairs of organisational variables, with organisational performance variables not included in the analysis. Research studies adopting the interaction approach consider the association between the interaction of explanatory variables and performance. The selection and interaction approaches reduce organisational elements into separately examinable components (Drazin and Van de Ven, 1985). This is in contrast to the systems approach that takes a holistic view, considering multiple contingency and design factors, to understand performance relationships (Drazin and Van de Ven, 1985; Selto *et al*., 1995). Both the selection and interaction approaches have been criticised and contingency theory researchers are advised to apply the systems approach (Chenhall and Langfield-Smith, 1998; Drazin and Van de Ven, 1985; Gerdin, 2005; Van de Ven and Drazin, 1985).

Fisher (1995) sets out four categories of contingency control literature, depending on the level of analysis complexity. However, these categories are not necessarily mutually exclusive. The first two categories examine one contingency factor correlated to a control mechanism and the joint effect of one contingency factor and control mechanism on outcome variable, respectively. The third level considers the joint linkage between one contingency factor, multiple control mechanisms and outcome. Finally, the fourth level examines multiple contingency factors, multiple control mechanisms and outcome. Further research at levels three and four is required (Fisher, 1995), which also links in with the adoption of a systems approach to contingency theory.

A systems approach to contingency theory is deemed to be the most appropriate for the present study. This research is interested in explaining the impact on performance of multiple contingency factors and management accounting (or control mechanism) variables. The research contingency model (Figure 5.2) is devised based on review of the previous literature undertaken in Chapters 2, 3 and 4. The broad nature of the model is to consider the contingency relationships between organisational variables, strategy, management accounting systems and performance outcome. The research contingency model is, consequently, comprised of dependent and independent variables. These variables are explained in the following sections (section 5.3.1 and 5.3.2, respectively), with the hypotheses concerning their respective relationships, devised in section 5.4.

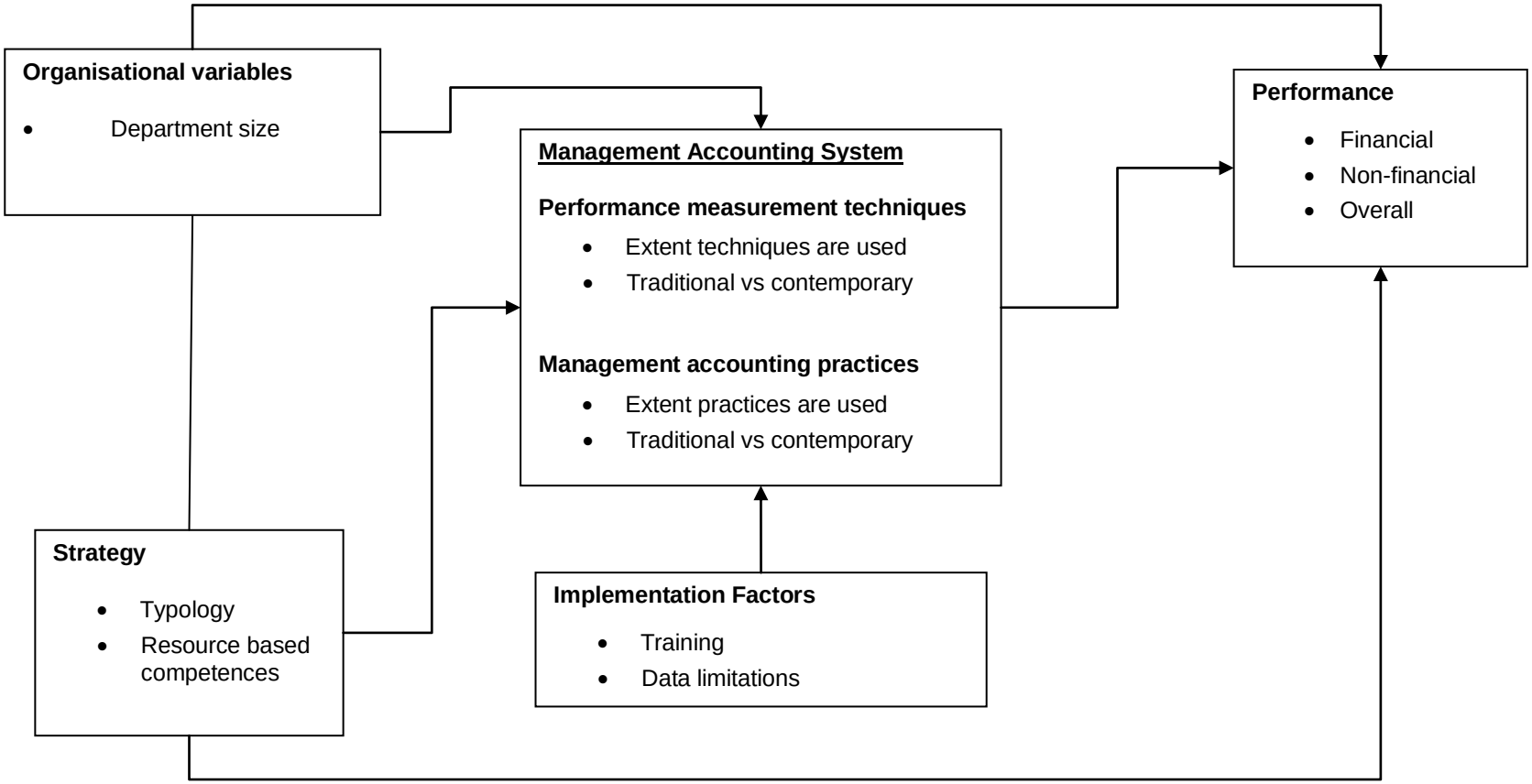


Figure 5.2: Research Contingency Model

The main categories of contingency variables considered in Chapter 4 (section 4.3) included the external environment, strategy, technology and interdependence and organisational variables, as well as other contingency factors such as culture. Although it is recommended that contingency theorists should adopt a holistic systems approach to research, there are practical limitations regarding the number of variables that can be included in research studies (Langfield-Smith, 1997). Indeed, it is acknowledged that it remains valuable to limit the number of variables researched at any one time (Merchant, 1981; Mia and Goyal, 1991; Otley and Pollanen, 2000). Consequently, although the research contingency model devised for this study adopts a systems approach and includes multiple variables, there remain other factors that have been excluded. The impact of these omitted variables would be a potential area for future research.

5.3.1 Dependent Variables

A dependent variable is the "…phenomenon whose variation the researcher is trying to explain or understand…" (Gill and Johnson, 2002: 226). Previous researchers view effectiveness as a necessary dependent variable in contingency research (Langfield-Smith, 1997; Otley, 1980). There are many different definitions of effectiveness or performance, ranging from financial performance to more subjective measures (Langfield-Smith, 1997). Performance outcome in local authorities will be the dependent variable used in the research contingency model for this study and is further discussed below.

5.3.1.1 Performance Outcome

Due to the different approaches to contingency research (selection, interaction and systems), not all contingency studies actually include performance as a dependent variable. As performance outcome is the ultimate objective of management in any organisation, the omission of performance as a dependent variable is a crucial failing of previous research (Miah and Mia, 1996). Specifically, there have been few public sector contingency research studies investigating performance outcome, particularly in relation to local government. This research has been reviewed in Chapter 4 and is revisited in section 5.4 below, for the development of specific research questions.

As explained in Chapter 2 (section 2.4), local authorities have been under increasing pressure in recent years to improve their performance and for this improvement to be evidenced. The present research study is concerned with explaining the impact

independent variables (considered in section 5.3.2) have on the performance of local authorities, with performance outcome being the dependent variable for this study. Measurement of organisational performance has long been of central interest to management accounting (Otley, 1999; Otley, 2001). However, the focus has tended to be restricted to financial performance (Otley, 1999). It is widely acknowledged that this financial focus of performance, particularly for public sector organisations, should be expanded to incorporate non-financial aspects (Ballantine *et al*., 1998; Ghobadian and Ashworth, 1994; Otley, 2001). Consequently, this research will consider both financial and non-financial aspects of performance in local authorities. More detail of the elements and measurement of performance for this study are covered in Chapter 7 (section 7.3.6).

5.3.2 Independent Variables

Independent variables are "…phenomenon whose variation notionally explains or causes changes in the dependent variable…" (Gill and Johnson, 2002: 227). Following on from the detailed review of existing literature in Chapters 2, 3 and 4, various independent variables have been identified for inclusion in this research. These will be now considered under the areas of organisational variables, strategy, PMTs, MAPs and implementation factors.

5.3.2.1 Organisational Variables

Organisational variables were identified in Chapter 4 as being a key contingency factor. As explored in section 4.3.4, there are many organisational variables that may be considered including organisational structure and size. Some of the organisational structure items, such as decentralisation, are not considered to be critical factors at this time for local government in England. As outlined in Chapter 2 (section 2.2), there are several different types of local authorities in England, such as district and unitary councils. These alternative types of local authorities also have different responsibilities and vary in size considerably. Size has been included in previous contingency studies (Merchant, 1981; Merchant, 1984) and is consequently included as a control variable within the present study.

5.3.2.2 Strategy

As indicated in Chapter 4, strategy is a key variable in contingency research. Indeed, Hambrick (1980) suggests strategy may be hypothesised as having linkages with many other variables and is a concept worthy of empirical investigation. Other researchers have concluded that further contingency research considering strategy and MCSs is required (Langfield-Smith, 1997; Widener, 2004). The majority of previous research concerning strategy has been focussed on the private sector. Strategy in the public sector and local authorities, specifically, is an area where there is a lacuna of research. Inclusion of strategy within this study's contingency model is, therefore, justified.

There are difficulties in operationalising the concept of strategy (Hambrick, 1980). In section 2.7 the alternative approaches to operationalising business strategy were outlined. The appropriate use of these approaches is dependent on the particular research being undertaken. Therefore, the uses of these approaches as put forward by Hambrick (1980) have been considered in relation to this study.

Goal of research: theory building, theory testing, demonstrating generalisability and improving measurement reliability.

Role of strategy construct in research: predictor variable

Researcher's view of strategy construct: intended or realised strategy

Based on the above aspects for this research study, Hambrick (1980) suggests that the most appropriate approach to operationalise strategy would be the partial measurement approach, which will consider only particular aspects of the strategy concept. It is this approach, focusing of key elements of strategy for local authorities that will, therefore, be adopted within this research study. The limitation of this approach is acknowledged, in that it does not capture the full breadth of strategy (Hambrick, 1980). However, it serves as a valuable starting point, with further elements of strategy an area for future research. This links in with the assertion in section 5.3 above, that even when multiple variables are included in a contingency model, the number of factors being researched at any one time needs to be limited.

The particular aspects of strategy to be considered within the present study are the four capabilities leading to strategic choice of market orientation, entrepreneurship, innovation and organisational learning. This resource perspective is based on the principle that competitiveness of an organisation is dependent on its resources and capabilities (Henri, 2006a). These capabilities have been found by prior research to offer strength to organisations (Henri, 2006a) and it is concluded that they have relevance to local

authorities. There is a lacuna of research in the MCSs realm that has considered this RBV of strategy (Henri, 2006a), particularly in the public sector. Inclusion of this element of strategy within the present study is, therefore, justified.

Additionally, a typology of strategy is considered by Hambrick (1980) to be of use to this type of study, in relation to the approaches specified above. As much of the previous research into strategy has focused on strategic typologies, it is deemed appropriate to also incorporate a strategic typology into the present study. From the strategic typologies considered in Chapter 2, Porter's (1980) cost leadership and differentiation is the typology deemed most applicable to local authorities and will be adopted in the present study.

5.3.2.3 Performance Measurement Techniques

PMTs were explored in Chapter 2 (section 2.6.1). It was concluded that the measurement of performance in the public sector has become of increasing importance over recent years, with CPMTs developing to address the inadequacies of the more traditional approaches. Despite the increased focus on PMTs, it is uncertain how it relates to other factors or impacts on overall performance. The existing literature indicates that further research is needed to explore contingency variables affecting the use of performance measures, as well as the resulting performance consequences (Ittner and Larcker, 1998b; Smith, 1995). This, therefore, supports the inclusion of PMTs within this study's contingency research model (Figure 5.2).

From review of the existing literature in Chapter 2, a classification of traditional and contemporary PMTs was devised. The main techniques of PIs, the BSC and RDF are summarised in the text below and in Table 5.3. This classification will form the basis of the PMTs variable in the present research study. More specific details of how the use of these techniques will be measured will be covered in Chapter 7.

Traditional PIs are a measure of how well an organisation is performing against its objectives, focusing on what is easy to measure and financial elements, in particular. Contemporary PIs have expanded to compare measurement against targets, linking them with the organisation's strategy and including non-financial as well as financial elements.

Benchmarking involves organisations improving through sharing information, learning from others and adopting best practices (Public Sector Benchmarking Service, 2005).

The BSC is a tool that aids the translation of an organisation's strategy into objectives and performance measures (Ittner and Larcker, 1998b; Kaplan and Norton, 1992; Kaplan and

Norton, 1996a; Kaplan and Norton, 1996b). Measures are focused across four perspectives (financial, innovation and learning, customer and internal business), providing a balanced view of the organisation.

The RDF provides a framework for measuring performance across six dimensions (financial performance, competitiveness, quality of service, flexibility, resource utilisation and innovation) within the two categories of results and determinants (Ballantine *et al*., 1998; Fitzgerald *et al*., 1991).

Table 5.3: Traditional and Contemporary Performance Measurement Techniques

Performance Measurement Technique	
Traditional	**Contemporary**
PIs • Financial focus • Measure what is easily measurable	PIs • Linked to strategy • Compared to targets • Financial and non-financial
	Benchmarking
	BSC
	RDF

(Source: Chapter 2)

5.3.2.4 Management Accounting Practices

MAPs relevant to local authorities were considered in Chapter 3. Table 5.4 summarises the key MAPs that may be adopted within local government, categorised between traditional and contemporary approaches. The existing literature indicates that further research is needed into accounting practices, particularly contemporary practices within the public sector (Chenhall, 2003; Guilding *et al*., 2000; Jackson and Lapsley, 2003; Otley, 1994; Seal, 2003). Management accounting in government, in particular, has been identified as a neglected research area (Lapsley, 2000). Specifically, ABC in local government has been identified as an area where further research is required (Brown *et al*., 1999). Pendlebury (1985) and Skousen (1990) found that some budgeting practices in local authorities were inadequate, although improvements were evident during the period between these two studies. Budgeting practices in local government are also

thought to be changing due to the Government's reform programme (Seal, 2003). The inclusion of MAPs within the contingency model for this research is, subsequently, justified.

Table 5.4: Traditional and Contemporary MAPs

Management Accounting Element	Traditional Practices	Contemporary Practices
Budget preparation	Incremental	ABB
		ZBB
Budgetary control	Receipts and payments basis	Income and expenditure basis
		Commitment accounting basis
Costing	Marginal costing	ABC
		Life cycle costing
		Target costing
		Functional analysis
	Absorption costing	Strategic cost management
		Value chain analysis
		Customer-profitability analysis

(Source: Chapter 3)

5.3.2.5 Implementation Factors

There may be many factors that have an effect on the extent councils adopt CPMTs. For example, whether the council has the information systems in place to produce the data required in a timely and reliable manner and whether the council managers have been provided the training to understand the relevance and use of PMTs. Such implementation factors have been hypothesised to have an impact on the development and use of performance measures in US Government (Cavalluzzo and Ittner, 2004) and are perceived to be relevant to English local authorities. It is, consequently, concluded to be appropriate to include training and information systems as independent variables within the present study.

5.3.3 Level of Analysis

Within contingency-based research, as Chenhall (2003) explains, the level of analysis is important to the theory construction, with care required in maintaining consistency between the theory and level of analysis. The level of analysis regarding local authorities for this research study should, therefore, be considered in relation to the research

contingency model, prior to the development of specific research questions or hypotheses.

For this research study, the level of analysis within local authorities will be taken as the departmental level, which may be likened to the business unit level. The departmental level has been selected, rather than the organisational or local authority level, for the following reasons. Firstly, the research contingency model is further complicated when it moves into a complex, multi-unit organisation where each unit is striving to cope with different elements of the environment (Lawrence and Lorsch, 1967). As the research contingency model is already complex with multiple variables, it is concluded that the level of analysis should be simplified to the department level. Secondly, as recognised in Chapter 2, much of the previous research into MCS and strategy has focussed on the business level of strategy (Langfield-Smith, 1997). With this study exploring new elements of strategy in a local authority context, where there has been limited previous research, it is concluded that it would be most appropriate to adopt the equivalent level of analysis as previous research. Thirdly, the strategic variables being investigated in the present study focus on elements that may be interpreted and applied differently between departments within the same local authority. For example, although the local authority's overall strategy will provide the organisation's strategic focus on specific performance initiatives, the application of this will vary between departments. Some of the performance initiatives also apply separately to individual departments by themes rather than to a local authority as a whole. Finally, the adoption of PMTs and MAPs may also differ between departments within the same local authority. Consequently, the department level of local authorities is deemed to be the most appropriate level of analysis to be adopted in this research.

The level of analysis is further complicated as the departments within local authorities differ by local authority type. For example, children and young people departments would be evident in county and unitary councils, but not in district councils. In contrast, council tax and benefits would be apparent in district and unitary councils, but not at county councils. This is due to the different structures of local government within England, explained in section 2.2, and the diverse responsibilities by tier of local authorities. The selection of departments to be incorporated in this research will be further explained in Chapter 7.

5.4 Hypotheses Development

A hypothesis may be defined as "…a tentative proposal that explains and predicts the variation in a particular phenomenon…" (Gill and Johnson, 2002: 226). Formulating and then testing hypotheses is the basis of undertaking research within the functionalist paradigm (see section 5.2 above). Indeed, Hussey and Hussey (1997) explain that in a functionalist paradigm it is traditional to state the research questions as hypotheses.

As this study is based in the functionalist paradigm, having developed the basic research contingency model (Figure 5.2), hypotheses for the expected relationships between the variables will now be devised.

5.4.1 Strategy, Performance Measurement Techniques and Performance Outcome

Performance measures are assumed to be necessary in all situations, irrespective of what strategy is being pursued (Langfield-Smith, 1997). The existing literature also suggests that PMSs in public sector organisations should be linked to strategy (Accounts Commission, 1998; Audit Commission, 2000; Audit Commission and IdeA, 2002; Ballantine *et al*., 1998; Flynn and Talbot, 1996; Ghobadian and Ashworth, 1994; HM Treasury *et al*., 2001; Kloot and Martin, 2000).

Within the present study, the focus of strategy is taken to include Porter's (1980) cost leadership/differentiation strategy and four capabilities leading to strategic choice; namely market orientation, entrepreneurship, innovation and organisational learning. This latter resource perspective is based on the principle that competitiveness of an organisation is dependent on its resources and capabilities (Henri, 2006b). Indeed, the RBV of strategy suggests that capabilities would determine performance (Knutsson *et al.,* 2008). There is a lacuna of research in the MCSs realm that has considered this RBV of strategy (Henri, 2006b). Henri (2006b) studied these four capabilities and their relationship with PMS and performance, finding positive relationships between all four capabilities and performance, although these relationships were not found to be significant. Andrews *et al*. (2006, cited in Knutsson *et al.*, 2008) found municipalities with a strategy content of being proactive and innovation seeking performed better than municipalities with a reactive stance focussed on formal inspections and complaints. As Bisbe and Otley (2004: 713) summarise, "...Most empirical studies have (...) shown a positive relationship between product innovation and performance." A strong positive relationship has also been found

between market orientation and performance in the private sector (Slater and Narver, 1998), particularly where performance is measured as profitability (Narver and Slater, 1990; Slater and Narver, 2000). Indeed, market orientation is concluded as being "...essential to success..." (Slater and Narver, 1998: 1001). As Slater and Narver (1999: 1166) summarise, the existing literature and previous research "...strongly indicates that a more developed market orientation is associated with superior performance." Henri (2006b) also found that an interactive use of PMS positively influenced the capabilities of market orientation, entrepreneurship, innovation and organisational learning. The 'PMS interactive' terminology adopted by Henri (2006b) may be seen to be equivalent to 'CPMT' within the present study.

In relation to the strategic typology, previous research tends to agree that cost control is more important in organisations following a cost leadership (as opposed to differentiation) strategy (Hyvönen, 2007). The existing literature does suggest that contemporary MASs are used in conjunction with differentiation strategies (Bouwens and Abernethy, 2000; Hyvönen, 2007). However, this proposition was not found to be supported by Hyvönen (2007). Regarding specific types of contemporary MASs, a relationship between ABC and strategy is argued by Shields (1995, cited by McCabe *et al*., 2002). PMTs may be classed as part of the MAS. Hyvönen (2007) found a positive significant relationship between customer-focussed strategy and contemporary performance measures. The customer-focussed strategy adopted by Hyvönen (2007) may be seen as equivalent to a differentiation strategy.

There is limited research in the public sector on variables relating to the use of CMAPs (Chenhall, 2003; Guilding *et al*., 2000; Otley, 1994). There have also been few public sector contingency research studies investigating performance outcome, particularly in relation to local government. Adopting both traditional and CMAPs were found by Chenhall and Langfield-Smith (1998) to enhance organisational performance. Although traditional MAPs were found to provide higher benefits than CMAPs, only a limited number of traditional MAPs were included in the study and were specific to the private manufacturing sector being researched (see section 3.5). Miah and Mia (1996) found performance in central government departments in New Zealand to be positively related to use of accounting control systems. However, this study only considered performance in relation to managers' perceived achievement of set goals for their district offices. The accounting control systems considered was also in relation to controls in place, rather than MAPs adopted. Despite these differences to the present research study, it suggests that similar positive relationships between MAPs and overall performance may be expected. Similarly, it has been proposed that the use of ABC in local authorities has the

benefit of identifying and encouraging good performance (IPF, 2008), further suggesting a link between ABC use and increased performance.

Research has found that the adoption of new accounting techniques in the public sector is triggered by governmental pressure and legislative demands (Lapsley and Wright, 2004). Government initiatives and legislation to improve local government performance have encouraged the use of CMAPs, such as ABC and contemporary budgeting (Gerdin, 2005; Merchant, 1981; Merchant, 1984; Seal, 2003). A corresponding relationship between use of CMAPs and increased performance may, therefore, be expected. Contemporary budgeting practices have also been found to be used by government organisations to improve performance (Anderson, 1998).

It was concluded in Chapter 2 that CPMTs have developed in recent years to address the inadequacies of the more traditional approaches. Many of the recent initiatives are based on the notion that the CPMTs, such as non-financial PIs, the BSC and benchmarking, will result in improved performance (Ball, 2001; Bowerman and Ball, 2000; Ittner and Larcker, 1998b; Wisniewski and Olafsson, 2004; Woods and Grubnic, 2008). Organisations utilising CPMTs may, consequently, be expected to have increased performance. However, the existing literature (Bowerman and Ball, 2000; Ittner and Larcker, 1998b; Smith, 1995) suggests that further research is needed to explore the impact on performance from the use of PMTs.

Based on the previous research and limited studies considering strategy, MAPs and PMSs in the public sector, the following hypotheses have been developed:

Hypothesis 1 (H1): Council departments placing higher emphasis on differentiation strategy will have higher performance through the mediating variables of CPMTs, CMAPs and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning.

Hypothesis 2 (H2): Council departments using more CPMTs will have higher performance through mediating variables of market orientation, entrepreneurship, innovation, organisational learning and CMAPs.

Hypothesis 3 (H3): Council departments with higher capabilities of market orientation, entrepreneurship, innovation and organisational learning will have higher performance.

Hypothesis 4 (H4): Council departments placing higher emphasis on cost leadership strategy will have higher performance through the mediating variables of CMAPs, CPMTs and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning.

5.4.2 Implementation Factors and Performance Measurement Techniques

It is intuitive that certain factors, such as training and information systems, will impact on the extent councils adopt traditional or contemporary PMTs. For example, organisations providing training for managers in performance measurement has been found to be positively associated with performance measurement development (Cavalluzzo and Ittner, 2004). It has also been hypothesised that data limitations, in terms of whether reliable and timely data can be obtained, is negatively associated with performance measurement (Cavalluzzo and Ittner, 2004), although their hypothesis was not supported. Ittner and Larcker (1998a), however, did find that the lack of highly developed information systems was problematic for BSC users. The existing literature was more extensively reviewed in Chapter 4. From this literature review, the following hypotheses have been developed for testing in the present study:

Hypothesis 5 (H5): The extent performance related training is provided to managers is positively associated with the higher use of PMTs.

Hypothesis 6 (H6): The extent departments experience data limitations are negatively associated with the higher use of PMTs.

5.4.3 Summary of Hypotheses Devised

The above sections (sections 5.4.1 and 5.4.2) have explained and stated the hypotheses developed to test the research contingency model in Figure 5.2. The rest of this chapter outlines how these hypotheses will be tested through adopting a questionnaire research methodology (section 5.5) and statistical analysis (section 5.6).

5.5 Questionnaire Research Methodology

As outlined above, this research is undertaken within the functionalist paradigm, by applying a contingency model. Quantitative data is usually generated in such an approach. Previous contingency research studies have tended to utilise questionnaires as the method of measurement (Otley, 1980; Otley and Pollanen, 2000), with a focus on cross-sectional[20] survey methods (Chenhall, 2003). As De Vaus (2002) summarises, survey research is one method of collecting, organising and analysing data. Questionnaires are one technique that may be adopted for such a survey research approach.

Rather than judging a research methodology against a universal standard, it should be assessed in terms of its ability to produce the type of results required for the research study (Otley, 1980). Therefore, the criticisms and advantages of a questionnaire research methodology will be considered in sections 5.5.1 and 5.5.2, respectively, with the application of such an approach to the current research considered in section 5.5.3.

There are two main types of questionnaires used for research. Analytical surveys are used to test theories or verify hypotheses, in contrast to descriptive surveys that observe and describe a situation or population. An analytical survey is, therefore, appropriate for this research project, developed to test the hypotheses devised in section 5.4.

Consideration of ethical issues is an important element of any research study (Saunders *et al*., 2007).

> In the context of research, **ethics** refers to the appropriateness of your behaviour in relation to the rights of those who become the subject of your work, or are affected by it.
>
> (Saunders *et al*., 2007: 178)

Key ethical issues in research include voluntary participation and maintenance of confidential data or anonymity (Saunders *et al*., 2007). In relation to the present study, the purpose and content of the research was explained to potential participants through the advance warning letter (Appendix B), the e-mail issuing the questionnaire (Appendix C) and the letter accompanying the questionnaire being issued (Appendix D), with assurance of anonymity provided. The e-mails to the questionnaire recipients were issued from an Audit Commission e-mail address in a purposeful attempt to increase response rates. Recipients of the questionnaire were strongly encouraged to complete

[20] Cross-sectional surveys produce information about a sample at a certain point in time.

the questionnaire though participation was voluntary. The subsequent return of completed questionnaires may be taken as 'implied consent' (Saunders *et al*., 2007).

5.5.1 Criticisms of Questionnaire Surveys

As mentioned above, many of the previous published contingency research studies have used questionnaires. Examples of such studies reviewed in Chapter 4 and in devising the research hypotheses in section 5.4, include Gerdin (2005), Miah and Mia (1996) and Simons (1987). However, despite the widely adopted utilisation of the questionnaire survey method, there are limitations with such an approach. Indeed, several criticisms have been put forward in relation to surveys, covering both philosophical and technique based aspects (De Vaus, 2002). Some of the main criticisms will now be explored.

Firstly, surveys do not adequately establish causal relationships between variables (De Vaus, 2002), as any associations between variables identified do not mean causality (Oppenheim, 1992). For example, results of cross-sectional survey studies do not prove a relationship or causality, but simply indicate relationships and provide evidence consistent with the theoretical position of the research (Abernethy and Stoelwinder, 1991; Argote, 1982; Govindarajan and Gupta, 1985; Gupta and Govindarajan, 1984a; Mak, 1989).

Secondly, some variables are not measurable, particularly by surveys (De Vaus, 2002). This links in with the review of previous research that concluded the operationalisation of certain variables, such as strategy, is problematic (section 2.7).

Surveys may also be criticised as being too restricted, with structured questionnaires limiting the issues explored (De Vaus, 2002). De Vaus (2002) goes on to explain that questions are also reduced into meaningless numbers for statistical analysis. However, this criticism should be considered in conjunction with the logic of the statistical analysis. The appropriateness of alternative statistical analyses is further explored in Chapter 6.

With questionnaires, there is also the risk of respondent bias. Results are based on the perceptions of the respondents (Fisher, 1995; Gupta and Govindarajan, 1984a) and even if care is taken to validate the data, Gresov (1989) suggests this criticism of the survey method can never be completely ignored.

5.5.2 Advantages of Questionnaire Surveys

Despite the widely acknowledged criticisms of questionnaires, Langfield-Smith (1997) suggests there is still a valuable place for future survey contingency research. Indeed, De Vaus (2002) suggests that the criticisms to survey methods should not result in abandoning the method, but should be used to improve such an approach. Indeed, there are many advantages to adopting questionnaire surveys which should also be acknowledged. Some of the main advantages of such a technique include that respondents can consider the questionnaire content and complete at a time convenient for them. The advantages of mailed survey questionnaires, specifically, include low cost and the ability to cover wide geographic distribution of the sample population, as well as target a large sample population (Bourque and Fielder, 1995; Czaja and Blair, 1996; Oppenheim, 1992). Postal questionnaires also avoid interviewer bias (Oppenheim, 1992). A variation on the postal questionnaire is a survey that is issued electronically rather than by conventional mail. This approach has developed over recent years in line with the increased use of computers and electronic-mail. Advantages specific to electronic questionnaires will now be considered in the following section.

5.5.2.1 Electronic Questionnaires

Many advantages of electronic questionnaires have been proposed. Six main advantages of electronic survey methods have been identified by Tse (1998) in comparison to traditional mail methods. Electronic survey methods are cheaper; quicker due to instantaneous delivery; encourage response; are environmentally friendly; eliminate tedious mail processes; and are less likely to be ignored as junk mail. Since this research by Tse in 1998 the quantity of junk e-mail has increased significantly and, therefore, the last advantage may have less relevance today. Indeed, Selwyn and Robson (1998) suggest that there will be information overload as electronic communication becomes the norm and research via email runs the risk of being marginalised as a form of electronic junk mail. However, research has found that questionnaires issued by e-mail are preferred by 84% of council officers in the UK (Enticott, 2003). Higher response rates to questionnaires issued by e-mail compared to postal methods have also been found (Enticott, 2003).

Other advantages of electronic surveys in comparison to mail surveys are reduced stationery and postage costs (Enticott, 2003; Gill and Johnson, 2002). Survey software also permits the transfer of electronically returned surveys to be transferred directly into spreadsheets or statistical packages. Considerable time is, therefore, saved on the data

input of responses. Furthermore, reduced data input lessens the likelihood of data input errors. Enticott (2003) concluded that e-mail surveys can prove a fruitful and cost-effective research methodology.

5.5.3 Application to this research

From the review of the advantages and disadvantages of questionnaire surveys in sections 5.5.1 and 5.5.2, an electronic-mail cross-sectional questionnaire is to be adopted as the research instrument for this study. Such a technique is concluded to be the most appropriate method for this study for the following reasons. Firstly, although case study research provides an in-depth analysis, this is limited to a just a few departments or councils. The questionnaire survey approach provides a cost-effective method to incorporate numerous local authorities within the research. Secondly, a mail questionnaire has the advantages of providing anonymity of respondents and avoiding interviewer bias. The existing literature supports that the majority of previous contingency-based research has adopted cross-sectional questionnaires as the research method (Chenhall, 2003; Fisher, 1995; Otley, 1980; Otley and Pollanen, 2000). The use of surveys in future contingency research is also advocated (Langfield-Smith, 1997).

Electronic communication has become the norm, particularly in local authorities. Issuing the questionnaires by e-mail is, therefore, an expected professional approach by senior managers in English local authorities. Such public sector managers are also familiar with completing electronic surveys produced by the SNAP survey software. In using the SNAP survey software, responses are submitted electronically and automatically merged into the SNAP survey for transfer to a spreadsheet or statistical packages such as SPSS. An electronic-mail questionnaire is, therefore, deemed to be the most appropriate method for the current research study. However, the criticisms of such an approach should not be ignored and, consequently, how some of these disadvantages can be overcome through the research design for this study will now be considered (section 5.5.3.1).

5.5.3.1 Addressing Questionnaire Disadvantages

Some of the key disadvantages, as referred to in section 5.5.1 above, are further considered below in an attempt to identify how they might be addressed so as to limit their impact on this research project.

Causality: It is acknowledged that the identification of associations between variables tested in the research contingency model will not prove causal relationships, as a limitation of cross sectional research studies. This will be considered in relation to the statistical analysis undertaken, the interpretation of the results and the recommendation for further longitudinal research to build on this research study's findings.

Measurability of variables: When measuring any of the variables within the research contingency model, it is essential that the concepts and measures are appropriately developed. This is an area where previous research has struggled (Otley and Pollanen, 2000). Such issues will be considered when devising variable measurement and the research questionnaire. Chapter 7 details the operationalisation and measurement of the research variables, as well as the questionnaire development.

Low response rate: The likelihood of obtaining a low response rate for the questionnaire administered for this research study will be attempted to be reduced by several means, such as through the design of the questionnaire itself and techniques to support the administering of the questionnaires, including issuing reminders. Such methods have been recognised to maximise response rates for postal surveys (De Vaus, 2002). More details on the application on such methods for this study will be explained in Chapter 7. Furthermore, surveys to a particular sub-section of the population (such as local authority senior managers in the present study) and well-administered have response rates as good as other methods (De Vaus, 2002).

Missing data: Missing data, through respondents not completing all questions, will be attempted to be avoided through the questionnaire design (see Chapter 6). However, some missing data is likely to be inevitable and will be considered through appropriate treatment within the statistical analysis.

Sub-population: The disadvantage of postal questionnaires not being appropriate for use with certain sub-populations is not relevant to this research project, as this research questionnaire will be targeted at senior managers within English local authorities. Furthermore, the questionnaire will be devised and pilot-tested to avoid over-complicated questions and to ensure that it is relevant for ease of completion but also to enable testing of the hypotheses.

Non-response bias: Statistical analysis will test for non-response bias and is further explained in 6.4.2.

Perceived junk-mail: The risk of the questionnaire being perceived as junk e-mail for this research is reduced by issuing the questionnaires from an Audit Commission e-mail

address[21]. The e-mails and questionnaire, consequently, should be perceived by respondents as a legitimate piece of research as opposed to junk e-mail.

5.6 Statistical Analysis

As explained in section 5.2, this research study is adopting a functionalist approach, which utilises nomothetic methods. A nomothetic method often includes statistical testing of hypotheses (Gill and Johnson, 2002). The approach to the statistical analysis for this research will now be briefly considered, with an overview of hypothesis testing and multivariate analysis in sections 5.6.1 and 5.6.2, respectively. The various statistical techniques and their application to this research study will be explored in more detail in Chapter 6.

5.6.1 Hypothesis Testing

In section 5.4 above, hypotheses to be tested in relation to the research contingency model for this study, were devised. Hypothesis or significance testing is the process of testing the proposal of the hypothesis by statistical methods, by using samples (Lucey, 1996). This basically means that statistical techniques help assess whether the difference between the sample data and the hypothesis is due to the sample being slightly unrepresentative or the hypothesis being wrong (Lucey, 1996).

Within hypothesis testing, the statistical analysis results in the rejection or acceptance of a hypothesis. There are four possible results of hypothesis testing:

Accept a true hypothesis – correct decision

Reject a false hypothesis – correct decision

Reject a true hypothesis – incorrect decision (Type I error)

Accept a false hypothesis – incorrect decision (Type II error*)*

When a hypothesis is tested by sampling, it is not possible to make a definitely correct decision, so there is always some risk of a Type I or Type II error occurring (Lucey, 1996). Statistical significance levels of 10%, 5% or 1% are usually selected to demonstrate how

[21] The Audit Commission was the initial sponsor of this research.

confident we are in the conclusion made. These standard significance levels will be adopted for testing the hypotheses in the present research study.

There are many different statistical techniques that may be adopted to undertake hypothesis testing. It is essential to determine which technique is the most appropriate for individual research studies. As evident from above (section 5.3), several variables are being considered within this study's research contingency model. Statistical methods examining multiple variables are termed multivariate statistical analyses and are further considered below.

5.6.2 Multivariate Statistical Analysis

This study's research contingency model (Figure 5.2) is concerned with determining the relationships between the independent variables of size, strategy, PMTs, MAPs, data limitations and training, and the dependent variable of local authority performance outcome. Statistical techniques to test the correlation[22] between these variables, therefore, need to be applied. As relationships between multiple variables from the research contingency model and hypotheses are to be explored, basic bivariate correlation techniques examining relationships between just two variables need to be extended to incorporate several variables. The concepts of multivariate statistical analysis, as well as the main methods within this branch of statistics, are explored in more detail in Chapter 6. In essence, though, multivariate statistical analysis refers to statistical methods that simultaneously analyse more than two variables (Hair *et al*., 1998). Multivariate statistical analysis is, consequently, concerned with measuring and predicting the relationships between multiple variables (Anderson, 1984; Hair *et al*., 1998).

Although multivariate statistical techniques analyse multiple variables, there are different methods that consider single or multiple relationships. For example, multiple regression and discriminant analyses examine single relationships with one dependent variable (Hair *et al*., 1998). SEM, in contrast, examines multiple relationships of dependent and independent variables (Hair *et al*., 1998). As Hoyle (1995:1) summarises, SEM "…is a comprehensive statistical approach to testing hypotheses about relations among observed and latent[23] variables…" SEM is determined to be the most appropriate statistical method to be adopted to simultaneously test the multiple relationships hypothesised in this study's research contingency model. SEM will be considered in more detail in Chapter 6.

[22] Correlation refers to the relationship between variables.
[23] Latent variables are unobserved variables implied by the co-variances among two or more indicators (Hoyle, 1995).

5.6.3 Other Statistical Analyses

Statistical analyses in addition to SEM will be required to support this research study. In particular, this will include assessment of potential non-response bias (section 5.5) and descriptive statistics to provide an overall picture of the sample population and variables. The techniques to be adopted for these analyses will be detailed in Chapter 6 (section 6.4).

5.7 Summary and Conclusion

The alternative philosophical and methodological approaches to undertaking research have been explored. It is concluded that the current research will be undertaken within the functionalist paradigm, through the adoption of a contingency model. A research contingency model, as well as associated hypotheses to be tested, has been developed from the review of prior research in Chapters 2, 3 and 4. Central to the research is the contingency relationship between strategy, PMTs, MAPs and the resulting local authority performance outcome. A cross-sectional analytical survey, based on an electronic questionnaire, will be adopted as the research method for this study. SEM has been identified as the most appropriate statistical technique to simultaneously study the multivariate relationships within the research contingency model, in order to test the research hypotheses. The selection of the SEM statistical approach will be further explained in Chapter 6, where the various statistical analyses to be utilised are explored and justified.

Chapter 6: Statistical Analysis Methodology

6.1 Introduction

The research contingency model and hypotheses to be tested in the present study were developed in Chapter 5. This chapter explores the alternative statistical techniques that may be adopted, focussing specifically on SEM as the technique to be adopted in the present study.

The remainder of this chapter is structured as follows. Firstly, section 6.2 explores multivariate statistical techniques. Section 6.3 considers the multivariate statistical techniques to be adopted in the present study, including SEM and a review of the main SEM software packages available. Section 6.4 briefly examines additional statistical analyses that should be undertaken, in addition to the multivariate statistical techniques. Section 6.5 brings the chapter to a close with a summary and conclusion.

6.2 Multivariate Statistical Analysis

Multivariate statistical analysis is a difficult concept to define, with alternative meanings applied in the existing literature (Anderson, 1984; Hair *et al*., 1998; Stevens, 1996). However, basically the term refers to statistical methods that simultaneously analyse more than two variables (Hair *et al*., 1998). The purpose of multivariate analysis is to measure, explain and predict the degree of relationship among variables, indicating that the multivariate character refers to the multiple combination of variables not just the number of variables (Hair *et al*., 1998). The measurement and analysis between variables and sets of variables, are fundamental to multivariate analysis (Anderson, 1984).

Many different multivariate statistical techniques have developed, particularly from univariate and bivariate statistics[24]. Hair *et al*. (1998) provide a useful classification of these techniques, between dependence and interdependence techniques. The main multivariate techniques will now be considered within these two categories (sections 6.2.1 and 6.2.2, respectively).

[24] Univariate and bivariate statistics involve one and two variables, respectively.

6.2.1 Dependence Techniques

A dependence technique is "...one in which a variable or set of variables is identified as the **dependent variable** to be predicted or explained by other variables known as **independent variables**…" (Hair *et al*., 1998: 18). There are similarities between the 'family' of dependence techniques, with the different techniques categorised based on the number of dependent variables and the type of measurement scale employed by the variables (Hair *et al*., 1998). The main dependence techniques will now be considered in sections 6.2.1.1 to 6.2.1.7.

6.2.1.1 Multiple Regression Analysis

Multiple regression analysis is a very useful technique (Hair *et al*., 1998; Howell, 1989), concerned with predicting one dependent variable from several independent variables (Hair *et al*., 1998; Imoisili, 1989; Lucey, 1996; Stevens, 1996). This is an extension of simple regression[25], enabling the effect of additional variables to be considered.

The coefficient of determination (R^2) is calculated in multiple regression analysis to indicate the percentage of the dependent variable that can be predicted by the independent variables (Lucey, 1996; Howell, 1989; Munro, 1993d). This level of accuracy in prediction of the dependent variable will change based on the independent variables included in the model. There are alternative approaches to assessing the contribution made by individual variables within the regression model, such as entering the variables one at a time. The use of such alternative methods aims to optimise the prediction of the dependent variable.

6.2.1.2 Discriminant Analysis

Discriminant analysis is used to understand group differences and to predict the likelihood that an entity will belong to a particular group based on several metric[26] independent variables (Hair *et al*., 1998; Munro, 1993c; Stevens, 1996). Discriminant analysis is, therefore, similar to multiple regression (section 6.2.1.1 above), but is adopted when the single dependent variable is non-metric (Hair *et al*., 1998; Stevens, 1996). Although discriminant analysis may be applied when the dependent variable is dichotomous or

[25] Simple regression predicts the dependent variable from a single independent variable.
[26] Metric measures relate to quantitative or numerical measures, in contrast to qualitative or categorical non-metric measures (Hair *et al*., 1998).

multichotomous (Hair *et al*., 1998), logistic regression is now increasingly adopted in social science research when there are two outcome categories (Munro, 1993c).

6.2.1.3 Logistic Regression

Logistic regression is a similar statistical technique to multiple regression (covered in section 6.2.1.1 above), where one or more independent variables are used to predict a single dependent variable (Hair *et al*., 1998; Munro, 1993c). The distinction between these two techniques is on the measurement scale of the dependent variable. The dependent variable when using multiple regression should be measured on an interval or ratio scale (Munro, 1993c). However, when the dependent variable measure is categorical, but dichotomous, logistic regression is appropriate (Munro, 1993c; Pampel, 2000). If there are more than two outcome categories then discriminant analysis (section 6.2.1.2 above) should be used instead (Munro, 1993c).

6.2.1.4 Multivariate Analysis of Variance and Covariance

Multivariate analysis of variance (MANOVA) is an important statistical technique in social science research (Munro, 1993a). The MANOVA is an extension of the univariate analysis of variance (ANOVA) (Hair *et al*., 1998; Munro, 1993a). ANOVA is basically a statistical technique used to test for differences in the means of several groups (Howell, 1989). The MANOVA technique enables the exploration of the relationship between several categorical independent variables and two or more metric dependent variables, simultaneously (Hair *et al*., 1998). Separate ANOVAs would not identify relationships between the dependent variables that a MANOVA permits (Munro, 1993a). A MANOVA is also a test of increased power, compared to separate ANOVAs (Munro, 1993a; Stevens, 1996).

Analysis of covariance (ANCOVA) is a statistical technique that combines analysis of variance (ANOVA) and regression analysis (Munro, 1993b; Stevens, 1996). ANCOVA is basically an extension of ANOVA that provides a more powerful test, by reducing error variance (Munro, 1993b; Stevens, 1996). Multivariate ANCOVA involves several dependent variables and several covariates, where a covariate is any variable that is significantly correlated with the dependent variable (Stevens, 1996). There are several assumptions that should be met when adopting the ANCOVA statistical technique, including that the groups should be mutually exclusive, interval or ratio level data should

be used for both dependent variables and covariates, and the covariate and dependent variable must be linearly related (Munro, 1993b).

6.2.1.5 Conjoint Analysis

Conjoint analysis is a dependence multivariate statistical technique evaluating objects, involving one metrically measured dependent variable in a single relationship (Hair *et al*., 1998). A primary application of this technique is in new service or product development, where complex products may be evaluated while maintaining a realistic decision context for the respondent (Hair *et al*., 1998).

6.2.1.6 Canonical Correlation

Canonical correlation is an extension of multiple regression, which enables more than one dependent variable to be included in the analysis (Hair *et al*., 1998; Munro, 1993d). The canonical correlation technique measures the relationship between several independent variables and several dependent variables (Hair *et al*., 1998; Munro, 1993d). This is in contrast to multiple regression, which only includes one dependent variable (section 6.2.1.1). Within canonical correlation, both the dependent and independent variables are measured on metric scales (Hair *et al*., 1998).

Canonical correlation basically involves obtaining weighted composites of the sets of independent and dependent variables which provides the maximum simple correlation between these sets of variables (Hair *et al*., 1998; Munro, 1993d).

6.2.1.7 Structural Equation Modelling

SEM is a collection of related statistical techniques (Kline, 2005; Ullman, 2007). Various other terms, such as covariance structure analysis, covariance structure modelling and analysis of covariance structures are also used in the literature, often interchangeably (Kline, 2005). Within SEM, the researcher develops a theoretical model, hypothesising how sets of variables define constructs and are related (Schumacker and Lomax, 2004). SEM aims to assess the extent the researcher's theoretical model is supported by the sample data (Schumacker and Lomax, 2004).

The unique characteristic of SEM is that it is able to simultaneously examine a series of dependence relationships (where a dependent variable becomes an independent variable in subsequent relationships within the same analysis), while also simultaneously analysing multiple dependent variables (Jöreskog *et al*., 1999 cited by Shook *et al*., 2004).

SEM is further explored in section 6.3 as the technique to be adopted in this research.

6.2.2 Interdependence Techniques

Interdependence techniques are ones "…in which no single variable or group of variables is defined as being independent or dependent. Rather, the procedure involves the simultaneous analysis of all variables in the set…" (Hair *et al*., 1998: 18). The three main techniques in this category are factor analysis, cluster analysis and multidimensional scaling, which are outlined in the following sections.

6.2.2.1 Factor Analysis

Factor analysis is a multivariate statistical technique used to analyse interrelationships between a large number of variables, and explain these variables based on their underlying factors (Hair *et al*., 1998). Factors are "…hypothesised, unmeasured and underlying variables, which are presumed to be the sources of the observed variables…" (Kim and Mueller, 1994: 71). Factor analysis, therefore, involves grouping a large number of variables into a smaller number of factors (Dixon, 1993; Kim and Mueller, 1994).

There are two main approaches to factor analysis; exploratory and confirmatory (Stevens, 1996). EFA is used to explore the underlying factor structure without prior specification of the number of factors or their relationships (Kim and Mueller, 1994). In contrast, CFA tests specific expectations concerning the number of factors and their relationships, using sample data (Kim and Mueller, 1994). EFA is, therefore, more concerned with theory generation, compared to CFA which has a theoretical or empirical base (Stevens, 1996).

An important distinction between EFA and CFA is that EFA assumes that all the observed variables are related to all of the common factors (Dixon, 1993). In contrast, in CFA relationships between variables and certain, but not all, common factors are hypothesised (Dixon, 1993).

6.2.2.2 Cluster Analysis

Cluster analysis is an interdependence multivariate statistical technique used to develop meaningful mutually exclusive subgroups of individuals or objects based on similarities (Hair *et al*., 1998). The result of cluster analysis is, consequently, a number of groups or clusters (Everitt, 1980). The groups are identified by the cluster analysis technique, in contrast to discriminant analysis (section 6.2.1.2), where the groups are predefined.

Cluster analysis may be adopted for several alternative purposes, including data exploration or reduction and hypothesis generation or testing (Everitt, 1980). There are three main steps to cluster analysis, according to Hair *et al*. (1998). Firstly, similarities or associations among the entities are measured, to identify groups within the sample. The second step involves actually dividing the entities into groups or clusters. The final step is to profile the variables to determine their composition, through other multivariate statistical techniques, such as discriminant analysis.

6.2.2.3 Multidimensional Scaling

Multidimensional scaling, also known as perceptual mapping, refers to a series of techniques that enable a researcher to determine the structure or perceived image of a set of objects (Davison, 1983; Hair *et al*., 1998; Kruskal and Wish, 1978). Multidimensional scaling uses measures of proximity between pairs of objects, where a proximity indicates how similar two objects are (Davison, 1983; Kruskal and Wish, 1978). The main output of this technique is a spatial representation or map, displaying the structure of the data through distances between objects, based on their similarity (Hair *et al*., 1998; Kruskal and Wish, 1978). Multidimensional scaling has two primary objectives of identifying unrecognised dimensions affecting behaviour and to obtain comparative evaluations of objects when the specific bases of comparison are unknown (Hair *et al*., 1998).

6.3 Technique to be adopted in this research

As outlined in Chapter 5, SEM is the primary multivariate statistical technique to be adopted for the present study in testing the research hypotheses. However, EFA and CFA will also be undertaken to support, and as part of, the SEM process. These three techniques will now be explored in more detail in sections 6.3.1 to 6.3.3.

6.3.1 Exploratory Factor Analysis

The SEM analysis to be executed in the present study (Chapters 9 and 10) will use the sample data collected from returned questionnaires, as well as UoR and CPA published assessments. It is important when using the data from measuring instruments such as a questionnaire that the data collected is valid. Factor analysis has been proposed as being "…the most important statistical tool for validating the structure of our instruments…" (Dixon, 1993: 252).

Following the formulation of items in the questionnaire designed to measure the unobserved variables (as detailed in section 7.3), EFA should then be conducted to determine the extent the observed variables are related to the unobserved variables (Byrne, 2001). Observed variables that are correlated with one another but largely independent of other subsets of variables are combined into factors (Tabachnick and Fidell, 2007). There are actually several different methods for identifying factors (Field, 2005). The two basic methods to obtain factor solutions are known as common factor analysis and PCA[27] (Field, 2005; Hair *et al*., 1998; Tabachnick and Fidell, 2007). A decision must be made as to which approach is the most appropriate to any particular research study. This choice is simplified by Tabachnick and Fidell (2007) who conclude that for researchers who are primarily trying to reduce a large number of variables down to a smaller number of components, PCA is the method to choose. PCA will, therefore, be applied to the numerous observed variables in the present research, to reduce them down to a smaller number of components. These components should, to some extent, be consistent with the unobserved variables identified in the research contingency model (Figure 5.2) and will be used as the basis for the SEM analysis.

The details of executing PCA are more fully explained in Chapter 8, where the technique is applied to the present research study.

6.3.2 Structural Equation Modelling

As a statistical methodology, SEM takes a hypothesis testing approach to analysing the structural theory on some phenomenon (Byrne, 2001). There are two types of variables differentiated within SEM. Firstly, there are the observed variables (also referred to as measured variables, indicators or manifest variables) which are the measured scores taken from the research instrument (Blunch, 2008; Bryne, 2001a; Kline, 2005; Ullman,

[27] Strictly speaking, factor analysis produces factors whereas PCA produces components, though the term factor is often applied to both techniques (Tabachnick and Fidell, 2007).

2007). In the present study, these observed variables are the questions on the research questionnaire as outlined in Chapter 7 (section 7.3). The second type of variable are termed unobserved variables, constructs, latent variables or factors which are the theoretical constructs that researchers study but that cannot be observed or measured directly (Bryne, 2001a; Kline, 2005; Ullman, 2007). The unobserved variables adopted for the SEM analysis will be the factors identified from the PCA (section 6.3.1). The observed variables serve as indicators of the underlying construct that they are presumed to represent (Byrne, 2001). As explained in section 7.3, there are various items on the research questionnaire in the present study that have been identified to measure the constructs in the research contingency model (Figure 5.2).

The general SEM model is made up of two sub-models of measurement model and structural model (Anderson and Gerbing, 1988; Blunch, 2008; Byrne, 2001). The measurement model describes the relationship between the unobserved and observed variables (Byrne, 2001). The structural model defines the relationships between the unobserved variables. This mapping of connections in the structural model is the primary purpose of SEM analysis (Blunch, 2008).

There are three main scenarios for applying SEM, termed strictly confirmatory, alternative models and model-generating (Jöreskog, 1993, cited in Kline, 2005). The strictly confirmatory scenario is where the researcher hypothesises a single model which is tested by comparison to sample data collected. The model is then rejected or not. Within the alternative models approach, the researcher proposes several alternative theoretically-based models. The models are analysed applying empirical data and one model is then selected as representing the sample data most appropriately. Finally, the model-generating approach is where the researcher proposes a single model which may then be rejected as poorly fitting the sample data. The researcher then goes onto modify and re-test the model on an exploratory basis until the model fits the sample data well, ensuring that the modified model still makes theoretical sense. The model-generating approach is the most commonly adopted (Byrne, 2001) and will be the approach adopted in the present study.

SEM has increased in popularity in recent years and there are four main reasons for this (Schumacker and Lomax, 2004). Firstly, SEM allows multiple observed variables to understand complex phenomena, whereas the basic statistical methods are limited in the number of variables that may be included. Secondly, SEM takes measurement error into account when statistically analysing data, addressing the need for increased recognition of the validity and reliability of the observed variables from the measurement instrument. Additionally, the observed and unobserved variables are separately analysed within SEM.

Thirdly, SEM has developed over the last three decades, enabling more advanced theoretical models to now be analysed. Finally, SEM software programs have become increasingly user-friendly, such as with features similar to other Windows-based software packages. Alternative SEM software programs are further considered in section6.3.4 below. These developments, summarised by Schumacker and Lomax (2004), have opened up the technique of SEM to researchers.

Leading on from the developments of SEM above, the characteristics and uses of SEM have been considered as part of the decision that it is the most appropriate multivariate statistical technique to be applied in the present study. Firstly, as noted in sections 5.6.2 and 6.2.1.7, SEM simultaneously examines the multiple relationships hypothesised in the research contingency model. Furthermore, applying SEM with AMOS (section 6.3.4.3) permits the significance of both direct and indirect effects of variables to be calculated. Direct paths would be, for example, the effect of the independent variable differentiation on CPMT. Differentiation also has indirect effects on the dependent variable performance outcome through the mediating variable CPMT. AMOS calculates the significance of these multiple indirect effects providing us a full picture of the complex relationships within the research contingency model. Secondly, SEM is a priori requiring researchers to think in terms of models (Kline, 2005). Thirdly, the distinction between observed and unobserved variables within a model enables researchers to test a wide variety of hypotheses (Kline, 2005). Applying these characteristics to the current study, the research contingency model (Figure 5.2) was developed based on the review of prior literature with hypotheses developed to be tested. Observed variables (measured via the research questionnaire) and unobserved variables are distinguished within the present study, as outlined above. The advantage of SEM, particular in reference to testing the current study's contingency model and hypotheses, is that it allows the evaluation of entire models, bringing a higher level perspective to the analysis (Kline, 2005). Therefore, although individual relationships within the model may be interesting, SEM permits us to make a decision about the acceptance of the model as a whole (Kline, 2005).

The more detailed application of SEM will be further considered and explained in Chapters 9 and 10 during the process of executing SEM.

6.3.2.1 Non-normal Data

Inferential statistics, including SEM, is often based on the assumption that the data are normally distributed (Arbuckle, 2007; Blunch, 2008; Schumacker and Lomax, 2004; West *et al.,* 1995). Though no variable is strictly normal, serious non-normality cannot be

ignored (Blunch, 2008). The extent of normality can be assessed through skewness and kurtosis measures in SEM software programs (Blunch, 2008; Schumacker and Lomax, 2004; West *et al.,* 1995). A preliminary review of the data set outlined in Chapter 6 suggests some variables in the present study may be non-normally distributed. Further assessment must be undertaken to assess the skewness and kurtosis for each variable prior to executing the detailed SEM analysis.

SEM may still be applied to non-normal data through several alternative approaches. Firstly, the variables may be transformed to near-normality (Blunch, 2008). Secondly, an estimation model that makes no assumption on normal distribution, such as unweighted least squares (ULS) or asymptotically distribution free (ADF) may be adopted in favour of the more commonly maximum likelihood (ML) and normal theory generalised least squares (GLS) (Blunch, 2008; West *et al.,* 1995). Alternatively, bootstrapping may be used (Blunch, 2008; Schumacker and Lomax, 2004; West *et al.,* 1995). The basic principle behind bootstrapping is that you take your sample to be the population and from this take a specified number of re-samples (Blunch, 2008; Schumacker and Lomax, 2004), thereby enabling the researcher to create multiple subsamples from an original data base (Bryne, 2001a). As West *et al.* (1995:66) conclude, the "...bootstrap approach is simple conceptually and computationally, given the increasing availability of software to implement bootstrap resampling, including some of the structural equation modelling packages."

Following the review of the data set and the acknowledgement that some of the variables are non-normally distributed, it is concluded to adopt the bootstrapping approach to SEM.

6.3.3 Confirmatory Factor Analysis

SEM may be undertaken as a two step process which is further explained in Chapter 9. Briefly, though, the first step of SEM is to apply CFA to analyse the measurement model element of the full SEM model. This analysis focuses on the link between the factors (identified through EFA or PCA explained in section 6.3.1) and their measured variables (Byrne, 2001). Within CFA we seek to statistically test the significance of the hypothesised measurement model (Schumacker and Lomax, 2004). This CFA, analysing the study's measurement models, is undertaken in Chapter 9 as the first step of the SEM process.

6.3.4 SEM Computer Programs

There are many computer programs currently available for undertaking SEM. The primary programs are identified as AMOS, EQS and LISREL (Kline, 1998; Schumacker and Lomax, 2004). These main software programs will now be further considered.

6.3.4.1 LISREL

LISREL (Linear Structural Relationships) was released in 1976 as the first SEM software program but has become increasingly user-friendly over the past three decades (Schumacker and Lomax, 2004). LISREL has now developed into a suite of programs to cover not just SEM, but all stages from data entry through exploratory data analyses. Indeed, LISREL is a set of three programs of PRELIS, SIMPLIS and LISREL (Ullman, 2007). The preliminary analyses for LISREL are performed using PRELIS, which is capable of imputing missing data (Ullman, 2007). SIMPLIS allows models to be specified with equations, but is limited in terms of options and output. Models may also be specified in SIMPLIS through diagrams. Alternatively, LISREL specifies SEM models with matrices but these can become complicated (Ullman, 2007). LISREL is also able to estimate multilevel models.

6.3.4.2 EQS

EQS allows the model to be specified either by equations or through a diagram. In comparison to AMOS and LISREL programs, EQS is the most user-friendly (Ullman, 2007). EQS offers several methods of estimation and is able to handle deletion of cases, as well as non-normal data. Additionally, EQS is able to analyse multilevel models. Ullman (2007) identifies EQS as the SEM 'program of choice' if model modifications are to be performed and when data are non-normal. However, on a detailed comparison of features of the main SEM software undertaken by Ullman (2007), it is evident that EQS reports less goodness of fit indexes than either LISREL or AMOS.

6.3.4.3 AMOS

AMOS is an acronym for Analysis of Moment Structures, meaning the analysis of mean and covariance structures (Byrne, 2001). AMOS offers two approaches to model specification; AMOS Basic and AMOS Graphics. Using AMOS Basic one works directly

from equation statements, whereas with AMOS Graphics you work directly from a path diagram. As Byrne (2001) explains, the choice of method is dependent on the researcher's preference to working within a graphical or more traditional programming interface.

There are several different estimation methods available in AMOS, as well as extensive bootstrapping capabilities and detailed reporting of goodness of fit information (Ullman, 2007). However, categorical data is not able to be treated within AMOS (Arbuckle, 2006; Ullman, 2007). A useful tool in AMOS is that by moving the cursor over a part of the output, a pop-up help screen explains that element of the output (Ullman, 2007). AMOS also is part of the SPSS (Statistical Package for the Social Sciences) suite of programs, increasing the flexibility between the data input file (in SPSS) and the SEM analysis (in AMOS).

6.3.4.4 Application for present study

AMOS was selected as the software to be adopted for the present study for two main reasons. Firstly, AMOS 7.0 is part of the SPSS statistical software suite. This meant that the AMOS software was easily available through the researcher's University, along with SPSS, without additional cost or issues. Furthermore, this means there would be a simple link between the raw data file in SPSS and the SEM analysis undertaken by AMOS. This was particularly useful as the electronic survey software adopted in the present study (SNAP) enabled the questionnaire responses to be transferred to SPSS, thereby avoiding manual data input.

Secondly, it is noted from the literature that AMOS is user-friendly and useful for those not experienced in SEM (Kline, 1998; Ullman, 2007). The AMOS Graphics method is particularly easy to use without the need for complicated equations. Furthermore, the extensive bootstrapping capabilities of AMOS (Ullman, 2007) are particularly relevant and useful for handling the study's non-normal data.

6.4 Other Statistical Analyses

Although SEM, along with PCA and CFA, is the primary statistical technique that will be undertaken to test the research model and associated hypotheses, there are additional statistical analyses that should be executed to provide additional information. These will now be briefly considered in sections 6.4.1 and 6.4.2.

6.4.1 Descriptive Statistics

Descriptive statistical methods aim to summarise the information and present the information clearly and concisely, drawing out the main features (Barrow, 2006). Descriptive statistics reported in research often include a measure of location (such as the mean or median) and a measure of dispersion (such as the standard deviation or range). Descriptive statistics of the variables in the present research study will be calculated and reported (see Chapter 9).

6.4.2 Non-response Bias

One of the drawbacks of using a questionnaire as the research measuring instrument is that, inevitably, there will be an element of non-response (Bourque and Fielder, 1995), with not all the research questionnaires issued being completed and returned. The non-respondents may differ in some important aspects to respondents, known as non-response bias (De Vaus, 2002). This may mean that the results identified from the respondents may not be generalised to the research population as a whole. It is, therefore, important to consider whether there is any statistical difference in characteristics between the respondents and non-respondents. Whether there is any non-response bias evident from the sample data is calculated and further discussed in section 7.2.4.4.

6.5 Summary and Conclusion

There are many multivariate statistical techniques which are designed to simultaneously analyse more than two variables. The main multivariate statistical methods have been considered, within the two main categories of dependence and interdependence techniques. SEM was explored in more detail, as the primary multivariate statistical method to be executed within the present study along with PCA and CFA. The main software programs to undertake SEM were considered and AMOS was identified as the most appropriate SEM software to be adopted for this research. The statistical analyses to be undertaken in addition to SEM were briefly considered. The PCA will be executed in Chapter 8, with SEM and the descriptive statistics completed in Chapters 9 and 10. Firstly, though, Chapter 7 includes further consideration of the variables and research questionnaire as well as setting out the empirical data.

Chapter 7: Research Questionnaire and Variable Measurement

7.1 Introduction

This chapter provides an overview of the research questionnaire, outlining how the questionnaire was designed and issued. The development of the content of the questionnaire to measure the variables included in the research model is also described. The questionnaire is structured into sections by variables, with each section comprising a series of questions to measure each variable. Following the development of the questionnaire the chapter goes on to introduce and summarise the data set for the study.

The remainder of the chapter is structured as follows. Firstly, section 7.2 summarises how the research questionnaire was devised and distributed. Section 7.3 details how each variable is measured within the questionnaire, with Section 7.4 summarising the study's data set. The chapter closes with a summary and conclusion.

7.2 Research Questionnaire

The adoption of a questionnaire as the research instrument for the present study, along with the various advantages and disadvantages, was explored in Chapter 5. This section explores the development and distribution of the research questionnaire. The questionnaire has 8 parts and is included at Appendix A. The first part consisted of two questions on council information (type and name)[28], as well as requesting the type of department to be indicated. The second part of the questionnaire consisted of six questions on strategy. Part three consisted of seven questions on performance measurement with the fourth part including five questions on financial, non-financial and managers' performance. The fifth part of the questionnaire included two questions on the implementation factors of training and data limitations. Part six of the questionnaire comprised three questions on MAPs. The final two sections of the questionnaire consisted of two questions about the respondent and a request for the respondent to indicate whether they would like to receive a summary of the research findings. The sequencing of the sections and questions were considered in the design of the questionnaire, with the literature suggesting how important this is for self-completion questionnaires (Gill and Johnson, 2002; Oppenheim, 1992). Each section of the

[28] The questionnaire stated that the council name will only be used to supplement information obtained through the questionnaire (such as CPA results) with council names being removed prior to any analysis.

questionnaire provided the opportunity for respondents to make additional comments. This was primarily to prevent the respondents becoming frustrated by a structured questionnaire restricting their responses and not enabling them to explain their own individual views or circumstances.

The measurement and scale of variables must be appropriate for the statistical techniques adopted (Gill and Johnson, 2002; Schumacker and Lomax, 2004). Section 7.3 of this chapter goes onto explain the measurement of each individual variable in detail. The variables[29] were measured by closed questions on a Likert scale. Closed questions enable comparison and statistical manipulation but restrict respondents to a fixed set of responses (Gill and Johnson, 2002). Closed questions are generally considered to be more efficient and reliable for obtaining information from respondents compared to open questions (Fink, 1995). Likert type questions are widely used in social science research to indicate the strength of agreement or disagreement. This approach is applied to the present study to measure the approaches of local authority departments, such as the extent each type of MAP is used. Literature suggested that scales of 5 to 7 points are adequate for the majority of surveys using ordered responses (Fink, 1995). Previous studies (Abdel Halim, 2004; Chenhall, 2004; Henri, 2006a; Shields *et al*., 2000) applying SEM have adopted 7 point Likert scales. As SEM is the statistical technique to be utilised in this study, a 7 point Likert scale was consequently adopted.

The questionnaire was developed during the period January 2006 to September 2006 and involved reviewing previous research literature and a pilot study. This was necessary to ensure that the questionnaire was built on previous research instruments in order to successfully test the research contingency model for the present study. Developing questionnaires from existing studies where possible enhances the validity and reliability of the variable measure (Chia, 1995). Pilot studies are crucial to identify and correct any potential problems with the questionnaire, such as appropriate interpretation of the questions by the respondents (Gill and Johnson, 2002).

7.2.1 Population and Sample

English local authorities and their senior officers make up the population for this research. There are different types of local authorities in England as outlined in Chapter 2 (section 2.7.1). The number of English local authorities for each type are summarised in Table 7.1.

[29] All variables other than department size were measured by closed questions on a Likert scale. See section 7.3 for details of how these variables were measured.

Table 7.1: Number of English Local Authorities by Type

Local Authority Type	Number of Local Authorities in England
Unitary	46
London Borough	32
Metropolitan	36
County	34
District or Borough	238
Total	**386**

Due to the large numbers of responses required in order to execute SEM (which has been selected as the most appropriate statistical technique to test the research contingency model) it was concluded that all local authorities in England should be included. This was in preference to sending questionnaires to only a sample of local authorities. The questionnaires were to be issued to the top tier managers. The names, titles and e-mail addresses of Directors of Services or Heads of Departments[30] were obtained through review of local authority websites and contacting individual local authorities. These details were then used to issue the questionnaires (see Section 7.2.3).

Table 7.2: Department Categories

Department Category[31]
Finance and Resources
Adults and Community Services
Children and Young People
Housing
Environment and Regeneration
Planning
Transport and Highways
Leisure and Culture
Corporate Services (e.g. policy, performance, human resources, law)

[30] The position and titles of chief officers, such as Director of Service or Head of Department, depend on the individual and type of local authority. The top tier managers were targeted for the questionnaire.
[31] The name and responsibilities of each department varies between councils but these categories incorporate the main areas which were used to target questionnaires being issued to the primary service departments for all councils.

7.2.2 Pilot Study

The questionnaire devised for use in this study was based on previous research, where possible. The development of the questionnaire and variable measurement is further explained in section 7.3 below. Although there are benefits in adapting questionnaires from previous research, they still should be tested to ensure that they are appropriate for the specific research population and will yield the data required to test the variables for the individual research study (Oppenheim, 1992).

The population for this research was limited to senior officers in English local authorities. As a large number of responses are required for SEM statistical analysis and a low response rate is typical for questionnaires, it was concluded that it was most appropriate to adopt pilot testing discussing the questionnaire in detail with a small number of respondents. This was in preference to issuing a large number of questionnaires, which would reduce the overall number of respondents possible for the main study[32]. Such an approach to piloting has been used in previous research (Mia and Goyal, 1991).

The draft questionnaire was discussed with four senior officers at a sample of three district, county and unitary local authorities from a range of departments. The pilot discussions focussed on assessing whether the questions were in an appropriate order, understood and whether any questions should be added or omitted. The local authority officers included in the pilot study were equivalent in grade and role to those to whom the final research questionnaire was issued. Additionally, testing was undertaken to ensure that recipients would be able to receive the SNAP questionnaire attachment via e-mail.

7.2.3 Issuing Questionnaires

An advance e-mail (Appendix B) advising that the questionnaire would be issued was sent out two weeks prior to the questionnaires, on 11th September 2006. This has been suggested as being a useful method to increase response rates (Oppenheim, 1992) and was confirmed during the pilot study as being an approach favoured by local authority officers. The questionnaires were issued during 22nd to 24th September 2006.

The questionnaires were issued as an attachment to a covering e-mail (Appendix C) which described the research, how to complete and submit the questionnaire, as well as ensuring complete confidentiality. A further letter (Appendix D), explaining the research in more detail, was also attached. Respondents were provided with the researcher's e-mail

[32] Senior officers who completed pilot questionnaires would be subsequently eliminated from the sample for the main study.

address and mobile telephone number to answer any queries about the research or the questionnaire. The e-mail requested the questionnaire be completed by Friday 13th October 2006, allowing three weeks for individuals to respond and providing a memorable deadline to encourage responses. This timeframe of three weeks for responses is consistent with previous research utilising electronic questionnaires in local government (Enticott, 2003).

7.2.4 Respondents and Response Rates

The questionnaire was issued to 2,156 senior council officers at English local authorities. Although a deadline for responding to the questionnaires was stated as being three weeks after the questionnaires were issued, responses received after this date were still accepted. A total of 531 questionnaires were returned over a period of six weeks. However, 3 questionnaires were submitted blank. The resulting response rate overall was 24.5% (528/2156) which is consistent with expectations for surveys of senior managers and previous research (Henri, 2006a).

A potential low response rate was identified as a criticism of questionnaires when considering the research methodology to be adopted (section 5.5). Review of current literature suggests that a sample size varying between 100 and 200 cases or 5 and 10 subjects per estimated parameter is adequate for small to medium size structural equation models (Anderson and Gerbing, 1988; Bentler and Chou, 1987; Henri, 2006b). The total of 528 completed questionnaires returned is concluded to provide a good sample size to apply the SEM technique to this research. However, during the research, some questionnaires issued were found to be undelivered. These undeliverable questionnaires are considered in the next section.

7.2.4.1 Undeliverable Questionnaires

The number of questionnaires issued and returned summarised above in section 7.2.4 above is based on the number of questionnaires actually delivered to the intended recipient. Some advance e-mails and questionnaires were undelivered, for reasons such as incorrect e-mail addresses or the local authority computer system not accepting the e-mail attachment. This highlights problems in administering questionnaires electronically. Table 7.3 summarises the number of undelivered e-mails and whether these were resolved.

Table 7.3: Undelivered Questionnaires and Advance E-mails

Item	Number issued returned as undelivered[33]	Number undelivered resolved	Remaining undelivered
Advance e-mails	153	124	29
Questionnaires	75	10	65

The undelivered advance e-mails were resolved through amending the e-mail address which was incorrect, such as by contacting the local authority to check e-mail address, spelling of the name and that the post-holder had not changed, or re-sending to a general local authority e-mail address for the attention of specific post-holders. Reasons for the 29 advance e-mails remaining undelivered are highlighted in Table 7.4. The majority (16) of the advance e-mail addresses that did not exist related to two district local authorites. The process of sending out advance e-mails had the added advantage of confirming correct e-mail addresses prior to issuing the questionnaire.

The 10 resolved undelivered questionnaires required the local authority computer section to release the e-mails that were initially held in quarantine. This was due to their computer system not being able to check the questionnaire attachment for viruses. The remaining undelivered questionnaires were due to incorrect e-mail address, such as due to person leaving the local authority[34], delivery rejected or the recipient's mailbox being full. Attempts to re-send to the latter individuals resulted in the same undeliverable response. It was intended to re-send the outstanding undelivered questionnaires to the title of post-holder either via a general local authority e-mail address or sending a hard copy by post. However, due to issues within local government and the project's initial sponsor[35], this was not permitted. The remaining 65 undelivered questionnaires were subsequently excluded from the number of questionnaires issued. Due to the large number of questionnaires issued to senior managers at English local authorities, this is not deemed to be a significant problem. The reasons for the e-mails being undelivered are displayed in Table 7.4.

[33] 'Undelivered' refers to e-mails that were sent but returned as being undeliverable.
[34] Although the names and contact details of all local authorities were collated specifically for this research project, there was still a time delay before questionnaires were actually issued and even between the advance e-mails and questionnaires being sent.
[35] The Audit Commission was the author's employer and sponsor of the project at the time the questionnaires were issued.

Table 7.4: Reasons for Undelivered E-mails

Reason for Undelivered E-mail	Advance E-mail	Questionnaire
Delivery refused but e-mail address correct	7	7
E-mail address does not exist	20	51
Recipient's mailbox full	2	5
Attachment blocked	0	1
Communication problem with recipient's e-mail system	0	1
Total	**29**	**65**

7.2.4.2 Communication between Respondents and Researcher

One advantage of issuing questionnaires by e-mail is that it permits easy and immediate communication between the researcher and respondent, such as if potential respondents have any queries concerning the questionnaire. It also enables the researcher to monitor the availability of respondents, such as whether they are on leave. For example, 196 of the 315 e-mails received back in response to the questionnaires being issued were automatic 'out of office' replies. This information provided the researcher with information on the availability of the respondent and reason for possible delayed response. A total of 315 e-mails were received following the questionnaires being issued with 250 received following the advance e-mails being sent. A summary of the reasons for these e-mails is provided in Table 7.5.

Some of the information requested by recipients had actually been provided on the questionnaire or e-mail issued, such as postal address for return of hard copy questionnaires. However, the main issue impacting on the research were the IT problems with 21 of the 26 reported IT problems in response to the questionnaire being due to respondents who were unable to access or complete the electronic version of the questionnaire. Electronic and hard copy questionnaires were issued to these individuals to enable them to be involved in the research.

Table 7.5: Summary of reason for e-mails in response to questionnaires and advance e-mails

Reason for e-mail response	Advance E-mail	Questionnaire
Courtesy (e.g. thank you, will complete, may not reply immediately)	30	68
IT problems	4	26
Queries on information already provided (e.g. postal address, when survey will be issued)	5	1
Completion of questionnaire	0	3
Out of office (automatic response)	176	196
Performance officer to co-ordinate all responses for council	8	0
Person has left post – replacement name provided or e-mail forwarded automatically	21	10
Request more information on research background and intended recipients	6	11
Total	**250**	**315**

7.2.4.3 Follow-up Techniques

As previously mentioned, low response rates are an acknowledged criticism of questionnaires. Many methods to increase response rates have been put forward and some of these techniques have been adopted for the present study. Oppenheim (1992) suggested issuing an advance warning letter informing respondents of the research and inviting participation. Such a letter was issued two weeks prior to the questionnaires (see section 7.2.3 above and Appendix B). An explicit statement that all information would be entirely confidential was included on both the questionnaire and accompanying e-mails, as recommended by Oppenheim (1992). In an attempt to increase the response rate, Widener (2004) provided an incentive for respondents to complete the questionnaire by offering them summary results. Similarly the present study offered results of the research as an incentive to increase the response rate to the questionnaire. The researcher's mobile telephone number and e-mail address were provided to enable respondents to obtain answers to any queries. This was aimed to reduce the number of potential respondents with queries opting not to complete the questionnaire. Communication relating to the research, including the questionnaires being issued, was from an Audit Commission[36] e-mail address. This was used in favour of a personal or university e-mail address due to the kudos of the Audit Commission within local government, in an attempt to increase response rates.

[36] The Audit Commission was the initial sponsor of this research (2004-2006).

Reminders are also proposed to increase response rates (Oppenheim, 1992). The planned research methodology for the proposed study included issuing two reminders; firstly in mid October 2006 to coincide with the suggested deadline for questionnaire completion of 13th October and the second reminder to be issued between 22nd and 24th October 2006 only to those who had not already responded. Unfortunately, due to issues within local government and the research project's initial sponsor arising in early October 2006, no reminders to councils were permitted to be sent.

7.2.4.4 Non-response Bias

A response rate of 24.5%, as identified above, raises the potential for non-response bias. Non-respondents may differ in crucial aspects to responders (De Vaus, 2002) which may mean the findings are specific to the respondents and cannot be generalised to non-responders and, therefore, local authorities as a whole. To test whether the respondents were different from non-respondents, a two-step analysis was conducted, consistent with previous SEM studies (Henri, 2006b). Firstly, respondents were compared with non-respondents in terms of the sample characteristics of local authority types. Secondly, early and late respondents[37] were compared to detect any difference in the mean score of each variable.

No significant difference at the 1% or 5% significance level was found between respondents and non-respondents in terms of local authority type ($\chi^2 = 2.48$, df = 4, $p < 0.01$). See Appendix E for the supporting Chi-Square calculations.

A comparison of the means of the variables found no significant differences at the 1% or 5% level between early and late responders for responses to all questions other than two. The significant t values at the 5% level are summarised in Table 7.6. These significant differences are concluded not to be a serious issue considering the isolated effect. However, while there is unlikely to be a systematic bias due to differences between respondents and non-respondents, the generalisation of results relating to the two items included in Table 7.6 should be made with caution. Appendix F includes full details of the comparison of the means and calculation of the t values.

[37] Early responders were defined as the first 25% respondents to the questionnaires. This equated to responses received on the first three days.
Late responders were defined as the last 25% of responses to the questionnaires. This equated to responses received at least 2 weeks after the questionnaires were issued.

Table 7.6: Significant differences between early and late responders

Variable	T value	Significance
PIs adopted are predominantly quantitative	1.617	p = 0.006
Use of marginal costing	-2.684	p = 0.008

7.3 Variable Measurement

Following the construction of research variables in Chapter 5 (section 5.3) the measurement of these variables needs to be developed. This section sets out how each of the variables included in the research contingency model (Figure 5.2) is measured. As this research is adopting a questionnaire as the method to collect empirical data, the variables are measured by a number of specifically designed questions to be answered by the respondents.

The dependent and independent variables within the research contingency model were defined and explained in section 5.3. Irrespective of whether variables are dependent or independent they may also be defined as being either observed or latent variables (Schumacker and Lomax, 2004). Latent variables are "...variables that are not directly observable or measured…" (Schumacker and Lomax, 2004: 3). Latent variables are consequently inferred from a set of variables that are measurable, known as observed variables (Kline, 2005; Schumacker and Lomax, 2004). These observed variables are questions included within the developed research questionnaire.

7.3.1 Organisational Variables

The research contingency model (Figure 5.2) incorporates the organisational control variable of department size. However, other data regarding the local authority and department type was also collected for information. The first section of the questionnaire requested information concerning the respondent's local authority and department. See Appendix A questions 1, 2 and 3. The questions included the type of local authority (county, unitary, London borough, metropolitan and district or borough) and type or types[38] of department from a list. Respondents were also asked to select the name of their local authority from a drop down list. The question explained that the council name would only be used to supplement the questionnaire responses on performance. This is further explained under the objective measurement of performance in section 7.3.6 below.

[38] It was recognised that some senior officers may have responsibilities across more than one department.

The questionnaire also requested respondents to indicate the number of full-time equivalent employees within their department (Question 3 on Appendix A). This was taken as a measurement of department size. Although it is recognised that there are several ways to conceptualise and measure organisational size (Chenhall, 2003; Thomas, 1991), the majority of past contingency-based research studies have used the number of employees as the measurement for organisational or departmental size (Chenhall, 2003; Hayes, 1977; Libby and Waterhouse, 1996; Merchant, 1981; Merchant, 1984). As employees are the primary resource in public sector organisations, it was concluded the number of employees was the most appropriate measurement method for departmental size for local authorities in the current study. Gerdin (2005) tailored the measurement of size to full time equivalent employees rather than just number of employees or full time employees. This terminology was adopted for the present study.

7.3.2 Strategy

Two main elements for the strategy variable included in the research contingency model (Figure 5.2) were covered within the research questionnaire; Porter's (1980) strategic typology and resource-based strategic capabilities as defined by Henri, 2006b. Sections of the questionnaire were designed to assess the extent to which a cost leadership or differentiation strategy was followed, as well as the possession of resource-based capabilities.

Strategic Typology

The cost leadership and differentiation strategic types proposed by Porter (1980) have been adopted for this study. Previous research (Auzair and Langfield-Smith, 2005) acknowledges that cost leadership and differentiation strategies are not mutually exclusive and both strategies may be followed to an extent simultaneously.

Cost leadership and differentiation strategies were measured by a question composed of 11 parts, as used by Auzair and Langfield-Smith (2005), based on previous instruments used by Chenhall and Langfield-Smith (1998) and Kumar and Subramanian (1997). This measurement of cost leadership and differentiation strategy used by Auzair and Langfield-Smith (2005) was adopted for this study as it recognises that organisations may follow both cost leadership and differentiation strategies in varying degrees. The terminology of the question was tailored to be relevant to local authorities. See Appendix A question 5. The emphasis departments placed on 11 activities was measured on a scale of 1 (no emphasis) to 7 (great emphasis), with the first 4 items relating to cost leadership and the remaining 7 concerned with differentiation.

Resource Based Strategy

The research questionnaire included a question on each of the four capabilities that lead to strategic choice; market orientation, entrepreneurship, innovation and organisational learning. The questionnaire included one question for each of the organisational capabilities, with each question comprising four or five sub-questions (see Appendix A questions 6, 7, 8 and 9). These questions were tailored from an instrument used by Henri (2006b) with a 7 point Likert scale ranging from 'not at all' to 'great extent'.

7.3.3 Performance Measurement Techniques

This research study aims to investigate the extent local authorities adopt traditional and contemporary PMTs, as well as to examine the impact of such techniques on actual performance. The PMTs categorised as traditional and contemporary were identified from previous literature in Chapter 2 and are further summarised in section 5.3.2.3.

There has been limited research into performance measurement in UK local authorities (Palmer, 1993). Previous research has recognised that valid measures, such as on the use of the BSC, need to be developed in future research (Chenhall, 2003). From a review of the current literature it was concluded that there were no instruments from prior research that were suitable to be adopted for this study. The questions to assess PMTs were consequently developed specifically for this research, but with consideration of both current literature and previous research instruments.

Five questions were included in the research questionnaire to measure this variable (Appendix A, questions 10, 11, 12, 13 and 14). Firstly, the extent the traditional and contemporary PMTs of PIs, benchmarking, BSC and RDF are used or considered could be useful were assessed on a 7 point Likert scale from 'not at all' to 'great extent'. The format of these questions was based on the questions to measure the MAPs (see section 7.3.4). Three additional questions were developed to assess the use of traditional and contemporary PIs, benchmarking, BSC and RDF. The approach of these questions was to examine the extent local authorities were using the principles of these techniques rather than just by referring to the name of the technique. The elements comprising these questions were based on the principles of the techniques identified from the literature review. Each question was rated on a 7 point Likert scale ranging from 'not at all' to 'great extent'.

7.3.4 Management Accounting Practices

As outlined in Chapter 5, this research study attempts to assess the extent councils use traditional and contemporary MAPs. The MAPs categorised as traditional or contemporary were identified from previous literature in Chapter 3 and are further summarised in section 5.3.2.4.

The measurement of the extent local authorities used the various MAPs was based on a question from instruments used in previous research (Abdel Halim, 2004; Guilding *et al*., 2000). The question was tailored so that the MAPs included in the question for this study were consistent with those determined from the literature review. The questionnaire for this research study was being issued to Directors or Heads of Services; respondents who may have limited knowledge of accounting terms. From pilot discussions with local authority officers, it was determined that it would be appropriate to explain the MAPs rather than just stating the accounting terms. Consequently the accounting terms were explained as simply as possible and split into three separate questions covering budget setting, budget monitoring and costing. See Appendix A questions 24, 25 and 26, respectively. From the 13 MAPs included, four were considered to be traditional practices (budget set based on last year's budget, budget monitored on a cash basis, marginal and absorption costing) with the remaining nine considered to be CMAPs. Table 5.4 summarises the adopted split between traditional and contemporary MAPs determined from the literature review. Responses to these management accounting questions were recorded on a Likert scale ranging from 1 (not at all) to 7 (great extent) which is consistent with prior research (Abdel Halim, 2004; Guilding *et al*., 2000) and the measurement of other variables in the questionnaire for the present study.

7.3.5 Implementation Factors

Training and data limitations were the two implementation factors included in the research contingency model (Figure 5.2). These factors were identified as issues in local authorities that could impact on the adoption of PMTs. One question, with four parts, was included in the questionnaire to measure the data limitations variable. This question was tailored from the instrument used by Cavalluzzo and Ittner (2004) on US Government. The response was measured on a scale of 1 (not at all) to 7 (great extent). See Appendix A question 22. The question to measure the training variable was also based on a research instrument adopted by Cavalluzzo and Ittner (2004), but adapted so it was appropriate for use in English local authorities (Appendix A question 23). The question

included 4 components looking into relevant training received over the past 3 years. Again, the response was measured on a scale of 1 (not at all) to 7 (great extent).

7.3.6 Performance Outcome

Performance outcome is the dependent variable within the contingency model for the present research study (section 5.3.1). As explored in Chapter 2 (section 2.4), there are difficulties in defining, and consequently measuring, performance in the public sector. For public sector organisations such as local authorities, it is essential to consider both financial and non-financial elements of performance. The present study uses a combination of self-assessment of performance by individual local authorities and objective measures through published assessments.

Self-assessed Performance

Self-assessment of performance has been the dominant measurement of organisational outcomes in contingency-based research and has been found to correlate to objective assessments (Chenhall, 2003). This study aims to supplement the self-assessment measurement of both financial and non-financial performance in the questionnaire with objective performance measures, which are further explained below.

The fourth part of the questionnaire includes five questions to measure performance. Firstly, respondents were requested to rank their perceived overall performance for their department on a seven point scale ranging from well below average to well above average (see Appendix A question 17). This scale measuring self-assessed performance has been used in previous research (Gul and Chia, 1994). Respondents were asked to rate their perceived financial performance for their department (Appendix A question 18) on the same seven point scale. A six-part question (Appendix A, question 21) was developed to measure non-financial performance with a 7-point Likert scale applied to measure from unsatisfactory to outstanding performance. This question was tailored from prior research (Abdel Halim, 2004) to be relevant to local authorities.

Objective Measurement of Performance

At the time of this research, the primary measure of performance within English local authorities is CPA, which was outlined in section 2.8.3. The CPA is an independent measure of each local authority's performance undertaken by the Audit Commission. An overall measure (such as excellent, good, fair, weak or poor) is concluded for each local

authority, though this is made up of various sub-elements. One of the primary sub-elements is UoR, which assesses the local authority's financial reporting, financial standing, financial management, internal control and value for money. These CPA and UoR results are published on the Audit Commission's website for all local authorities. The other sub-elements of CPA differ by local authority type so inclusion for this research would be problematic. It was, therefore, concluded that the overall CPA judgement and the score for each of the five UoR elements would be included as objective measures of performance outcome.

The CPA and UoR assessment scores were re-classed to a 1 to 7 scale for consistency between variables and particularly because some of the assessment results were by category such as 'good' as opposed to a numerical score. The basis for the re-scaling process is summarised in Table 7.7.

Table 7.7: Re-scaling of CPA and UoR Categories

Item	Original Scale	Amended Scale[39]
CPA scores	1, 2, 3 and 4	1, 3, 5 and 7
CPA results	Poor, weak, fair, good and excellent	1, 2.5, 4, 5.5 and 7
UoR scores	1, 2, 3 and 4	1, 3, 5 and 7

7.3.7 Respondent Information

The final section of the questionnaire asked the respondents to provide some information about themselves. This section was placed towards the end of the questionnaire as recommended by the literature (Oppenheim, 1992), due to respondent information questions potentially putting respondents off from completing the questionnaire. The research questionnaire requested information regarding the respondent's age range, number of years in current job and number of years in current department. This information would be useful background information for the responses provided.

Finally, the questionnaire asked the respondent to indicate whether they would like to receive a summary of the findings from this research. This option was included (and mentioned in the e-mail accompanying the questionnaire being issued) to encourage respondents to complete the questionnaire and, thereby, increase the response rate.

[39] Figures on Amended Scale are shown respectively to those figures on Original Scale.

7.4 Description of the Data Set

The following sections provide an overview of the primary data set for the study. This data will be used for more detailed statistical analyses in Chapters 8, 9 and 10.

7.4.1 Council and Department Classifications

The research questionnaire was issued to all types of English local authorities as outlined in section 7.2.1 with Table 7.1 showing the total number of local authorities in each category. Table 7.8 below displays the number and proportion of responses received by council type, indicating responses are from across the different types of English local authorities. It should, therefore, be possible to generalise the study findings across English local authorities, irrespective of council type. Indeed, as identified in section 7.2.4.4, there is no significant difference between respondents and non-respondents on council type. A larger proportion of district council responses would be expected simply due to the number and categorisation of council types.

Table 7.8: Council Type of Responses

Council Type	Departments	
	Number	Percent (%)
Unitary	47	8.9
London Borough	35	6.6
Metropolitan	40	7.6
County	49	9.3
District or Borough	357	67.6
Total Sample	**528**	**100.0**

Table 7.9 displays the number of responses received for each department type. Some senior officers are responsible for more than one department type and, consequently, the number of responses received for all departments exceeds the total number of questionnaires returned. From Table 7.9 it can be seen that responses have been received across the full range of departments. The number of responses between department type would be expected to vary due to the different types and number of councils, and their respective roles.

Table 7.9: Type of Department Responses

Department Type	Number of Responses	Percent of Total (%)
Finance and Resources	145	17.4
Adults and Community Services	64	7.7
Children and Young People	51	6.1
Housing	103	12.3
Environment and Regeneration	143	17.1
Planning	90	10.8
Transport and Highways	47	5.6
Leisure and Culture	85	10.2
Corporate Services (e.g. policy, performance, human resources, law)	107	12.8
Total Sample	**835**	**100**

7.4.2 Strategic Typology

As explained in section 7.3.2 the extent local authorities adopted cost leadership and differentiation strategies was measured by an 11 part question (Appendix A question 5). The first 4 parts to the question related to the extent a department placed emphasis on a cost leadership strategy. The last 7 parts to the same question indicate the extent a department placed emphasis on a differentiation strategy. The number of responses received on each of the questions relating to cost leadership and differentiation are summarised in Figures 7.1 and 7.2, respectively. A full range of responses on the scale of 1 (not at all) to 7 (great extent) were obtained, although for some individual questions (such as Question 5i) the responses tend to be grouped towards the upper end of the scale. The impact of such grouping of the data is further considered in section 7.4.9. Full details of the responses for each question are displayed in Appendix G.

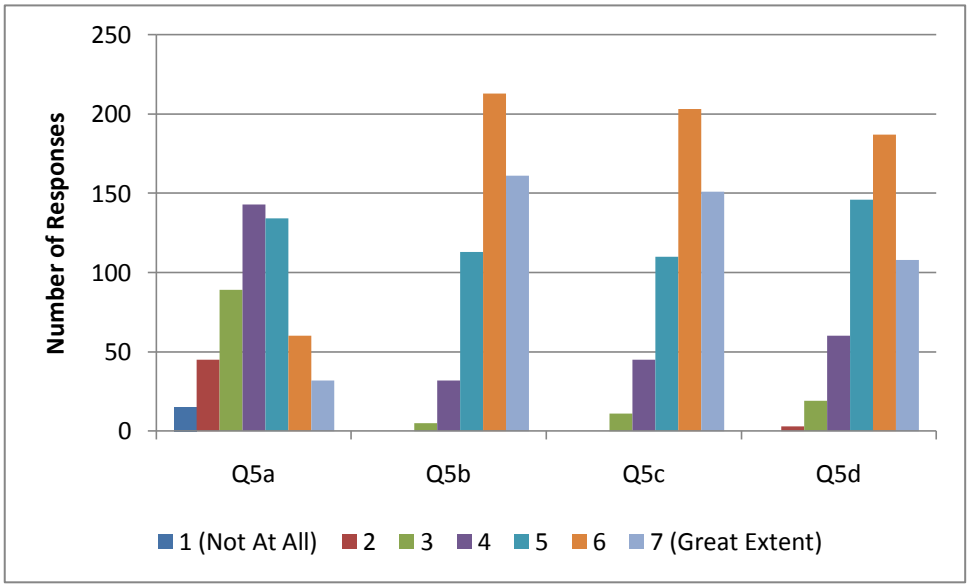


Figure 7.1: Responses to Cost Leadership Questions

7.4.3 Resource-Based Strategy

As explained in section 7.3.2 four questions were included in the research questionnaire to measure the extent organisational capabilities leading to strategic choices are demonstrated by local authority departments (see Appendix A, questions 6, 7, 8 and 9). These questions explored the organisational capabilities of market orientation, entrepreneurship, innovation and organisational learning, respectively. Each question included four or five sub-questions. The number of responses obtained for each question, on the scale of 1 (not at all) to 7 (great extent), are summarised in Figures 7.3, 7.4, 7.5 and 7.6 for each of the strategic capabilities, respectively. Full details of the responses for each question are included in Appendix G.

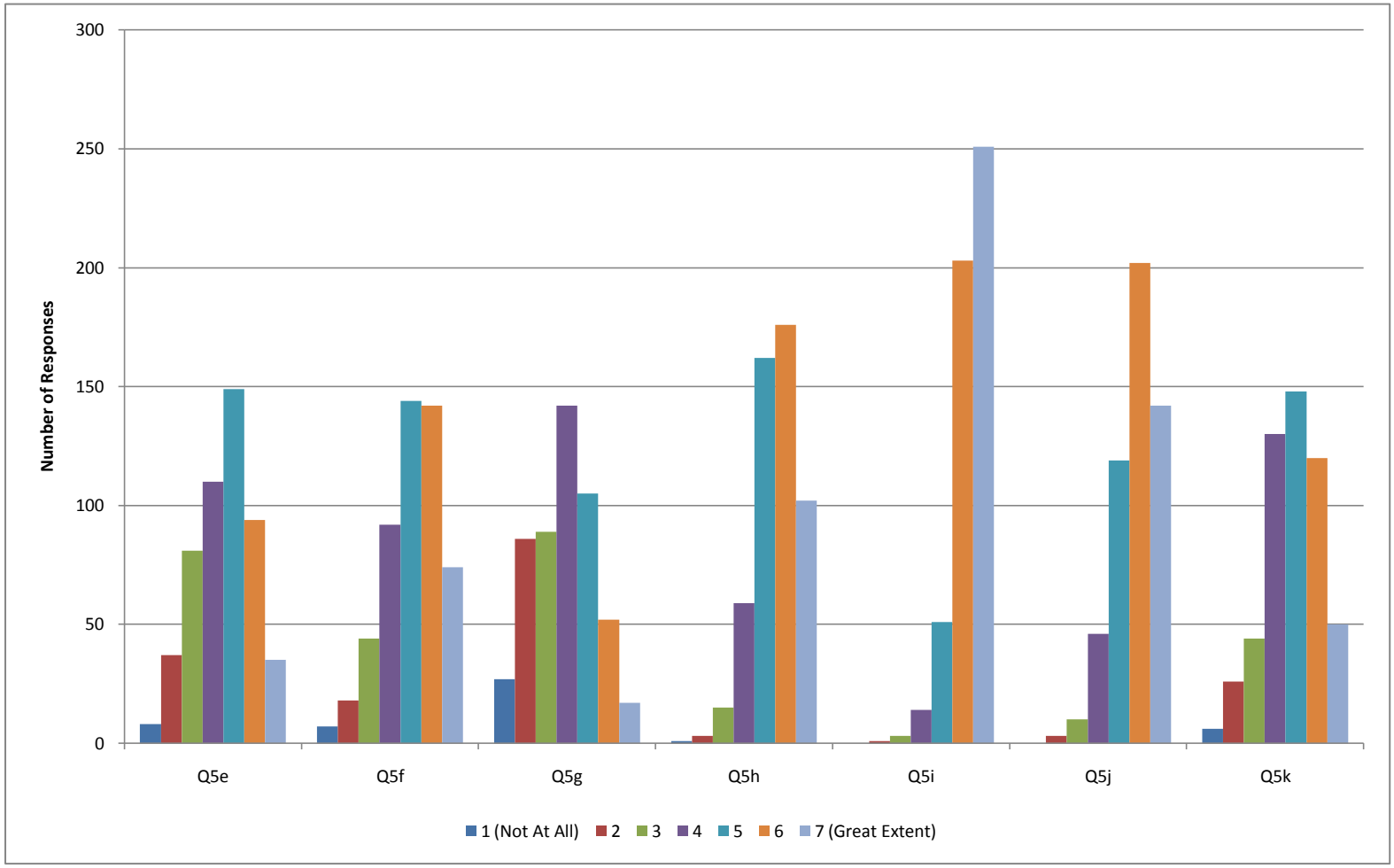


Figure 7.2: Responses to Differentiation Questions

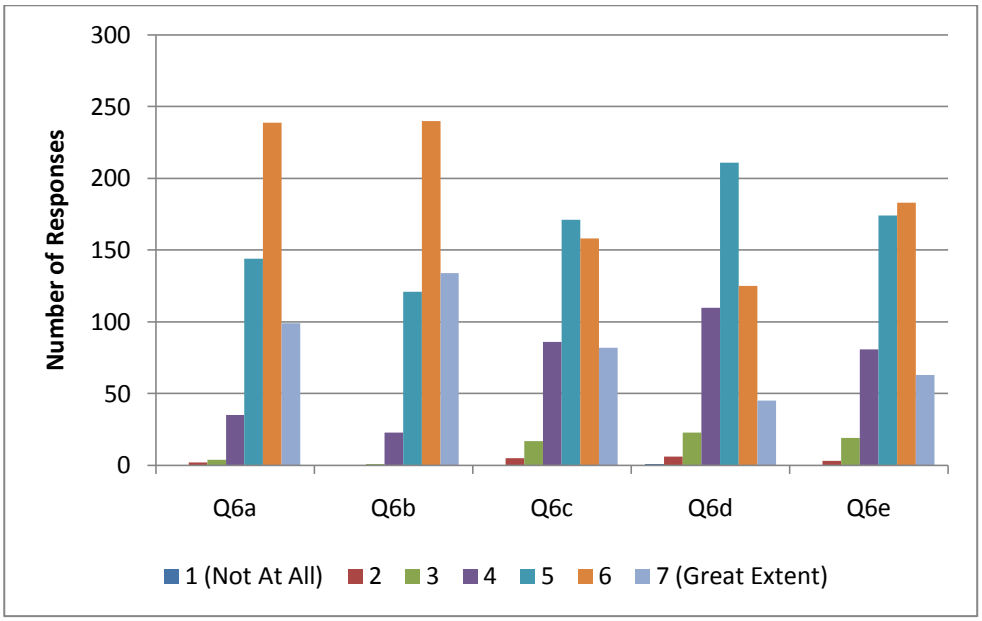


Figure 7.3: Responses to Market Orientation Questions

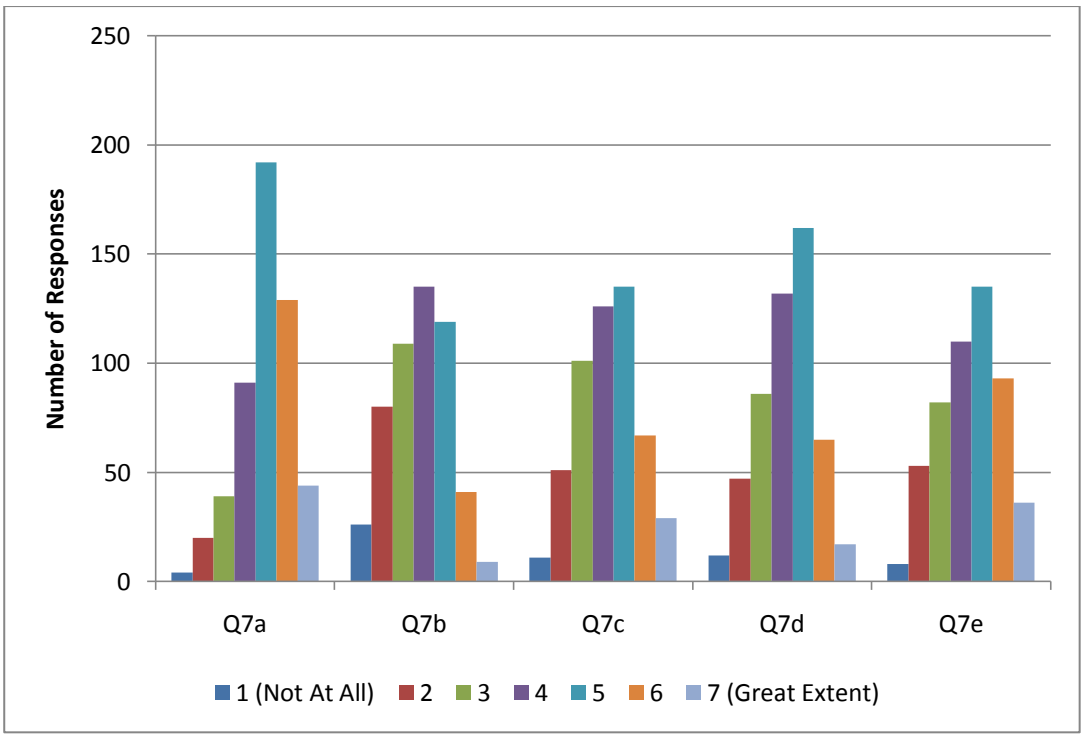


Figure 7.4: Responses to Entrepreneurship Questions

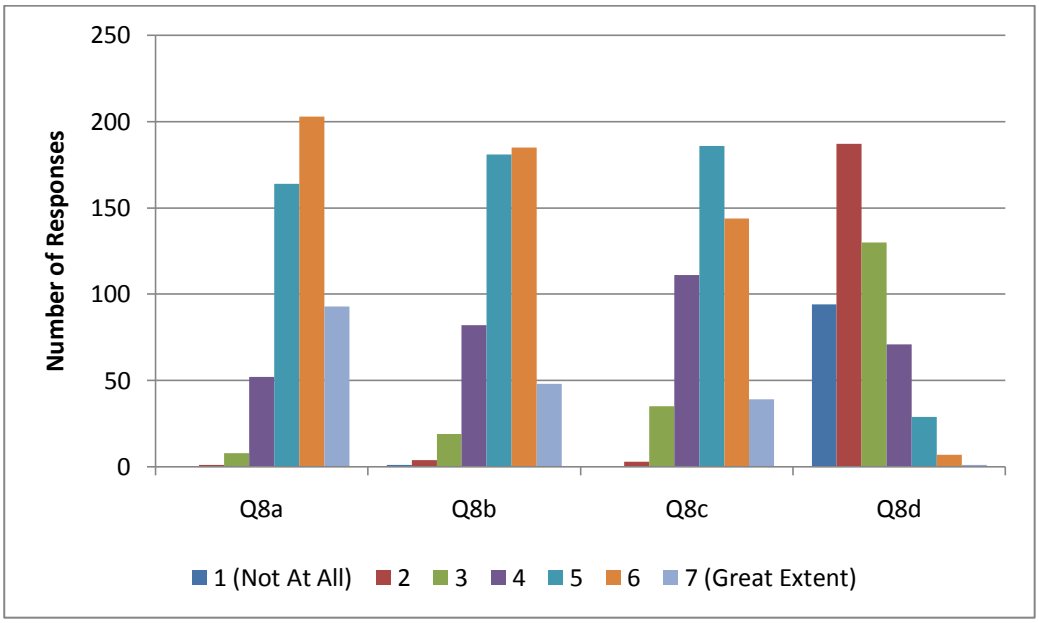


Figure 7.5: Responses to Innovation Questions

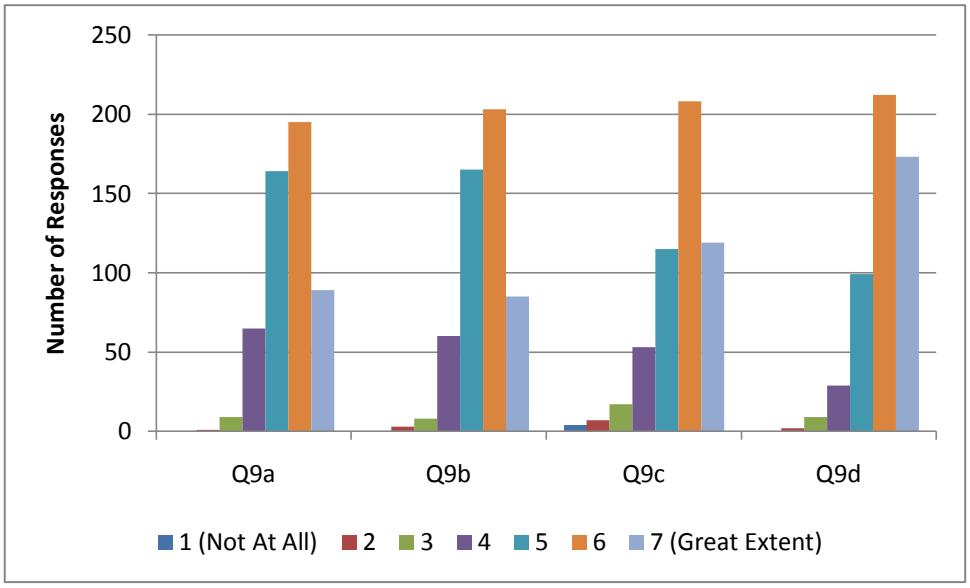


Figure 7.6: Responses to Organisational Learning Questions

A full range of responses were obtained across the Likert scale for each of the questions measuring the four capabilities. However, for some questions, such as Questions 6b and 9d, the responses tend to be grouped towards the upper end of the scale. Although such grouping is not unexpected, the impact on any statistical analysis must be fully considered. This is further explored in section 7.4.9.

7.4.4 Performance Measurement Techniques

As detailed in section 7.3.3 the research questionnaire included five questions to measure the PMT variable, covering PIs, benchmarking, BSC and RDF. The responses to the questions in each of these areas are summarised graphically in Figures 7.7 to 7.10. Full details of the responses for each question are displayed in Appendix G.

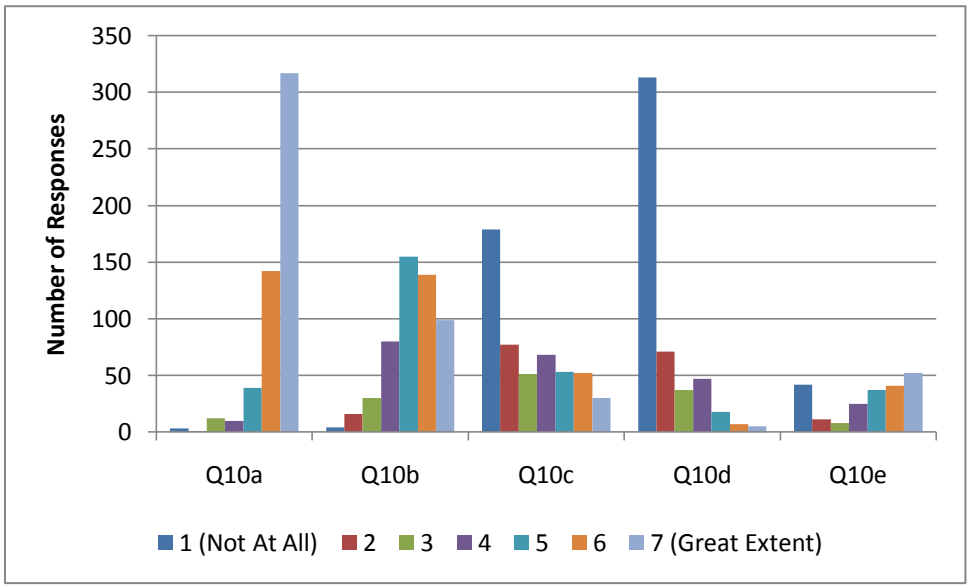


Figure 7.7: Responses to Use of PMTs Questions

Responses were obtained on the use of the various PMTs across the full range of the Likert scale from 1 (not at all) to 7 (great extent). However, for some specific questions the responses tended to be grouped towards one end of the scale. For example, the majority of respondents indicated that they use PIs (Question 10a) at or approaching a great extent. Such responses are as would be expected but have an impact on statistical analyses that may rely on an assumption of normality. This is further considered in section 7.4.9.

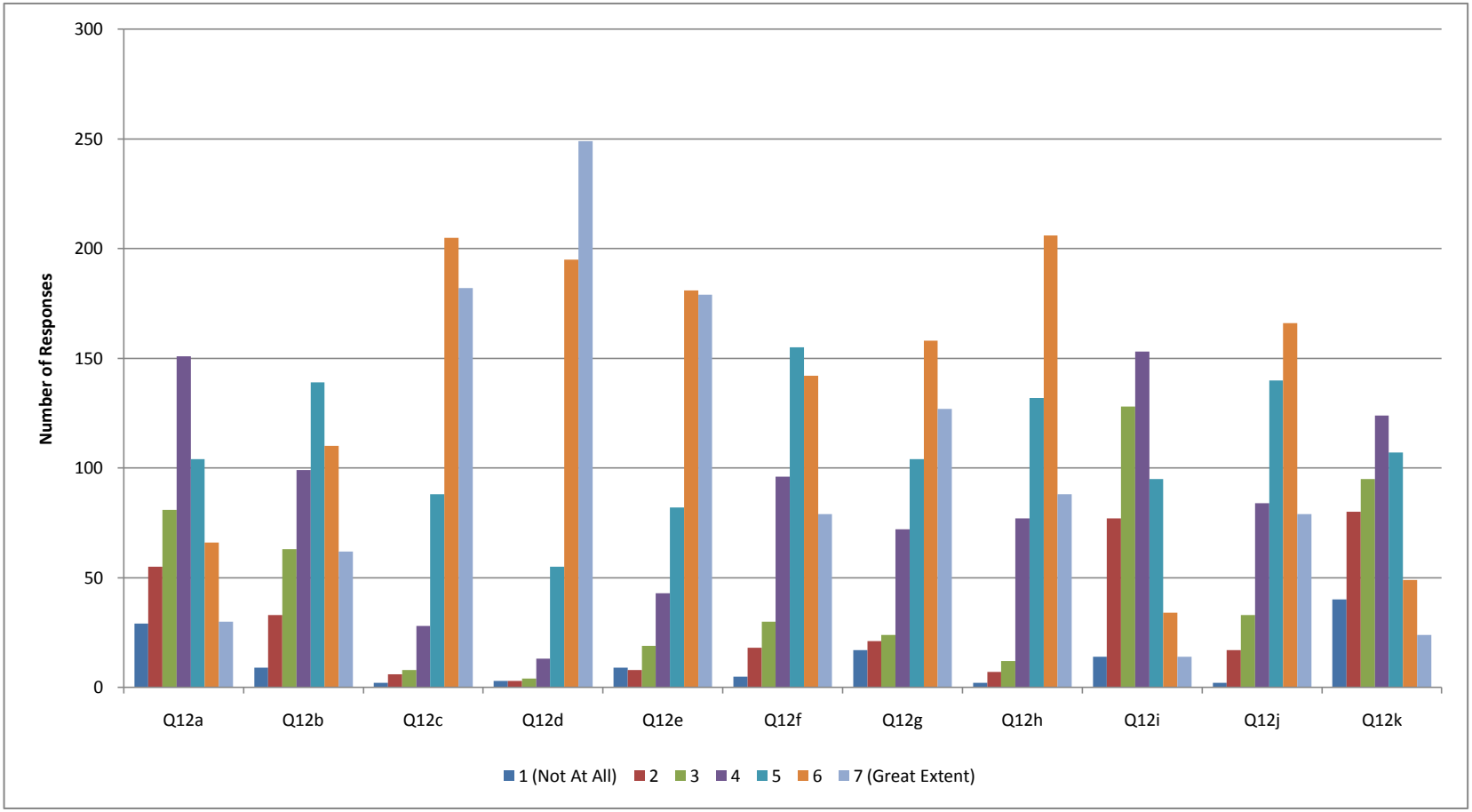


Figure 7.8: Responses to Use of PI Questions

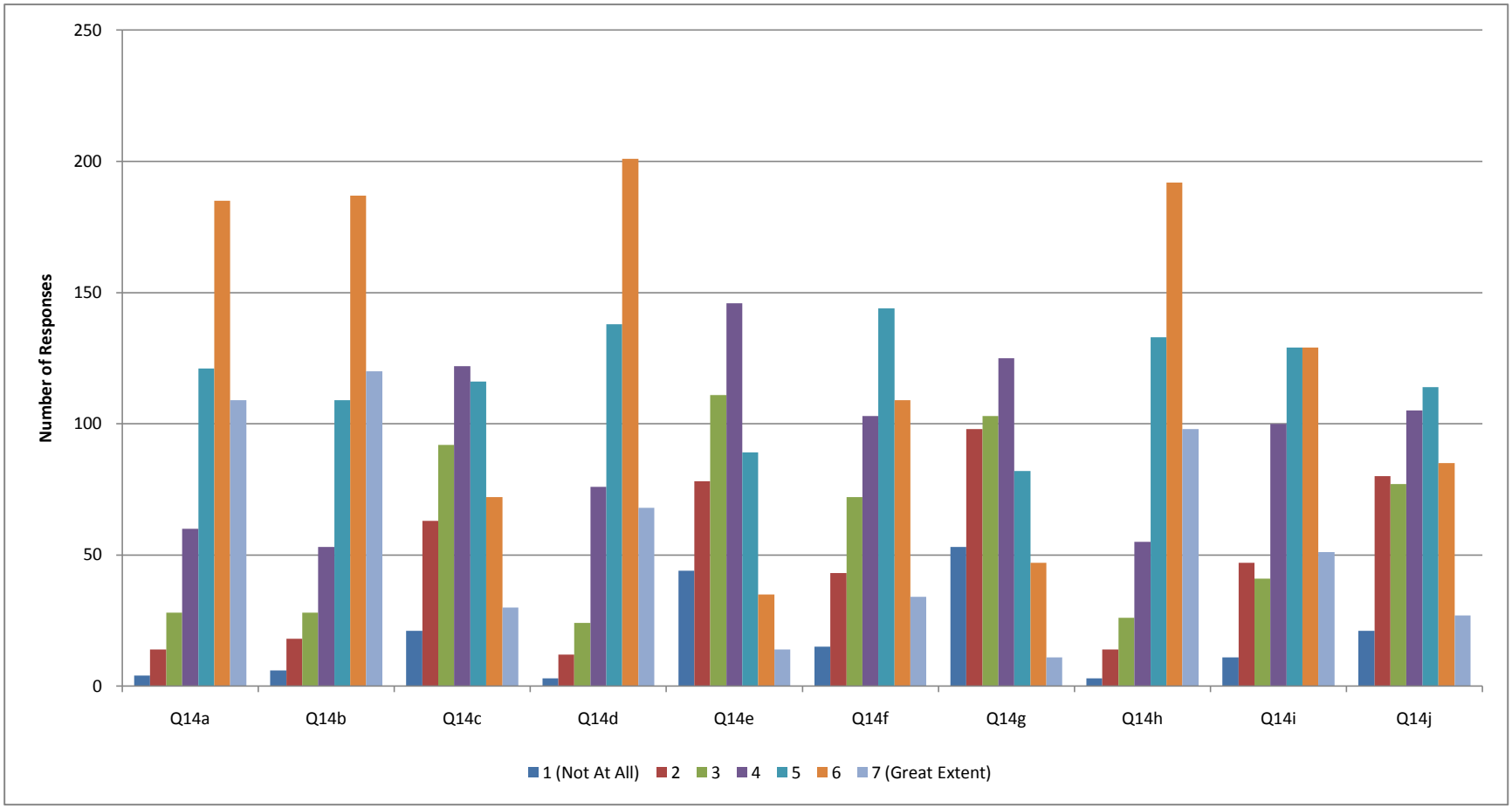


Figure 7.9: Responses to Use of BSC and RDF Questions

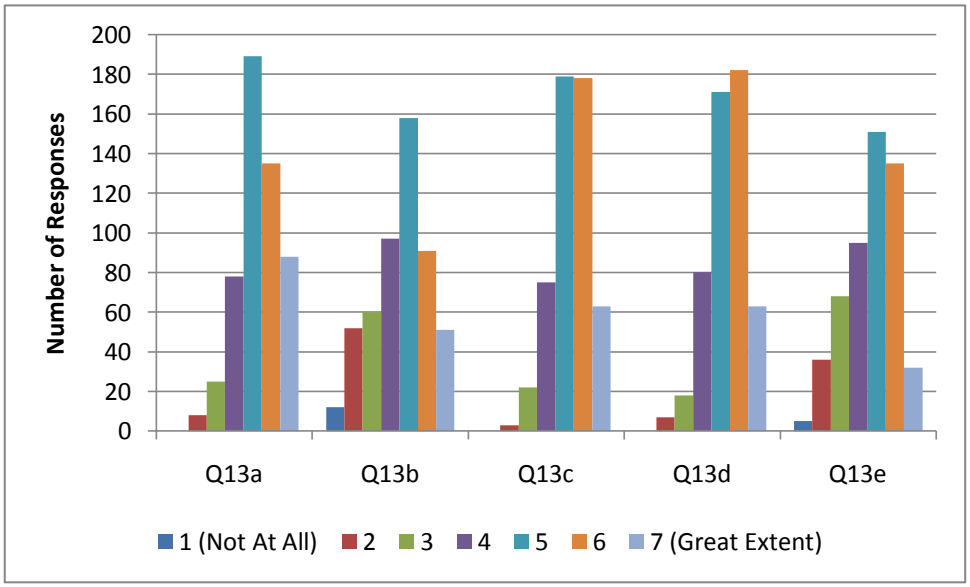


Figure 7.10: Responses to Benchmarking Questions

7.4.5 Management Accounting Practices

Three questions were included in the research questionnaire to measure the extent MAPs were adopted. These questions explored budget setting, budget monitoring and costing techniques. As indicated in section 7.3.4, respondents were asked to indicate the extent to which their department used each of the 13 MAPs. The number of responses obtained on the scale of 1 (not at all) to 7 (great extent) for each of the MAP questions are graphically summarised in Figures 7.11, 7.12 and 7.13, covering budget setting, budgetary control and costing, respectively. Full details of the responses obtained for each question are included in Appendix G. A full range of responses were obtained across the 1 to 7 scale for the MAP questions, though it is evident from the graphs that the responses on the use of some MAPs are grouped towards one end of the spectrum. For example, the majority of responses for marginal costing (Q26a, Figure 7.13) and ZBB (Q24c, Figure 7.11) are grouped towards the lower end of the scale. The implications of such distributions on the statistical analysis are further considered in section 7.4.9.

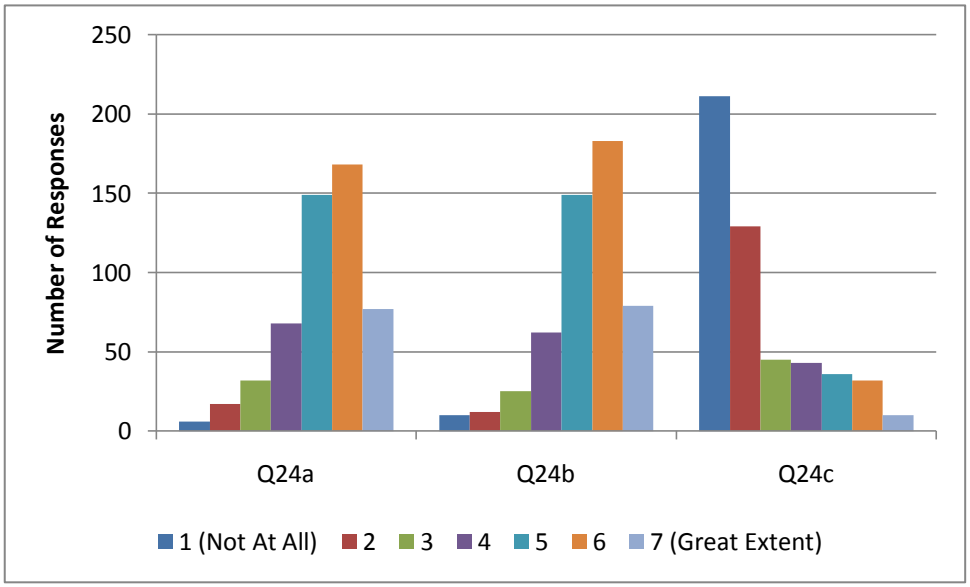


Figure 7.11: Responses to Budget Setting Questions

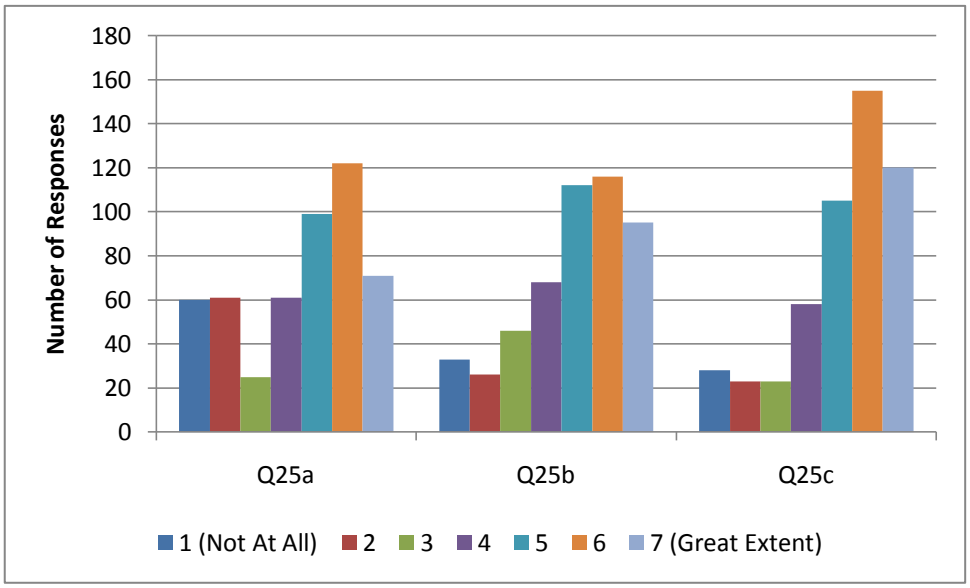


Figure 7.12: Responses to Budgetary Control Questions

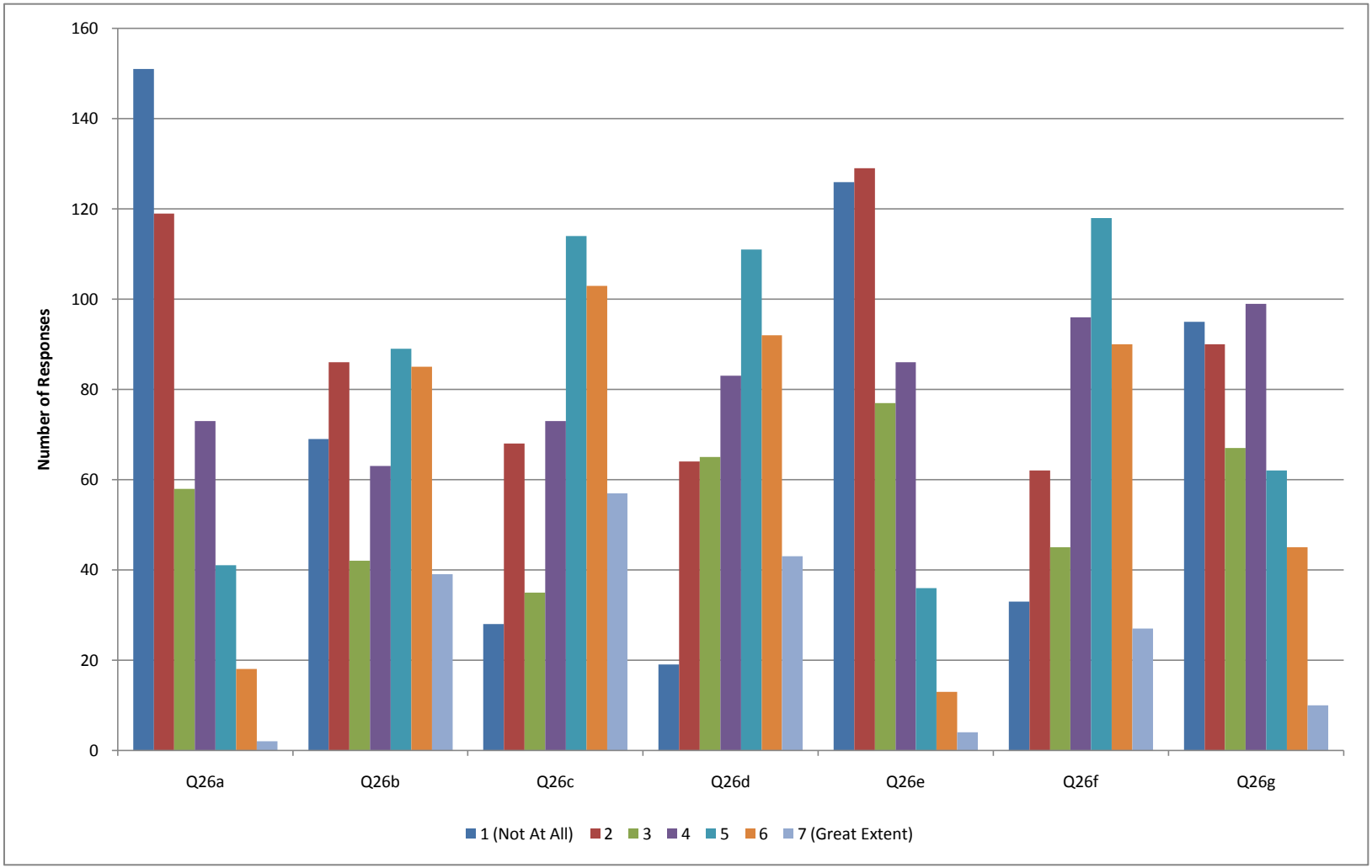


Figure 7.13: Responses to Costing Questions

7.4.6 Implementation Factors

Respondents were asked to indicate the extent that a range of data limitation factors hindered their measurement of performance or using performance information in their department. A full range of responses from not at all (1) to a great extent (7) were obtained and are summarised in Figure 7.14. Respondents were also asked whether their local authority had provided them training over the past three years to accomplish four performance measurement related tasks. The responses obtained are summarised in Figure 7.15. Full details of the number of responses received to each question are displayed in Appendix G.

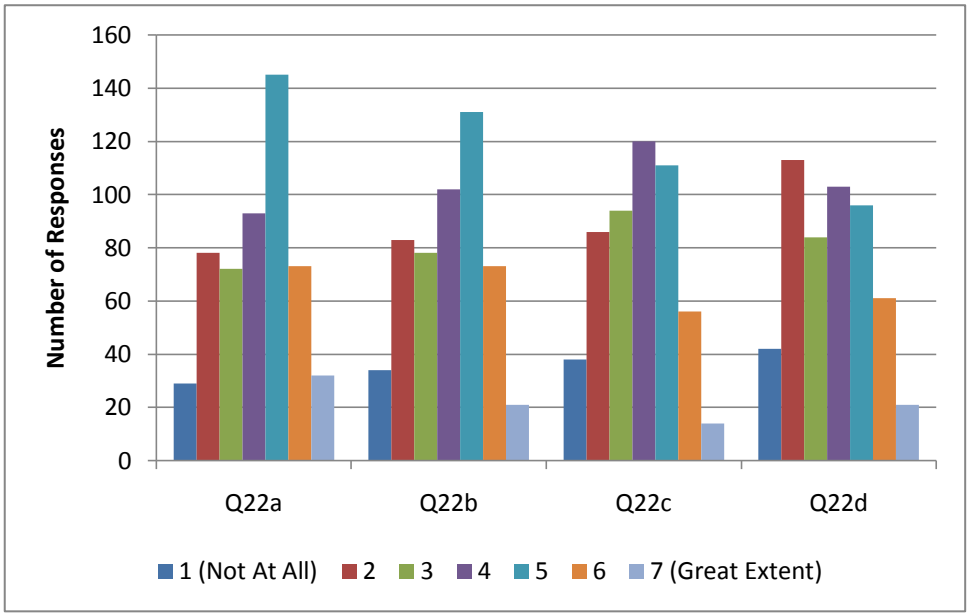


Figure 7.14: Responses to Data Limitation Questions

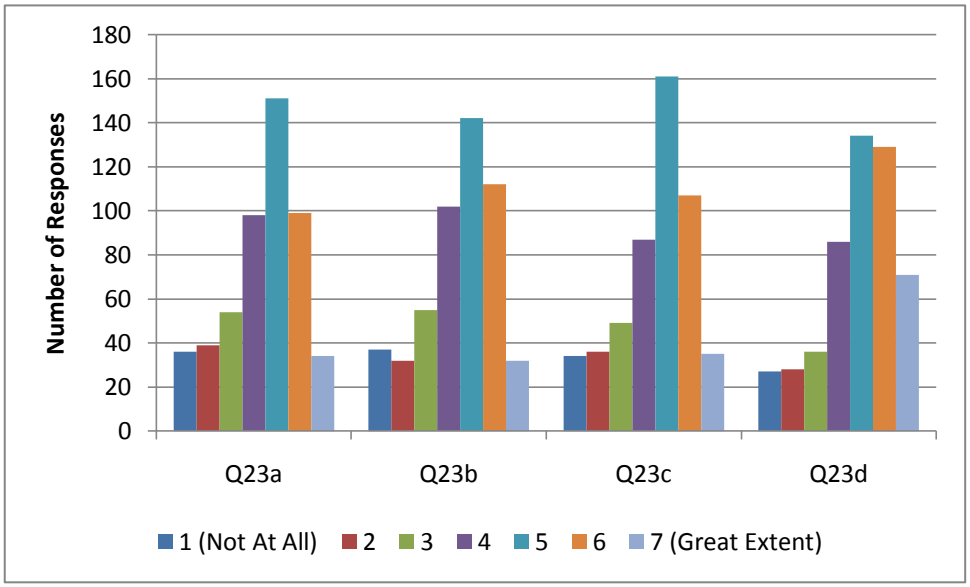


Figure 7.15: Responses to Training Provision Questions

7.4.7 Performance Outcome

As explained in section 7.3.6, the measurement of the performance outcome variable comprises responses to self-assessment questions on the research questionnaire and objective measures through UoR and CPA. The self-assessed responses to overall and financial performance are summarised in Figure 7.16, with the results from self-assessed non-financial performance displayed in Figure 7.17.

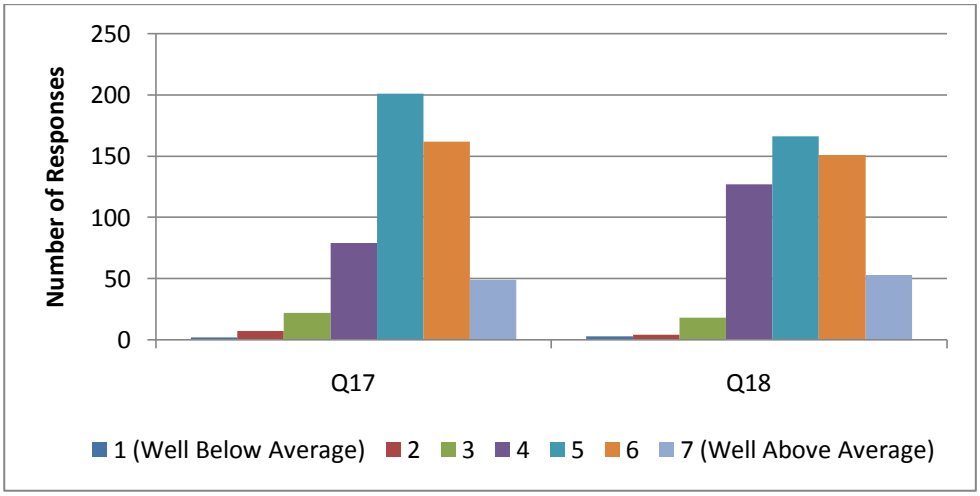


Figure 7.16: Responses to Overall and Financial Performance Questions

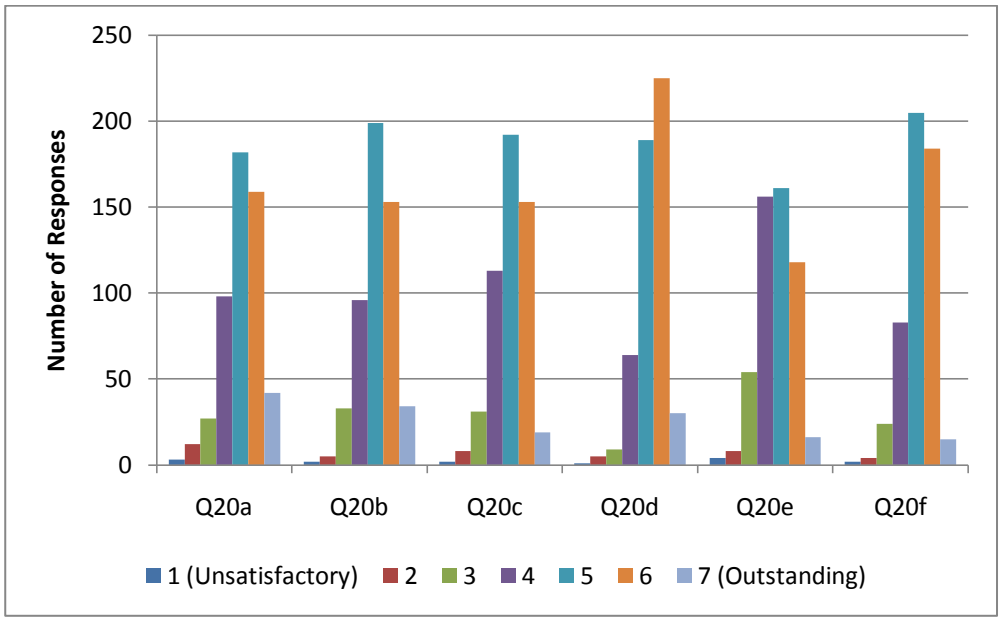


Figure 7.17: Responses to Non-Financial Performance Questions

The objective measures of performance outcome obtained from the Audit Commission's UoR and CPA regimes are summarised in Figures 7.18 and 7.19, respectively. Full details of responses to the performance questions and the UoR and CPA assessment results are included in Appendix G.

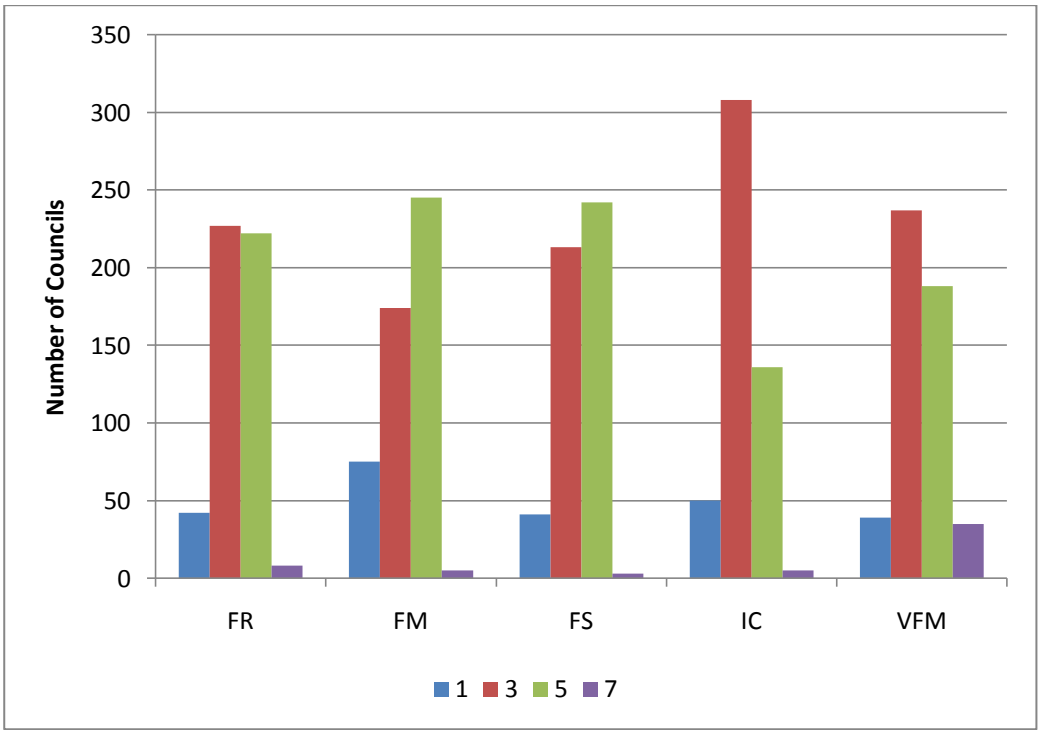


Figure 7.18: UoR Data

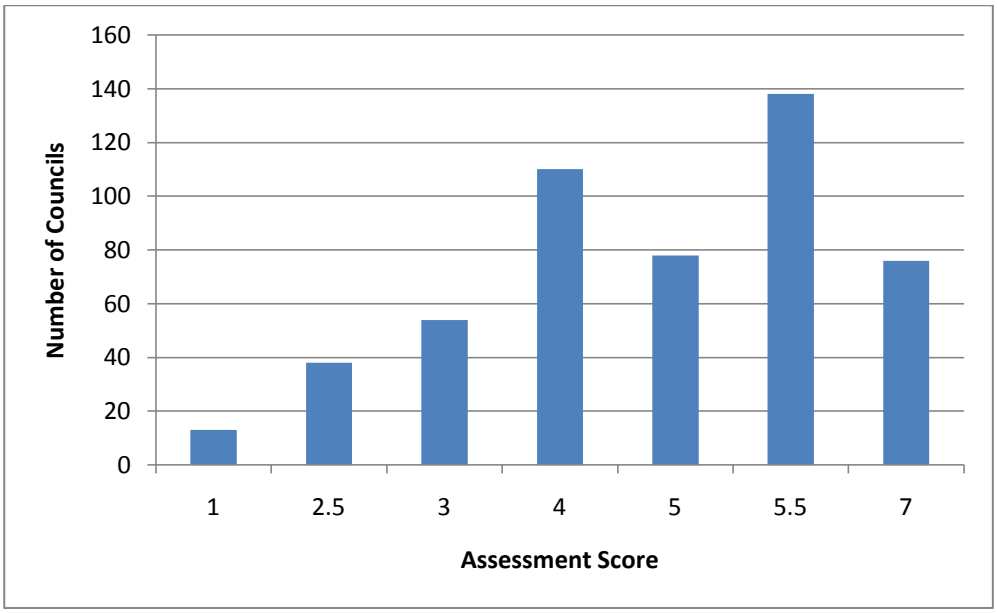


Figure 7.19: CPA Data

7.4.8 Respondent Details

The majority (299, 59.4%) of respondents were aged between 30 and 50 years and had worked in both their current jobs (281, 54.0%) and for the same department (205, 41.75%) for between 1 and 5 years. The full details of the responses received are included in Appendix G.

7.4.9 Issues arising from the data set

From review of the primary data set in sections 7.4.1 to 7.4.8 above, it is clear that a good number of responses have been received for all of the questions included on the questionnaire to measure the present study's research variables. Such a large number of responses to the full set of questions is an excellent basis for the statistical analysis to be executed. Although for many questions a broad range of responses were obtained across the Likert scale of 1 to 7, for some questions many of the responses appear to be grouped towards one end of the scale. For many of the questions this is not entirely unexpected, though it is crucial that the distributions of such responses are more fully explored in the preliminary stages of the statistical analysis to ensure that any assumptions of normality,

required for the subsequent statistical analyses, are achieved. This was discussed in Chapter 6 where the statistical methods were detailed.

7.5 Summary and Conclusion

This chapter has provided an overview of the development and design of the research questionnaire, including techniques for optimising a good response rate and the collection of valid data. The issuing of the questionnaire and the measurement of variables were also explained. Finally the data set of the study has been introduced and summarised. This basic data set will now be used for the detailed statistical analysis in Chapters 8, 9 and 10.

Chapter 8. Preliminary Statistical Analysis

8.1 Introduction

The research contingency model and hypotheses devised in Chapter 5 are now to be set out in more detail to be tested statistically. The statistical techniques to be undertaken were set out in Chapter 6. In this chapter, PCA is executed as the initial statistical method using the data set out in Chapter 7.

The remainder of the chapter is set out as follows. Firstly, section 8.2 sets out the theoretical model and hypotheses to be tested. Section 8.3 gives an overview of testing the validity and reliability of the research questionnaire with section 8.4 describing the PCA undertaken on the questionnaire to test its validity in measuring the research variables. Finally the chapter is brought to a close with a summary and conclusion in section 8.5.

8.2 Theoretical Model and Hypotheses

As explained in Chapter 5, this research is based within the functionalist paradigm, with a contingency model and associated hypotheses developed for testing. A total of 6 hypotheses were developed in section 5.4 to test the research contingency model, based on theory and previous research.

Hypothesis testing is concerned with concluding whether the sample data supports the research hypotheses. The researcher concludes whether any difference between the sample data and hypothesis is statistically significant (Lucey, 2002). Any difference identified between the sample data and the hypothesis may be due to the hypothesis being wrong or the sample being slightly unrepresentative (Lucey, 2002). The level of significance dictates how confident we can be in the result (Barrow, 2006; Tabachnick and Fidell, 2007). The most common significance levels adopted are 10%, 5% and 1% (Barrow, 2006; Lucey, 2002).

8.2.1 Theoretical Research Model

The theoretical model to be tested is shown in Figure 8.1 developed from the research contingency model in Figure 5.2. The hypotheses that relate to the model are summarised in Table 8.1 but are also indicated on the theoretical model in Figure 8.1.

Table 8.1: Research Hypotheses

Hypotheses	
H1	Council departments placing higher emphasis on differentiation strategy will have higher performance through the mediating variables of CPMTs, CMAPs and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning.
H2	Council departments using more CPMTs will have higher performance through mediating variables of market orientation, entrepreneurship, innovation, organisational learning and CMAPs.
H3	Council departments with higher capabilities of market orientation, entrepreneurship, innovation and organisational learning will have higher performance.
H4	Council departments placing higher emphasis on cost leadership strategy will have higher performance through the mediating variables of CMAPs, CPMTs and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning.
H5	The extent performance related training is provided to managers is positively associated with the higher use of PMTs.
H6	The extent council departments experience data limitations is negatively associated with the higher use of PMTs.

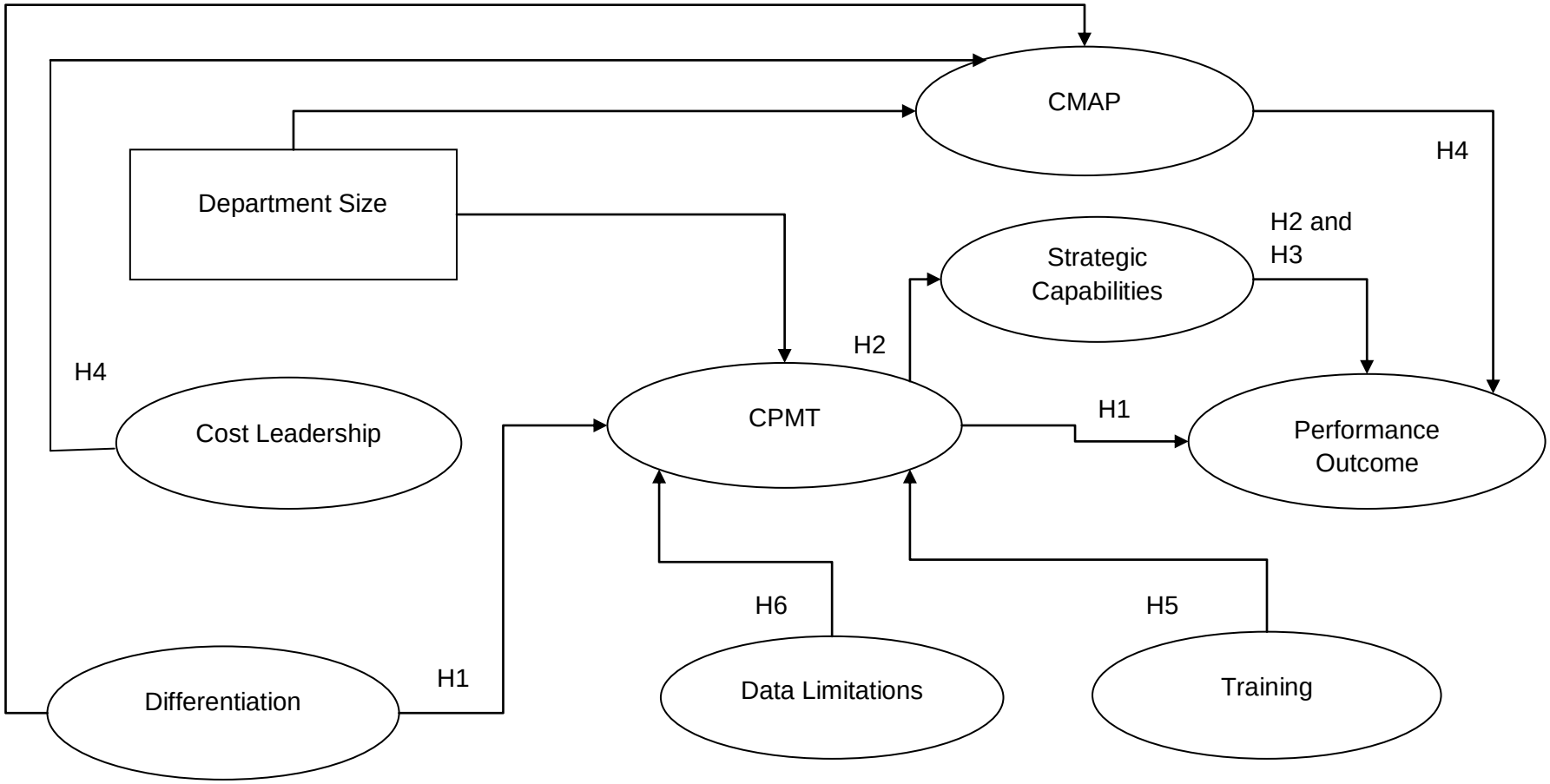


Figure 8.1: Theoretical Model

8.3 Validity and Reliability

When using SEM, the validity and reliability of the measures should be assessed (Shook *et al*., 2004). It is crucial that the questionnaire designed and applied is both reliable and valid. The reliability of an instrument is its ability to give almost identical results in repeated measurements undertaken in identical conditions (Blunch, 2008). In comparison, validity is that the instrument measures what it is intended to measure (Blunch, 2008). Although relevant and appropriate items were attempted to be included in the questionnaire, based on previous research instruments where possible, it is necessary to consider the extent these items actually measure the constructs required. This is particularly important in the present study as many elements of the questionnaire were newly devised or tailored to local authorities and, subsequently, had not been previously tested.

Factor analysis is often used in research to test construct validity (Abdel Halim, 2004; Chenhall, 2004; Dixon, 1993). Indeed, Dixon (1993: 252) states that factor analysis "...is the most important statistical tool for validating the structure of our instruments…" The establishment of validity through factor analysis is often followed by the computation of Cronbach's alpha coefficient, which is a measure of internal consistency reliability (Field, 2005; Munro, 1993c).

The validity of the research measurement instrument will firstly be evaluated by undertaking factor analysis. This will be undertaken in two stages, initially applying PCA in section 8.4, followed by CFA in Chapter 9, as the first stage of SEM. Following the completion of factor analysis, Cronbach's alpha will be undertaken to assess the measurement instrument's reliability (see Chapter 9).

8.4 Principal Component Analysis

As detailed in Chapter 6, there are two types of factor analysis; exploratory and confirmatory. EFA is used to explore the underlying factor structure without prior specification of the number of factors or their relationships (Kim and Mueller, 1994). This is the starting point for assessing the validity of the research questionnaire. EFA as an approach to test the questionnaire validity and, as explained in section 6.3.1, PCA was concluded to be the most appropriate method to be applied to the observed variables in the present research. PCA reduces the observed variables down to a smaller number of

components. The resulting components are named for the subsequent analyses in Chapters 9 and 10, as well as the interpretation of the results. However, it should be recognised that this naming process is for convenience rather than being actual explanations (Kline, 2005).

Component analysis, with Varimax rotation[40], was determined to be the most appropriate approach to be undertaken. It is recommended that there is a sample size of at least 100 in order for factor analysis to be applied (Hair *et al.*, 1998). This study's sample size of 528 is, therefore, acceptable. There are various approaches to determine the number of factors to extract. Where the sample size is greater than 200, the scree plot provides a reliable criterion for factor selection (Stevens, 1992 cited in Field, 2005). The scree plot was subsequently the approach adopted for the present study.

Before undertaking factor analysis or PCA, it is important to ensure that the data is suitable for the technique to be applied (Field, 2005). Prior to undertaking PCA, two tests were executed to assess whether the data was suitable for PCA to be undertaken. The *Kaiser-Meyer-Olkin measure of sampling adequacy* (KMO) tests whether the partial correlations among variables are small (SPSS, 2006), indicating that PCA would be appropriate. The KMO statistics ranges from 0 to 1, with values closer to 1 indicating the data should yield reliable factor analysis results (Field, 2005*)*. Values greater than 0.5 are acceptable with above 0.7 being good (Kaiser, 1974 cited by Field, 2005). The *Bartlett test of sphericity* (Bartlett test) tests the null hypothesis that the original correlation matrix is an identity matrix so a significant (less than 0.05) figure indicates that factor analysis would be appropriate for the data.

8.4.1 Strategic Typology

PCA was undertaken to establish the construct validity for strategic typology. The KMO (0.787) and Bartlett test (0.000) both indicated that the strategic typology data was suitable for PCA.

For a sample greater than 350, items loaded in excess of 0.3 are significant (Hair *et al*., 1998). From Table 8.2 it can be seen that all items were loaded in excess of this minimum level and were, therefore, all retained in the analysis. Two components were loaded as identified from the scree plot, one consistent with cost leadership (Loading

[40] Factor rotation is the process of adjusting the factor axes to achieve a simpler and more meaningful factor solution. Orthogonal factor rotation is where factors are extracted while their axes are maintained at 90 degrees and Varimax is one of the most popular orthogonal factor rotation methods. (Hair *et al*., 1998)

component 1) and the other with differentiation (Loading component 2). These two components explain 46.51% of the variance.

Table 8.2: Strategic Typology PCA

Question Number (Appendix A)	Question Description	Loading Component 1	Loading Component 2
5a	Achieving lower costs of services than other local authorities	0.694	
5b	Making services more cost efficient	0.727	
5c	Identifying cost savings	0.817	
5d	Improving the utilisation of available equipment, services and facilities	0.471	
5e	Introducing new services		0.580
5f	Providing services that are better than those of other local authorities or providers		0.502
5g	Offering a broader range of services than other providers or local authorities		0.609
5h	Improving the time it takes to provide services		0.526
5i	Providing high quality services		0.732
5j	Customising services to user needs		0.704
5k	Providing after service support		0.716

8.4.2 Resource-Based Strategy

PCA was undertaken to establish the construct validity for research-based strategy. The KMO (0.899) and Bartlett test (0.000) both indicated that the resource-based strategy data was suitable for PCA.

Table 8.3: Resource-Based Strategy PCA

Question Number (Appendix A)	Question Description	Loading Component 1	Loading Component 2	Loading Component 3	Loading Component 4
6a	Understand customer needs	0.770			
6b	Commitment and orientation to serving customers' needs	0.745			
6c	Measure customer satisfaction	0.662			
6d	Managers understand how everyone can create value	0.668			
6e	Create greater value for customers	0.723			
7a	Initiate actions to which other organisations respond		0.693		
7b	Strong tendency to adopt high risk projects		0.759		
7c	Dramatic changes in services		0.728		
7d	New lines of services		0.707		
7e	First organisation to introduce new services or techniques		0.670		
8a	Management actively seeks innovation and ideas			0.558	
8b	Innovation is readily accepted in service or project management			0.771	
8c	Technical innovation and research results are readily accepted			0.760	
8d reversed[41]	Innovation is perceived as being too risky and is resisted			0.713	
9a	Ability to learn is the key improvement				0.776
9b	Basic values include learning as a key to improvement				0.780
9c	Once we quit learning we endanger our future				0.771
9d	Employee learning is an investment not an expense				0.761

From Table 8.3 it can be seen that all items were loaded in excess of the minimum level of 0.3 and were, therefore, all retained in the analysis. Four components were loaded as identified from the scree plot, one consistent with each of the capabilities; market orientation (component 1), entrepreneurship (component 2), innovation (component 3) and organisational learning (component 4). The four components explained 62.11% of the variance.

[41] Due to how Q8d was phrased the scoring had to be reversed for analysis in order to be consistent with the other questions.

8.4.3 Management Accounting Practices

PCA was undertaken to establish the construct validity for MAPs. The KMO (0.668) and Bartlett test (0.000) both indicated that the MAPs data was suitable for PCA to be applied.

Table 8.4: Management Accounting Practices PCA

Question Number (see Appendix A)	Question Description	Loading Component 1
To what extent does your council use the following practices to set your budget:		
24a	Based on last year's budget?	-0.222
24b	**Based on policy or planned activities?**	**0.534**
24c	**Set from a zero base? (zero-based budgeting)**	**0.319**
To what extent does your council use the following practices to monitor your budget:		
25a	On a cash basis? (cash actually paid out or received)	0.162
25b	On an accruals basis? (includes debtors and creditors)	0.233
25c	**On a commitment basis? (includes orders)**	**0.319**
To what extent does your council use the following practices to deal with costing:		
26a	Only variable costs are assigned to products or services (with fixed costs excluded)? (marginal costing)	0.175
26b	**Overhead costs are divided between departments based on a standard rate? (absorption costing)**	**-0.309**
26c	**Overhead costs are charged based on the activities that cause the overheads? (activity-based costing)**	**0.353**
26d	**All costs related to a project are considered from a project's conception to its completion? (life cycle costing)**	**0.686**
26e	**A benchmark cost is adopted as a best practice target, with procedures and service provision altered to achieve this target cost? (target costing)**	**0.608**
26f	**Cost information is used to support the setting and achievement of strategic objectives? (strategic cost management)**	**0.728**
26g	**Activities are related to the competitive strength of the council or its ability to provide value for money? (value chain analysis)**	**0.705**

One component was loaded as identified from the scree plot. This component explained 21.04% of the variance. From Table 8.4 it can be seen that 9 items (indicated in bold in Table 8.4) were loaded in excess of the minimum level of 0.3 and were, therefore,

retained in the analysis. The remaining items, below the minimum acceptable level of 0.3, were subsequently excluded from further analysis.

8.4.4 Performance Measurement Techniques

PCA was undertaken to establish the construct validity for PMTs. The KMO (0.800) and Bartlett test (0.000) both indicated that the PMT data was suitable for PCA to be applied.

Two components were loaded as identified from the scree plot. From Table 8.5 it can be seen that three items did not load above the minimum level of 0.3 (Questions 10e, 12b and 12h) and were, consequently, removed from further analysis. Some of the remaining items loaded above this minimum level under more than one component. These have been left as included under both components as identified at this stage and will be further considered in the more detailed statistical analysis in Chapter 9. The two components explained 34.08% of the variance.

Table 8.5: Performance Measurement Techniques PCA

Question Number (see Appendix A)	Question Description	Loading Component 1	Loading Component 2
To what extent does your council *use* the following practices?			
10a	Performance Indicators		0.612
10b	Benchmarking		0.634
10c	Balanced scorecard (BSC)	0.331	
10d	Results and determinants framework (RDF)	0.455	
10e	Other performance measures	*(None >0.3)*	
If performance indicators (PIs) are used, please indicate to what extent your council adopts PIs that:			
12a	Have predominantly financial focus	0.477	
12b	Measure what is easily measurable	*(None >0.3)*	
12c	Are linked to the organisation's strategy		0.654
12d	Are compared to targets		0.719
12e	Focus on both financial and non-financial aspects	0.305	0.426
12f	Are locally developed		0.496
12g	Are set externally		0.311
12h	Are predominantly quantitative (i.e. number based)	*(None >0.3)*	

Table 8.5 (continued)

Question Number (see Appendix A)	Question Description	Loading Component 1	Loading Component 2
12i	Are predominantly qualitative (e.g. opinions, quality of service)	0.587	
12j	Measure the outcome of what is trying to be achieved		0.387
12k	Measure the ratio between inputs and outputs (efficiency)	0.531	
To what extent does your council:			
13a	Share best practice with other departments (within or outside own council)		0.635
13b	Use benchmarking groups		0.553
13c	Learn from other council departments (within or outside own council)		0.688
13d	Adopt best practices from other council departments (within or outside own council)		0.633
13e	Consider best practices from sources other than local authorities (e.g. other public or private sector organisations)	0.339	
To what extent does your council use performance measures to monitor:			
14a	Your council's strategy	0.315	0.541
14b	Financial performance	0.460	0.337
14c	Competitiveness	0.655	
14d	Quality of service	0.540	0.474
14e	Flexibility	0.740	
14f	Resource utilisation	0.746	
14g	Innovation	0.749	
14h	Customer satisfaction	0.512	0.367
14i	Key business processes it has identified it needs to be good at	0.531	
14j	Department's ability to learn, to cope with change and to improve through its people, systems and infrastructure	0.667	

8.4.5 Implementation Factors

PCA was undertaken to establish the construct validity for the implementation factors. The KMO (0.792) and Bartlett test (0.000) both indicated that the data was appropriate for PCA to be undertaken.

Table 8.6 shows that all items were loaded in excess of the minimum level of 0.3 and were, therefore, all retained in the analysis. Two components were loaded as identified from the scree plot. Component 1 relates to training and component 2 to data limitations. These two components explained 76.75% of the variance.

Table 8.6: Implementation Factors PCA

Question Number (see Appendix A)	Question Description	Loading Component 1	Loading Component 2
To what extent during the past 3 years has your council provided, arranged or paid for training that would help you to accomplish the following tasks:			
23a	Set performance goals?	0.929	
23b	Develop performance measures?	0.946	
23c	Use performance information to make decisions?	0.939	
23d	Link the performance of the council to the achievement of the council's strategic goals?	0.882	
To what extent have the following factors hindered measuring performance or using performance information in your council?			
22a	Difficulty obtaining valid or reliable data		0.869
22b	Difficulty obtaining data in time to be useful		0.884
22c	High cost of collecting data		0.790
22d	Existing information technology not capable of providing data needed		0.731

8.4.6 Performance Outcome

PCA was undertaken to establish the construct validity for performance outcome. The KMO (0.860) and Bartlett test (0.000) both indicated that the performance outcome data was suitable for PCA.

From Table 8.7 it can be seen that all items were loaded in excess of the minimum level of 0.3 and were, therefore, all retained in the analysis. Three components were loaded as identified from the scree plot. Component 1 relates to UoR, component 2 relates to non-financial and overall performance, and component 3 concerns financial and overall performance. Table 8.7 shows that two items (Questions 17 and 20b) loaded as over 0.3 on more than one component. These items have been left in all components at this time. This will be further considered in the more detailed statistical analysis in Chapter 9. The three components explained 60.89% of the variance.

Table 8.7: Performance Outcome PCA

Question Number (see Appendix A)	Question Description	Loading Component 1	Loading Component 2	Loading Component 3
N/A[42]	UoR – FR	0.743		
N/A	UoR – FM	0.582		
N/A	UoR – FS	0.804		
N/A	UoR – IC	0.715		
N/A	UoR – VFM	0.810		
17	Please rate your perceived overall performance for your council relative to the national local authority average	0.300	0.542	0.456
18	Please rate your perceived financial performance for your council			0.804
20a	Number of customer complaints		0.711	
20b	Value for money (quality versus cost)		0.419	0.689
20c	Variety and flexibility of services provided		0.735	
20d	Quality of services provided		0.778	
20e	Average costs of providing services			0.828
20f	Public satisfaction with the services provided		0.760	

There is also a fourth component for performance outcome which is an observed variable, measured by only one item, which was not included in the above PCA. This observed variable is the overall CPA judgement made on each English local authority by the Audit Commission. At the time of the research, CPA is the primary overall measure of performance for English local authorities and is a measure that is independent and consistent between local authorities. It was, therefore, concluded that this is a crucial measure of performance outcome that should be included as a separate component.

[42] The UoR data was collated from the Audit Commission's website as an objective measure of performance, rather than from the questionnaire. See section 6.3.6 for more detail.

8.5 Summary and Conclusion

The research contingency model devised in Chapter 5 has been displayed diagrammatically as a theoretical model with corresponding hypotheses indicated. The hypotheses have also been summarised.

PCA has been executed as the statistical technique to assess the validity of the research questionnaire in measuring the research variables. PCA reduced the observed variables into a smaller number of components. These components will be used as the basis for the measurement models to be tested as the first step of the SEM analysis in Chapter 9. The reliability of the research questionnaire in measuring the variables will also be tested in Chapter 9.

Chapter 9: SEM Statistical Analysis (Step 1)

9.1 Introduction

This chapter comprises the first step of the SEM statistical analysis building on the PCA undertaken in Chapter 8, which identified components for each of the unobserved variables. This present chapter takes these components identified and uses them as the base to specify and, subsequently, assess the measurement models. The second step to the SEM process is then undertaken in Chapter 10.

The remainder of the chapter is structured as follows. Section 9.2 sets out the two-step approach to SEM with the assessment of the measurement and structural models. The evaluation of model fit is specifically explored. Section 9.3 goes on to execute the first step of the SEM analysis, by applying CFA to the measurement models. The chapter is then brought to a close with a summary and conclusion in section 9.4.

9.2 SEM Approach

As explained in section 6.3.2, the general SEM model is made up of two parts; measurement and structural models (Anderson and Gerbing, 1988; Blunch, 2008; Byrne, 2001). The measurement model describes the relationships between the observed and unobserved variables, whereas the structural model defines the relationships between the unobserved variables. The measurement and structural sub-models making up the SEM model can be estimated simultaneously in a one-step analysis through the application of SEM software programs (Anderson and Gerbing, 1988). However, it is proposed that there are advantages in separately estimating (and re-specifying) the measurement model prior to the simultaneous estimation of the measurement and structural sub-models (Anderson and Gerbing, 1988). This latter approach is known as the two-step approach (Anderson and Gerbing, 1988; Blunch, 2008). The advantages of this two-step approach are both in theory testing and the assessment of construct validity (Anderson and Gerbing, 1988). As Blunch (2008) points out, it is meaningless to analyse the structural part of the model if the measurement models have not demonstrated satisfactory reliabilities. This two step approach to SEM analysis has been adopted in the present study. Firstly, CFA is applied to analyse the measurement models in section 9.3 below. Secondly, the full structural model is analysed in Chapter 10.

The first step of SEM involves evaluating how well the proposed measurement models fit the sample data. Assessment of model fit is explored in section 9.2.1 below and CFA was

explained in Chapter 6 (section 6.3.3). The specification of the measurement models are detailed, along with the CFA and model fit results, in section 9.3.

As stated in Chapter 8 (section 8.4), prior to undertaking factor analysis it is important to ensure that the data is suitable for factor analysis to be executed. For each variable, two tests (KMO and Bartlett test) were undertaken and confirmed that factor analysis was appropriate for the data.

9.2.1 Model Fit

SEM involves testing whether the empirical data supports the theoretical model. Part of the SEM analysis involves assessing whether the data and the theoretical model 'fit'. Model fit determines the extent the sample variance-covariance data fit the structural equation model (Schumacker and Lomax, 2004). There are numerous indexes of model fit available through SEM statistical packages, such as AMOS, that are adopted within the research literature (Arbuckle, 2006; Byrne, 2001; Kline, 2005; Schumacker and Lomax, 2004). These fit indexes may be categorised by absolute fit measures, relative fit measures and information theoretic fit measures (Blunch, 2008). Table 9.1 summarises some of the main indexes of model fit within these three categories, as identified from the literature, as well as the acceptable levels and interpretation of these indexes.

Table 9.1: Indexes of Model Fit

Index of Model Fit		
Name	**Description**	**Acceptable Level of Fit**
Absolute measures of fit	*Judge the fit of a model without reference to other models that could be relevant in the situation.*	
Chi-square (X^2)	Simultaneously tests the extent to which the specification of the factor loadings, factor variances/covariances and error variances for the study's model are valid. Should be reported along with degrees of freedom (df) and level of significance (p value). The only statistical test for testing the theoretical model and is reported in majority of SEM analyses.	Low, non-significant X^2 sought, indicating the specified model is consistent with the sample's observed data. A X^2 of 0 indicates perfect fit.
X^2 /df ratio	A relative chi-square taking into account degrees of freedom.	Value <3 indicates an acceptable fit.
Relative measures of fit	*Based on a comparison of the hypothesised model against a standard. The standard is represented by a baseline model, which is typically the independence or null model.*	
Normed Fit Index (NFI)	The NFI is a measure that rescales chi-square into a 0 (no fit) to 1.0 (perfect fit) range. Compares a restricted model with a full model using a baseline null model.	Values range from 0 (no fit) to 1.00 (perfect fit). NFI >0.90 indicates an acceptable fit with values close to 0.95 indicating a good model fit.
Comparative Fit Index (CFI)	Revised version of NFI, taking account of sample size.	Values range from 0 to 1.00. Value >0.90 originally indicated well-fitting model. Research has subsequently revised this to suggested values >0.95.
Information Theoretic Fit Measures	*Based on expressing the extent to which the present model will cross-validate in future samples of the same size from the same population.*	
Akaike Information Criterion (AIC)	Used to compare models with differing numbers of unobserved variables. Addresses the issue of parsimony in model fit assessment and, therefore, takes into account statistical goodness of fit and number of estimated parameters are taken into account.	Fit statistics for the hypothesised model should be smaller than for the saturated[43] model

(Adapted from Arbuckle, 2006; Blunch, 2008; Byrne, 2001; Kline, 2005; Hickey, 1993; Schumacker and Lomax, 2004)

There are some issues with the model fit indexes. For example, the chi-square measure is dependent on sample size. Indeed, findings of well fitting hypothesised models according to the chi-square measure have proven to be unrealistic in most SEM research

[43] The saturated model includes the maximum number of parameters (Blunch, 2008), where the number of estimated parameters equals the number of data points (Byrne, 2001).

(Byrne, 2001). Consequently, a number of other indexes have been developed and a combination of these indexes should be used (Byrne, 2001; Hair *et al*., 1998; Shook *et al*., 2004). Furthermore, the fit indexes provide information on the model's lack of fit and it is down to the researcher's judgement to conclude on whether the model is plausible (Blunch, 2008; Byrne, 2001). A combination of the indexes summarised in Table 9.1 will consequently be used to assess model fit in the present study.

9.2.2 SEM Software

The AMOS 7.0 software (Arbuckle, 2006) was adopted to execute SEM in the present study. In relation to model fit, AMOS 7.0 produces a large number of fit indexes, many of which report similar information. As recommended in the literature and discussed above (section 9.2.1), the number of model fit indexes reported for the current study will be limited to those indexes summarised in Table 9.1.

9.3 CFA of Measurement Models

The measurement model describes the relationship between the observed and unobserved variables (Byrne, 2001). Measurement models have been specified for each of the components identified through PCA in Chapter 8 (see sections 9.3.1 to 9.3.6).

The measurement models initially specified invariably fail to provide an acceptable level of fit so re-specification and re-estimation is necessary (Anderson and Gerbing, 1988). If the model fit is not strong enough, modification of the measurement model is required (Schumacker and Lomax, 2004). There are various procedures available for detecting specification errors in order to select what modification should be undertaken (Schumacker and Lomax, 2004). The *standardized regression coefficients* are one such approach (Abdel Halim, 2004; Loehlin, 1987) and the method adopted in the present study. The *standardised regression coefficients* within the AMOS output are actually termed *standardised regression weights*. The modification process involved identifying the observed variable with the lowest standardised regression weight and removing that observed variable from the measurement model. The model fit was then reassessed and the modification process repeated until it resulted in an acceptable model fit. The measurement models with acceptable fits were then taken through to step 2 of the SEM analysis in Chapter 10.

9.3.1 Measurement Model for Strategic Typology

The PCA executed in section 8.4.1 identified two components from the observed variables measuring strategic typology. These components were consistent with cost leadership and differentiation strategic typologies. The measurement models for these two components are specified and tested in sections 9.3.1.1 and 9.3.1.2, respectively.

9.3.1.1 Measurement model for cost leadership strategy

The measurement model in Figure 9.1 comprises cost leadership strategy as an unobserved variable, measured by 4 observed variables (Q5a, Q5b, Q5c and Q5d). These 4 observed variables relate to questions on the research questionnaire included in Appendix A. Random measurement error influences the reliability of each observed variable and this is indicated by the error terms err1 to err4. These errors terms indicate that the observed variable is measuring something other than the hypothesised item (Schumacker and Lomax, 2004).

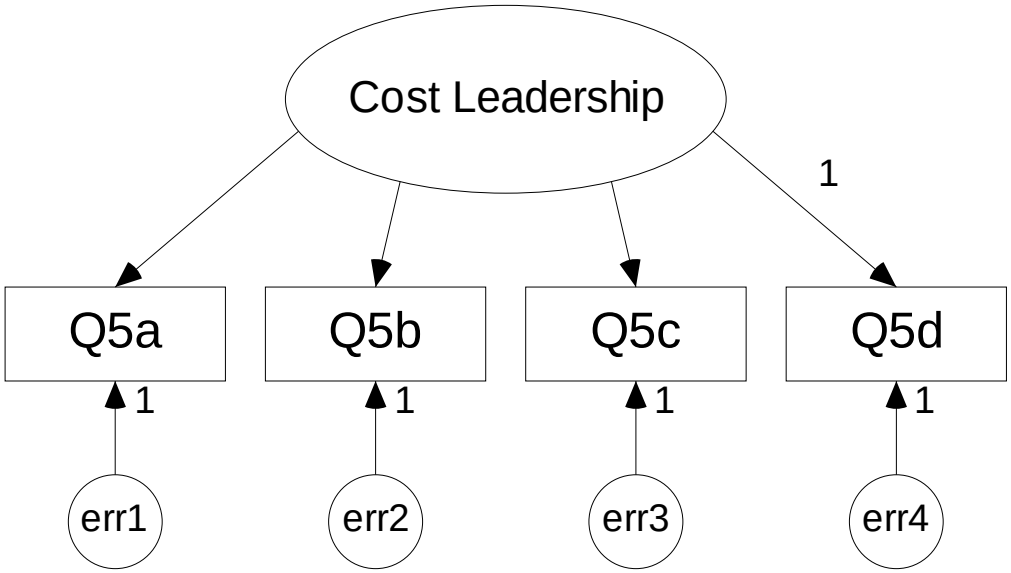


Figure 9.1: Cost Leadership Measurement Model

CFA was undertaken to assess the fit of the 4 observed variables into the unobserved variable. Paths were set between each observed variable and cost leadership, to examine the relationship between the observed variables. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.1 produced fit indexes of X^2 of 17.397 (df =2; p = 0.000), CFI of 0.959, NFI of 0.955, X^2/df of 8.698 and AIC of 41.397 (saturated model = 28.000). The AIC and X^2/df indexes are below the recommended minimum level for a good model fit and, consequently, some model modification was required.

The observed variable with the lowest standardised regression weight was Q5a which was subsequently removed and the measurement model fit re-assessed. Following this modification, all of the fit indexes were above the minimum recommended level and, in fact, a perfect model fit was indicated. This modification and the fit indexes are summarised in Table 9.2. It should be noted that as the model has a zero degrees of freedom, it should fit the data perfectly and chi-square is zero. Consequently, the ratio of X^2/df cannot be calculated.

Table 9.2: Cost Leadership Measurement Model Modification Process

Fit Index	Initial model	Q5a removed
X^2	17.397 p = 0.000 df = 2	0.000
CFI	0.959	1.000
NFI	0.955	1.000
X^2/df	8.698	n/a
AIC (Saturated model)	41.397 (28.000)	18.000 (18.000)

The final cost leadership measurement model includes 3 observed variables (Q5b, Q5c and Q5d). As explained in Chapter 8, after using factor analysis to validate a questionnaire, it is then useful to check the reliability of the scale, such as through Cronbach's alpha (Field, 2005; Munro, 1993c; Shook *et al*., 2004). Cronbach's alpha was, therefore, calculated for the 3 items in the modified cost leadership measurement model. The calculated Cronbach's alpha of 0.689 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.1.2 Measurement model for differentiation strategy

The measurement model in Figure 9.2 comprises differentiation strategy as an unobserved variable, measured by 7 observed variables (Q5e, Q5f, Q5g, Q5h, Q5i, Q5j and Q5k). These 7 observed variables relate to questions on the research questionnaire

included in Appendix A. The reliability of each observed variable is influenced by random measurement error, indicated by the error terms in Figure 9.2 (err1 to err7).

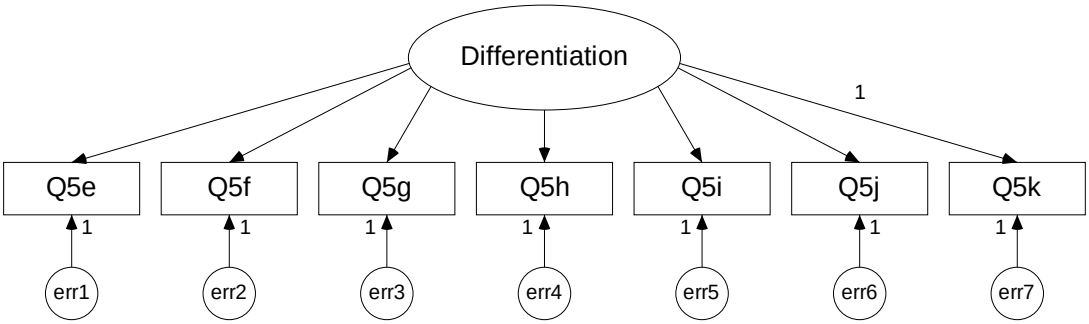


Figure 9.2: Differentiation Measurement Model

CFA was undertaken to assess the fit of the 7 observed variables into the unobserved variable. To examine the relationship between the observed variables, paths were set between each observed variable and differentiation strategy. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.2 produced fit indexes of X^2 of 193.262 (df =14; p = 0.000), CFI of 0.777, NFI of 0.768, X^2/df of 13.804 and AIC of 235.262 (saturated model = 70.000). The indexes are below the recommended minimum level for a good model fit and, consequently, some model modification was required.

The observed variable with the lowest standardised regression weight was Q5h which was subsequently removed and the measurement model fit re-assessed. All the fit indexes improved but were still below the minimum level required. This modification process was repeated until all the fit indexes adopted were above the acceptable limit, indicating a good model fit. The modification steps and fit indexes are summarised in Table 9.3. After the fourth modification step a perfect model fit was identified.

Table 9.3: Differentiation Measurement Model Modification Process

Fit Index	Initial model	Q5h removed (step 1)	Q5f removed (step 2)	Q5e removed (step 3)	Q5g removed (step 4)
χ^2	193.262 p = 0.000 df = 14	184.879 p = 0.000 df= 9	94.361 p = 0.000 df = 5	11.391 p = 0.003 df = 2	0.000
CFI	0.777	0.754	0.837	0.976	1.000
NFI	0.768	0.749	0.832	0.972	1.000
χ^2/df	13.804	20.542	18.872	5.696	n/a
AIC (Saturated model)	235.262 (70.000)	220.879 (54.000)	124.361 (40.000)	35.391 (28.000)	18.000 (18.000)

The final modified differentiation measurement model includes the 3 observed variables of Q5i, Q5j and Q5k. Cronbach's alpha was calculated for these 3 items. The calculated Cronbach's alpha of 0.711 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.2 Measurement Models for Resource-Based Strategy

The PCA executed in section 8.4.2 identified four components from the observed variables measuring resource-based strategy. These components were consistent with the four capabilities of market orientation, entrepreneurship, organisational learning and innovation. The measurement models for these four components are specified and tested in sections 9.3.2.1 to 9.3.2.4.

9.3.2.1 Measurement model for market orientation

The measurement model in Figure 9.3 comprises one unobserved variable (market orientation) measured by 5 observed variables (Q6a, Q6b, Q6c, Q6d and Q6e). These 5 observed variables relate to questions on the research questionnaire (Appendix A). The reliability of each observed variable is influenced by random measurement error, indicated by the error terms in Figure 9.3 (err1 to err5).

CFA was undertaken to assess the fit of the 5 observed variables into the unobserved variable. To examine the relationship between the measured variables, paths were set

between market orientation and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

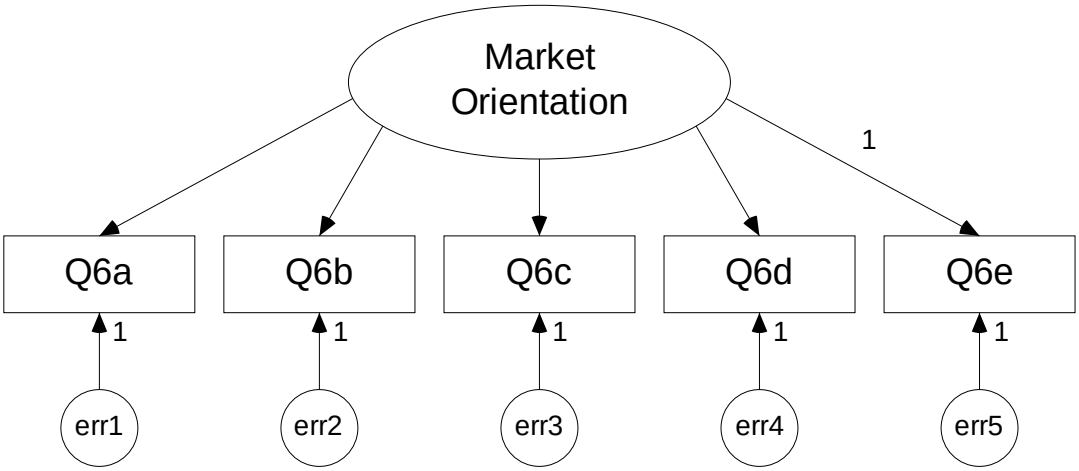


Figure 9.3: Market Orientation Measurement Model

The initial measurement model shown in Figure 9.3 produced fit indexes of χ^2 of 72.012 (df =5; p = 0.000), CFI of 0.933, NFI of 0.929, χ^2/df of 14.402 and AIC of 102.012 (saturated model = 40.000). The latter two indexes indicate an unacceptable model fit and, therefore, the model was modified.

The observed variable with the lowest standardised regression weight was Q6c which was subsequently removed and the measurement model fit re-assessed. The revised model fit improved but the χ^2/df and AIC indexes were still below the acceptable minimum level. Q6d, as the observed variable with the lowest standardised regression weight in this revised model, was then removed which resulted in a perfect model fit. These modification steps and fit indexes are summarised in Table 9.4.

Table 9.4: Market Orientation Measurement Model Modification Process

Fit Index	Initial model	Q6c removed (step 1)	Q6d removed (step 2)
X^2	72.012 p = 0.000 df = 5	69.159 p = 0.000 df = 2	0.000
CFI	0.933	0.915	1.000
NFI	0.929	0.914	1.000
X^2/df	14.402	34.579	n/a
AIC (Saturated model)	102.012 (40.000)	93.159 (28.000)	18.000 (18.000)

The final market orientation measurement model includes 3 observed variables (Q6a, Q6b and Q6e). Cronbach's alpha was calculated as 0.791 for the 3 items included in the modified market orientation measurement model, which is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.2.2 Measurement model for organisational learning

The measurement model in Figure 9.4 comprises organisational learning as an unobserved variable, measured by 4 observed variables (Q9a, Q9b, Q9c and Q9d). These 4 observed variables relate to questions on the research questionnaire included in Appendix A. Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err4) in Figure 9.4.

CFA was undertaken to assess the fit of the 4 observed variables into the unobserved variable. To examine the relationship between the observed variables, paths were set between organisational learning and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.4 produced fit indexes of X^2 of 10.525 (df =2; p = 0.005), CFI of 0.990, NFI of 0.988, X^2/df of 5.262 and AIC of 34.525 (saturated model = 28.000). The AIC and X^2/df indicate an unacceptable model fit so the model was modified.

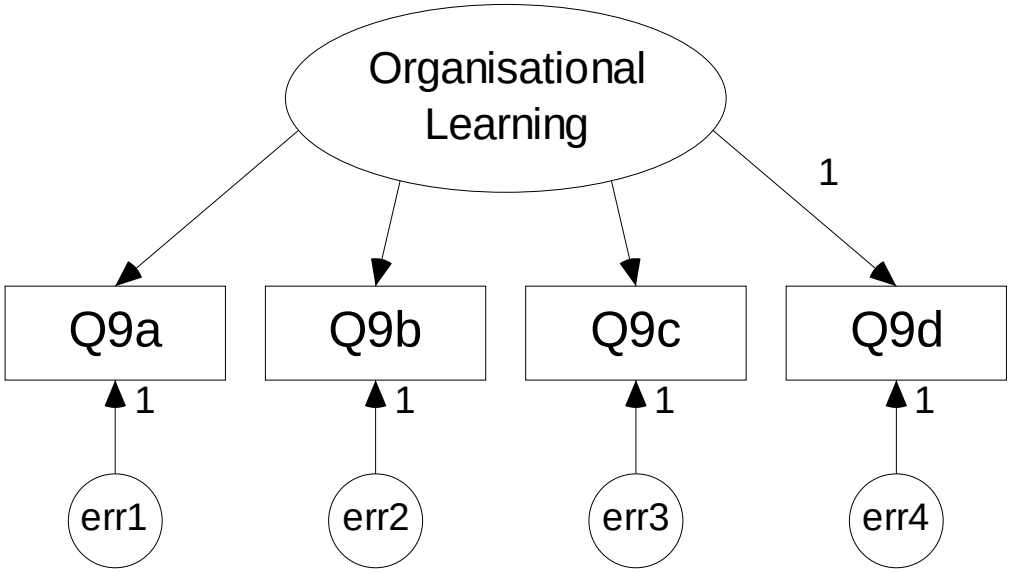


Figure 9.4: Organisational Learning Measurement Model

The observed variable with the lowest standardised regression weight was Q9c which was subsequently removed and the measurement model fit re-assessed, resulting in a perfect model fit. This modification and the fit indexes are summarised in Table 9.5. The final measurement model included 3 observed variables (Q9a, Q9b and Q9d). Cronbach's alpha was calculated for these 3 items included in the modified organisational learning model. The calculated Cronbach's alpha of 0.829 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

Table 9.5: Organisational Learning Measurement Model Modification Process

Fit Index	Initial model	Q9c removed (step 1)
χ^2	10.525 p = 0.005 df =2	0.000
CFI	0.990	1.000
NFI	0.988	1.000
χ^2/df	5.262	n/a
AIC (Saturated model)	34.525 (28.000)	18.000 (18.000)

9.3.2.3 Measurement model for innovation

The measurement model in Figure 9.5 comprises innovation as an unobserved variable, measured by 4 observed variables (Q8a, Q8b, Q8c and Q8dR). These 4 observed variables relate to questions on the research questionnaire included in Appendix A. The scoring on question 8d was reversed due to how the question was phrased, to ensure the responses were consistent with the other observed variables. The reliability of each observed variable is influenced by random measurement error, indicated by the error terms in Figure 9.5 (err1 to err4).

CFA was undertaken to assess the fit of the 4 observed variables into the unobserved variable. Paths were set between innovation and each observed variable, to examine the relationships. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

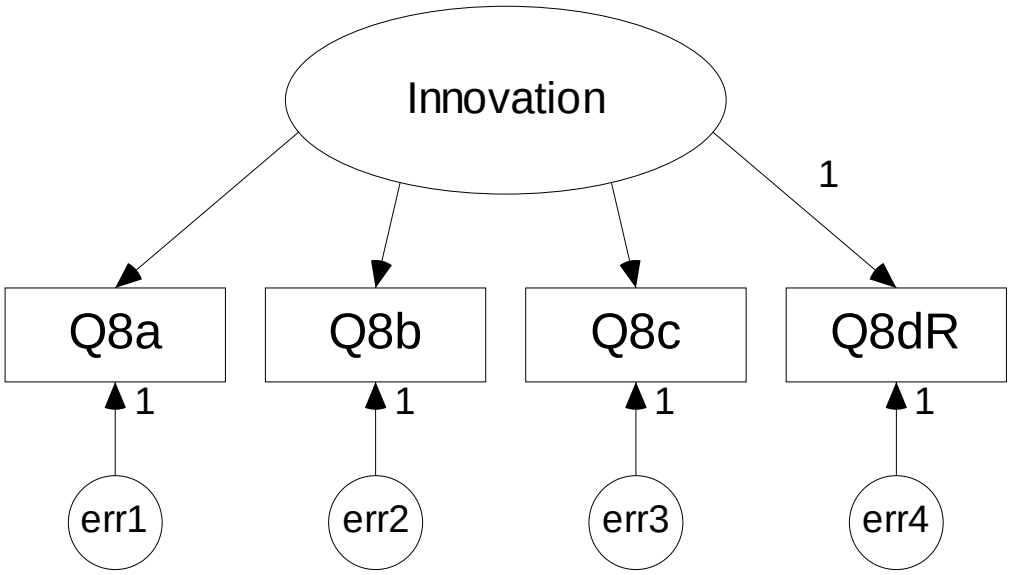


Figure 9.5: Innovation Measurement Model

The initial measurement model shown in Figure 9.5 produced fit indexes of X^2 of 5.108 (df =2; p = 0.078), CFI of 0.996, NFI of 0.993, X^2/df of 2.554 and AIC of 29.108 (saturated model = 28.000). Overall these figures indicate a good model fit. However, the AIC index suggests modification of the model would further improve the model fit.

The observed variable with the lowest standardised regression weight was Q8dR which was subsequently removed, resulting in a perfect model fit. This modification and the fit indexes are summarised in Table 9.6.

The final innovation measurement model includes 3 observed variables (Q8a, Q8b and Q8c). Cronbach's alpha was calculated for these 3 items remaining in the modified innovation measurement model. The calculated Cronbach's alpha of 0.834 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

Table 9.6: Innovation Measurement Model Modification Process

Fit Indexes	Initial model	Q8dR removed
X^2	5.108 p = 0.078 df = 2	0.000
CFI	0.996	1.000
NFI	0.993	1.000
X^2/df	2.554	n/a
AIC (Saturated model)	29.108 (28.000)	18.000 (18.000)

9.3.2.4 Measurement model for entrepreneurship

The measurement model in Figure 9.6 comprises entrepreneurship as an unobserved variable, measured by 5 observed variables (Q7a, Q7b, Q7c, Q7d and Q7e). These 5 observed variables relate to questions on the research questionnaire (Appendix A). Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err5) in Figure 9.6.

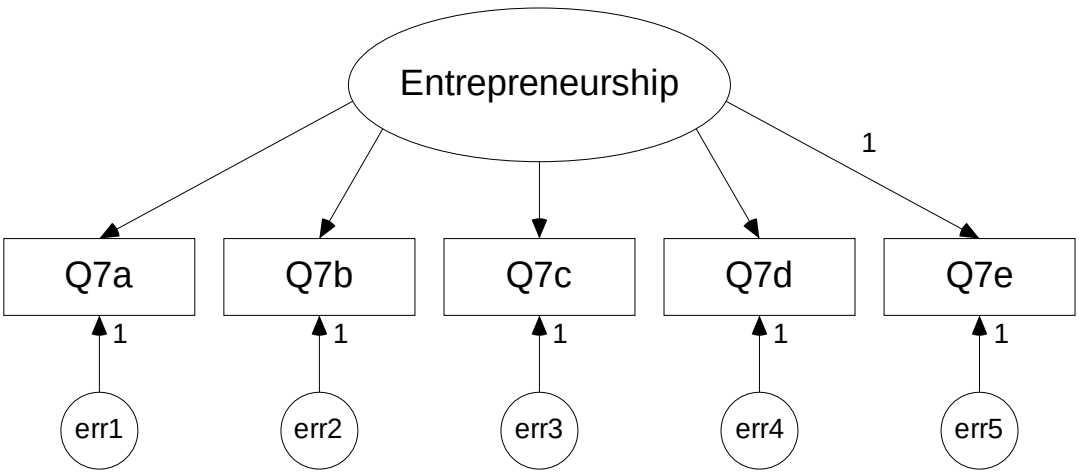


Figure 9.6: Entrepreneurship Measurement Model

CFA was undertaken to assess the fit of the 5 observed variables into the unobserved variable. To examine the relationship between the measured variables, paths were set between entrepreneurship and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.6 produced fit indexes of X^2 of 40.718 (df =5; p = 0.000), CFI of 0.950, NFI of 0.944, X^2/df of 8.144 and AIC of 70.718 (saturated model = 40.000). The latter two indexes are above the recommended minimum level so some model modification was required.

The observed variable with the lowest standardised regression weight was Q7c which was subsequently removed and the measurement model fit re-assessed. The model fit improved for all the fit indexes but AIC and X^2/df both remained above the acceptable level. Consequently Q7b (as the observed variable with the lowest standardised regression weight) was removed, resulting in a perfect model fit. These modification steps and fit indexes are summarised in Table 9.7.

The final innovation measurement model includes 3 observed variables (Q7a, Q7d and Q7e). Cronbach's alpha was calculated for these 3 items remaining in the modified entrepreneurship measurement model. The calculated Cronbach's alpha of 0.734 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

Table 9.7: Entrepreneurship Measurement Model Modification Process

Fit Index	Initial model	Q7c removed (step 1)	Q7b removed (step 2)
X^2	40.718 p = 0.000 df = 5	8.453 p = 0.015 df = 2	0.000
CFI	0.950	0.987	1.000
NFI	0.944	0.983	1.000
X^2/df	8.144	4.226	n/a
AIC (Saturated model)	70.718 (40.000)	32.453 (28.000)	18.000 (18.000)

9.3.3 Measurement Models for Performance Measurement Techniques

The PCA executed in section 8.4.4 identified two components from the observed variables measuring PMTs. The measurement models for these two components are specified and tested in sections 9.3.3.1 and 9.3.3.2.

9.3.3.1 Measurement model for PMT component 1

The measurement model in Figure 9.7 comprises one unobserved variable (PMT component 1), measured by 17 observed variables (Q10c, Q10d, Q12a, Q12e, Q12i, Q12k, Q13e, Q14a, Q14b, Q14c, Q14d, Q14e, Q14f, Q14g, Q14h, Q14i and Q14j). These 17 observed variables relate to questions on the research questionnaire included in Appendix A. Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err17) in Figure 9.7.

CFA was undertaken to assess the fit of the 17 observed variables into the unobserved variable. To examine the relationship between the measured variables, paths were set between the unobserved variable and each observed variable. The descriptive statistics and correlation matrix for all the observed variables included in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.7 produced fit indexes of X^2 of 742.912 (df =119; p = 0.000), CFI of 0.798, NFI of 0.771, X^2/df of 6.243 and AIC of 844.912 (saturated model = 340.000). All these indexes indicate an unacceptable model fit and, therefore, the model was modified.

The observed variable with the lowest standardised regression weight was Q10c which was subsequently removed and the measurement model fit re-assessed. The revised model fit improved but the fit indexes were still below the acceptable minimum level. This modification process was repeated, removing the observed variable with the lowest standardised regression weight, one at a time and reassessing model fit, until all the indexes were within acceptable limits. This actually required 14 modification steps eventually resulting in a perfect model fit. These modification steps and fit indexes are summarised in Table 9.8.

The final measurement model comprised 3 observed variables (Q14e, Q14f and Q14g), corresponding to RDF elements. The variable of this measurement model will subsequently be termed ‘RDF’. Cronbach’s alpha was calculated for these 3 items

remaining in the modified measurement model. The calculated Cronbach's alpha of 0.819 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.3.2 Measurement model for PMT component 2

The measurement model in Figure 9.8 comprises one unobserved variable (PMT Component 2), measured by 16 observed variables (Q10a, Q10b, Q12c, Q12d, Q12e, Q12f, Q12g, Q12j, Q13a, Q13b, Q13c, Q13d, Q14a, Q14b, Q14d and Q14h) which relate to questions on the research questionnaire (Appendix x). The reliability of each observed variable is influenced by random measurement error, indicated by the error terms in Figure 9.8 (err1 to err16).

The fit of the 16 observed variables into the unobserved variable was assessed using CFA. To examine the relationship between the measured variables, paths were set between the unobserved variable and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.8 produced fit indexes of χ^2 of 1331.627 (df = 104; p = 0.000), CFI of 0.611, NFI of 0.595, χ^2/df of 12.804 and AIC of 1427.627 (saturated model = 304.000). All these indexes indicate an unacceptable model fit so model modification was required. The observed variable with the lowest standardised regression weight was Q12g which was subsequently removed and the measurement model fit re-assessed. This model modification process was repeated, removing one observed variable at a time until all the indexes reported an acceptable model fit. The modification steps and fit indexes are summarised in Table 9.9. The final measurement model included 3 observed variables (Q13a, Q13c and Q13d), corresponding to benchmarking elements. The variable for this measurement model will subsequently be referred to as 'benchmarking'.

Cronbach's alpha was calculated for the 3 items remaining in the modified innovation measurement model. The calculated Cronbach's alpha of 0.859 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

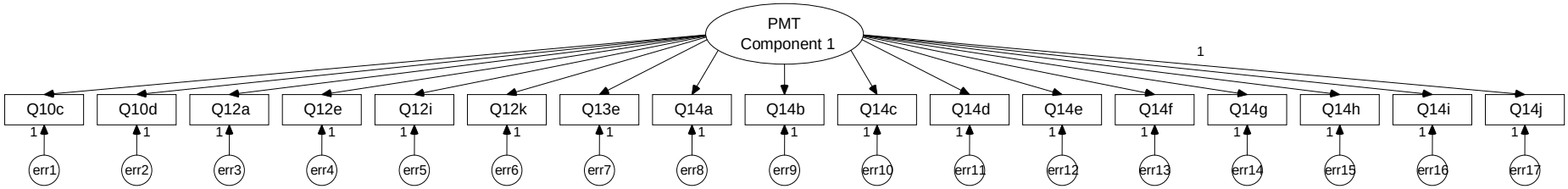


Figure 9.7: PMT Component 1 Measurement Model

Table 9.8: PMT Component 1 Measurement Model Modification Process

Fit Index	Initial model	Q10c removed (step 1)	Q10d removed (step 2)	Q13e removed (step 3)	Q12i removed (step 4)	Q12a removed (step 5)	Q12e removed (step 6)	Q14a removed (step 7)	Q14b removed (step 8)	Q14h removed (step 9)	Q14i removed (step 10)	Q14d removed (step 11)	Q12k removed (step 12)	Q14j removed (step 13)	Q14c removed (step 14)
X^2	742.912 p= 0.000 df= 119	662.641 p=0.000 df=104	629.624 p=0.000 df=90	607.519 p=0.000 df=77	557.474 p=0.000 df=65	491.647 p=0.000 df=54	430.821 p=0.000 df=44	354.820 p=0.000 df=35	261.694 p=0.000 df=27	93.726 p=0.000 df=20	81.129 p=0.000 df=14	48.517 p=0.000 df=9	18.571 p=0.000 df=5	10.546 p=0.005 df=2	0.000
CFI	0.798	0.811	0.812	0.809	0.814	0.825	0.833	0.850	0.876	0.954	0.952	0.968	0.987	0.989	1.000
NFI	0.771	0.785	0.789	0.789	0.796	0.809	0.820	0.837	0.865	0.942	0.944	0.961	0.982	0.987	1.000
X^2/df	6.243	6.372	6.996	7.890	8.577	9.105	9.791	10.138	9.692	4.686	5.795	5.391	3.714	5.273	n/a
AIC (Saturated model)	844.912 (340.000)	758.614 (304.000)	719.624 (270.000)	691.517 (238.000)	635.474 (208.000)	563.647 (180.000)	496.821 (154.000)	414.820 (130.000)	315.694 (108.000)	141.726 (88.000)	123.129 (70.000)	84.517 (54.000)	48.571 (40.000)	34.546 (28.000)	18.000 (18.000)

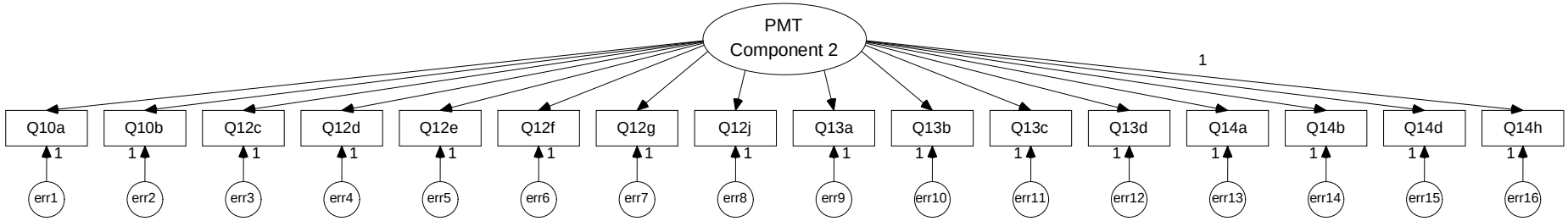


Figure 9.8: PMT Component 2 Measurement Model

Table 9.9: PMT Component 2 Measurement Model Modification Process

Fit Index	Initial model	Q12g removed (step 1)	Q12f removed (step 2)	Q12j removed (step 3)	Q12e removed (step 4)	Q14b removed (step 5)	Q12d removed (step 6)	Q10a removed (step 7)	Q14a removed (step 8)	Q14h removed (step 9)	Q12c removed (step 10)	Q14d removed (step 11)	Q10b removed (step 12)	Q13b removed (step 12)
χ^2	1331.627 p=0.000 df=104	1228.449 p=0.000 df=90	1173.115 p=0.000 df=77	1137.699 p=0.000 df=65	1014.573 p=0.000 df=54	949.580 p=0.000 df=44	834.531 p=0.000 df=35	664.445 p=0.000 df=27	543.653 p=0.000 df=20	322.969 p=0.000 df=14	277.539 p=0.000 df=9	260.906 p=0.000 df=5	14.011 p=0.001 df=2	0.000
CFI	0.611	0.625	0.622	17.503	0.626	0.624	0.639	0.679	0.707	0.793	0.805	0.801	0.987	1.000
NFI	0.595	0.611	0.610	0.603	0.616	0.617	0.632	0.673	0.702	0.788	0.802	0.799	0.985	1.000
χ^2/df	12.804	13.649	15.235	17.503	18.788	21.581	23.844	24.609	27.183	23.069	30.838	52.181	7.005	n/a
AIC (Saturated model)	1427.627 (304.000)	1318.449 (270.000)	1257.115 (238.000)	1215.699 (208.000)	1086.573 (180.000)	1015.580 (154.000)	894.531 (130.000)	718.445 (108.000)	591.653 (88.000)	364.969 (70.000)	313.539 (54.000)	290.906 (40.000)	38.011 (28.000)	18.000 (18.000)

9.3.4 Measurement Model for Management Accounting Practices

The PCA executed in section 8.4.3 identified one component from the observed variables measuring MAPs. The measurement model for this component is specified and tested below.

The measurement model in Figure 9.9 comprises CMAP as an unobserved variable, measured by 9 observed variables (Q24b, Q24c, Q25c, Q26b, Q26c, Q26d, Q26e, Q26f, Q26g). These 9 observed variables relate to questions on the research questionnaire (Appendix A). Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err9) in Figure 9.9.

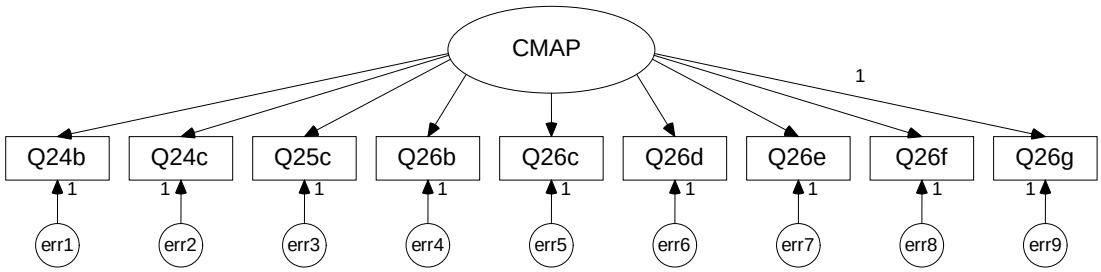


Figure 9.9: MAP Measurement Model

The fit of the 9 observed variables into the unobserved variable was assessed using CFA. To examine the relationship between the measured variables, paths were set between each observed variable and the unobserved variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.9 produced fit indexes of χ^2 of 194.762 (df =27; p = 0.000), CFI of 0.729, NFI of 0.707, χ^2/df of 7.213 and AIC of 248.762 (saturated model = 108.000). These indexes indicate that the model fit was below acceptable limits, indicating that model modification was required.

The observed variable with the lowest standardised regression coefficient was Q26b which was subsequently removed. Reassessment of the measurement model resulted in a perfect model fit. This modification and the fit indexes are summarised in Table 9.10.

Table 9.10: MAP Measurement Model Modification Process

Fit Index	Initial model	Q26b removed (step 1)	Q24c removed (step 2)	Q25c removed (step 3)	Q26c removed (step 4)	Q24b removed (step 5)	Q26d removed (step 6)
X^2	194.762 p=0.000 df=27	95.087 p=0.000 df=4.754	71.276 p=0.000 df=5.091	58.159 p=0.000 df=9	24.436 p=0.000 df=5	4.730 p=0.094 df=2	0.000
CFI	0.729	0.856	0.883	0.894	0.954	0.992	1.000
NFI	0.707	0.829	0.862	0.880	0.944	0.987	1.000
X^2/df	7.213	4.754	5.091	6.462	4.887	2.365	n/a
AIC (Saturated model)	248.762 (108.000)	143.087 (88.000)	113.276 (70.000)	94.159 (54.000)	54.436 (0.000)	28.730 (28.000)	18.000 (18.000)

The final MAP measurement model comprised 3 observed variables (Q26e, Q26f and Q26g). Cronbach's alpha was calculated for these 3 items remaining in the modified MAP measurement model. The calculated Cronbach's alpha of 0.697 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.5 Measurement Models for Implementation Factors

The PCA executed in section 8.4.5 identified two components from the observed variables measuring implementation factors. These components were consistent with the two implementation factors of data limitations and training. The measurement models for these two components are specified and tested in sections 9.3.2.1, 9.3.5.1 and 9.3.5.2, respectively.

9.3.5.1 Measurement model for data limitations

The measurement model in Figure 9.10 comprises data limitations as the unobserved variable, measured by 4 observed variables (Q22a, Q22b, Q22c and Q22d). These 4 observed variables relate to questions on the research questionnaire included in Appendix A. The reliability of each observed variable is influenced by random measurement error, indicated by the error terms in Figure 9.10 (err1 to err4).

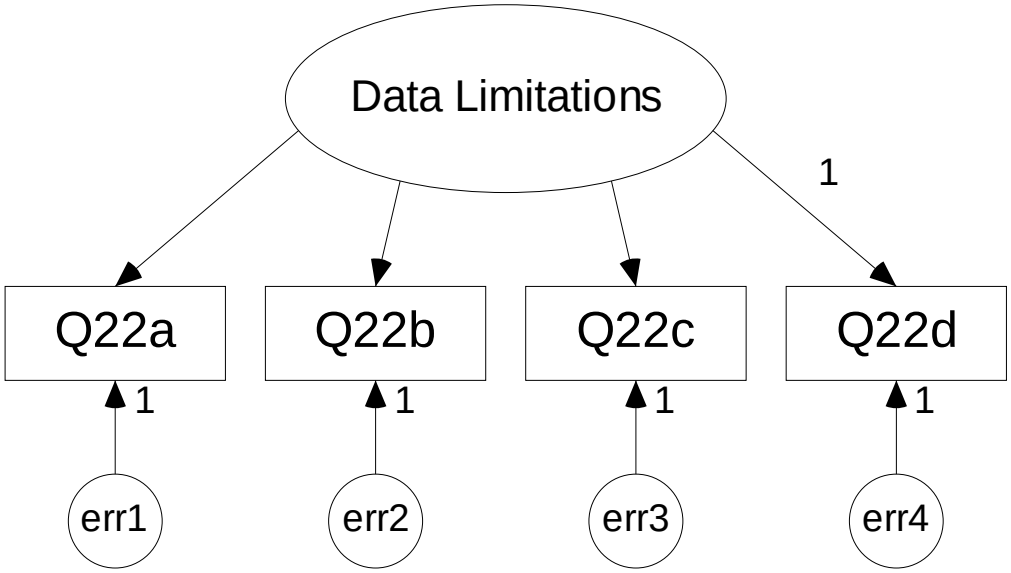


Figure 9.10: Data Limitations Measurement Model

CFA was undertaken to assess the fit of the 4 observed variables into the unobserved variable. To examine the relationship between the observed variables, paths were set between the unobserved variable and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.10 produced fit indexes of X^2 of 23.711 (df =2; p = 0.000), CFI of 0.975, NFI of 0.973, X^2/df of 11.855 and AIC of 47.711 (saturated model = 28.000). The AIC and X^2/df indexes are below the minimum acceptable level so the model required modification.

The observed variable with the lowest standardised regression coefficient was Q22d which was subsequently removed. Reassessment of the measurement model fit produced a perfect model fit. This modification and fit indexes are summarised in Table 9.11.

The final data limitations measurement model includes 3 observed variables (Q22a, Q22b and Q22c). Cronbach's alpha was calculated for these 3 items remaining in the modified data limitations measurement model. The calculated Cronbach's alpha of 0.829 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

Table 9.11: Data Limitations Measurement Model Modification Process

Fit Index	Initial model	Q22d removed (step 1)
X^2	23.711 p = 0.000 df = 2	0.000
CFI	0.975	1.000
NFI	0.973	1.000
X^2/df	11.855	n/a
AIC (Saturated model)	47.711 (28.000)	18.000 (18.000)

9.3.5.2 Measurement model for training

The measurement model in Figure 9.11 comprises MAP as an unobserved variable, measured by 4 observed variables (Q23a, Q23b, Q23c and Q23d). These 4 observed variables relate to questions on the research questionnaire (Appendix A). Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err4) in Figure 9.11.

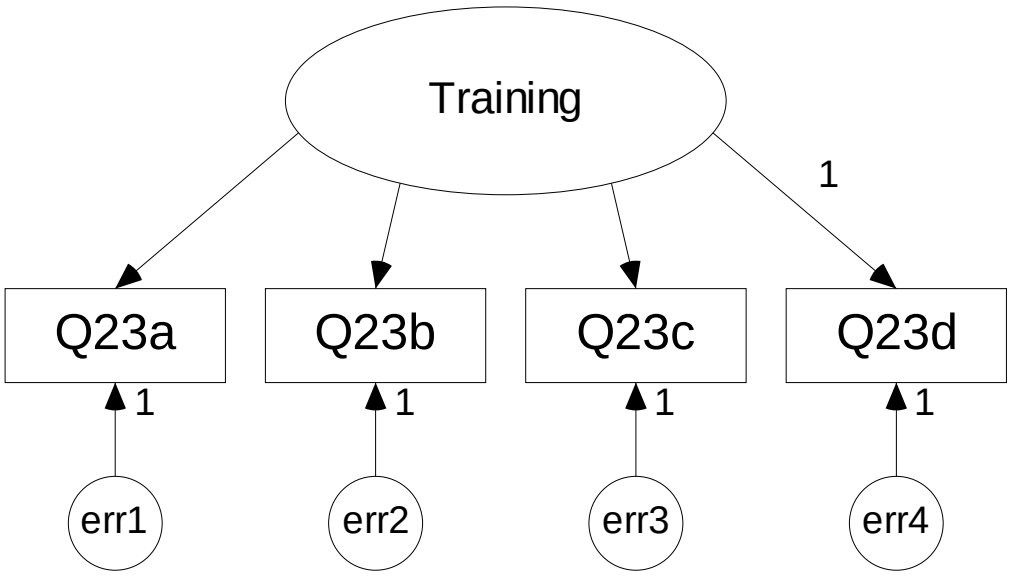


Figure 9.11: Training Measurement Model

The fit of the 4 observed variables into the unobserved variable was assessed using CFA. To examine the relationship between the observed variables, paths were set between

training and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.11 produced fit indexes of χ^2 of 78.352 (df =2; p = 0.000), CFI of 0.963, NFI of 0.962, χ^2/df of 39.176 and AIC of 102.352 (saturated model = 28.000). The latter 2 indexes are below the minimum acceptable limits so the model was modified.

The observed variable with the lowest standardised regression coefficient was Q23d which was subsequently removed and the measurement model fit re-assessed. The modified model had a perfect fit. This modification process and the associated fit indexes are summarised in Table 9.12. The final measurement model comprised the 3 remaining observed variables (Q23a, Q23b and Q23c).

Table 9.12: Training Measurement Model Modification Process

Fit Index	Initial model	Q23d removed (step 1)
χ^2	78.352 p = 0.000 df = 2	0.000
CFI	0.963	1.000
NFI	0.962	1.000
χ^2/df	39.176	n/a
AIC (Saturated model)	102.352 (28.000)	18.000 (18.000)

Cronbach's alpha was calculated for the 3 items remaining in the modified training measurement model. The calculated Cronbach's alpha of 0.948 is well above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.6 Measurement Models for Performance Outcome

The PCA executed in section 8.4.6 identified three components from the observed variables measuring performance outcome. The characteristics of these three components were consistent with UoR, non-financial and overall performance, and financial and overall performance. Additionally there is a fourth component of performance outcome of the CPA score for each council, which is a single item published by the Audit Commission. The measurement models for these four components are specified and tested in sections 9.3.6.1 to 9.3.6.4.

9.3.6.1 Measurement model for performance outcome component 1: UoR

The measurement model in Figure 9.12 comprises UoR Performance Outcome as an unobserved variable, measured by 6 observed variables (FR, FS, FM, IC, VFM and Q17). These 6 observed variables relate to the UoR measures judged and published by the Audit Commission (see section 7.3.6) and a self-assessment evaluation of overall performance from the questionnaire. Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err6) in Figure 9.12.

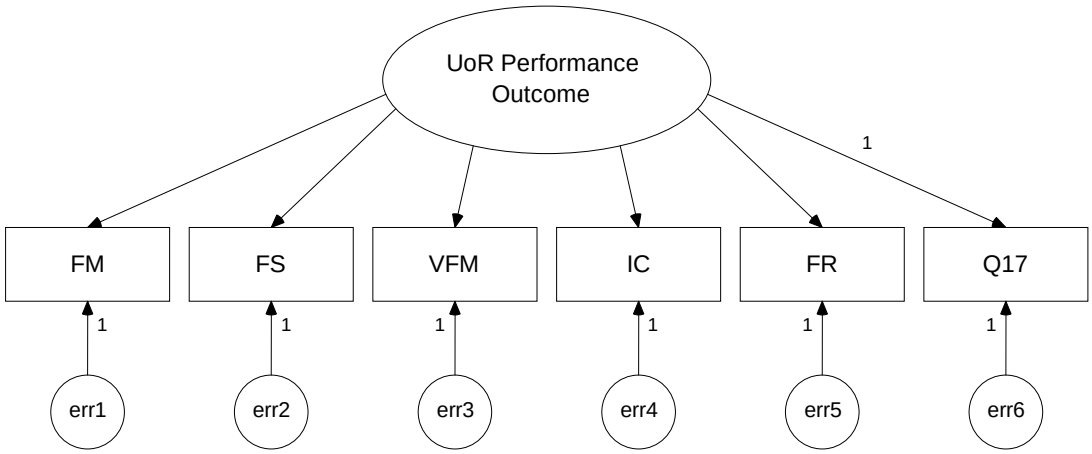


Figure 9.12: UoR Performance Outcome Measurement Model

CFA was undertaken to assess the fit of the 6 observed variables into the unobserved variable. To examine the relationship between the observed variables, paths were set between the unobserved variable and each observed variable. The descriptive statistics and correlation matrix for all the observed variables included in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.12 produced fit indexes of X^2 of 31.224 (df =9; p = 0.000), CFI of 0.974, NFI of 0.964, X^2/df of 3.469 and AIC of 67.224 (saturated model = 54.000). The AIC index and X^2/df are below the minimum acceptable levels so model modification was required.

The observed variable with the lowest standardised regression coefficient was Q17 which was subsequently removed from the measurement model. Reassessment of the model fit found that the AIC figure and X^2/df remained below the minimum acceptable limits

specified in Table 9.13. This modification process was repeated until all the indexes reported an acceptable model fit. These modification steps and fit indexes are summarised in Table 9.13.

Table 9.13: UoR Performance Outcome Measurement Model Modification Process

Fit Index	Initial model	Q17 removed (step 1)	FM removed (step 2)	IC removed (step 3)
χ^2	31.224 p = 0.000 df = 9	21.815 p = 0.001 df = 5	11.746 p = 0.003 df = 2	0.000
CFI	0.974	0.978	0.985	1.000
NFI	0.964	0.987	0.982	1.000
χ^2/df	3.469	4.363	5.873	n/a
AIC (Saturated model)	67.224 (54.000)	51.815 (40.000)	35.746 (28.000)	18.000 (18.000)

The final measurement model comprised the 3 observed variables of FR, VFM and FS. Cronbach's alpha was calculated for these 3 items remaining in the modified measurement model. The calculated Cronbach's alpha of 0.799 exceeds the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.6.2 Measurement model for performance outcome component 2: non-financial performance

The measurement model in Figure 9.13 comprises non-financial performance outcome as an unobserved variable, measured by 6 observed variables (Q17, Q20a, Q20b, Q20c, Q20d and Q20f). These 6 observed variables relate to questions on the research questionnaire (Appendix A). Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err6) in Figure 9.13.

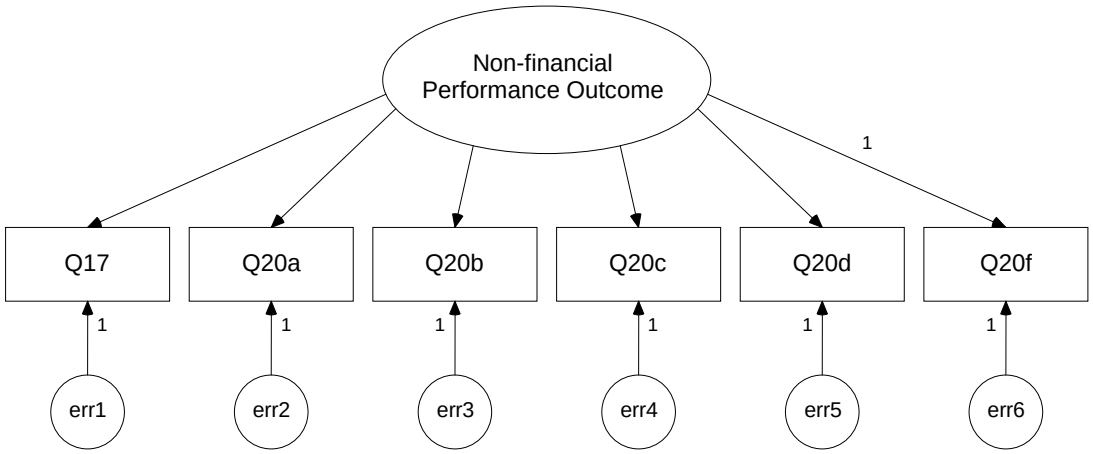


Figure 9.13: Non-financial Performance Outcome Measurement Model

CFA was undertaken to assess the fit of the 6 observed variables into the unobserved variable. To examine the relationship between the observed variables, paths were set between the unobserved variable and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.13 produced fit indexes of X^2 of 38.264 (df =9; p = 0.000), CFI of 0.973, NFI of 0.965, X^2/df of 4.252 and AIC of 74.264 (saturated model = 54.000). The latter two indexes are below the minimum acceptable level so modification of the measurement model was required.

The observed variable with the lowest standardised regression coefficient was Q20a which was subsequently removed and the measurement model fit re-assessed. The AIC index was still below acceptable limits so the model was modified again, producing an almost perfect model fit. This modification process and the associated fit indexes are summarised in Table 9.14. The final measurement model comprised the 4 remaining observed variables (Q17, Q20c, Q20d and Q20f).

Table 9.14: Non-financial Performance Outcome Measurement Model Modification Process

Fit Index	Initial model	Q20a removed (step 1)	Q20b removed (step 2)
X^2	38.264 p = 0.000 df = 9	19.977 p= 0.001 df = 5	0.986 p = 0.611 df = 2
CFI	0.973	0.984	1.000
NFI	0.965	0.978	0.999
X^2/df	4.252	3.995	0.493
AIC (Saturated model)	74.264 (54.000)	49.977 (40.000)	24.986 (28.000)

Cronbach's alpha was calculated for the 4 items remaining in the modified measurement model. The calculated Cronbach's alpha of 0.815 is well above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

9.3.6.3 Measurement model for performance outcome component 3: financial performance

The measurement model in Figure 9.14 comprises financial performance outcome as an unobserved variable, measured by 4 observed variables (Q17, Q18, Q20b and Q20e). These 4 observed variables relate to questions on the research questionnaire (Appendix A). Random measurement error influences the reliability of each observed variable and this is indicated by the error terms (err1 to err4) in Figure 9.14.

CFA was undertaken to assess the fit of the 4 observed variables into the unobserved variable. To examine the relationship between the observed variables, paths were set between the unobserved variable and each observed variable. The descriptive statistics and correlation matrix for all the observed variables in the measurement model are included in Appendix H.

The initial measurement model shown in Figure 9.14 produced fit indexes of X^2 of 28.594 (df =2; p = 0.000), CFI of 0.956, NFI of 0.953, X^2/df of 14.297 and AIC of 52.594 (saturated model = 28.000). The latter two indexes are below the minimum acceptable levels so the model required modification.

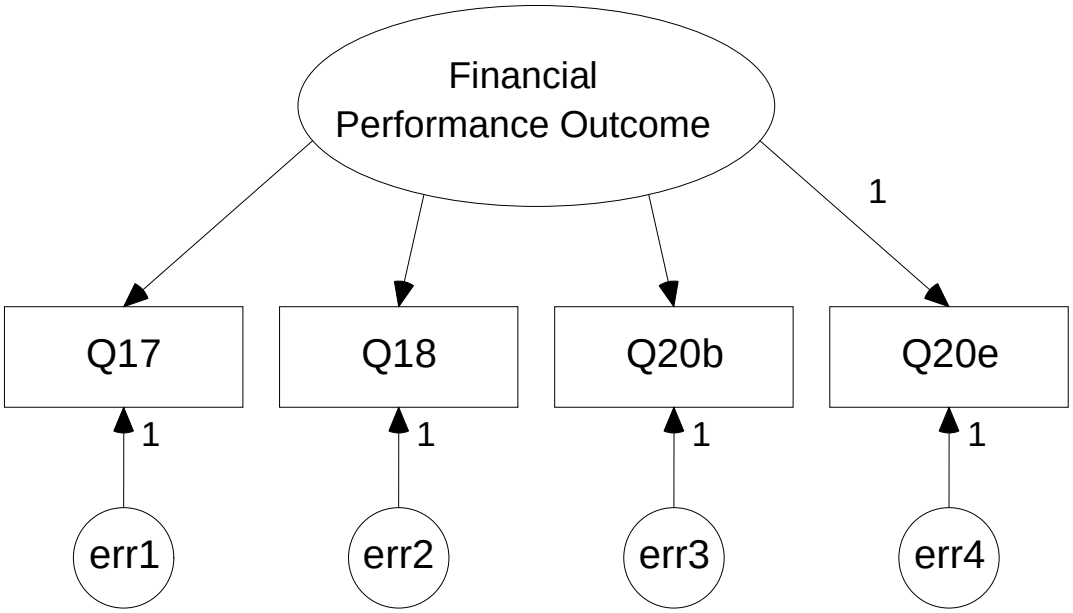


Figure 9.14: Financial Performance Outcome Measurement Model

The observed variable with the lowest standardised regression coefficient was Q17 which was subsequently removed from the measurement model, resulting in a perfect model fit. This modification process and the associated fit indexes are summarised in Table 9.15. The final measurement model comprised the 3 remaining observed variables (Q18, Q20b and Q20e). Cronbach's alpha was calculated for these 3 items remaining in the modified measurement model. The calculated Cronbach's alpha of 0.767 is above the acceptable minimum of 0.6 (Nunnally, 1967; Verbeeten, 2008).

Table 9.15: Financial Performance Outcome Measurement Model Modification Process

Fit Index	Initial model	Q17 removed (step 1)
χ^2	28.594 p = 0.000 df = 2	0.000
CFI	0.956	1.000
NFI	0.953	1.000
χ^2/df	14.297	n/a
AIC (Saturated model)	52.594 (28.000)	18.000 (18.000)

9.3.6.4 Measurement model for performance outcome component 4: CPA

The fourth component of performance outcome is an observed variable, measured by a single item. The observed variable is the overall CPA score (see sections 7.3.6 and 8.4.6). Consequently, there is no need to specify and test the fit of a measurement model.

The descriptive statistics and correlation matrix for the CPA observed variable are included in Appendix H.

9.3.7 Department Size

Department size is included in the research contingency model (Figure 5.2), but as an observed control variable measured by a single item on the research questionnaire (Appendix A). There is, consequently, no need to specify and test the fit of a measurement model for this variable.

9.4 Summary and Conclusion

SEM may be undertaken as a two-step process by estimating and re-specifying the measurement models prior to the simultaneous estimation of the measurement and structural sub-models. The first step, involving the specification of the measurement models and assessment of how well the hypothesised models fit the sample data, was completed within this chapter. The measurement models were initially estimated based on the components identified from the PCA in the previous chapter and the observed variables from the research questionnaire. All of the measurement models were assessed and re-specified as necessary, until acceptable levels of fit were obtained. These modified measurement models will be included in the overall model which is assessed in Chapter 10, as the second step of the SEM analysis.

Chapter 10: SEM Statistical Analysis (Step 2)

10.1 Introduction

This chapter continues the SEM statistical analysis initiated in Chapter 9, with SEM being undertaken as a two-step process. The first step, comprising the specification of the measurement models and assessment of how well the hypothesised measurement models fit the sample data, was completed in Chapter 9. The present chapter goes on to analyse the full structural model as the second stage of the SEM process. This second stage of SEM takes the modified measurement models specified in Chapter 9 and uses these as part of the full model to test the research hypotheses devised in Chapter 5.

The chapter firstly summarises the links between the measurement models specified in Chapter 9 and the theoretical model established in Chapter 8, which makes up the full model. The second step of the SEM process is then undertaken in section 10.3, with the structural model and hypotheses being tested and key findings identified. Finally, section 10.4 brings the chapter to a close with a summary and conclusion.

10.2 The Structural Equation Model

The full SEM model comprises the measurement and structural models. The structural sub-model defines the relationships between the unobserved variables, in line with the hypotheses developed from theory and previous research. The structural model is summarised in Figure 10.1. The components established in Chapter 8 make up each of the observed variables included in this structural model. For example, the RDF and benchmarking components comprise CPMT. The measurement models for each component for the variables were estimated and re-specified in stage one of the SEM process in Chapter 9. The second stage of the SEM process is to simultaneously estimate the measurement and structural sub-models (Anderson and Gerbing, 1988).

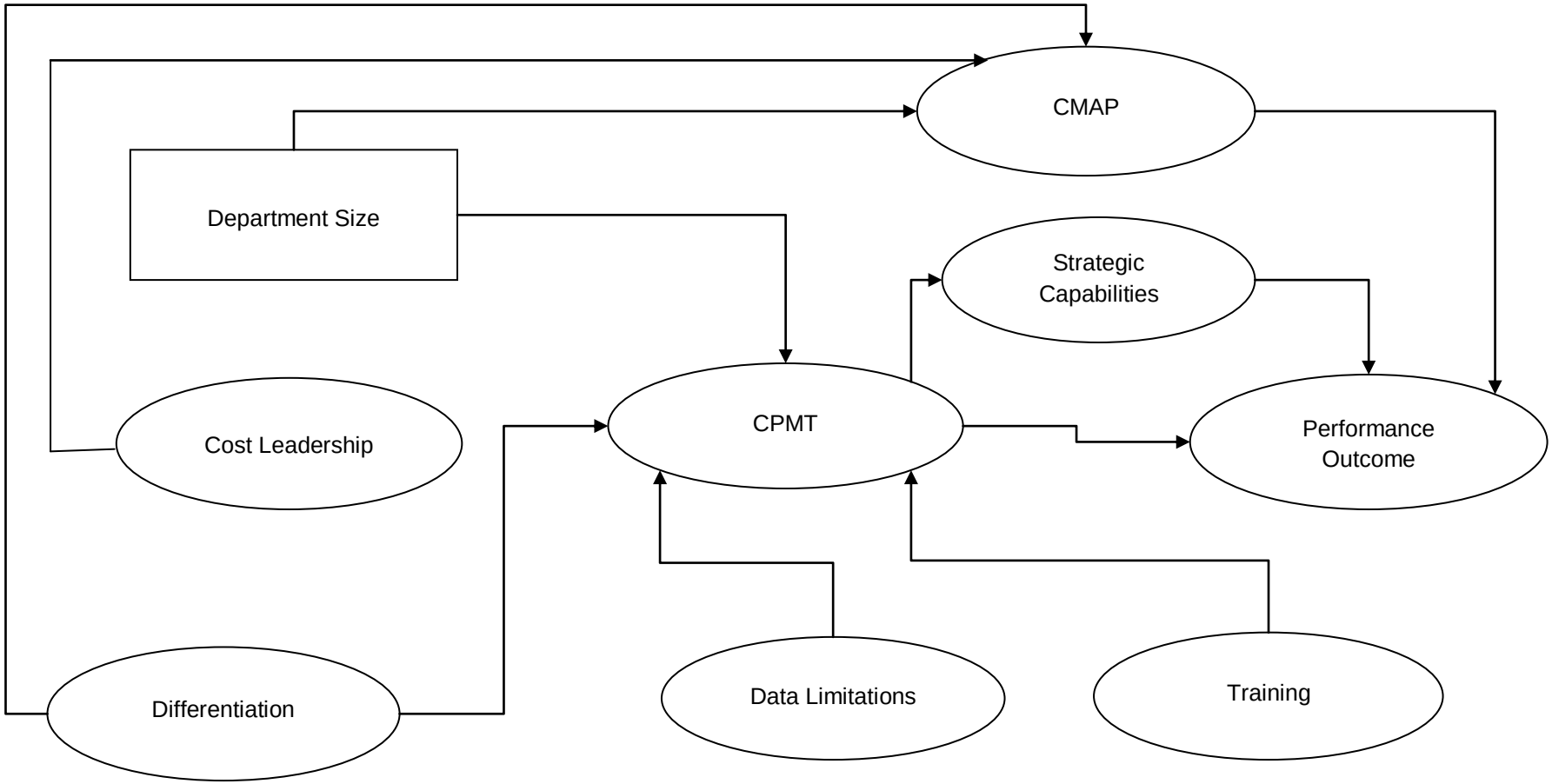


Figure 10.1: Structural Model

SEM involves testing whether the empirical data supports the theoretical model using a range of indexes of model fit. The models of fit were explored in Table 9.1 and the same range of indexes adopted for the measurement models in Chapter 9 will be used below for assessing the level of fit for the full SEM model. The results from the second stage of the SEM analysis are summarised in the following section.

10.3 Results

This section summarises the main findings from the second stage of the SEM statistical analysis. Firstly, the overall model fit will be assessed, followed by the significance of the paths within the model, indicating where the sample data supports the hypotheses. The hypotheses to be tested were summarised in Table 8.1. A unique characteristic of SEM is that it is able to simultaneously examine a series of dependence relationships (where a dependent variable becomes an independent variable in subsequent relationships within the same analysis), while also simultaneously analysing multiple dependent variables (Jöreskog *et al*., 1999 cited by Shook *et al*., 2004). In order to test the hypotheses we need to assess the total effects of the variables within the model, comprising direct and indirect effects. Direct paths would be, for example, the effect of the independent variable cost leadership on CMAP. Cost leadership also has an indirect effect on the dependent variable performance outcome through the mediating variable CMAP. Some indirect paths are more complex, comprising several mediating variables. The results for all the paths (total, direct and indirect) are displayed in Appendix I and will be referred to within the following sections.

10.3.1 Model Fit

As explained in section 6.3.2, the approach to applying SEM adopted in the present study is *model-generating*, which involves modifying and re-testing the model until an acceptable model fit is achieved. Any modification aims to obtain a model that makes theoretical sense and is consistent with the sample data (Kline, 2005). The literature highlights it is important to know when to stop modifying the model to increase the fit, to avoid over-fitting the model or fitting to idiosyncratic characteristics of the sample (Byrne, 2001).

Analysis of the full theoretical model indicated an acceptable model fit according to the X^2/df index of 2.210. However, the other model fit indexes of NFI (0.804), CFI (0.881), X^2 (1947.196, df = 881, p = 0.000) and AIC (2345.196: saturated model 2160.000) all suggest the model fit is less than acceptable. This means the initial model is rejected as inadequately fitting the empirical data, with modification and re-testing of the model required.

The detailed results and modification indexes (MIs) produced by AMOS, were reviewed to identify appropriate modification to the model in an attempt to improve model fit. Firstly, an assessment of normality of the observed variables in the model was executed and identified department size to have a highly skewed (15.948) and positive kurtosis distribution (278.085). It was, consequently, concluded to exclude the control variable of department size from the model. For each fixed parameter specified AMOS provides an MI, the value of which represents the expected drop in overall X^2 value if the parameter were to be freely estimated in a subsequent run (Byrne, 2001). Large MIs suggest ways the model might be altered, allowing the corresponding parameters to become free, resulting in a better fitting model (Schumacker and Lomax, 2004). This procedure has been found to work well in practice (Jöreskog and Sörbom, 1988, cited in Schumacker and Lomax, 2004). High MIs were, therefore, identified and assessed as to whether they make theoretical sense. The modifications identified related to co-variances between error terms and regression coefficients between unobserved variables. Details of the amendments made are included in Appendix J and explained below.

Modification Process: Step 1

The normality of the observed variables was assessed and department size was identified to have a highly skewed (15.948) and positive kurtosis distribution (278.085). Although bootstrapping is a method being adopted to handle non-normal data, it is not a technique that can overcome severely non-normal distributions (Kline, 2005). It was, consequently, concluded to exclude department size from the model.

The variance for Err38 (the measurement error for the Financial Standing observed variable for UoR performance outcome unobserved variable) was identified as being slightly negative at -0.000. Negative variances are impossible (Arbuckle, 2007; Blunch, 2008) but if the negative variance is numerically small it may be fixed to have a small positive value (Blunch, 2008). The negative variance for Err38 was, subsequently, fixed at being zero.

Modification Process: Step 2

Residual error represents the error in the prediction of an unobserved factor (Arbuckle, 2007; Byrne, 2001). The MIs identified that a covariance between cost leadership residual error and differentiation residual error terms should be added, suggesting that there is a covariance between the errors in predicting the unobserved variables of cost leadership and differentiation strategies from the observed variables of the questions on the research questionnaire. The existing literature suggests that organisations may follow both a cost leadership and differentiation strategy at the same time (Auzair and Langfield-Smith, 2005) and questionnaire recipients would be responding similarly to the questions aimed at measuring both these unobserved factors. A covariance between the residual error terms measuring these two unobserved variables therefore is theoretically justified and this covariance was added to the model.

The MIs also suggested modifying the model to include a covariance between the residual error terms for market orientation and differentiation. A significant relationship was identified between differentiation and market orientation (Figure 10.3 C) and similarities are also evident between the observed variables measuring these two factors, such as providing services to meet customer needs (Appendix A). A relationship between the error terms for these two unobserved variables therefore makes substantive sense and should consequently be incorporated into the model (Byrne, 2001).

A covariance between the residual error terms for CPA performance outcome and UoR performance outcome was identified from review of the MIs as a possible modification to the model in order to improve model fit. UoR performance outcome is actually a component of the final CPA performance judgment and therefore a covariance between the error terms of these two unobserved variables is theoretically justified (Audit Commission, 2005a). Similarly, a covariance between the measurement error of financial reporting and the residual error for CPA performance outcome is also theoretically based, as financial reporting forms part of the calculation of CPA judgment (Audit Commission, 2005a). The model was consequently modified accordingly.

The MIs highlighted that the model fit could be potentially improved by adding covariances between the residual error term of organisational learning and the residual error terms of both innovation and market orientation. Furthermore, a covariance between the residual errors of entrepreneurship and innovation was proposed. Organisational learning, innovation, entrepreneurship and market orientation are all unobserved factors that aim to measure the strategic capabilities that departments possess based on self-assessment by respondents (Henri, 2006b). Henri (2006b) also suggests that only collectively can these capabilities provide sustained competitive advantages. Covariances between the residual

errors for these unobserved variables therefore make substantive sense and were consequently included in the modified model (Byrne, 2001).

The MIs also suggested adding covariances between some measurement error terms. Correlations between measurement errors for two observed variables, known as correlated measurement error, may be added to modify a model as long as they make theoretical sense (Byrne, 2001; Kline, 2005; Schumacker and Lomax, 2004). Question 17 and Question 18 on the research questionnaire (Appendix A) ask respondents to self-assess their department's overall and financial performance, respectively, on a scale of well below average to well above average. On reflection, a relationship between the error terms measuring these two similar observed variables (Questions 17 and 18) on the same scale would be expected (Schumacker and Lomax, 2004) and a covariance was consequently included in the modified model.

A covariance between the measurement error for Question 6a and Question 6b was identified as a possible modification to the model according to the MIs. Both these questions aim to measure market orientation, assessing issues in relation to customer needs (see Appendix A). As evident from the construct validity and PCA (Chapter 8) these two questions are aimed at measuring the same unobserved factor of market orientation (Henri, 2006b). A covariance between their measurement error terms consequently makes substantive sense and the model was modified accordingly (Byrne, 2001; Kline, 2005; Schumacker and Lomax, 2004).

The MIs suggested additional regression paths between differentiation and both market orientation and organisational learning. These regression paths propose that departments placing greater emphasis on differentiation strategy will demonstrate higher strategic capabilities of market orientation and organisational learning. Pursuing a differentiation strategy and possessing capabilities of market orientation and organisational learning are all means of organisations achieving competitive advantage (Henri, 2006b; Langfield-Smith, 1997; Porter, 1980). There are also similarities in the components of a differentiation strategy and these capabilities. For example, differentiation includes customising services to user needs (Auzair and Langfield-Smith, 2005) and market orientation involves understanding customer needs (Henri, 2006b). Other components of a differentiation strategy such as improving the time it takes to provide services or providing services that are better than other providers (Auzair and Langfield-Smith, 2005) are reliant on the organisation improving their knowledge and understanding; that is the capability of organisational learning (Fiol and Lyles, 1985). There are therefore theoretical justifications for these regression paths suggested by the MIs and the model was modified accordingly.

Modification Process: Step 3

Following on from Step 2 above, two further covariances were identified from the MIs to potentially improve the model fit through modification. Firstly, a covariance was proposed between the measurement error term for Question 8a and the residual error term for entrepreneurship. Question 8a (Appendix A) requires respondents to self-assess the extent to which management actively seeks innovation and ideas (Henri, 2006b). As stated in Chapter 2 (section 2.7.3), entrepreneurship is the ability of an organisation to renew, innovate and take constructive operational risks (Henri, 2006b; Miller, 1983; Naman and Slevin, 1993). With respondents self-assessing their department on these similar items, a covariance between these error terms makes substantive sense and the model was subsequently amended (Byrne, 2001; Kline, 2005; Schumacker and Lomax, 2004).

Secondly, the MIs highlighted that a covariance between the measurement error for Question 14f and the residual error for cost leadership may improve the model fit. Question 14f (Appendix A) asks the questionnaire respondents to assess the extent their council uses performance measures to monitor resource utilisation. Cost leadership is an unobserved factor aiming to assess the extent the councils pursue a strategy focussing on cost. Again, a covariance between these error terms is therefore theoretically justified resulting in the model being modified (Byrne, 2001; Kline, 2005; Schumacker and Lomax, 2004).

There are similarities between a differentiation strategy where an organisation focuses on providing products or services valued by its customers (Porter, 1980) and both innovation and entrepreneurship capabilities which involve providing new services (Auzair and Langfield-Smith, 2005). The additional regression paths between differentiation and the two capabilities of innovation and entrepreneurship therefore are theoretically justified and the model was modified by adding these regression paths as suggested by the MIs.

From a review of the MIs an additional regression path between cost leadership strategy and innovation was also identified as a modification which would potentially improve the model fit. Pursuing a cost leadership strategy and possessing the capability of innovation are both means of organisations achieving competitive advantage (Henri, 2006b; Langfield-Smith, 1997; Porter, 1980). A focus on cost, such as through a cost leadership strategy, can also be seen to be part of innovation in relation to new ideas or processes by finding innovative ways to provide services with cost savings (DCLG and IDeA, 2010b; Henri, 2006b).

Modification Process: Step 4

The variance for Res2 (financial performance outcome residual error) was identified as being negative (-0.026). As explained above, numerically small negative variances may be fixed to have a small positive value (Blunch, 2008). The negative variance for Res2 was, subsequently, fixed at being zero.

Other regression paths or covariances reported under MIs were concluded to either not make theoretical sense or were too small to warrant further consideration (Bryne, 2001). It was, therefore, concluded to finish the model modification at step 4. The model fit was re-assessed following the application of these amendments and the resulting fit indexes are summarised in Table 10.1.

The fit of the modified model following step 4 is good according to X^2/df (1.559), CFI (0.948) and AIC (1701.558: saturated model 2068.000). Although the NFI of 0.869 is slightly below an acceptable level, it is important to look at a range of indexes rather than relying on one (Byrne, 2001; Hair *et al*.,1998; Shook *et al*., 2004). Furthermore, the NFI is known to be subject to issues of parsimony and sample size and it is, therefore, useful to supplement the NFI with the Tucker-Lewis Index (TLI) and incremental index of fit (IFI) (Byrne, 2001; Schumacker and Lomax, 2004). These additional indexes were reported as being 0.949 for IFI and 0.941 for TLI, consistent with CFI and indicating an acceptable model fit.

Although, the X^2 index did not indicate a satisfactory level of fit (X^2 = 1295.521, df = 831, p = 0.000), again this must be interpreted with caution. There are problems in relying on X^2 as a fit statistic as it is affected by sample size (Kline, 2005). To overcome this weakness researchers divide the X^2 value by its degrees of freedom to give the X^2/df ratio (Kline, 2005). As stated above the X^2/df index of 1.559 indicates a good model fit which provides additional assurance despite the X^2 fit index result.

Overall, the indexes indicate a good fit for the final modified model. As an acceptable fit has been obtained with modifications that make theoretical sense, it is concluded to finish model modification here, to avoid over-fitting the model or fitting to idiosyncratic characteristics of the sample as recommended by Byrne (2001). In conclusion, the final modified model is as shown in Figure 10.1, with department size omitted. The other modifications were simply the addition of relationships or co-variances between variables or error terms. This final modified full SEM working model is displayed in Figure 10.2, comprising both measurement and structural sub-models, including all the components and error terms.

Table 10.1: Structural Model Fit Indexes and Modification Process

Fit Index	Initial model	Step 1	Step 2	Step 3	Step 4
X^2	1947.196 df = 881 p = 0.000	1916.507 df = 846 p = 0.000	1405.852 df = 835 p = 0.000	1295.521 df = 830 p = 0.000	1295.521 df = 831 p = 0.000
CFI	0.881	0.880	0.936	0.948	0.948
NFI	0.804	0.806	0.858	0.869	0.869
X^2/df	2.210	2.265	1.684	1.561	1.559
AIC (Saturated model)	2345.196 (2160.000)	2292.507 (2068.000)	1803.852 (2068.000)	1703.521 (2068.000)	1701.558 (2068.000)

10.3.2 Hypothesis Testing Results

This section assesses the significance of the total, direct and indirect paths, indicating where the empirical data supports the hypotheses. A summary of the findings in relation to the hypotheses is provided in Table 10.2. The results of the hypothesis testing are considered below with supporting diagrams. Table 10.3 sets out a key for these diagrams.

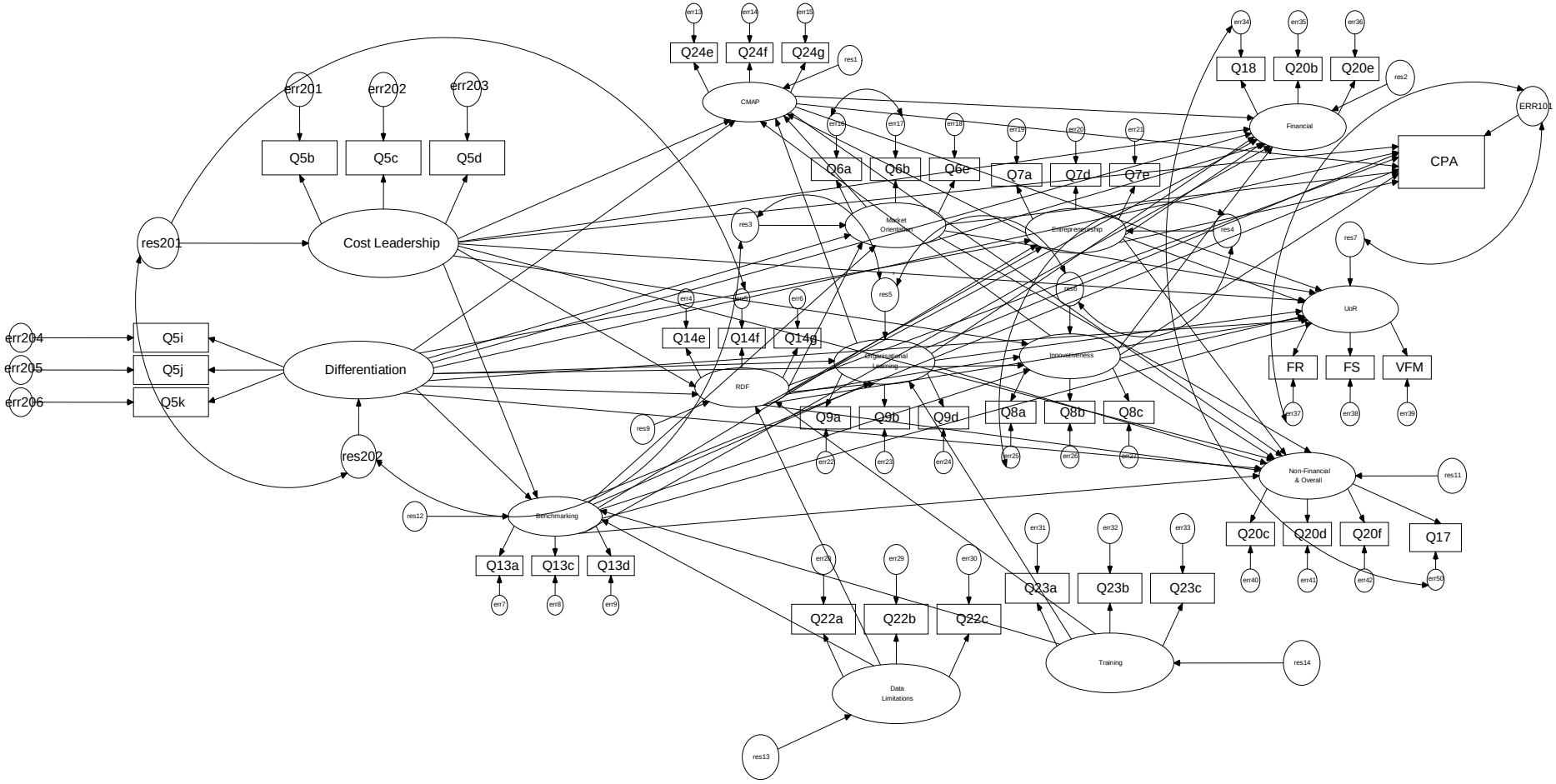
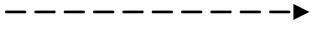
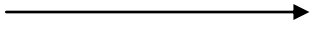
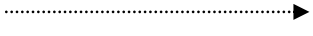


Figure 10.2: Full SEM Working Model

Table 10.2: Summary of Hypothesis Testing Results

Hypotheses		Rejected or Supported by Empirical Sample Data?
H1	Council departments placing higher emphasis on differentiation strategy will have higher performance through the mediating variables of CPMTs, CMAPs and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning.	Supported
H2	Council departments using more CPMTs will have higher performance through mediating variables of market orientation, entrepreneurship, innovation, organisational learning and CMAPs.	Supported
H3	Council departments with higher capabilities of market orientation, entrepreneurship, innovation and organisational learning will have higher performance.	Supported
H4	Council departments placing higher emphasis on cost leadership strategy will have higher performance through the mediating variables of CMAPs, CPMTs and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning.	Rejected
H5	The extent performance related training is provided to managers is positively associated with the higher use of PMTs.	Supported
H6	The extent council departments experience data limitations is negatively associated with the higher use of PMTs.	Rejected

Table 10.3: Key for Summary Diagrams of Results

Key	Meaning
***	Significant at 1% level
**	Significant at 5% level
*	Significant at 10% level
	Non-significant direct effect
	Significant direct effect
	Non-significant total effect
	Significant total effect
	Non-significant indirect effect
	Significant indirect effect

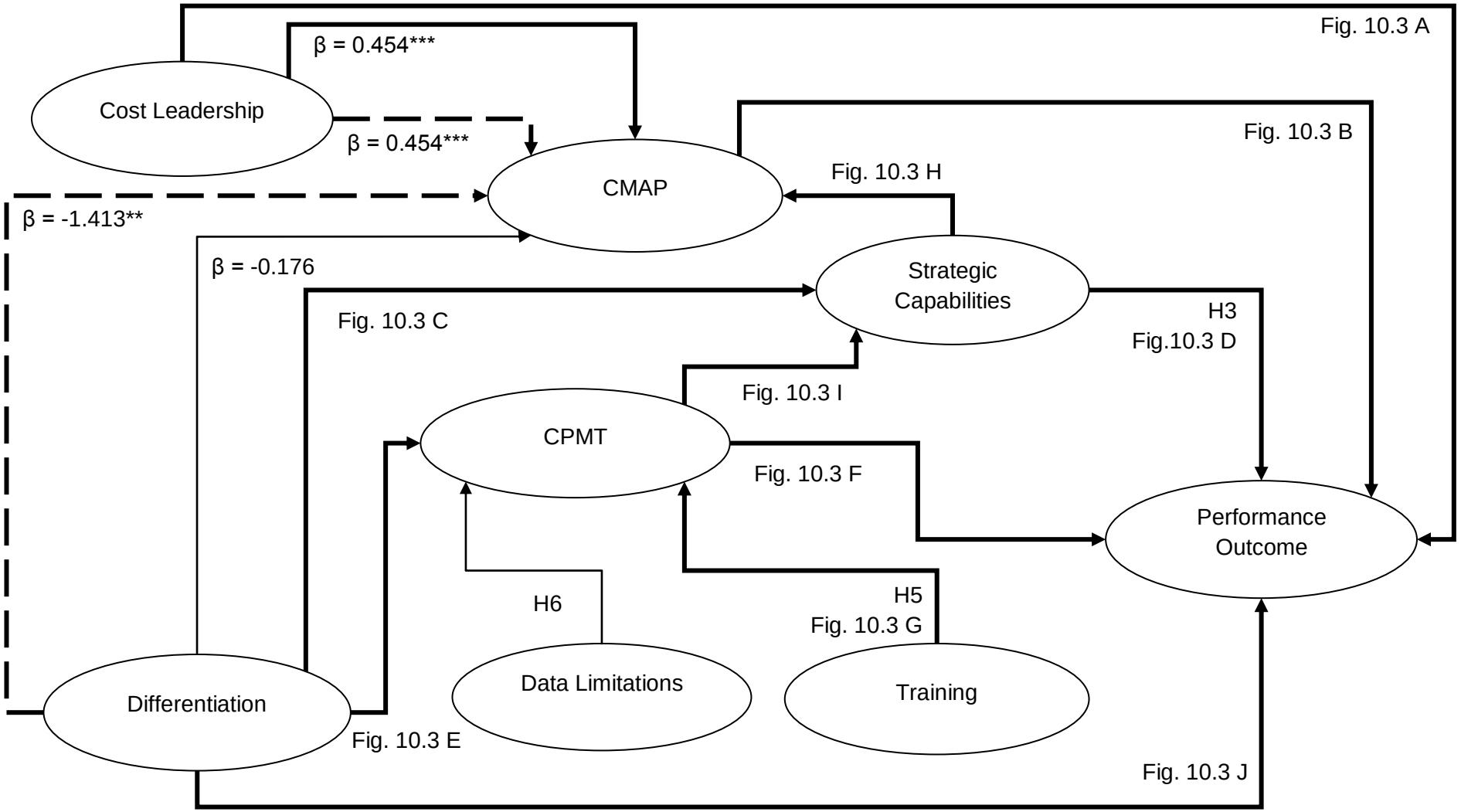


Figure 10.3: Structural Model Showing Direct and Total Effects

Figure 10.3A

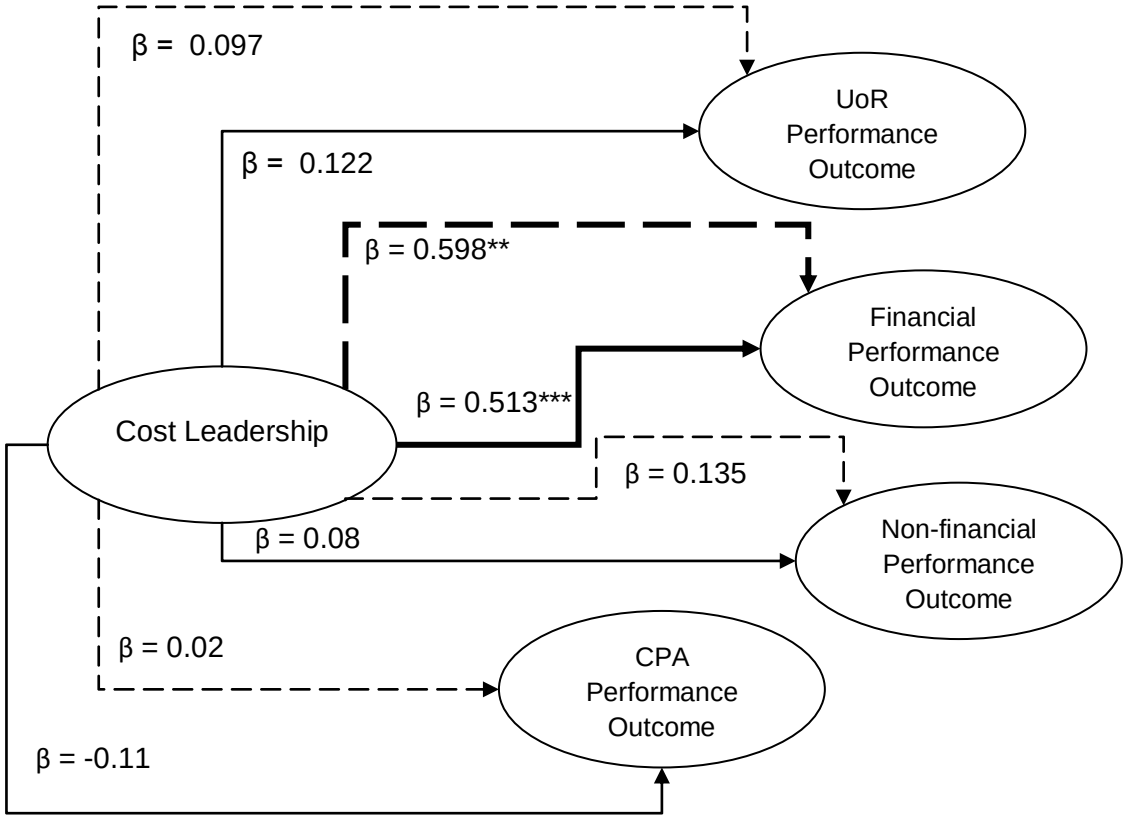


Figure 10.3B

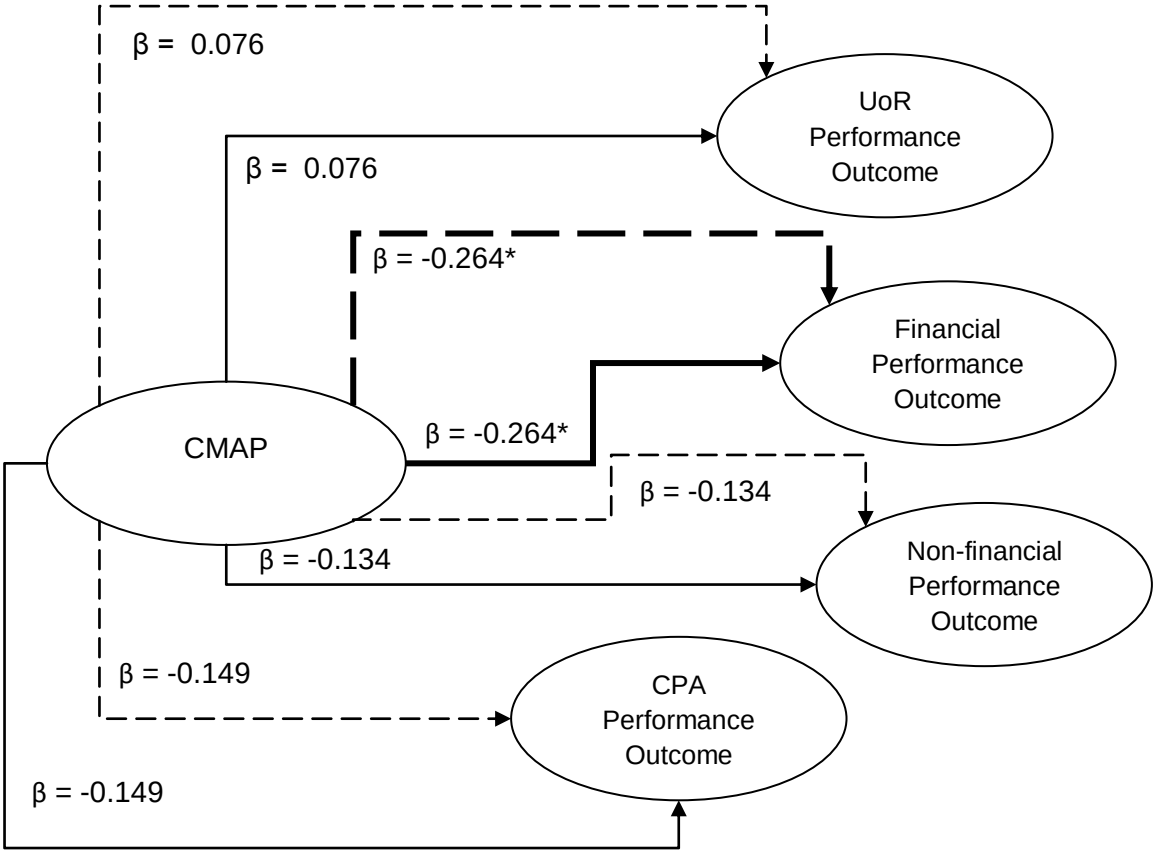


Figure 10.3C

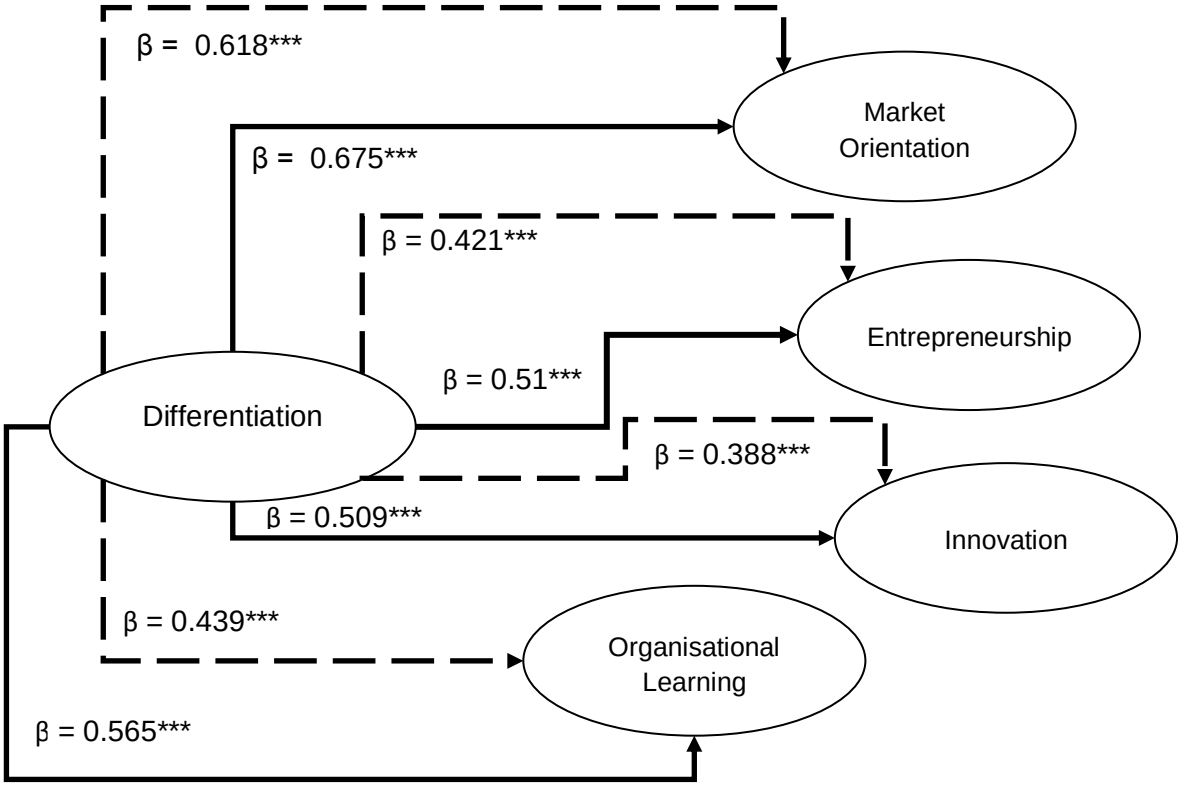


Figure 10.3D(i)

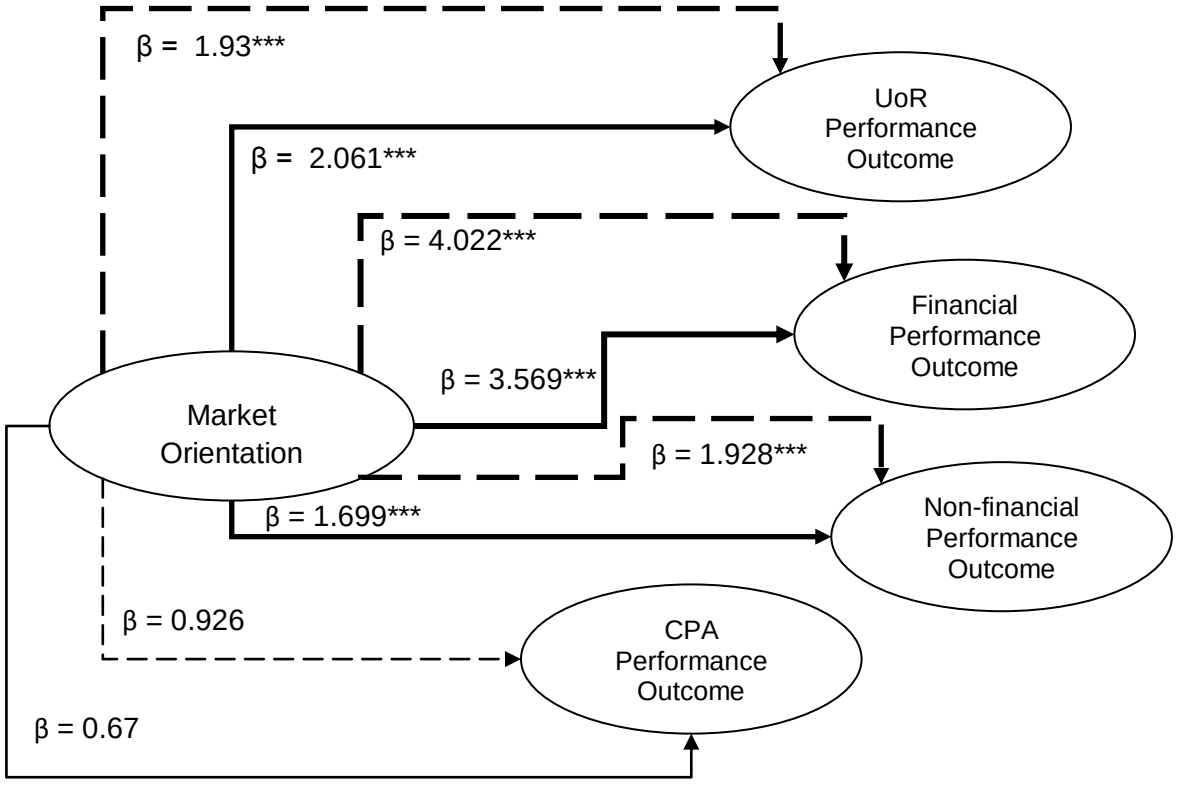


Figure 10.3D(ii)

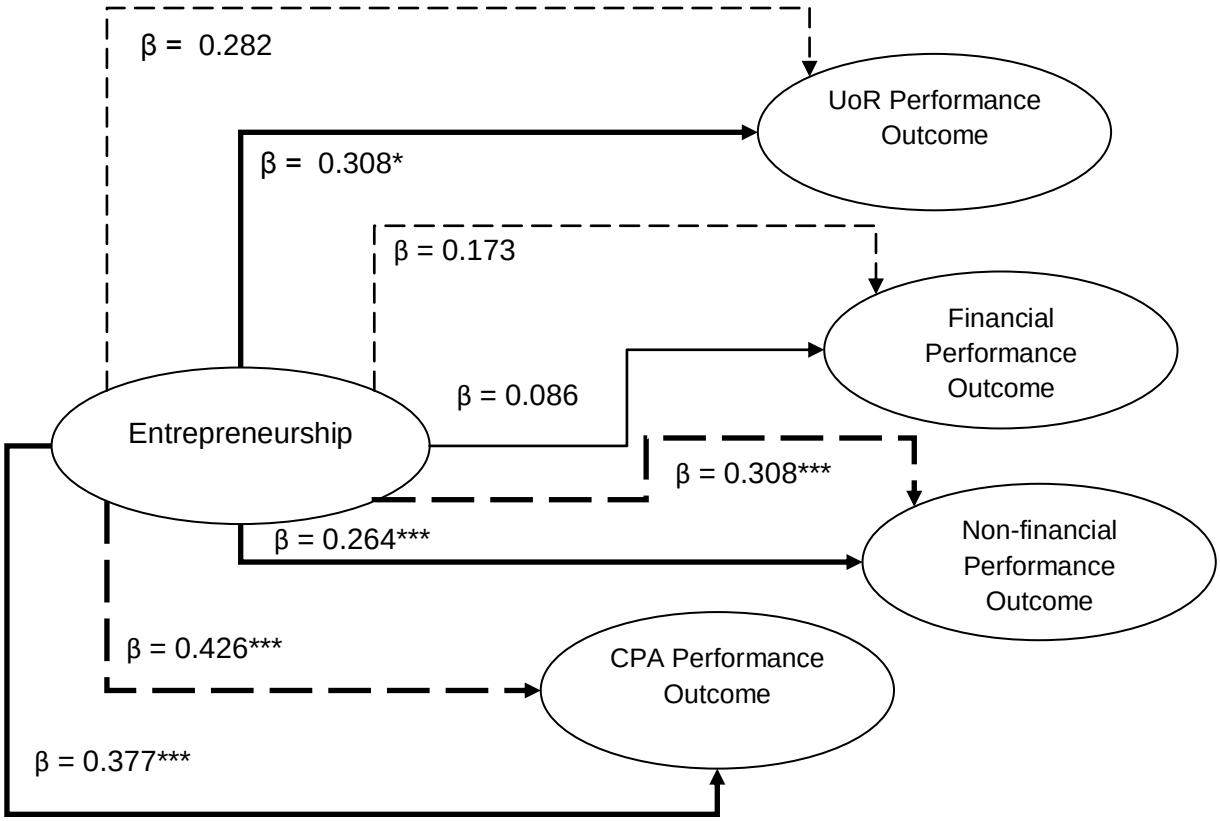


Figure 10.3D(iii)

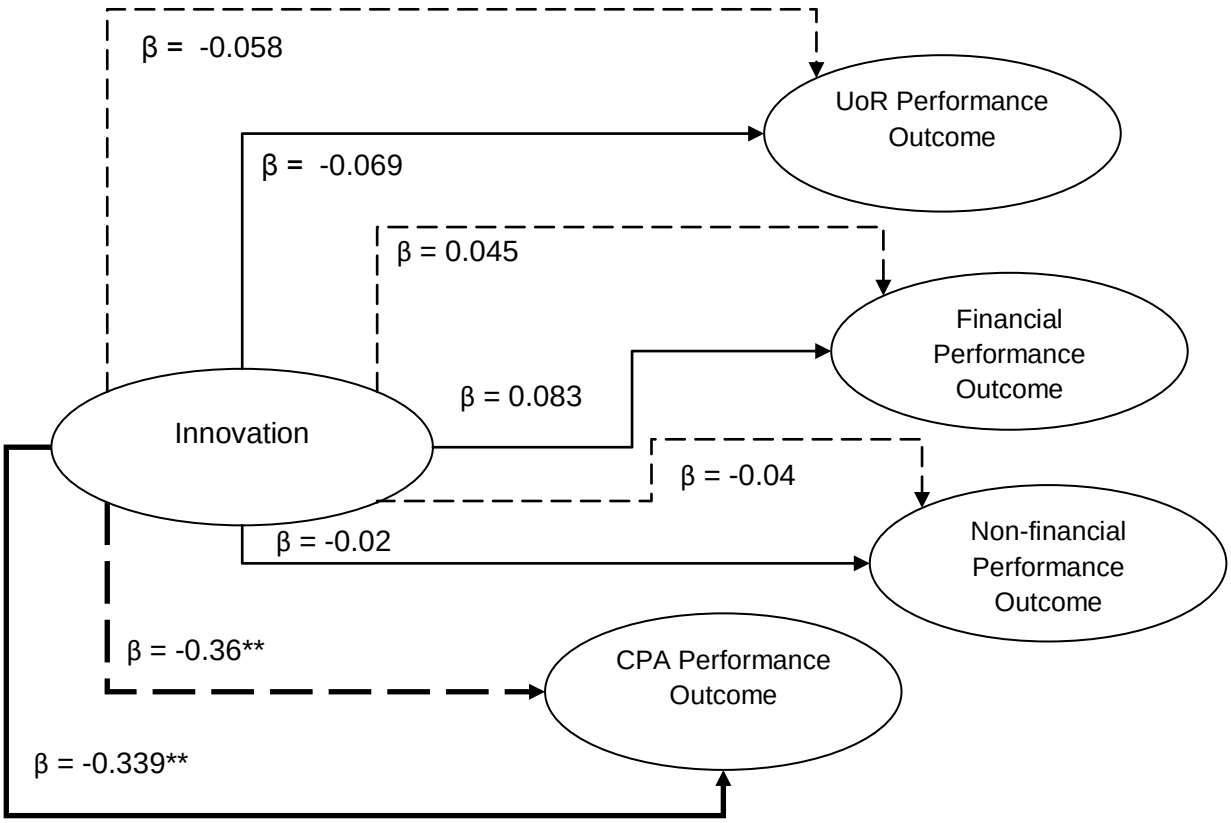


Figure 10.3D(iv)

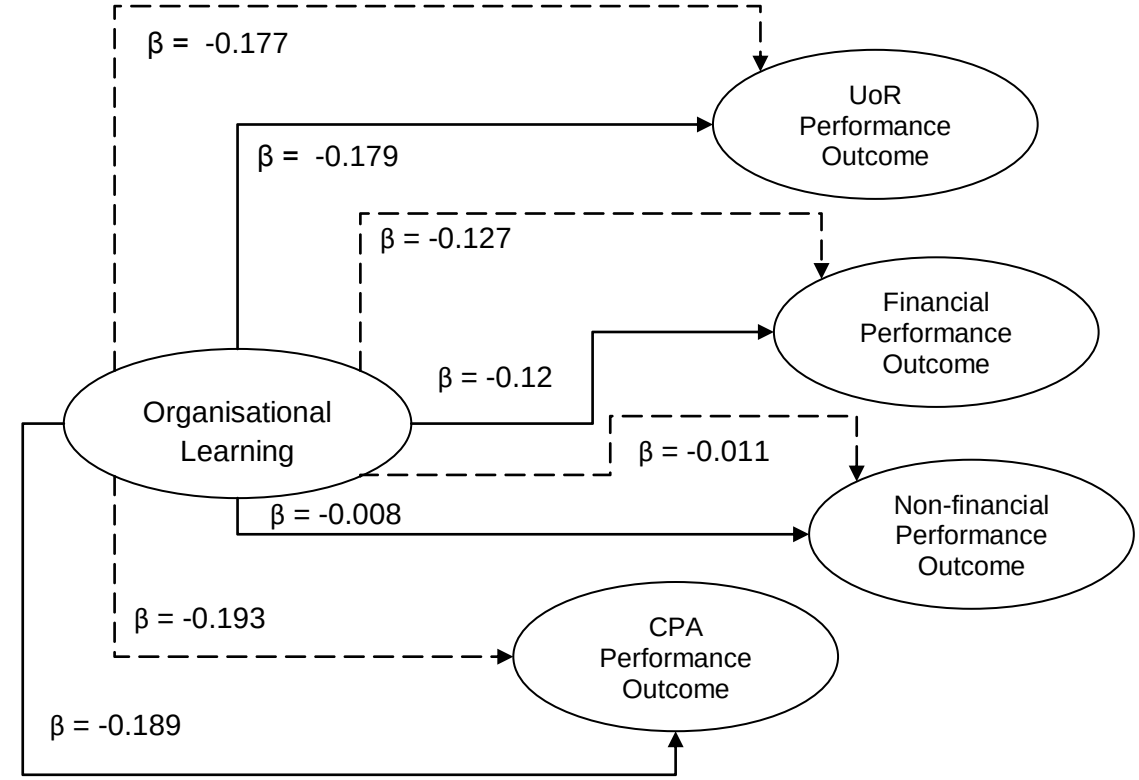


Figure 10.3E

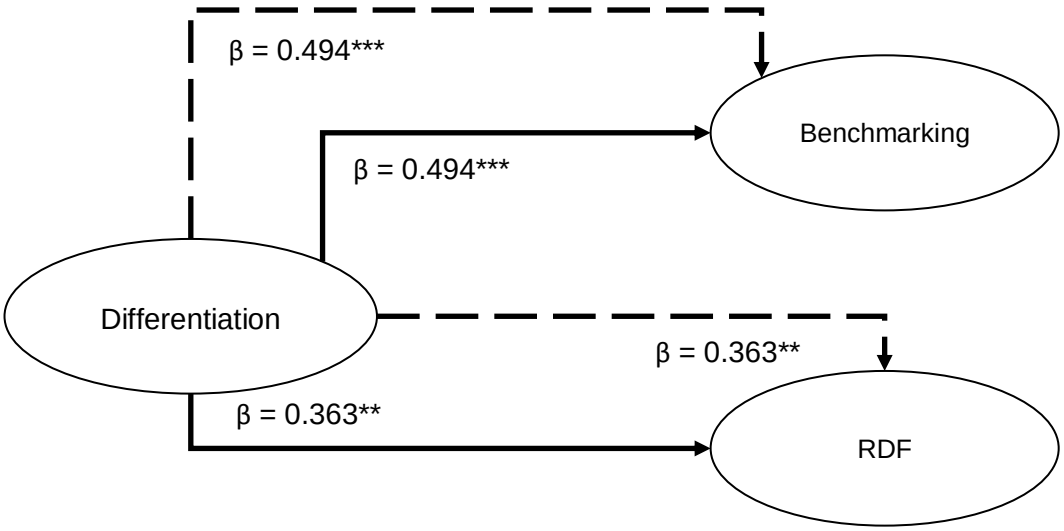


Figure 10.3F(i)

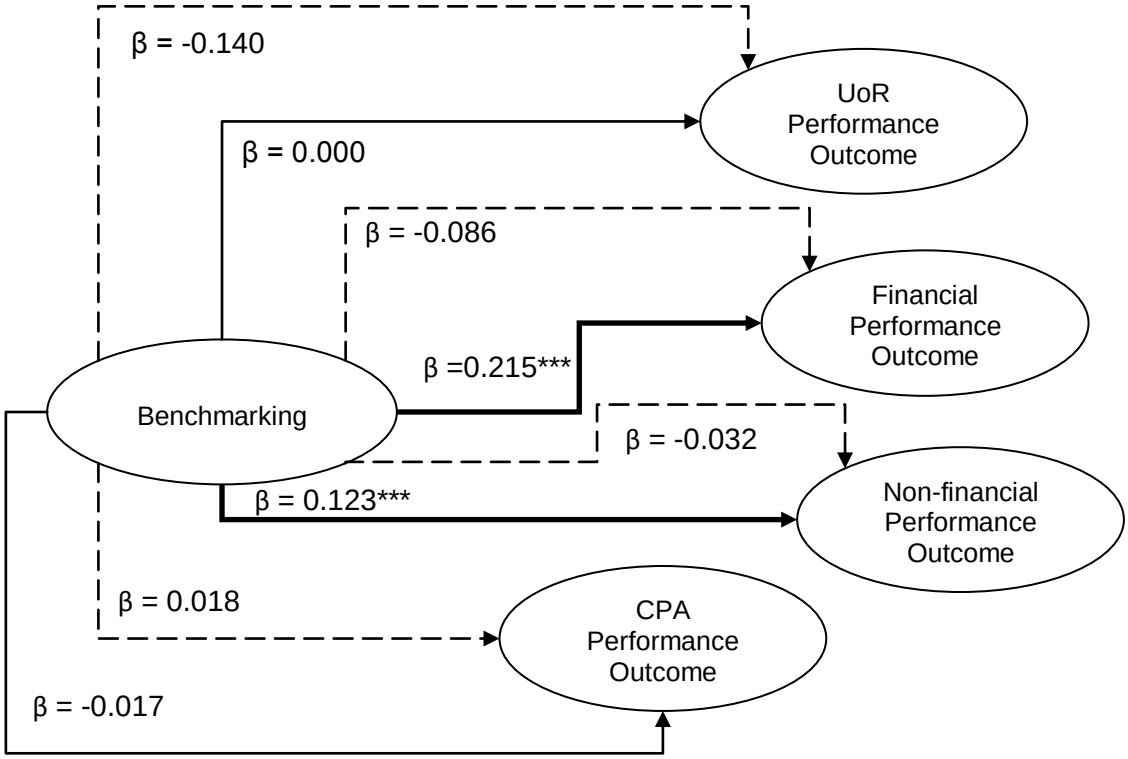


Figure 10.3F(ii)

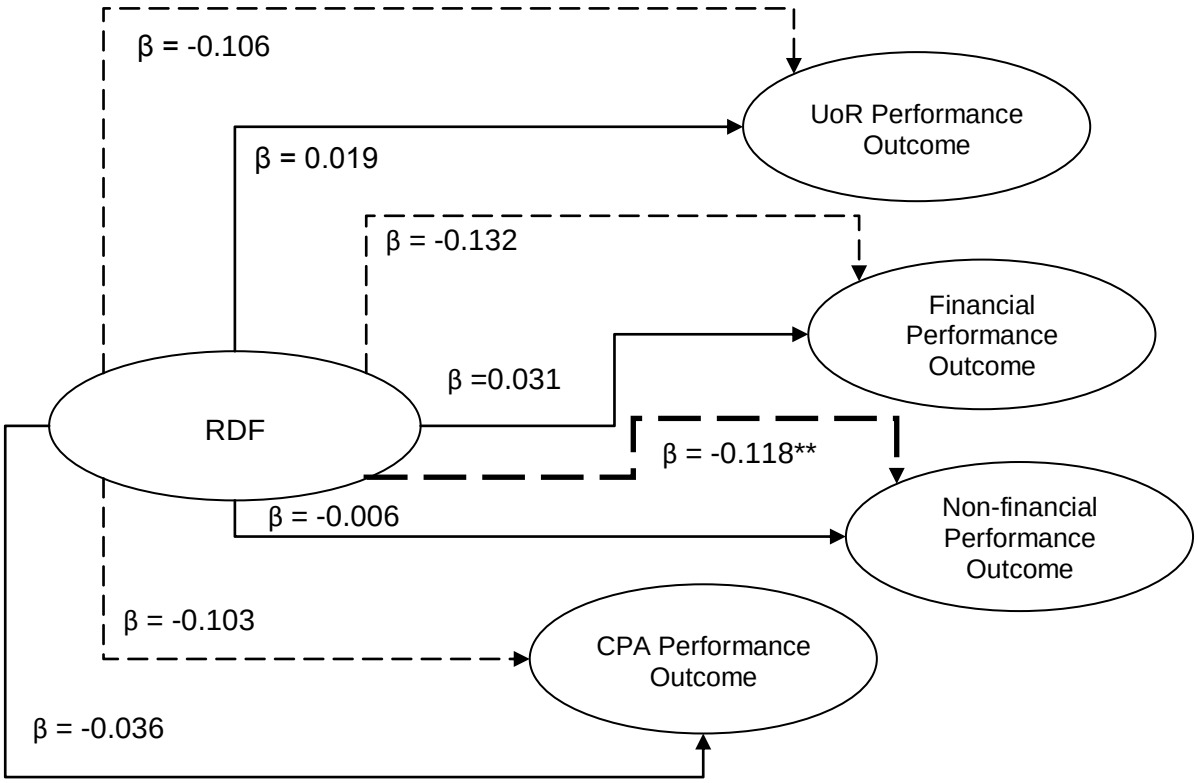


Figure 10.3G

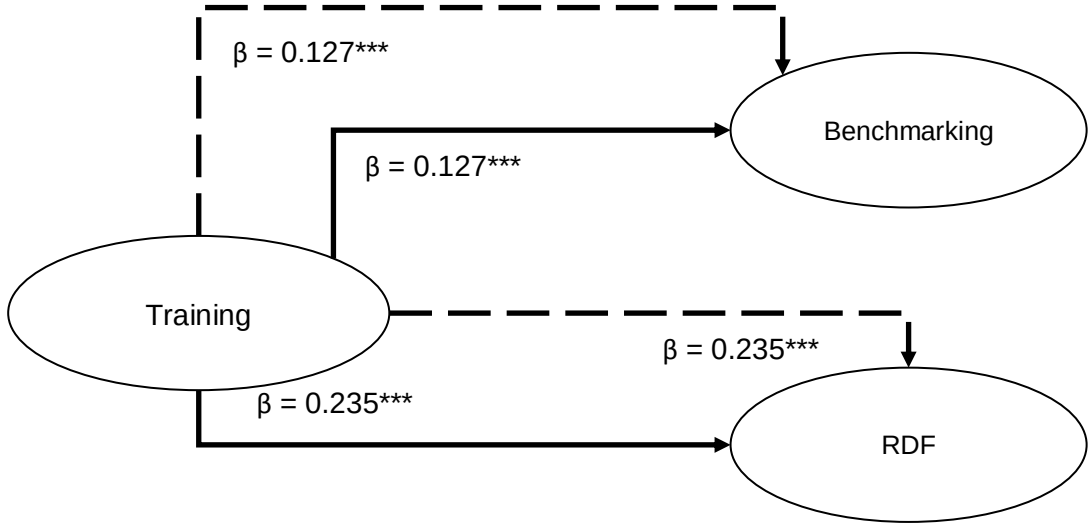


Figure 10.3H

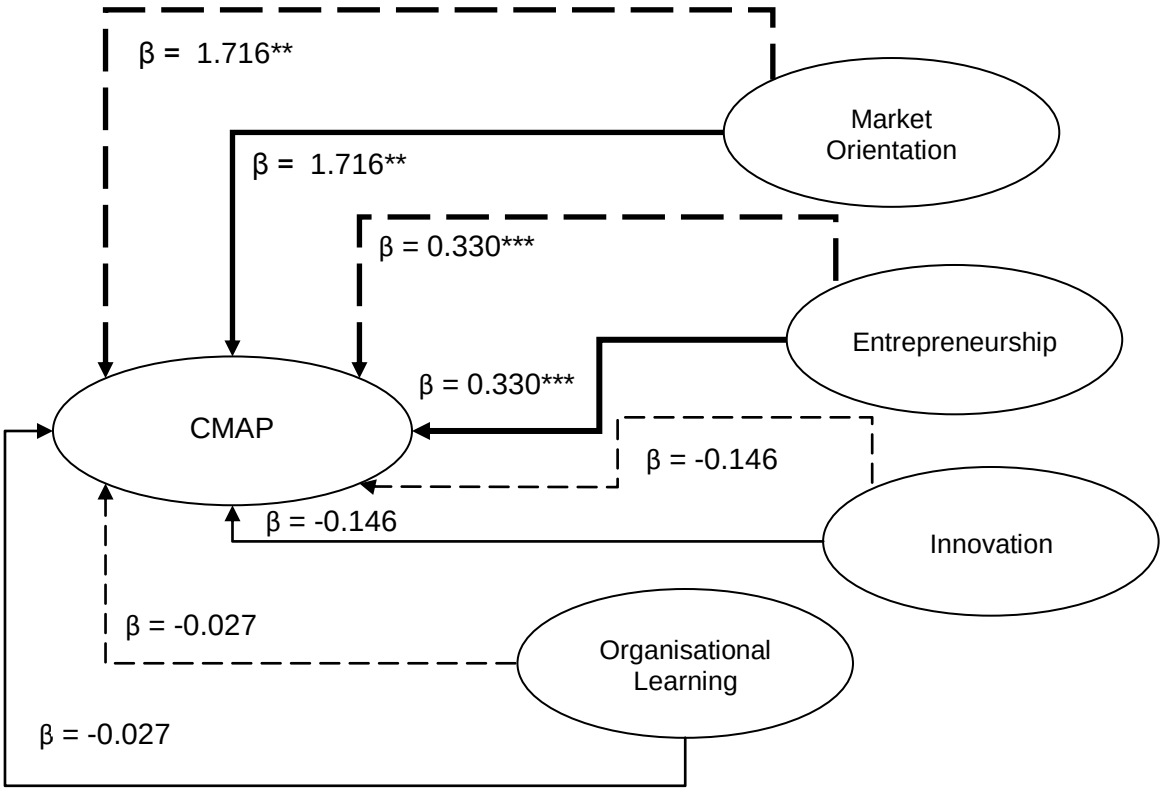


Figure 10.3 I(a)

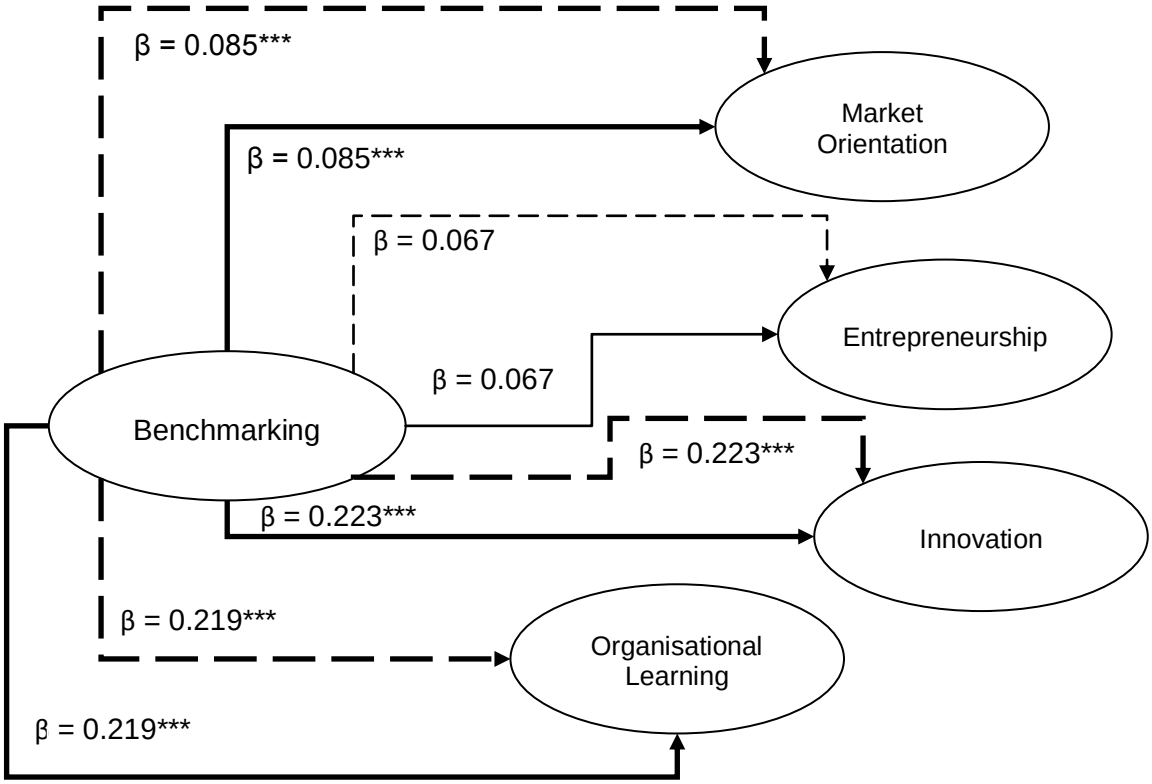


Figure 10.3 I(b)

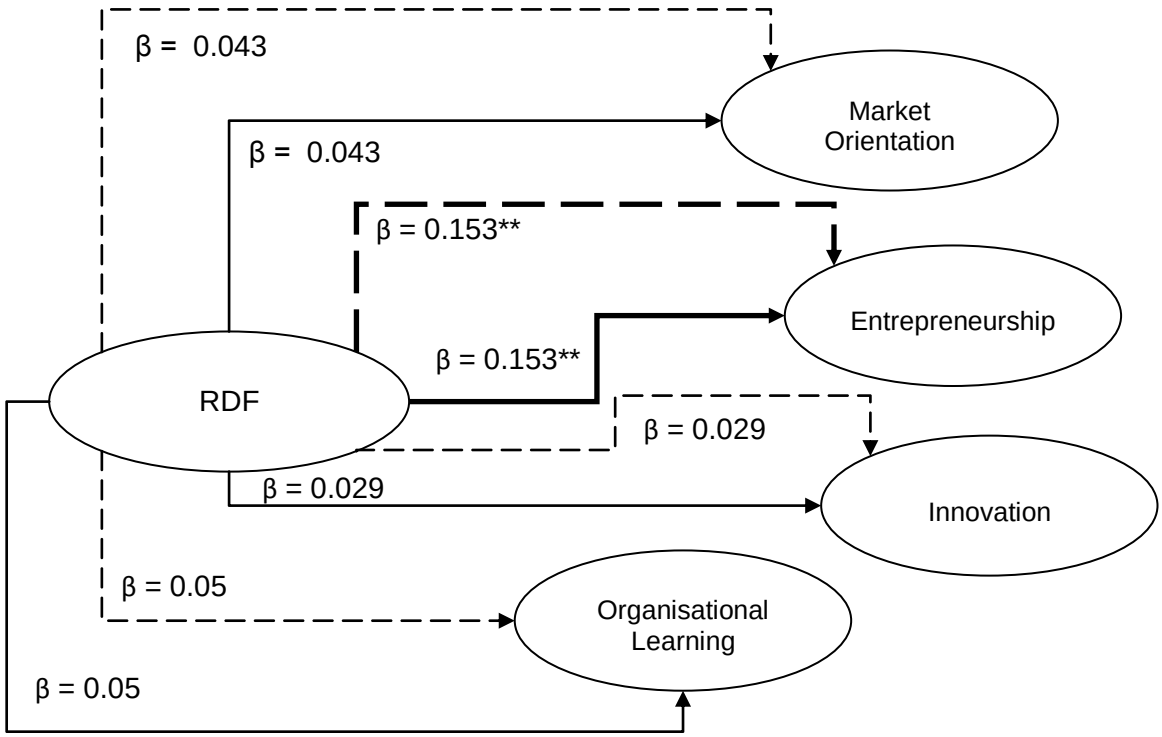
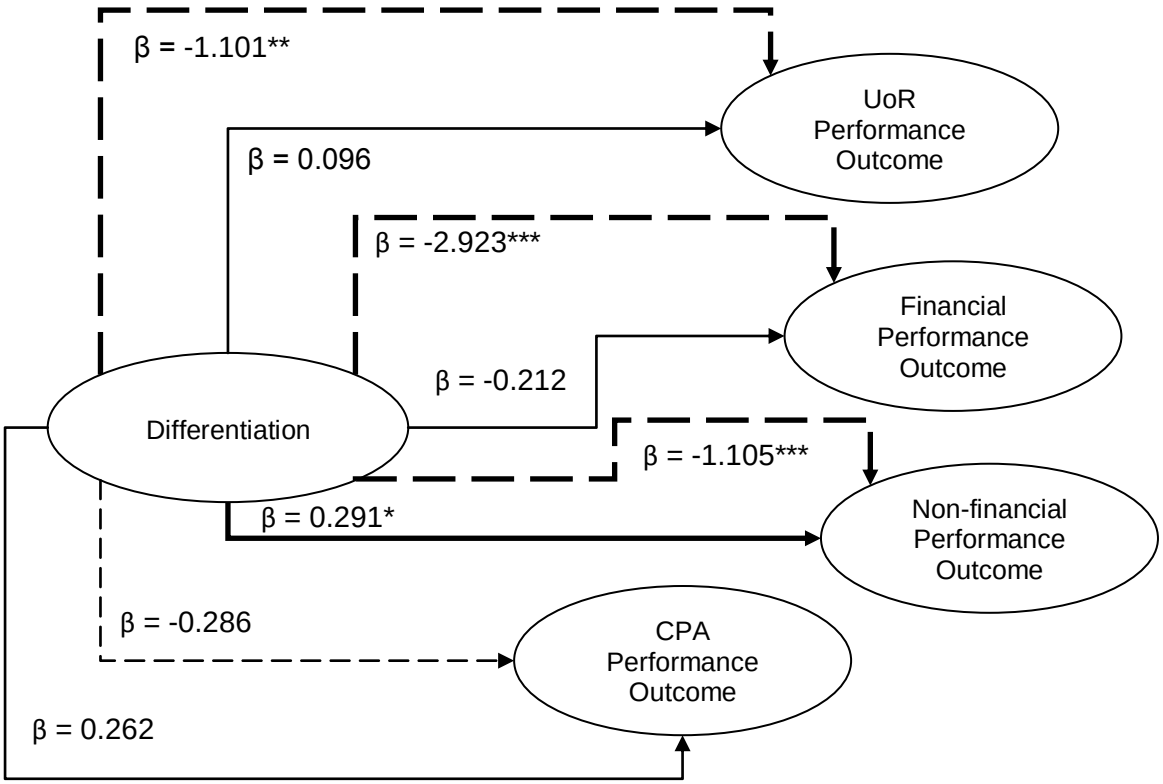


Figure 10.3J



Firstly, the study hypothesised in H1 that local authority departments placing higher emphasis on differentiation strategy will have higher performance through the mediating variables of CPMT, CMAP and the strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. The empirical data provided support for this hypothesis. Overall, the total effect of placing higher emphasis on a differentiation strategy is a significant positive increase in non-financial performance (β = 0.291**, p = 0.051). As would be expected, emphasis placed on a differentiation strategy has a positive and significant direct effect on both components of CPMT (benchmarking β = 0.494***, p = 0.001; RDF β = 0.363**, p = 0.023), as shown in Figure 10.3E. Emphasis placed on a differentiation strategy also has a significant positive direct effect on the four capabilities of market orientation (β = 0.618***, p = 0.001), entrepreneurship (β = 0.421***, p = 0.001), innovation (β = 0.388***, p = 0.001) and organisational learning (β = 0.439***, p = 0.001), as shown in Figure 10.3C. In contrast, significant negative direct relationships were identified between emphasis placed on differentiation strategy and the financial (β = -2.923***; p = 0.000), non-financial (β = -1.105***; p = 0.001) and UoR (β = -1.101**; p = 0.018) performance outcomes. This suggests that as departments place greater emphasis on a differentiation strategy, performance outcome actually declines. These direct and total effects are displayed in Figure 10.3J. Furthermore, the direct relationship between emphasis placed on differentiation and use of CMAP was significantly negative

(β = -1.413**, p = 0.027). However, significant positive indirect relationships were identified between emphasis placed on differentiation strategy and non-financial (β = 1.397***, p = 0.001), financial (β = 2.711***, p = 0.000) and UoR (β = 1.196***, p = 0.003) performance outcome. This indicates that emphasis placed on a differentiation strategy has a positive impact on performance outcome through the mediating variables of CPMT and the strategic capabilities. This indirect effect is shown diagrammatically in Figure 10.4.

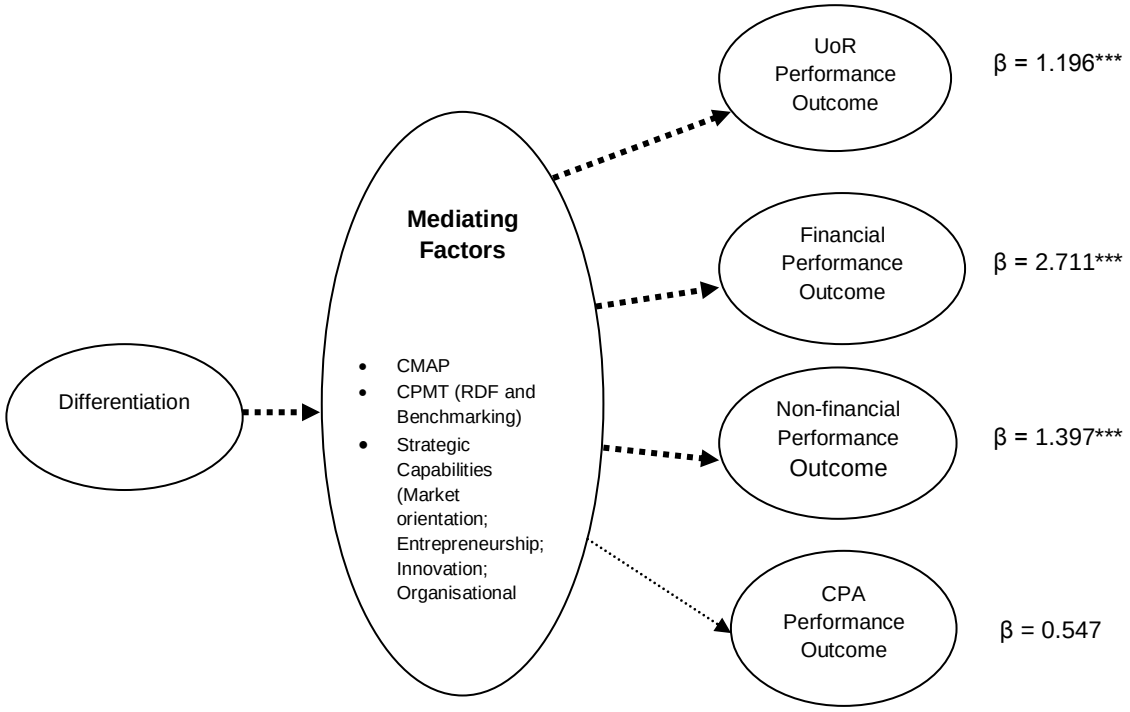


Figure 10.4: Indirect Effect of Differentiation on Performance Outcome

The second hypothesis (H2) was concerned with departments using more CPMT having higher performance through the influence of the mediating variables of CMAP and the strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. Overall, there were significant positive effects of use of benchmarking on both non-financial (β = 0.123***, p = 0.005) and financial (β = 0.215***, p = 0.001) performance outcome. These total effects were made up of the direct (β = -0.032, p = 0.651; β = -0.086, p = 0.515, respectively) and indirect effects (β = 0.155**, p = 0.036; β = 0.300**, p = 0.032, respectively). These total and direct effects concerning benchmarking are displayed in Figure 10.3F(i) with the indirect effects shown in Figure 10.5. It is clear from the results that the positive indirect effects of benchmarking on non-financial and financial performance outcomes outweigh the non-significant negative direct effects. This results is a positive total effect of benchmarking on non-financial and

financial performance outcomes as shown in Figure 10.3F(i), providing empirical support for hypothesis H2. The effects of benchmarking on CPA and UoR performance outcome components are not significant. There are, however, significant positive direct relationships between benchmarking and three of the strategic capabilities; namely, market orientation (β = 0.085**, p = 0.047), innovation (β = 0.223***, p = 0.001) and organisational learning (β = 0.219***, p 0.001), as shown in Figure 10.3I(a).

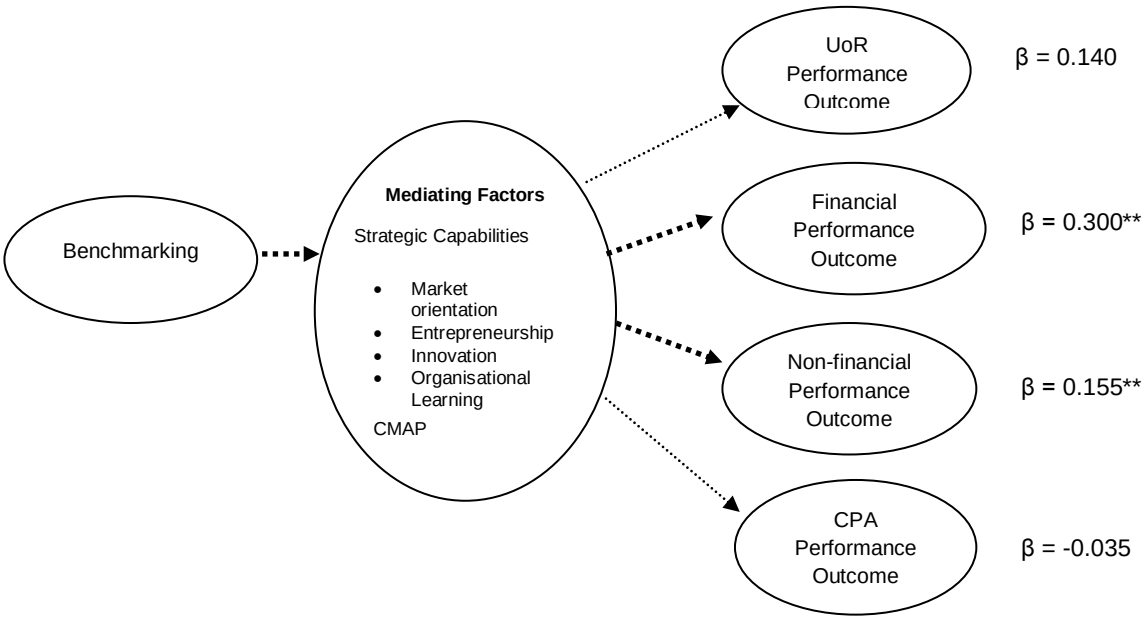


Figure 10.5: Indirect Effect of Benchmarking on Performance Outcome

The total effect of RDF on performance outcome is not significant for any of the four performance outcome components of UoR, non-financial, financial or CPA (Figure 10.3F(ii)). However, some individual relationships were identified as being significant. Specifically, the use of RDF was found to have a significant negative direct effect on non-financial performance outcome (β = -0.118**, p = 0.034). This suggests that as the use of RDF increases, non-financial performance outcome actually decreases. Conversely, the use of RDF was found to have a positive significant indirect effect on UoR (β = 0.124**, p = 0.048), non-financial (β = 0.112**, p = 0.046) and financial (β = 0.163*, p = 0.092) performance outcome, through mediating variables. This provides empirical support for hypothesis H2 and is shown in Figure 10.6. The empirical data, though, does not support hypothesis H2 for CPA performance outcome.

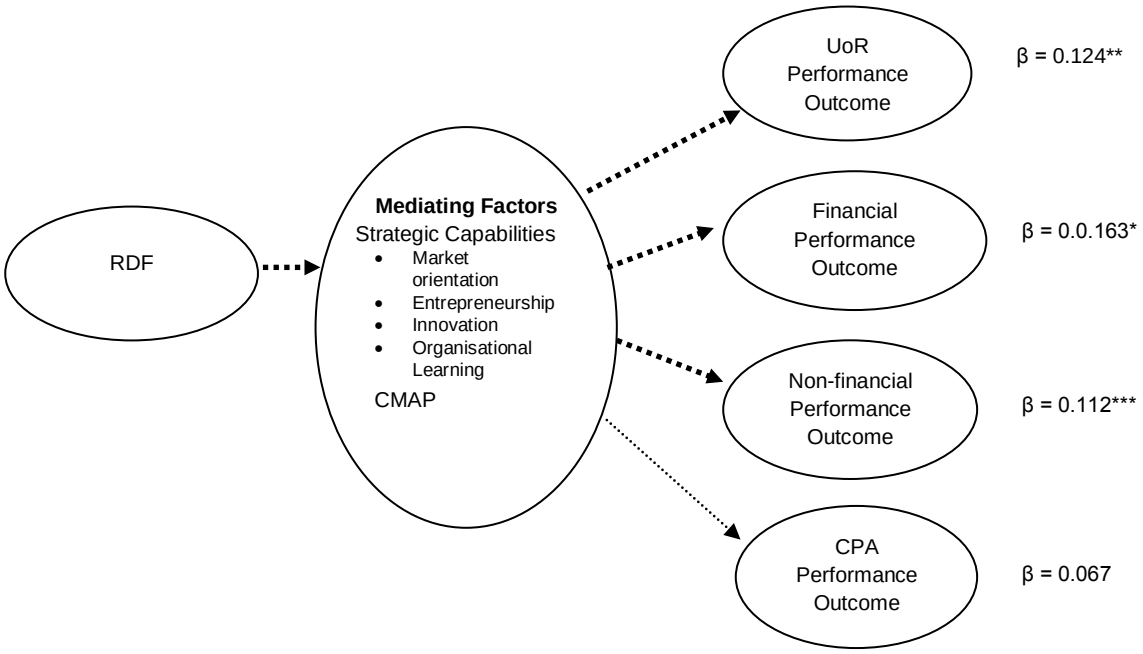


Figure 10.6: Indirect Effect of RDF on Performance Outcome

There are significant relationships between certain strategic resource capabilities and some of the performance outcome components, providing support for hypothesis H3. The significance of the relationships are shown in Figures 10.2D(i), 10.2D(ii), 10.2(iii) and 10.2D(iv) for the market orientation, entrepreneurship, innovation and organisational learing capabilities, respectively. Overall, significant positive relationships were identified between market orientation and non-financial (β = 1.699***, p = 0.001), financial (β = 3.569***, p =0.000) and UoR (β = 2.061***, p = 0.000) performance outcomes. These total effects comprise direct (β = 1.928***; p = 0.001, β = 4.022***; p = 0.001, β = 1.93***; p = 0.001, respectively) and indirect (shown in Figure 10.7) effects. Significant total effects of entrepreneurship on non-financial (β = 0.264***, p = 0.007), UoR (β = 0.308*, p = 0.056) and CPA (β = 0.377***, p = 0.005) performance outcomes were also identified. Again, these total effects are made up of the direct (β = 0.308***, p = 0.005; β = 0.282, p = 0.107; β = 0.426***, p = 0.005, respectively) and indirect effects, which are shown in Figure 10.8. Entrepreneurship has a significant negative indirect effect on financial (β = -0.087**, p = 0.042) and non-financial (β = -0.044*, p = 0.080) performance outcome, through mediating factor of CMAP.

Innovation was found to have a negatively significant total effect on CPA performance outcome (β = -0.339, p = 0.037) made up primarily of a direct effect (β = -0.36**, p = 0.032), shown in Figure 10.3D(iii). This suggests that as the innovation capability increases, performance on CPA actually decreases. The remaining relationships between innovation and performance outcomes were not significant. None of the relationships

between organisational learning and any of the four performance outcomes were significant, as shown in Figure 10.3D(iv).

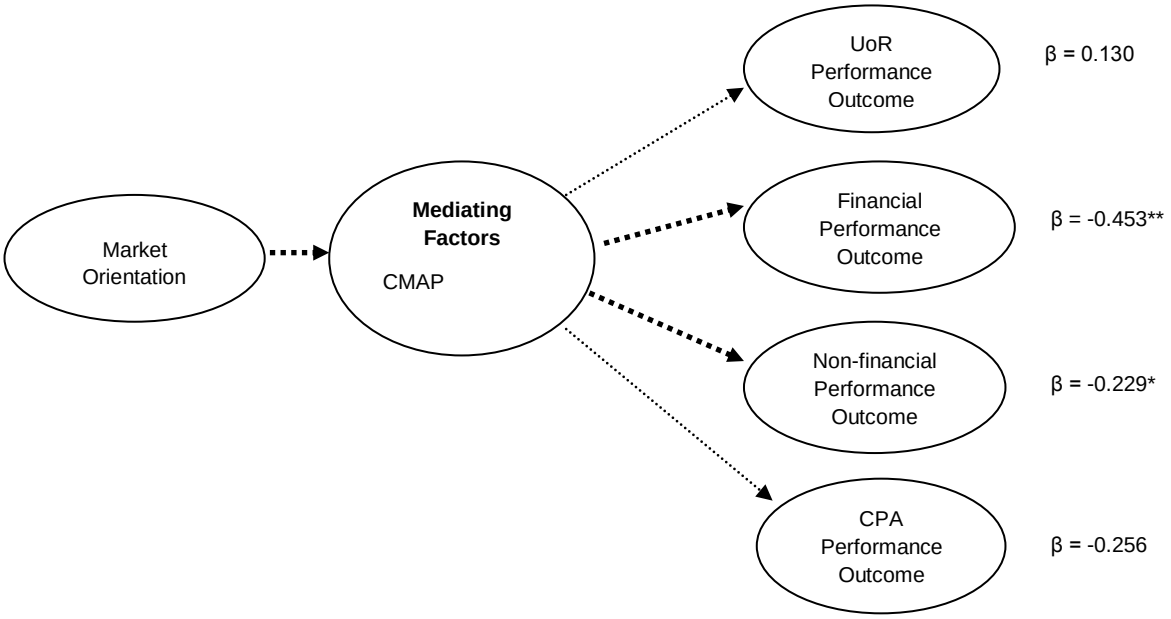


Figure 10.7: Indirect Effect of Market Orientation on Performance Outcome

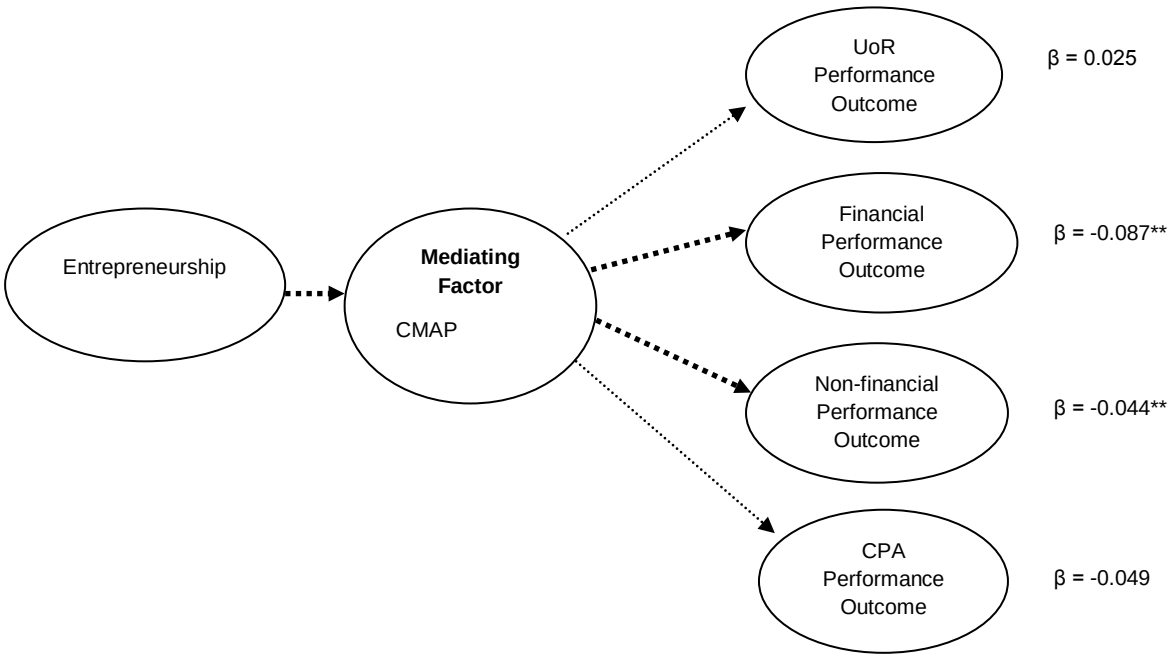


Figure 10.8: Indirect Effect of Entrepreneurship on Performance Outcome

The study also hypothesised in H4 that departments placing a higher emphasis on cost leadership strategy would have higher performance through the mediating factors of

CMAP, CPMT and the strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. The total effect of emphasis placed on cost leadership strategy was found to have a positive significant effect on financial performance outcome (β = 0.513***, p = 0.007), shown in Figure 10.3A. This significant total effect is due primarily to the significant direct effect (β = 0.598**, p = 0.016) as opposed to the negative non-significant indirect effect (β = -0.086, p = 0.338) through the mediating factors of CMAP, CPMT and the strategic capabilities (see Figure 10.9). The total effect of cost leadership to the other performance outcome components of non-financial, UoR and CPA were not significant (Figure 10.3A). There was, however, a significant positive direct relationship identified between emphasis placed on cost leadership strategy and use of CMAP (β = 0.454***, p = 0.005), as shown in Figure 10.3. In contrast, there was a significant negative direct relationship between use of CMAP and financial performance (β = -0.264*, p = 0.081), suggesting as use of CMAP increases financial performance actually decreases (Figure 10.3B). The direct relationship between use of CMAP and the other performance outcomes (UoR, non-financial and CPA) were not found to be significant. However, the indirect effect of emphasis placed on cost leadership strategy on CPA performance, through the multiple mediating factors of CMAP, CPMT and strategic capabilities is negatively significant (β = -0.13*, p = 0.077), as shown in Figure 10.9. This suggests that as emphasis placed on cost leadership increases, the CPA performance outcome actually declines.

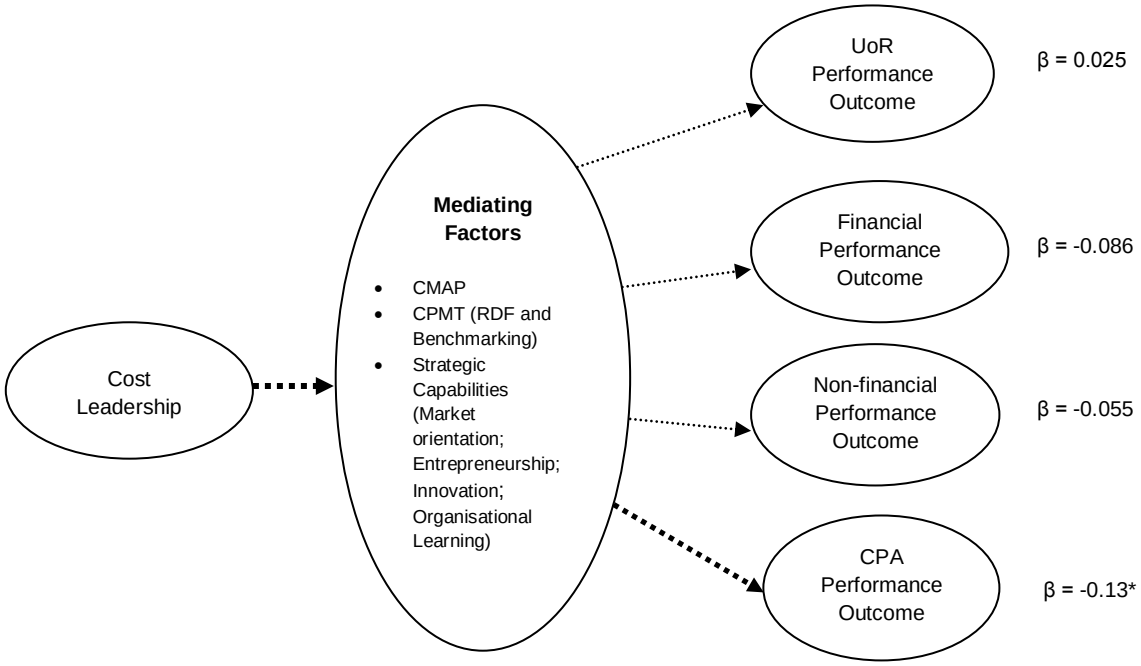


Figure 10.9: Indirect Effect of Cost Leadership on Performance Outcome

In support of hypothesis H5, significant positive relationships were identified between the provision of performance related training to managers and use of both benchmarking (β = 0.127***, p = 0.001) and RDF (β = 0.235***, p = 0.001). This suggests that if managers are provided more training on performance related issues, CPMT will be used to a greater extent in their departments. See Figure 10.3G. The provision of performance related training also has indirect positive effect on the strategic capabilities of market orientation (β = 0.021**, p = 0.032), entrepreneurship (β = 0.044***, p = 0.001), innovation (β = 0.035***, p = 0.008) and organisational learning (β = 0.040***, p = 0.001), as well as financial performance outcome (β = 0.035***, p = 0.010). See Figure 10.10. This mediated effect of training on the strategic capabilities, suggests that as the extent performance related training is provided to managers increases, the capabilities demonstrated also increase through CPMT as a mediating factor.

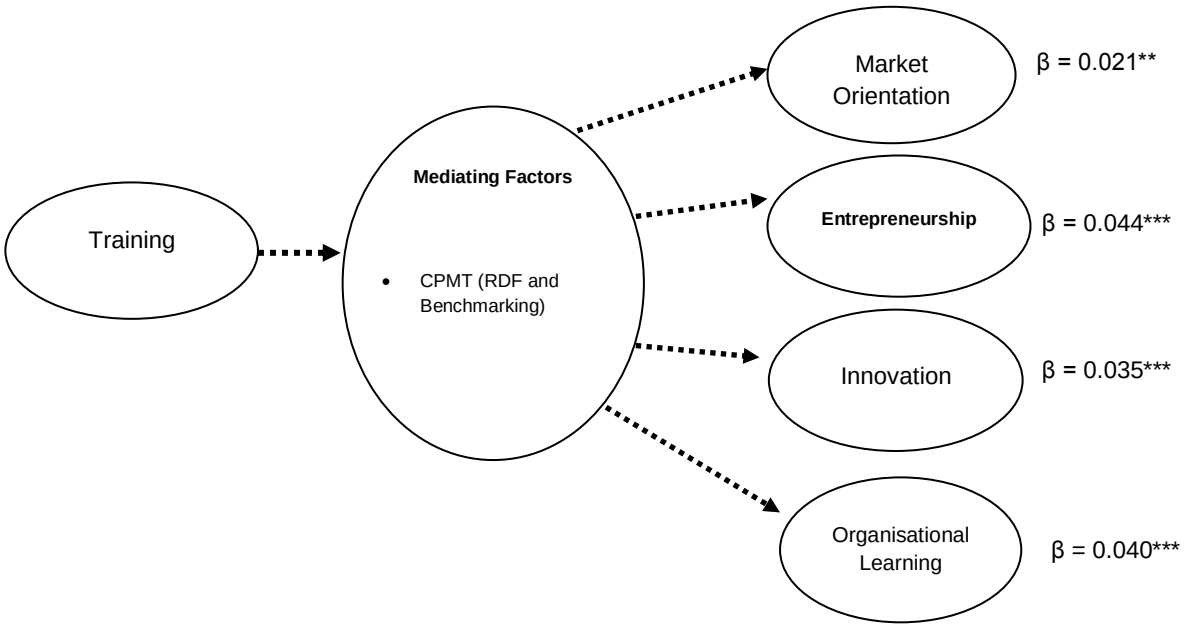


Figure 10.10: Indirect Effect of Training on Capabilities

No empirical support was found for hypothesis H6, with non-significant negative effects of the extent departments experience data limitations identified. See Figure 10.3 and Appendix I.

Although not hypothesised, additional significant paths within the SEM model have been identified. Firstly, variables having a significant effect on the use of CMAP have been identified. Training on performance related has a positive significant indirect effect on the use of CMAP (β = 0.044***, p = 0.002), as do both the use of benchmarking (β = 0.129**;

p = 0.04) and RDF (β = 0.118**; p = 0.012), due to multiple mediating factors. Capabilities of market orientation and entrepreneurship have both been found to have a significant and positive total effect on the use of CMAP (β = 1.716**, p = 0.026; β = 0.33***, p = 0.001), suggesting council departments demonstrating higher capabilities use CMAP to a greater extent.

10.4 Summary and Conclusion

This chapter completed the second step of the SEM process by analysing the full SEM model, developed from the measurement models specified during the first stage of the SEM process undertaken in Chapter 9 and the research contingency model in Figure 5.2. The relationships between the unobserved variables in the full SEM model were explored, testing the hypotheses devised from existing literature. Following modification and re-assessment through the model-generating approach to SEM, a good model fit was obtained. Support was also found from the empirical data for hypotheses H1, H2, H3 and H5. There was no significant empirical support for hypotheses H4 and H6. These findings are discussed in more detail in Chapter 11.

Chapter 11: Discussion of the Empirical Findings

11.1 Introduction

This chapter discusses the empirical findings identified from the SEM statistical analysis undertaken in Chapters 9 and 10. The discussion will consider the findings in more detail and relate them back to the proposed hypotheses and previous literature. The implications of the findings for contingency theory will be considered, as well as the limitations of the present study.

The chapter starts in section 11.2 with a summary of the key findings in relation to the study's hypotheses detailed in Chapter 10. A discussion around the empirical findings of the SEM analysis is included in section 11.3. Section 11.4 discusses methodological issues, with section 11.5 considering the limitations of the present study. Finally there is a summary and conclusion in section 11.6.

11.2 Summary of Findings

This section provides an overview of the results which are explained in more detail in Chapter 10. The indirect relationship between emphasis placed on a differentiation strategy and performance outcome proposed by Hypothesis H1 is supported for UoR, financial and non-financial performance outcomes, but not for CPA performance outcome. Hypothesis H2 relating to the indirect relationship between use of CPMT and performance outcome is supported for financial and non-financial performance outcomes. The positive relationship suggested by Hypothesis H3 between the four strategic capabilities and performance outcome receives partial support for market orientation and entrepreneurship. The indirect positive relationship between emphasis placed on a cost leadership strategy and performance outcome suggested by Hypothesis H4 is not supported. In fact, a significant negative relationship was identified for CPA performance outcome. Hypothesis H5 concerning the direct relationship between performance related training and the higher use of CPMT receives strong support. In contrast, Hypothesis H6 relating to the direct relationship between data limitations and lower use of CPMT is not supported by the empirical data.

The following sections will discuss these findings in more context and in relation to the existing literature.

11.3 Discussion of the SEM analysis

The previous chapter examined the outcomes of testing the empirical data in relation to the research hypotheses, using SEM. This section provides a more detailed examination of these findings to present further insights into the relationships between the variables within the research contingency model. This more detailed consideration also relates the findings of the present study to the existing literature.

11.3.1 Differentiation Strategy and Performance Outcome (H1)

Firstly, the study hypothesised that local authority departments placing greater emphasis on a differentiation strategy will have higher performance through multiple mediating variables. The empirical data provided support for this hypothesis. The indirect effect of placing greater emphasis on differentiation is a significantly positive increase in non-financial, financial and UoR performance, through the mediating factors of CPMT and strategic capabilities. Conversely, the direct effect of a higher emphasis on differentiation strategy is significantly reduced non-financial, financial and UoR performance. Overall, the total effect of a higher emphasis placed on a differentiation strategy is a significant positive increase in non-financial performance, with no significant effect on financial, CPA or UoR performance. For the impact of non-financial performance, the results indicate that the indirect positive effect outweighs the negative direct effect. For local authorities this means that if higher emphasis is placed on a differentiation strategy it is crucial this is in conjunction with higher use of the mediating factors of CPMT and strategic capabilities. Otherwise the effect will be a reduction in performance outcome. The existing literature suggests that PMS in public sector organisations should be linked to strategy (Accounts Commission, 1998; Audit Commission, 2000; Audit Commission and I&DeA, 2002; Ballantine *et al*., 1998; Flynn and Talbot, 1996; Ghobadian and Ashworth, 1994; HM Treasury *et al*., 2001; Kloot and Martin, 2000), with performance measurement aiming to improve public sector performance (Audit Commission, 2000). The present study provides empirical support for the use of PMS (in terms of both benchmarking and RDF) being positively linked to the emphasis placed on a differentiation strategy. However, the results from the current study indicate that greater use of CPMT does not directly affect performance outcome to a significant extent. The relationship has been found to be more complex with the use of CPMT positively and significantly increasing performance only through multiple mediating factors.

Strategic management is increasingly singled out as one of the primary means through which organisational performance can be enhanced (Andrews *et al.*, 2006; Andrews *et al*., 2009; Boyne and Walker, 2004). The present study addresses this area, but highlights that the relationships between strategy and performance is complicated by mediating factors, such as the use of CPMT. The relationships between variables and performance outcome in local authorities are complex, as evident from the SEM model and results. As Knutsson *et al*. (2008: 298) state, "Good performance cannot be explained only by looking into strategies and strategic plans."

Consistent with expectations, local authority departments placing higher emphasis on differentiation strategy have been found to use benchmarking and RDF to a significantly higher extent. These results are consistent with the findings by Hyvönen (2007), who found a significant positive relationship between customer-focused strategies and contemporary performance measures in Finish forest, metal and electronic firms. The customer-focused strategy applied by Hyvönen (2007) may be seen as equivalent to the differentiation strategy in the present study. The contemporary performance measures assessed by Hyvönen (2007) considered qualitative measures, customer satisfaction surveys and non-financial measures. Although similar items were assessed, a different measurement instrument was utilised by Hyvönen (2007) and the current study, for measuring both strategy and contemporary PMS. The present study, therefore, provides further support for Hyvönen's (2007) results, using different measurement instruments and application to the public sector.

Emphasis placed on a differentiation strategy was found to have significant positive direct effects on each of the strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. These findings are intuitively appealing as they suggest that local authority departments placing greater emphasis on a differentiation strategy demonstrate higher strategic capabilities. However, it must be acknowledged that the relationship may be the opposite way round, where local authority departments demonstrating higher capabilities may place greater emphasis on a differentiation strategy. This possible reversal of direction for such relationships is further discussed in section 11.5.

The literature suggests that contemporary MAS are used in conjunction with differentiation strategies (Bouwens and Abernethy, 2000; Hyvönen, 2007), although this was not found to be supported by Hyvönen (2007). It was expected that local authorities placing higher emphasis on differentiation strategy would use cost accounting practices to a lesser extent. The negative significant relationship identified between emphasis placed on differentiation and use of CMAP is, therefore, as would be expected. These findings

should be seen within the context of the final CMAP variable in the present study, which focussed on the costing methods of target costing, strategic cost management and value chain analysis.

This study's results are important regarding the analysis of variables, demonstrating that it is crucial to look at the combined effect of multiple variables rather than the isolated relationship between individual variables. Indeed, as in this case, exploring the total effects may lead to conclusions contrary to the direct effects of a particular variable. This also supports the valuable contribution of SEM which is a unique statistical technique that is able to examine a series of dependence relationships (where a dependent variable becomes an independent variable in subsequent relationships within the same analysis) as well as simultaneously analysing multiple dependent variables (Jöreskog *et al*., 1999 cited by Shook *et al*., 2004). The contribution of using SEM within the present research is further discussed in Chapter 12 (section 12.3).

11.3.2 CPMT and Performance Outcome (H2)

The present study hypothesised that local authority departments using more CPMT will have higher performance through multiple mediating factors, such as higher capabilities of market orientation, entrepreneurship, innovation and organisational learning. The empirical results supported this hypothesis for financial and non-financial performance outcomes and these findings will be further discussed by the two PMTs of benchmarking and RDF. Firstly, benchmarking was found to have a significant positive indirect effect on both financial and non-financial performance outcomes. RDF, secondly, was found to a significant positive indirect effect on UoR, financial and non-financial performance outcomes. These indirect effects are the total indirect effects of the multiple mediating factors within the model, including the strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. Previous research has similarly hypothesised that CPMS will have an indirect effect on organisational performance through the capabilities of market orientation, entrepreneurship, innovation and organisational learning (Henri, 2006b). Henri (2006b), however, found no empirical support for this hypothesis, suggesting restricted measures of performance as a potential explanation. In contrast to the present study, Henri's (2006b) exploration of relationships between the use of PMSs, capabilities and performance was undertaken in Canadian manufacturing firms. As explained in Chapter 4, it is currently unclear whether results from contingency studies undertaken in the private sector are transferable to public sector organisations, such as English local authorities. Indeed, Mia and Goyal (1991) argued

that findings from prior research in the private sector were not applicable to not-for-profit organisations. There are several reasons why different findings may be expected between Henri's (2006b) research and the present study, due to the differences between manufacturing and local government sectors. Firstly, the overall objective of private manufacturing firms and local authorities differ, with the former focusing on maximising profit and the latter aiming to provide the best services to the public with minimum costs. The overall measure of performance is consequently much broader in local government, with manufacturing firms concentrating on profit. Subsequently, the PMSs adopted in these two different sectors will also differ. Secondly, English local authorities are subject to central Government's legislation and regulation, having to provide statutory services and comply with the inspection regimes, such as CPA. Furthermore, local authorities are providing services to the public within their local authority boundaries. In contrast, private manufacturing firms are able to make their own decisions as to what products to make and to whom they market their products, having much more freedom in directing their business. Thirdly, local authorities operate in primarily monopolistic markets with few other organisations competing to provide similar services within the same geographical area. Manufacturing firms, however, will usually have other firms making and selling similar products and targeting the same market. Finally, the PMTs adopted and measurement of performance will differ between manufacturing firms and local authorities, as will the interpretation and application of the strategic capabilities of market orientation, innovation, entrepreneurship and organisational learning. Due to these differences between the two sectors, it is not entirely unexpected that some findings between Henri's (2006b) research in Canadian manufacturing firms may differ to the findings in relation to English local authorities in the present study.

Further insight into the results is gained from examining the effect of individual variables within the overall CPMT and performance outcome relationship. In terms of the effect of CPMT on strategic capabilities, greater use of benchmarking was found to have a significant positive direct effect on the strategic capabilities of market orientation, innovation and organisational learning. The only significant direct relationship between RDF and strategic capabilities was a positive effect of RDF on entrepreneurship. The positive significant effects of RDF and benchmarking on the strategic capabilities are consistent with previous research by Henri (2006b) who found interactive use of PMS to positively and significantly foster market orientation, entrepreneurship, innovation and organisational learning. The lack of significant support between CPMT components and the remaining strategic capabilities is in contrast to Henri's (2006b) findings. These inconsistent findings may be due to the research being applied to local authorities rather

than Henri's (2006b) Canadian manufacturing firms or the different measurement of the PMS construct between the two studies.

The direct effects of each of the four strategic capabilities on performance outcome are further explored in the following section (section 11.3.3). In terms of direct relationships between PMT and performance, the only significant relationship was a negative effect of RDF on non-financial performance which suggests that as the use of RDF increases non-financial performance outcome actually decreases. This is contrary to expectations, as it was anticipated that increased use of CPMTs, such as RDF, would result in higher performance. Government initiatives and legislation have encouraged the use of contemporary PMS in order to improve local government performance (Ball, 2001; Bowerman and Ball, 2000; Ittner and Larcker, 1998b) but the existing literature suggests further research is needed to explore the actual effect of PMS on local government performance (Bowerman and Ball, 2000; Ittner and Larcker, 1998b; Smith, 1995). This present study has contributed to the existing literature by exploring the impact of contemporary PMTs on performance in English local authorities but has not provided empirical support that the use of contemporary PMS actually improves performance. However, one of the limitations of the study's research model and SEM analysis is that it assumes unidirectional relationships between the variables (see section 11.5). It may be that some of the relationships are in the opposite direction (Baines and Langfield-Smith, 2003; Kline, 2005). Therefore, it may be that local authority departments with lower non-financial performance outcome choose to use RDF to a greater extent in an attempt to improve their performance. More research would be valuable in exploring this relationship between RDF and performance outcome. Furthermore, it is acknowledged that the SEM analysis only assessed benchmarking and RDF as components of PMS and other PMS elements may provide alternative results. For example BSC, which was removed through the SEM modification process, would be an interesting area for future research to explore in terms of impact on performance.

Despite the significant indirect effects between RDF and non-financial, financial and UoR performance outcomes, the total effect of RDF is not significant on any of the performance outcome components. This difference in significance is due to the combined effect of the negative direct effects of RDF on the performance outcome components. This again highlights the importance of examining the overall model and relationships between multiple variables in contrast to viewing individual relationships in isolation.

11.3.3 Strategic Capabilities and Performance Outcome (H3)

The present study hypothesised that local authority departments with higher capabilities of market orientation, entrepreneurship, innovation and organisational learning will have higher performance. The results supported this hypothesis for market orientation and entrepreneurship capabilities but not for innovation and organisational learning. These findings will now be discussed in more detail for each capability.

Firstly, market orientation. Direct significant positive relationships were found between market orientation and UoR, financial and non-financial performance outcomes; the relationship to CPA is positive but not significant. In comparison with previous research, Henri (2006b) found a positive but non-significant relationship between market orientation and organisational performance in Canadian manufacturing firms. The differing results by Henri (2006b) to the present study may be linked to the different population targeted in the two studies or the adoption of alternative research measurement instruments. Both studies adopted the same research instrument to measure market orientation, though Henri (2006b) applied a subjective instrument comprising the three indicators of sales volume, return on investment and profits, to measure organisational performance. This is in contrast to the range of performance outcomes measured in the present study, tailored specifically to English local authorities and encompassing both financial and non-financial performance. This variation in measurement of performance is also linked to the different organisations being researched by Henri (2006b) and the present study. The significant positive effect of market orientation on financial performance outcome in the present study provides further support for previous research in the private sector, which has found a positive effect of market orientation on business profitability (Narver and Slater, 1990; Slater and Narver, 2000). Of course, the differences between business profitability in the private sector and local government financial performance must be acknowledged. However, these findings from the present study further support and extend the existing evidence of the link between market orientation and performance to the public sector and English local authorities specifically. In contrast to the direct relationships, the indirect effect of market orientation on both non-financial and financial performance outcomes was found to be significant and negative. Although the total effects of market orientation on performance outcome components remain positive, these findings again emphasise the complexity of the relationships between multiple variables within the research model. Despite market orientation having a positive direct effect on financial and non-financial performance outcome, this capability carries through a negative effect to these performance outcome components through mediating variables.

The second capability of entrepreneurship was found to have direct significant positive relationships with both non-financial and CPA performance outcomes. The direct relationships between entrepreneurship and both financial and UoR performance outcomes were found to be positive but not significant. This finding is consistent with previous research by Slater and Narver (2000) who found no relationship between entrepreneurial orientation and business profitability in a wide range of product and service businesses. Similarly, Henri (2006b) applied the same entrepreneurship measurement instrument to Canadian manufacturing firms, finding a positive but not significant relationship to organisational performance, which tended to focus on financial aspects. Consistent with the direct effects, the total effect of entrepreneurship on the performance outcome components are positive with the relationship to non-financial, UoR and CPA all being significant. In contrast though, it is evident that entrepreneurship carries through negatively significant indirect effects to non-financial and financial performance outcomes. The positive effects of the entrepreneurship capability must consequently not be viewed in isolation due to the complexities of multiple variables that exist in a local authority department.

The similarities in the results for both entrepreneurship and market orientation, in terms of their positive effect on performance outcome, are consistent with expectations. Indeed, a market orientation and entrepreneurial values should complement each other (Slater and Narver, 1995).

The direct relationship between the third capability of innovation and CPA performance outcome was significant and negative. The remaining direct relationships between innovation and performance outcome (non-financial, financial and UoR) were not found to be significant. Though the relationship to financial performance outcome was positive, contrary to expectations innovation was found to negatively affect UoR, financial and non-financial performance outcomes. Previous research by Henri (2006b) found innovation to be positively, but again not significantly, related to performance. Henri's (2006b) measure of organisational performance may be likened to financial performance outcome and, therefore, his findings are consistent with the present study. Bisbe and Otley (2004: 713) conclude that a positive relationship between innovation and performance has been demonstrated in "...most empirical studies..." However, these studies focussed on product innovation and financial performance in the private sector which may explain the conflicting findings with the present study. Innovation may be seen to be part of the multi-dimensional concept of entrepreneurship (Miller, 1983). Similar findings may, therefore, be expected for both entrepreneurship and innovation capabilities, as found by Henri (2006b). However, this is not the case in the present study. As summarised above, significant direct relationships have been identified between entrepreneurship and

performance outcome, but not for innovation. Damanour (1996: 697) suggests that innovation "...is more restricted in not-for-profit than for-profit organizations..." such as due to external regulations. It may, therefore, be that the results regarding innovation are not as expected and contrary to existing research (Henri, 2006b), due to the public sector focus of the present study.

The lack of significantly positive relationships between innovation and performance outcome for local authorities in the present study, and indeed even some negative effects, remains an interesting finding. Indeed, innovation may be interpreted as "...changes or improvements to increase the operating efficiency and performance of local government..." (Mulcahy and Mulcahy, 1995: 553) suggesting improved performance is inherent to innovation. A few possible reasons will be put forward to explain the consequently unexpected findings. Firstly, the majority of respondents indicated that their departments possess high levels of innovation (see Figure 6.5 and Appendix G). However, it may be that the respondents over-estimated their department's capability of innovation, a bias perhaps linked to the research questionnaires being issued through the Audit Commission. Secondly, intermediary variables may enable innovation to result in improved performance. The results from the present study do support this suggestion, with innovation found to have positive indirect effects on non-financial, financial and CPA performance outcomes (see Appendix I). This would be an area where future research could be directed in order to further explore these issues in more detail.

The final capability to be discussed is organisational learning. The direct relationships between organisational learning and performance outcome were not found to be significant. This is consistent with prior research by Henri (2006b) who also found a non-significant effect of organisational learning on organisational performance. It was hypothesised that council departments with a higher organisational learning capability would have higher performance outcome. Indeed, improved performance is inherent in the meaning of organisational learning with organisational learning defined as being "...the process of improving actions through better knowledge and understanding..." (Fiol and Lyles, 1985: 803). From the present study it appears that organisational learning does not have a significant effect on performance outcome. However, it may be that the relationship between organisational learning and performance is more complex with an intermediary variable (or variables) that needs to be present in order for a department's organisational learning to actually result in improved performance. The results from the present study provide support for this proposition, with organisational learning found to have positive indirect effects on non-financial, financial and CPA performance outcomes (see Appendix I). This is an interesting area that would value further research.

11.3.4 Cost Leadership Strategy and Performance Outcome (H4)

The study hypothesised that local authority departments placing higher emphasis on cost leadership strategy will have higher performance through the mediating factors of CMAP, CPMT and the four strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. However, the results did not support this hypothesis. Indeed, contrary to expectations, cost leadership strategy was found to have a negative indirect effect on financial, non-financial and CPA performance outcomes, though only the latter was significant. Furthermore, cost leadership was found to have a positive indirect effect on UoR performance outcome, though this was not found to be significant. One possible explanation for these findings is due to the complex contingency model comprising multiple mediating factors, with the SEM results providing the total indirect effect. Greater emphasis placed on cost leadership strategy may have a positive indirect effect on performance outcome through CMAP as a single mediating variable, but a specific indirect effect such as this is not decomposed from the total indirect effect by SEM. This is a drawback of the SEM software which is further discussed in section 11.5 below.

The present study did find that local authority departments placing higher emphasis on a cost leadership strategy use cost accounting practices to a greater extent (higher CMAP). This finding is consistent with previous research, with Hyvönen (2007) finding a significant relationship between customer-focused strategy (equivalent to differentiation strategy) and financial performance measures. However, the financial performance measures adopted by Hyvönen (2007) considered budget variance analysis and profit measures, as opposed to the costing techniques in the present study. Previous research tends to agree that cost control is more important in organisations following a cost leadership (as opposed to differentiation) strategy (Hyvönen, 2007). However, there is a lacuna of previous research investigating the link between strategy and MAP. The findings from the present study provide empirical evidence that local authority departments placing an increased emphasis on a cost leadership strategy use CMAP to a greater extent. These findings must be considered in the context that the final CMAP variable in the present study focussed on the costing methods of target costing, strategic cost management and value chain analysis. Additionally, however, greater use of CMAP was found to have a significant negative direct effect on financial performance. Such findings are contrary to expectations from both research and Government initiative perspectives. Firstly, prior research by Chenhall and Langfield-Smith (1998), for instance, found that adopting CMAP enhanced organisational performance in manufacturing firms. Although equivalent concepts to Chenhall and Langfield-Smith (1998) were adopted in the present study, the items incorporated in the measurement of CMAP and performance, differ. In particular,

the present study focussed on costing techniques within CMAP, with Chenhall and Langfield-Smith (1998) taking a broader remit. Secondly, Government initiatives and legislation to improve local government performance in the UK have encouraged the use of CMAP over the recent years (Anderson, 1998; Seal, 2003). The unexpected findings from the present study may well be due to the limited costing elements included in the final measurement of CMAP or interpretation of the CMAP elements. For example, the target costing explanation in the research questionnaire may have been interpreted more broadly by the respondents as benchmarking costs.

Although not hypothesised in the present study, the empirical findings also indicate a positive significant direct effect of the emphasis placed on cost leadership on financial performance. No previous research has been identified exploring the relationship between cost leadership strategy and performance outcome in English local authorities. However, this finding is intuitively appealing as if local authority departments are placing a higher emphasis on a cost leadership strategy then higher financial performance would be expected as they would be ensuring their costs are controlled.

11.3.5 Training and CPMT (H5)

The study hypothesised that the extent performance related training is provided to managers is positively associated with the higher use of PMT. The results supported this hypothesis, indicating that there is a significant positive relationship between performance related training and the use of CPMT in the form of benchmarking and RDF. These findings are consistent with previous research by Cavalluzzo and Ittner (2004), who found that performance related training is significantly and positively related to the use of contemporary PMS in US federal government. Despite different measures of PMS between the two studies, the present study suggests that Cavalluzzo and Ittner's (2004) findings also apply to English local government. PMS development and use can, therefore, be hampered by inadequate training (Cavalluzzo and Ittner, 2004). These findings have important practical implications, in that local authorities requiring and encouraging the use of PMS should ensure that managers are provided with the necessary training. This issue is further discussed in section 12.4 below.

The provision of performance related training was also found to have positive significant indirect effects on strategic capabilities, CMAP and financial performance outcome. These findings suggest that the effect of local authority departments providing performance related training for their managers has broad consequences, carrying through positive effects to capabilities and ultimate performance. Not only do these

findings have important practical implications for local authorities, they also provide direction for future research. These issues are returned to in sections 12.4 and 12.5, respectively.

11.3.6 Data Limitations and CPMT (H6)

It was hypothesised in the present study that the extent local authority departments experience data limitations would be negatively associated with the higher use of PMT. This hypothesis was not supported as, although the extent local authority departments experience data limitations was found to be negatively associated with the use of both benchmarking and RDF, the relationship was not significant. These results are contrary to previous findings by Ittner and Larcker (1998a) who found that the lack of highly developed information systems was problematic for BSC users. Although intuitively appealing that data problems would be associated with lower use of CPMT, the findings of prior research is mixed (Cavalluzzo and Ittner, 2004). Indeed, the findings of the present study are consistent with Cavalluzzo and Ittner (2004), who similarly found data limitations to be negatively associated with the development of PMS, but to a non-significant extent. It, therefore, appears that any negative impact data limitations may have on the development and use of PMS is not significant. In view of the inconsistent previous research and the on-going reliance on information technology, there should be caution in writing off the importance of local authorities providing adequate systems to support the production and interpretation of performance measurement data. Indeed, local authorities are encouraged to assess the arrangements they have in place to secure the production of good quality data, with compliance of standards and good practice recommended (Audit Commission *et al.*, 2007).

11.4 Discussion of Methodological Issues

The previous discussion in section 11.3 considered the statistical results and put forward possible explanations for the findings. However, within the research project as a whole there are other issues that should be considered to put the above results in context. Issues concerning the research measurement instruments and research population will now be discussed.

11.4.1 Measurement Instruments

The present study utilised an electronic questionnaire which provided an effective method to collect the primary data. Many advantages of adopting an electronic questionnaire were experienced, compared to the more traditional postal method, including cost and time efficiencies and the ease in reaching a large sample of local authority officers. Such advantages experienced in the present study are consistent with the existing literature (Enticott, 2003; Gill and Johnson, 2002; Tse, 1998). A key advantage of issuing the questionnaire electronically experienced in the present study was that the responses could be automatically uploaded directly into SPSS and AMOS, thereby avoiding the time consuming process and potential errors of manually inputting the responses. Issuing the questionnaire by e-mail also enabled convenient on-going contact between the researcher and questionnaire recipients, making it straightforward to resolve any queries. The ease of data input and on-going contact with the researcher supports potential advantages of using electronic surveys proposed by Enticott (2003).

There were, however, some difficulties experienced in utilising an electronic questionnaire. Despite attempts to obtain accurate e-mail addresses and testing the electronic questionnaire as an e-mail attachment, some problems were still encountered. Specifically, 75 e-mails issuing the research questionnaire were returned as being undeliverable. Ten of these undeliverable e-mails were resolved by the local authority computer sections releasing the e-mails initially held in quarantine, due to their computer systems not being able to check the questionnaire attachment for viruses. An alternative for future research studies to overcome this problem would be to place the electronic questionnaire on a controlled website and e-mail potential respondents a link to the website. The remaining 65 e-mails issuing the questionnaire (3% of the total issued) remained undeliverable. The main reason (51 out of the 65) was that the e-mail address did not exist. Although the names and contact details for each local authority were collated specifically for this research, there was still a time delay before questionnaires were actually issued simply due to the size, complexities and practicalities of a large research project. This slight time delay may explain why some e-mail addresses did not exist when the questionnaires were actually issued, such as due to turnover of staff in local authorities. This highlights a limitation of issuing the questionnaires by e-mail, as opposed to traditional mail, as the e-mails are sent to specific individuals and may not be accessed by their replacement.

The variables in the present study have been measured using multiple items, other than department size and the overall CPA judgement which both took a single absolute measure. Existing measures were utilised where possible, with some modifications made

so that they were applicable to local authorities. Although the reliability and validity tests produced acceptable results, there are still some issues regarding the measurement of the variables that should be considered. Indeed, the difficulties of developing survey instruments to meaningfully capture the underlying phenomena are recognised (Malmi and Brown, 2008). For example, it was acknowledged from the literature review, that there are difficulties in both defining and operationalising strategy (Dent, 1990; Guilding *et al*., 2000; Hambrick, 1980; Wilson, 1995). The existing literature also acknowledges that defining and measuring performance in local authorities is problematic (Jackson, 1993; Smith, 1995). This study adopted a range of methods in an attempt to encompass both financial and non-financial performance, as well as to use objective measures where possible. Consistent with previous contingency-based research (Chenhall, 2003), the study incorporated a self-assessment of performance in the research questionnaire. However, this measure of performance is open to potential bias by the respondents. The study additionally adopted the two objective measures of UoR and overall CPA judgement. Although these measures are useful as providing externally audited, objective measures of performance which are consistent between authorities, they are measured at the local authority rather than departmental level. This provides some inconsistency in the study as the focus of the research, and measurement of the other variables, was at the departmental level.

11.4.2 Research Population and Sample

The population adopted for the present study comprised departments of English local authorities, with the research questionnaire distributed to Heads of Departments at all English local authorities. Although this incorporated the full range of local authority types in England, it remains a relatively unique population and it is unclear whether the study's findings would be applicable to local government in other countries or other sections of the public sector. This is further discussed in section 11.5.

The usable sample size was 528 which is regarded as more than adequate for SEM analysis (Anderson and Gerbing, 1988; Bentler and Chou, 1987; Henri, 2006a). However, this represents a response rate of 24.5% and a greater number of responses would have provided more confidence in the results from the statistical analysis. Although the response rate is considerably lower than the 56% obtained by Enticott (2003), who issued questionnaires by e-mail to local government members and officers in the UK, it compares favourably to response rates in recent management accounting and contingency research (24% by Henri, 2006a; 15% by Widener, 2004). One limitation in the practicalities of

executing the research was that it was not possible to issue reminders to further increase the number of completed questionnaires returned. Some assurance was gained, though, through acceptable results from testing for non-response bias.

11.5 Limitations of the Present Study

As with other empirical research, this study is subject to potential limitations (Henri, 2006b). Firstly, the model adopted in this study assumed unidirectional relationships between the variables. However, it is possible that some of the relationships are in the opposite direction or reciprocal (Baines and Langfield-Smith, 2003; Kline, 2005). For example, it may be that local authority departments with higher capabilities of market orientation, entrepreneurship, innovation and organisational learning may use CPMT to a higher extent, rather than the opposite relationship specified in the present study's model. Similarly, while this research has identified a greater emphasis on cost leadership strategy to be significantly associated with increased use of CMAP, it may be that effective use of CMAP is providing a cost leadership focus.

Secondly, AMOS does not calculate the separate indirect effects of variables for each of the multiple mediating factors (Blunch, 2008; Kline, 2005). Rather, the indirect effect estimated by AMOS, and the majority of SEM software packages, is the total indirect effect of the multiple mediating factors (Blunch, 2008; Brown, 1997; Kline, 2005). Although this provides useful information on the model as a whole and mediating factors within a model, it does not provide a full detailed picture of mediation in a complex model (Brown, 1997), such as in the present study.

Thirdly, the present study did not explore the differences or similarities between local authorities of different types, instead reporting results for English local authorities as a whole. Within the research questionnaire, data was collected on the type of local authority, such as district or county council. This information was used in conjunction with the council's name to supplement their questionnaire responses with the objective performance measures of UoR and CPA. It was not possible to execute a comparison on the study's results by local authority type as, at the time of the present research, AMOS does not allow researchers to take into account the categorical nature of the variables (Byrne, 2001). The relatively small number of certain types of local authorities, such as county councils, and the large sample required for SEM would be another factor limiting such a categorical analysis.

Fourthly, the results presented from the SEM statistical analysis are based on correlations from a cross-sectional survey and do not necessarily indicate causal relations (Henri, 2006a; Henri, 2006b; Kline, 2005; Oppenheim, 1992; Verbeeten, 2008). A limitation of survey research is also that it is static and only takes a view at a particular point in time (Henri, 2006a). There is, consequently, no consideration of changes over time.

Fifthly, despite the complex nature of the research model, there are other variables it would have been plausible to include. For example, the partial measurement approach recommended by Hambrick (1980) was adopted as the most appropriate in operationalising strategy in the present research. The study focused on Porter's (1980) cost leadership / differentiation strategy and the four capabilities leading to strategic choice of market orientation, entrepreneurship, innovation and organisational learning proposed by Henri (2006b). The limitation of the partial measurement approach adopted in the present study is that it does not capture the full breadth of strategy (Hambrick, 1980). There are, consequently, other aspects of strategy that were not incorporated into the present study.

A sixth limitation of the present study is that the results are based primarily on perceptions obtained from local authority officers through the research questionnaire. These perceptions by individuals may be flawed due to inappropriate measures or inadequate interpretation of the questions within the research questionnaire as the measuring instrument (Fisher, 1995; Gresov, 1989; Verbeeten, 2008). The pilot testing, reliance on previously tested measurement instruments where possible, as well as validity and reliability testing of the measurement instrument in the present study, should have helped to reduce such errors (Verbeeten, 2008). In the present study, however, there is an additional risk associated with the questionnaires being issued from an Audit Commission e-mail address. Some respondents may have biased their responses due to the inspection role of the Audit Commission, despite assurance of confidentiality and anonymity in the research analysis and reporting.

Finally, any generalisations made from this study's results to local authorities, or the public sector more widely, should be made with caution. The sample in the present study was English local authorities and it cannot be assumed that the results can be generalised to local authorities in other countries or other types of organisations.

11.6 Summary and Conclusion

This chapter provided a discussion of the present study's empirical findings from the SEM statistical analysis, in comparison with existing research. Possible explanations for the findings were explored, in the context of local authorities, as well as the limitations of the present study being acknowledged.

It is concluded from the study's findings that performance outcome in English local authorities is contingent upon strategic typology, CMAP, CPMT, strategic capabilities and the training of senior managers.

The findings of this study extend and contribute to the existing literature on contingency research, strategy, management accounting and performance measurement within the public sector and English local authorities specifically. The contributions of the present study, as well as how the present study may be extended through further research, are discussed in Chapter 12.

Chapter 12: Conclusions and Contributions

12.1 Introduction

This chapter brings the research together by setting out the final conclusions and contributions of the present study. Firstly, the key findings are summarised in section 12.2, with reference to the overall aim of the research. Section 12.3 outlines both the methodological and theoretical contributions of this research study, with section 12.4 highlighting some of the practical implications of the study. Areas for future research are suggested in section 12.5, with some final concluding remarks in section 12.6 bringing the chapter to a close.

12.2 Review of Research Approach and Findings

The research adopted a functionalist and contingency theory approach to exploring the relationships between strategy, MCS and performance outcome in English local authorities. The contingency theory approach is based on the premise that there is no one universally appropriate management accounting or control system which is applicable to all organisations in all circumstances (Otley, 1980; Fisher, 1995; Rayburn and Rayburn 1991; Reid and Smith, 2000). Contingency theory suggests that the effectiveness of an organisation is dependent on matching organisational characteristics, such as the management accounting system, with an organisation's specific circumstances. The overall research question for the present study was how strategic typology, resource-based capabilities, CPMTs and CMAPs affect the performance outcome of English local authorities. Based on a detailed literature review, six research hypotheses were devised and a research contingency model developed, setting out expected relationships between the study's variables. An electronic questionnaire was designed in order to collect data for each of the research variables, with reliance placed on existing research instruments where possible. In order to address the research question and test the hypotheses, empirical data was collated from local authority departments through the electronic questionnaire and analysed using SEM, enabling the contingency model to be assessed in its entirety. A *model generating* approach to SEM was adopted, where the initial contingency model was rejected and modified. Through this modification process a revised model, still theoretically sound, was identified that fitted the empirical data well.

The SEM analysis examined the direct, indirect and total effects of relationships between the variables within the research contingency model, providing a fuller picture of

relationships within the model than alternative regression statistical procedures. Emphasis placed on a differentiation strategy was found to have significantly positive indirect effects on UoR, financial and non-financial performance outcomes, through the multiple mediating factors of CPMT and strategic capabilities of market orientation, entrepreneurship, innovation and organisational learning. In contrast, emphasis placed on a cost leadership strategy was found to have a significantly negative indirect effect on CPA performance outcome, again through multiple mediating factors. Greater use of both benchmarking and RDF were found to have significantly positive indirect effects on financial and non-financial performance outcomes. The provision of performance-related training was also found to have significant positive effects on use of CPMT directly and indirectly on strategic capabilities, CMAP and financial performance outcome. Contrary to expectations, though, data limitations were not found to significantly affect the use of CPMT.

The study's findings make valuable and significant contributions to the existing contingency theory and public sector literature, as well as providing constructive empirical information for local government practitioners and policy makers on the impact of specific strategies and practices adopted by English local authorities. The primary contributions made by this research will be explored in more detail in the following section (section 12.3).

12.3 Methodological and Theoretical Contributions

The study makes many methodological and theoretical contributions to the existing literature on contingency research, as well as strategy, management accounting and performance in the public sector. Specific contributions in these areas will now be further explored.

12.3.1 Methodology and Research Approach

In relation to contingency research, this study makes a number of contributions. Firstly, the study responds to the call by Fisher (1995) to incorporate multiple contingency factors, control mechanisms and outcomes. Furthermore, the present research responds to the criticisms of selection and interaction approaches to previous contingency research (Chenhall and Langfield-Smith, 1998; Drazin and Van de Ven, 1985; Gerdin, 2005; Van de Ven and Drazin, 1985) by adopting a systems approach. The holistic approach

adopted by the present study's research contingency model explores the complex relationships between strategic typology, resource-based strategic capabilities, MAPs, PMTs and performance outcome. The research, therefore, enables richness in knowledge and understanding of the contingent relationships between these multiple variables in a way not previously addressed in the existing literature.

Secondly, the study contributes to the existing literature by addressing the lacuna of contingency research within not-for-profit organisations (Chenhall, 2003), particularly in the UK. Furthermore, within the limited contingency research in the public sector, little is in relation to local government. Indeed, as far as the researcher is aware, this is the only research applying contingency theory to the local government in the UK within the management accounting field of research, investigating strategy, management accounting and performance.

Thirdly, the present study builds on and extends prior research exploring the strategic, management accounting, performance measurement, limiting factors and performance outcome variables within local government. For example, the study extends previous research by Cavalluzzo and Ittner (2004), who explored the development, use and perceived benefits of results-oriented performance measures in the US federal government, applying a similar model to the new setting of English local authorities. Additionally, the study builds on and further develops the research by Hyvönen (2007) investigating the relationships between strategy, PMTs and organisational performance, as well as research by Henri (2006b) examining strategy from a resource-based perspective. The contribution of the study's specific findings is further detailed in section 12.3.2.

A fourth contribution from the research method perspective is that the present study contributed to the existing literature by confirming the validity of previously developed research instruments, through replication and application to an alternative setting. Specific measurement instruments adopted from prior research in the present study include the questionnaire items relating to cost leadership and differentiation previously applied by Auzair and Langfield-Smith (2005), the four capabilities leading to strategic choice of market orientation, entrepreneurship, innovation and organisational learning previously adopted by Henri (2006b), implementation factors of data limitations and performance-related training applied by Cavalluzzo and Ittner (2004) and self-assessed performance previously adopted by Gul and Chia (1994) and Abdel Halim (2004). The questions adopted from prior research were tailored where necessary to ensure relevance to English local authorities. Each of the measurement instruments adopted demonstrated acceptable validity and reliability through analysis in the present study.

Finally, a key contribution of the present study from a methodological perspective is the use of SEM, which has only been used to a limited extent in prior management accounting research (Smith and Langfield-Smith, 2004). Indeed, the adoption of SEM within this research, responds to the call by Smith and Langfield-Smith (2004) for management accounting researchers to make greater use of SEM, overcoming some of the limitations and criticisms of the more commonly applied regression-based statistical methods. SEM permits multiple observed variables and relationships, in comparison to the basic statistical methods which are limited in the number of variables that may be included and the focus on single relationships (Baines and Langfield-Smith, 2003; Schumacker and Lomax, 2004). The recent developments of SEM, and the associated software, enable the analysis of complex models, such as in the present study, to be analysed (Schumacker and Lomax, 2004). SEM also allows for the error variances associated with variables measured by multiple items, to be incorporated into the model, thereby enabling inaccuracies associated with the imprecise measurement of multi-item variables to be included (Baines and Langfield-Smith, 2003; Schumacker and Lomax, 2004). The primary contributions of the present study through utilising SEM, is that it allows the evaluation of the entire research contingency model, bringing a higher level of perspective to the analysis (Kline, 2005). The use of SEM in this research, therefore, recognised that strategy, CPMTs, CMAPs and strategic capabilities do not impact independently on each other or on performance outcome. The unique characteristic of SEM is that it is able to simultaneously examine a series of dependence relationships (where a dependent variable becomes an independent variable in subsequent relationships within the same analysis), while also simultaneously analysing multiple dependent variables (Jöreskog *et al.*, 1999 cited by Shook *et al*., 2004). Conclusions were, therefore, able to be made from this research on both the direct and indirect effects of the multiple variables. For example, the direct and indirect effects that adopting a differentiation strategy has on performance outcome, through multiple mediating factors including CPMT and strategic capabilities were assessed. Furthermore, SEM permits us to make a decision about the acceptance of the model as a whole, (Kline, 2005). In the present study, following modifications of the initial model through the *model-generating* approach (Byrne, 2001), the goodness of fit indexes from the SEM analysis reflect a good fit of the empirical data to the hypothesised model.

12.3.2 Local Government and Management Accounting

The study also makes important contributions to the knowledge and understanding of the strategy, PMTs and MAPs adopted by English local authorities and how these variables impact on overall local authority performance. Recent Government initiatives in the UK are based on the notion that CPMTs, such as non-financial PIs and benchmarking, will result in improved performance (Ball, 2001; Bowerman and Ball, 2000; Ittner and Larcker, 1998b). Government initiatives and legislation to improve local government performance have also encouraged the use of CMAPs, such as ABC and contemporary budgeting (Anderson, 1998; Gerdin, 2005; Merchant, 1981; Merchant, 1984; Seal, 2003). This study provides an empirical investigation exploring whether local authorities applying CMAP, or the CPMT of benchmarking and RDF, do actually experience improved performance. The findings suggest that there is no direct positive relationship between the extent benchmarking or RDF is used and resulting performance outcome. Although increased use of benchmarking was found to be significantly related to increased financial and non-financial performance outcome, this is only through the indirect effect of the multiple mediating variables. The use of CMAP was not found to be positively related to performance outcome to a significant extent. Indeed, use of CMAP to a greater extent was actually found to significantly reduce financial performance outcome. The study, therefore, contributes to the existing knowledge and theories within local government on how CMAP and CPMT variables impact on performance outcome.

The existing literature suggests that the PMS in public sector organisations should be linked to strategy (Accounts Commission, 1998; Audit Commission, 2000; Audit Commission and IdeA, 2002; Ballantine *et al*., 1998; Flynn and Talbot, 1996; Ghobadian and Ashworth, 1994; HM Treasury *et al*., 2001; Kloot and Martin, 2000). The present study contributes to this existing literature by providing empirical support that there is a significant positive relationship between the extent local authority departments place emphasis on a differentiation strategy and the adoption of CPMTs.

Previous research by Henri (2006b) on the resource-based perspective of strategy provided conclusions on the relationship of the capabilities of market orientation, entrepreneurship, innovation and organisational learning, and MCSs. The present study contributes to the existing literature by extending Henri's (2006b) research to the public sector and English local authorities specifically. Results from the present study confirmed Henri's (2006b) findings of the positive relationship between market orientation and entrepreneurship capabilities and certain performance outcomes. However, some of the study's results regarding English local authorities were found to be contrary to Henri's (2006b) findings, particularly in relation to organisational learning. Such findings that are

contrasting with prior research also make valuable contributions to the existing literature by providing evidence that findings from the private sector may not be completely and directly transferable to the public sector.

Hyvönen (2007) explored the relationship between strategy and contemporary performance measures in the three industries of forest, metal and electronics in Finland. The present study provides support for Hyvönen's (2007) findings but extends the existing literature by confirming the findings in another country and sector; English local authorities.

Preliminary analysis of the study's data set also contributes to the existing knowledge and research in local authorities, by providing empirical support that Porter's (1980) two generic competitive strategies of cost leadership and differentiation may be applied to English local authorities, as proposed by Brignall (1993). Furthermore, the study contributes by the results supporting the previous research in the private sector by Auzair and Langfield-Smith (2005), identifying that local authorities follow both cost leadership and differentiation strategies, rather than these strategies being mutually exclusive.

In sum, the present study combines and tailors prior research on specific variables, building these into an original contingency model which is applied to English local authorities. The study contributes both to contingency research and to the knowledge and understanding of strategy, resource-based strategic capabilities, management accounting and PMTs in English local authorities.

12.4 Practical Implications

The findings from the present study have practical implications for English local authorities and, possibly, to public sector organisations and policy makers more broadly. Ultimately, local authorities are continuously aiming to improve their performance so will be interested in pioneering research that indicates what factors are related to significantly higher performance. This study has explored relationships in local government that have not been explained in previous contingency-based research. Caution must be heeded, though. The significant relationships identified in the present study do not indicate that one variable is causing another to increase, but simply that there is a relationship between the two variables.

Within a society that promotes and encourages new ideas, there have been calls for the public sector "...to be supported in developing a culture where innovation and reflection is

encouraged..." including skills for innovators and innovation-focused managers (Irani and Elliman, 2008: 337). However, innovation in the public sector also needs to be seen in the context of the prescribed assessment regimes, such as CPA. The present study, for example, demonstrates a significant reduction in the overall CPA outcome for local authority departments with higher capabilities in innovation. In contrast, it has been suggested that innovative managers in the public sector are "...charged with promoting change and fostering ideas for the good of the organisation and in the delivery of best value to the citizen and hence tax-payer..." (Irani and Elliman, 2008: 337), suggesting innovation can bring benefits both to an organisation and society more widely. This perhaps identifies broader questions for policy-makers, such as whether inflexible performance assessment regimes may actually penalise local authorities who possess higher capabilities of innovation. For local authorities, more controversially, should they choose to contain innovation in an attempt to perform well on external assessments or recognise the potential other benefits of innovation?

The results from the present study may encourage local authorities to consider increasing their market orientation, with this capability positively associated with UoR, financial and non-financial performance outcome. Slater and Narver (1999) emphasise that being market-oriented need not be expensive. Local authorities should consequently not rule out focusing on being market oriented on the basis of cost alone.

For policy makers more broadly, the findings of the present study may bring into question the success of certain initiatives, including the advantages of adopting recommended practices such as CMAPs and CPMTs and the proposed link of such techniques to performance outcome. The regulation and assessment regime in the public sector has changed since the data for the present study was collected, with CPA being reported for the last time in March 2009 for the financial year 2007/2008 (Audit Commission, 2009). CAA is the new framework for the independent assessment of public services in England, including local authorities, being delivered from 1st April 2009. However, UoR organisational performance assessment will still be reported for English local authorities under CAA (Audit Commission, 2009). The core findings, particularly regarding UoR, financial and non-financial performance outcomes are still deemed relevant to local authorities.

The provision of training on performance related issues was found in the present study to not only be linked to greater use of benchmarking and RDF, but also to have a positive indirect effect on strategic capabilities and financial performance. The importance and potential benefits of training provision should be acknowledged and fully embraced by English local authorities.

12.5 Areas for Future Research

The results of the present study provide a basis for suggestions of areas for future research, some of which will now be explored.

One of the advantages of the approach adopted through contingency theory is that the structured research methodology enables replication. Indeed, the existing research in the area of MCSs has been criticised with findings not being confirmed through repeated studies (Chenhall, 2003). Replication enhances the validity and reliability of the findings, providing a strong basis for further model development (Chenhall and Langfield-Smith, 1998; Lindsay, 1995, cited by Chenhall, 2003). It is, therefore, suggested that future research should replicate the contingency model developed and tested in the present study and further validate the study's findings (Chenhall and Langfield-Smith, 1998). Replicated studies could be directed to testing the contingency model in different sectors, such as the NHS or police authorities in England, or local government in other countries. Such research would further increase our understanding of the study's research variables in a wider and more global context. Alternatively, future research could explore the application of the present study's contingency model or individual variables further within English local government, such as exploring differences or similarities between local authorities by council or department type.

Despite the advantages and insights provided from a functionalist methodology and contingency theory approach, it is acknowledged that empirical research undertaken within any one paradigm provides an incomplete and narrow view of the social world being researched (Gioia and Pitre, 1990; Laughlin, 1995). Further research under an alternative or multiparadigm approach would provide a broader insight into the strategy, management accounting and performance measurement areas within English local government. As Chenhall (2003: 161) concludes, non-functionalist approaches "...can assist in elaborating the traditional contingency-based model..." and "...much can be gained by combining case evidence with surveys within contingency-based frameworks..." (Chenhall, 2003: 160). It may be useful for a single or multiple case study approach to be applied in future research to obtain a more detailed picture to supplement the findings from the cross-sectional view provided by the present study. Longitudinal case studies on individual local authorities would also be an area for future research, in an attempt to further elaborate on MASs and their links to strategy and performance outcome over a period of time.

The focus of the SEM technique adopted in the present study assumes that any relationships between variables are linear in nature. It is recognised that relationships

between certain variables may not be linear or that any linear relationship may only be within a limited relevant range (Baines and Langfield-Smith, 2003; Kline, 2005). The exploration of non-linear relationships between variables within the present study's contingency model would be a further direction for future research.

The research contingency model developed and applied in the present study is complex and includes multiple variables. However, it is acknowledged that there are additional variables that could be incorporated into a revised model for future research, such as the other contingency factors of environment and culture. Additionally, certain variables in the present study could be further developed in subsequent research. For example, future research could extend the element of strategy operationalised in the present study or apply strategy to the organisational, as opposed to departmental, level of analysis. Porter's (1980) strategic typology included in the present study may be criticised as only considering strategic actions and not strategic stance (Boyne and Walker, 2004). Furthermore, future research could distinguish between intended and realised strategy in English local authorities. Future research looking at other elements of strategy in local government such as these would further contribute to the existing knowledge and literature in this area. Focusing on local authorities, future research could also explore alternative measures of performance. The new CAA, for example, might be a useful source for objective performance measures in future research, as well as to enable the extension of the present study's contingency model to other areas of the public sector.

Some of the findings identified within this research also suggest more specific directions for further research. Firstly, the effect of innovation on performance outcome, particularly regarding UoR and non-financial performance, was unexpected and contrary to research from the private sector, as well as being inconsistent with findings associated with entrepreneurship. Further research could be directed to exploring in more detail how and why local authorities are pursuing innovation and the implications of possessing this capability. Similarly, the SEM analysis provided contrasting findings to expectations for the effect of organisational learning on performance outcome. Again, it would be interesting for further research to explore the organisational learning within local authorities and assess how and why such learning is not contributing to improved performance. Case studies at specific local authorities may provide valuable insights.

The provision of performance related training was found to positively affect the use of CPMTs. However, the SEM analysis also identified that such training has significant positive indirect effects on strategic capabilities, CMAPs and financial performance outcome. These findings also highlight the advantages of using SEM which explores such indirect effects by analysing the model as a whole. The results suggest that performance

related training has broad consequences, carrying through indirect effects which could have wide implications. This would be a valuable area for future research to focus.

Finally, it would be interesting for future research to extend the components of CPMTs incorporated in the final SEM analysis of the present study. For example, exploring what the implications are for local authorities utilising the BSC. Further research could also consider examining this issue in other areas of the public sector, particularly as the BSC is being increasingly encouraged to be adopted in the NHS, for example.

Overall, the present study's SEM model was concluded to fit the empirical data well, following modifications. It would, however, be valuable for future research to adopt the final modified SEM model from this research and test it again using SEM, but with a different empirical data set. This would also provide further support for the results and conclusions made from the present study.

12.6 Concluding Remarks

Bringing this study to a close, there are a few concluding comments to be made. Firstly, the overall finding from this research study is that the performance outcome of English local authorities is contingent upon the emphasis placed on pursuing a differentiation or cost leadership strategy, use of benchmarking and RDF CPMTs, CMAPs, strategic capabilities of market orientation, entrepreneurship, innovation and performance-based training.

The study has provided valuable and significant contributions to the contingency and public sector research, particularly through the utilisation of SEM. Though further research would continue to develop the area, results from this study provide important information for management accounting researchers, local government practitioners and policy makers.

Appendices

Appendix A: Research Questionnaire

Improving Local Authority Performance

All responses are completely confidential

Council & Department Information

Q.1 **Please indicate the type of your council:**

- County
- Unitary
- London Borough
- Metropolitan
- District or borough

Q2 **Please select your council's name:** (The council name will only be used to supplement information obtained through this questionnaire with published information such as CPA results and Best Value performance indicators. Council names will be removed following the completion of data collection and prior to any analysis.)

--Click Here--

Q.3 **Please indicate from the following the type(s) of department that most closely relates to your area of responsibility:**

- Finance & Resources
- Adults & Community Services
- Children & Young People
- Housing
- Environment & Regeneration

Planning	☐
Transport & Highways	☐
Leisure & Culture	☐
Corporate Services (e.g. policy, performance, human resources, law)	☐

Approximately how many full-time equivalent employees are there within your department?

Comments
If you would like to make any other comments on this section please use the space provided:

For each question / statement please click the circle that most closely reflects your view

Strategy

Q.4 **To what extent does your department's strategy place emphasis on the following activities?**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Best Value	○	○	○	○	○	○	○
Comprehensive Performance Assessment (CPA)	○	○	○	○	○	○	○
Beacon Council Scheme	○	○	○	○	○	○	○
Other performance initiatives	○	○	○	○	○	○	○

(please specify)

Q.5 **Please indicate the degree of emphasis your department places on the following activities**

	No emphasis 1	2	3	4	5	6	Great emphasis 7
Achieving lower costs of services than other local authorities							
Making services more cost efficient							
Identifying cost savings							
Improving the utilisation of available equipment, services & facilities							
Introducing new services							
Providing services that are better than those of other local authorities or providers							
Offering a broader range of services than other providers or local authorities							
Improving the time it takes to provide services							
Providing high quality services							
Customising services to user needs							
Providing after service support							

Q.6 **To what extent do the following items describe your department?**

	Not at all 1	2	3	4	5	6	Great extent 7
Understand customer needs							
Commitment and orientation to serving customers' needs							
Measure customer satisfaction							
Managers understand how everyone can create value							
Create greater value for customers							

Q.7 **To what extent do the following activities describe your department's entrepreneurship?**

	Not	2	3	4	5	6	Great
Initiate actions to which other organisations respond							

	at all 1						extent 7
Strong tendency to adopt high risk projects							
Dramatic changes in services							
New lines of services							
First organisation to introduce new services or techniques							

Q.8 **To what extent do the following activities describe your department's innovativeness?**

	Not at all 1	2	3	4	5	6	Great extent 7
Management actively seeks innovation and ideas							
Innovation is readily accepted in service or project management							
Technical innovation or research results are readily accepted							
Innovation is perceived as being too risky and is resisted							

Q.9 **To what extent do the following activities describe your department's approach to learning?**

	Not at all 1	2	3	4	5	6	Great extent 7
Ability to learn is the key improvement							
Basic values include learning as a key to improvement							
Once we quit learning we endanger our future							
Employee learning is an investment not an expense							

Comments

If you would like to make any other comments on this section please use the space provided:

Performance Measurement

Q.10 **To what extent does your department *use* the following practices?**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Performance indicators							
Benchmarking							
Balanced scorecard (BSC)							
Results & determinants framework (RDF)							
Other performance measures							

(please specify)

Q.11 **To what extent do you consider the following practices *could be useful* to your department?**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Performance indicators							
Benchmarking							

Balanced scorecard (BSC)	○
Results & determinants framework (RDF)	○
Other performance measures	○
(please specify)	

Q.12 **If performance indicators (PIs) are used, please indicate to what extent your department adopts PIs that:**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Have predominantly financial focus	○	○	○	○	○	○	○
Measure what is easily measurable	○	○	○	○	○	○	○
Are linked to the department's or organisation's strategy	○	○	○	○	○	○	○
Are compared to targets	○	○	○	○	○	○	○
Focus on both financial and non-financial aspects	○	○	○	○	○	○	○
Are locally developed	○	○	○	○	○	○	○
Are set externally	○	○	○	○	○	○	○
Are predominantly quantitative (i.e. number based)	○	○	○	○	○	○	○
Are predominantly qualitative (e.g. opinions, quality of service)	○	○	○	○	○	○	○
Measure the outcome of what is trying to be achieved	○	○	○	○	○	○	○
Measure the ratio between inputs and outputs (efficiency)	○	○	○	○	○	○	○

Q.13 **To what extent does your department:**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Share best practice with other departments (within or outside own council)	○	○	○	○	○	○	○

Use benchmarking groups							
Learn from other council departments (within or outside own council)							
Adopt best practices from other council departments (within or outside own council)							
Consider best practices from sources other than local authorities (e.g. other public or private sector organisations)							

Q.14 **To what extent does your department use performance measures to monitor:**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Your department's strategy							
Financial performance							
Competitiveness							
Quality of service							
Flexibility							
Resource utilisation							
Innovation							
Customer satisfaction							
Key business processes it has identified it needs to be good at							
Department's ability to learn, to cope with change and to improve through its people, systems and infrastructure							

Q.15 **In your department to what extent is the purpose of performance measures perceived as being:**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Monitoring and controlling expenditure and performance? *(control)*							

Accountability of service managers and directors? *(accountability)*							
Decision-making to identify priority areas for action (e.g. service improvement)? *(decision-making)*							

Q.16

To what extent is the purpose of performance measures for your department achieved:

	Not at all 1	2	3	4	5	6	*Great extent* 7
Monitoring and controlling expenditure and performance? *(control)*							
Accountability of service managers and directors? *(accountability)*							
Decision-making to identify priority areas for action (e.g. service improvement)? *(decision-making)*							

Comments

If you would like to make any other comments on this section please use the space provided:

Performance

Q.17

	well below average 1	2	3	*average* 4	5	6	*well above average* 7
Please rate your perceived *overall* performance for your department relative to the national local authority average							

Q.18

	well	2	3	*average*	5	6	*well*
Please rate your perceived *financial* performance for your department							

	below average 1			4			above average 7
	○	○	○	○	○	○	○

Q.19

	under budget 1	2	3	break even 4	5	6	over budget 7
Please rate your department's position in the last financial year (2005-2006):	○	○	○	○	○	○	○

Q.20 **For each measure below please rate your department's overall perceived performance:**

	unsatisfactory 1	2	3	4	5	6	outstanding 7
Number of customer complaints	○	○	○	○	○	○	○
Value for money (quality versus cost)	○	○	○	○	○	○	○
Variety and flexibility of services provided	○	○	○	○	○	○	○
Quality of services provided	○	○	○	○	○	○	○
Average costs of providing services	○	○	○	○	○	○	○
Public satisfaction with the services provided	○	○	○	○	○	○	○

Q.21 **Please rate your own performance on the following items:**

	unsatisfactory 1	2	3	4	5	6	outstanding 7
Planning for my area of responsibility	○	○	○	○	○	○	○
Coordinating my area's activities	○	○	○	○	○	○	○
Evaluating subordinates' activities	○	○	○	○	○	○	○
Investigating issues in my area	○	○	○	○	○	○	○

Supervising staff	
Obtaining and maintaining suitable staff	
Negotiating	
Representing the interests of my area	
Overall performance	

Comments
If you would like to make any other comments on this section please use the space provided:

Implementation Factors

Q.22 **To what extent have the following factors hindered measuring performance or using performance information in your department?**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Difficulty obtaining valid or reliable data							
Difficulty obtaining data in time to be useful							
High cost of collecting data							
Existing information technology not capable of providing data needed							

Q.23 **To what extent during the past 3 years has your department provided, arranged or paid for training that would help you to accomplish the following tasks:**

	Not at all 1	2	3	4	5	6	*Great extent* 7
Set performance goals?							
Develop performance measures?							

Use performance information to make decisions?	○	○	○	○	○	○	○
Link the performance of the department to the achievement of the council's strategic goals?	○	○	○	○	○	○	○

Comments
If you would like to make any other comments on this section please use the space provided:

Management Accounting

Q.24 **To what extent does your department use the following practices to set your budget:**

	Not at all 1	2	3	4	5	6	*Great extent 7*
Based on last year's budget?	○	○	○	○	○	○	○
Based on policy or planned activities?	○	○	○	○	○	○	○
Set from a zero base? *(zero-based budgeting)*	○	○	○	○	○	○	○

Q.25 **To what extent does your department use the following practices to monitor your budget:**

	Not at all 1	2	3	4	5	6	*Great extent 7*
On a cash basis? (cash actually paid out or received)	○	○	○	○	○	○	○
On an accruals basis? (includes debtors and creditors)	○	○	○	○	○	○	○
On a commitment basis? (includes orders)	○	○	○	○	○	○	○

Q.26 **To what extent does your department use the following practices to deal with costing:**

	Not at all 1	2	3	4	5	6	*Great extent 7*
Only variable costs are assigned to products or services (with fixed costs excluded)? *(marginal costing)*	○	○	○	○	○	○	○

	○						○
Overhead costs are divided between departments based on a standard rate? (*absorption costing)*	○	○	○	○	○	○	○
Overhead costs are charged based on the activities that cause the overheads? (*activity-based costing)*	○	○	○	○	○	○	○
All costs related to a project are considered from a project's conception to its completion? (*life cycle costing)*	○	○	○	○	○	○	○
A benchmark cost is adopted as a best practice target, with procedures and service provision altered to achieve this target cost? (*target costing)*	○	○	○	○	○	○	○
Cost information is used to support the setting and achievement of strategic objectives? (*strategic cost management)*	○	○	○	○	○	○	○
Activities are related to the competitive strength of the council or its ability to provide value for money? (*value chain analysis)*	○	○	○	○	○	○	○

Respondent Information

Please provide the following information regarding the person completing the questionnaire

	<30	*30-50*	*>50*
Age *(in years)*	○	○	○

	<1	*1-5*	*6-10*	*11-15*	*16-20*	*21-25*	*>25*
Number of years you have been in your current job	○	○	○	○	○	○	○
Number of years you have been in your current department	○	○	○	○	○	○	○

Comments

If you would like to make any further comments please use the space provided:

Research Results

Please indicate if you would like to receive a summary of the findings from this research:

Yes *No*

Thank you for taking the time to complete this survey. Please send us your responses by clicking on the SUBMIT button below.

Reset Submit

Appendix B: Advance Warning E-mail

Council Performance

Dear Senior Officer

I am writing to make you aware of a research project currently being undertaken which is looking into strategy, performance measurement, management accounting practices and actual performance in English local authorities.

You will shortly be receiving a survey to be completed by Friday 13th October. Your time and views for this valuable research would be very much appreciated.

Additional information on the research is attached. If you have any queries at this stage please do not hesitate to contact me.

Many thanks.

Alexa Brown

Financial Management Researcher

T: 07779 336 198

E: alx-brown@audit-commission.gov.uk

Appendix C: E-mail issuing questionnaire

Council Performance – FOR ACTION

Dear Senior Officer

You may recall I wrote to you a couple of weeks ago explaining that you would shortly be receiving a questionnaire to aid a research project being undertaken. The study is looking into strategy, performance measurement, management accounting practices and actual performance in English local authorities.

Please find attached the questionnaire to be completed by ***Friday 13th October***. **Simply open the attachment to this e-mail, fill in your responses and press the 'submit' button.** The questionnaire includes 26 questions, takes approximately 15-20 minutes to complete and should be returned by ***Friday 13th October***.

Your responses will be treated as ***strictly confidential*** and any information provided will be anonymous in the research analysis and reporting. ***Your time and views for this valuable research would be very much appreciated.***

If you would prefer to print out a copy of the questionnaire to complete, please return it to the address at the bottom of this e-mail.

This questionnaire looks at an individual department and ideally one should be completed for each department within the council. If you recognise that a Director or Head of Department/Service has been omitted from this e-mail please feel free to forward it to them.

Additional information on the research is attached and there is an opportunity to indicate on the questionnaire whether you would like to receive a summary of the findings from this work. If you have any queries please do not hesitate to contact me.

Many thanks.

Alexa Brown

audit commission

Financial Management Researcher
T: 07779 336 198
E: alx-brown@audit-commission.gov.uk

Audit Commission
3rd Floor MECH
County Hall
Bythesea Road
Trowbridge
Wiltshire
BA14 8JY

Appendix D: Letter accompanying questionnaire

***Improving Local Authority Performance*:**
Strategy, Management Accounting and Performance Measurement

Dear Chief Executives, Executive Directors and Heads of Services

Performance in English councils has been under increasing scrutiny over recent years with more intense focus on performance assessment, such as through Best Value and Comprehensive Performance Assessment (CPA) initiatives. This current research project is looking into some of the factors impacting on the performance of councils with questionnaires being sent to the Chief Executives and Directors / Heads of Services of English local authorities.

Information on current practices and perceptions at local authorities in England in relation to strategy, management accounting practices, performance measurement and actual performance is being sought as part of this research. It is intended that the results from this research will inform the debate on improving performance in councils. The results will also contribute to the understanding of the implementation of local government performance initiatives.

Please complete the questionnaire to contribute to this important research – your views are valuable. The questionnaire has been piloted among senior management in local government and has been developed from previous research, legislation and initiatives. Completing the questionnaire and the findings of the research will also hopefully help you in preparing for future CPA and Use of Resources assessments.

The survey is designed to be completed electronically and should be submitted by Friday 13th October 2006. If you would prefer to complete a hard copy of the questionnaire, simply print out the questionnaire and return to the address indicated on the e-mail.

Your responses will be treated as strictly confidential and any information provided will be anonymous in the research analysis and reporting. No individual details or responses will be identified to your Council.

Should you have any queries or concerns about this study or questionnaire please contact Alexa Brown on 07779 336 198.

Many thanks for your time to complete and submit the survey.

Yours sincerely

Alexa Brown

T: 07779 336 198

E: alx-brown@audit-commission.gov.uk

Appendix E: Non-response Bias by Council Type

Questionnaires Issued and Returned

Council Type	Total Questionnaires Issued	Actual completed questionnaires returned (OBSERVED FREQUENCIES)	EXPECTED FREQUENCIES*
County Councils	170	49	41.63
London Boroughs	153	35	37.47
Unitary	218	47	53.39
Districts	1440	357	352.66
Metropolitan	175	40	42.85
TOTAL	***2156***	***528***	***528***

Response Rates

Council Type	Questionnaires returned	Questionnaires issued	Response rate
Departments	528	2156	24.49%

* Expected frequencies for returned questionnaires calculated based on response rate and assuming no difference by council type.

Results:
$X^2 = 2.48$
Degrees of freedom = 4
Significant at both 5% and 1% levels.

Conclude that there is no significant difference between the number of questionnaires returned by council type.

Appendix F: Non-response Bias by Variable

Strategic Typology

Question		T value	Significance
Reference	Description		
5a	Achieving lower costs of services than other local authorities	1.033	0.303
5b	Making services more cost efficient	0.774	0.440
5c	Identifying cost savings	-1.033	0.302
5d	Improving the utilisation of available equipment, services and facilities	-1.086	0.279
5e	Introducing new services	0.113	0.910
5f	Providing services that are better than those of other local authorities or providers	-0.383	0.702
5g	Offering a broader range of services than other providers or local authorities	-1.307	0.192
5h	Improving the time it takes to provide services	0.036	0.971
5i	Providing high quality services	-0.830	0.407
5j	Customising services to user needs	0.608	0.543
5k	Providing after service support	0.298	0.766

Strategic Capabilities

Question		T value	Significance
Reference	Description		
6a	Understand customer needs	0.457	0.648
6b	Commitment and orientation to serving customers' needs	0.069	0.945
6c	Measure customer satisfaction	0.266	0.790
6d	Managers understand how everyone can create value	0.419	0.676
6e	Create greater value for customers	0.116	0.908
7a	Initiate actions to which other organisations respond	-0.362	0.718
7b	Strong tendency to adopt high risk projects	0.000	1.000
7c	Dramatic changes in services	1.009	0.314
7d	New lines of services	0.276	0.783
7e	First organisation to introduce new services or techniques	0.109	0.913
8a	Management actively seeks innovation and ideas	-1.312	0.191
8b	Innovation is readily accepted in service or project management	-1.486	0.139
8c	Technical innovation and research results are readily accepted	-0.292	0.770
8d	Innovation is perceived as being too risky and is resisted	-0.252	0.801
9a	Ability to learn is the key improvement	1.531	0.127
9b	Basic values include learning as a key to improvement	0.202	0.840
9c	Once we quit learning we endanger our future	1.083	0.280
9d	Employee learning is an investment not an expense	-1.593	0.112

Performance Measurement Techniques

Question		T value	Significance
Reference	**Description**		
To what extent does your council *use* the following practices?			
10a	Performance Indicators	-1.786	0.075
10b	Benchmarking	0.077	0.939
10c	Balanced scorecard (BSC)	0.096	0.924
10d	Results & determinants framework (RDF)	0.209	0.835
10e	Other performance measures	0.913	0.363
If performance indicators (PIs) are used, please indicate to what extent your council adopts PIs that:			
12a	Have predominantly financial focus	1.163	0.246
12b	Measure what is easily measurable	0.440	0.660
12c	Are linked to the organisation's strategy	0.174	0.862
12d	Are compared to targets	-0.816	0.415
12e	Focus on both financial and non-financial aspects	-1.035	0.302
12f	Are locally developed	-0.584	0.560
12g	Are set externally	-0.269	0.789
12h	Are predominantly quantitative (i.e. number based)	-2.769	0.006
12i	Are predominantly qualitative (e.g. opinions, quality of service)	1.617	0.107
12j	Measure the outcome of what is trying to be achieved	-0.148	0.882
12k	Measure the ratio between inputs and outputs (efficiency)	0.738	0.461
To what extent does your council:			
13a	Share best practice with other departments (within or outside own council)	-0.247	0.805
13b	Use benchmarking groups	1.319	0.188
13c	Learn from other council departments (within or outside own council)	0.628	0.530
13d	Adopt best practices from other council departments (within or outside own council)	0.140	0.889
13e	Consider best practices from sources other than local authorities (e.g. other public or private sector organisations)	0.259	0.796
To what extent does your council use performance measures to monitor:			
14a	Your council's strategy	-0.150	0.881
14b	Financial performance	-1.170	0.243
14c	Competitiveness	0.949	0.344
14d	Quality of service	-1.054	0.293
14e	Flexibility	-0.769	0.442
14f	Resource utilisation	0.519	0.604
14g	Innovation	0.595	0.552
14h	Customer satisfaction	-0.151	0.880
14i	Key business processes it has identified it needs to be good at	0.628	0.530
14j	Department's ability to learn, to cope with change and to improve through its people, systems and infrastructure	0.992	0.322

Implementation Factors

Question		T value	Significance
Reference	Description		
To what extent have the following factors hindered measuring performance or using performance information in your council?			
Q22a	Difficulty obtaining valid or reliable data	0.734	0.463
Q22b	Difficulty obtaining data in time to be useful	1.990	0.048
Q22c	High cost of collecting data	-0.207	0.836
Q22d	Existing information technology not capable of providing data needed	-0.611	0.532
To what extent during the past 3 years has your council provided, arranged or paid for training that would help you to accomplish the following tasks:			
Q23a	Set performance goals?	-0.444	0.658
Q23b	Develop performance measures?	-0.465	0.642
Q23c	Use performance information to make decisions?	-0.302	0.763
Q23d	Link the performance of the council to the achievement of the council's strategic goals?	-0.261	0.794

Management Accounting Practices

Question		T value	Significance
Reference			
To what extent does your council use the following practices to set your budget:			
24a	Based on last year's budget?	0.466	0.642
24b	Based on policy or planned activities?	1.023	0.307
24c	Set from a zero base? *(zero-based budgeting)*	-0.725	0.469
To what extent does your council use the following practices to monitor your budget:			
25a	On a cash basis? (cash actually paid out or received)	0.588	0.557
25b	On an accruals basis? (includes debtors and creditors)	0.352	0.725
25c	On a commitment basis? (includes orders)	-0.642	0.521
To what extent does your council use the following practices to deal with costs:			
26a	Only variable costs are assigned to products or services (with fixed costs excluded)? *(marginal costing)*	-2.684	0.008
26b	Overhead costs are divided between departments based on a standard rate? (*absorption costing)*	0.565	0.572
26c	Overhead costs are charged based on the activities that cause the overheads? (*activity-based costing)*	-0.075	0.940
26d	All costs related to a project are considered from a project's conception to its completion? (*life cycle costing)*	0.637	0.525
26e	A benchmark cost is adopted as a best practice target, with procedures and service provision altered to achieve this target cost? (*target costing)*	-1.118	0.265
26f	Cost information is used to support the setting and achievement of strategic objectives? (*strategic cost management)*	0.527	0.598
26g	Activities are related to the competitive strength of the council or its ability to provide value for money? (*value chain analysis)*	1.482	0.140

Performance Outcome

Question		T value	Significance
Reference	Description		
17	Please rate your perceived overall performance for your council relative to the national local authority average	-0.264	0.792
18	Please rate your perceived financial performance for your council	-1.626	0.105
20a	Number of customer complaints	-1.713	0.088
20b	Value for money (quality versus cost)	-0.763	0.446
20c	Variety and flexibility of services provided	0.062	0.951
20d	Quality of services provided	-1.494	0.136
20e	Average costs of providing services	-0.376	0.707
20f	Public satisfaction with the services provided	-1.894	0.059

Respondent Details

Question	T value	Significance
Age	0.570	0.569
Number of years in current job	0.750	0.454
Number of years in current department	0.510	0.610

Appendix G: Summary of Raw Data

Strategic Typology

Question		Frequency of Responses						
Reference	**Description**	**1 Not at all**	**2**	**3**	**4**	**5**	**6**	**7 Great Extent**
5a	Achieving lower costs of services than other local authorities	15	45	89	143	134	60	32
5b	Making services more cost efficient	0	0	5	32	113	213	161
5c	Identifying cost savings	0	0	11	45	110	203	151
5d	Improving the utilisation of available equipment, services and facilities	0	3	19	60	146	187	108
5e	Introducing new services	8	37	81	110	149	94	35
5f	Providing services that are better than those of other local authorities or providers	7	18	44	92	144	142	74
5g	Offering a broader range of services than other providers or local authorities	27	86	89	142	105	52	17
5h	Improving the time it takes to provide services	1	3	15	59	162	176	102
5i	Providing high quality services	0	1	3	14	51	203	251
5j	Customising services to user needs	0	3	10	46	119	202	142
5k	Providing after service support	6	26	44	130	148	120	50

Strategic Capabilities

Question		Frequency of Responses						
Reference	**Description**	**1 Not at all**	**2**	**3**	**4**	**5**	**6**	**7 Great Extent**
6a	Understand customer needs	0	2	4	35	144	239	99
6b	Commitment and orientation to serving customers' needs	0	0	1	23	121	240	134
6c	Measure customer satisfaction	0	5	17	86	171	158	82
6d	Managers understand how everyone can create value	1	6	23	110	211	125	45
6e	Create greater value for customers	0	3	19	81	174	183	63
7a	Initiate actions to which other organisations respond	4	20	39	91	192	129	44
7b	Strong tendency to adopt high risk projects	26	80	109	135	119	41	9
7c	Dramatic changes in services	11	51	101	126	135	67	29
7d	New lines of services	12	47	86	132	162	65	17
7e	First organisation to introduce new services or techniques	8	53	82	110	135	93	36
8a	Management actively seeks innovation and ideas	0	1	8	52	164	203	93
8b	Innovation is readily accepted in service or project management	1	4	19	82	181	185	48
8c	Technical innovation and research results are readily accepted	0	3	35	111	186	144	39
8d	Innovation is perceived as being too risky and is resisted	94	187	130	71	29	7	1
9a	Ability to learn is the key improvement	0	1	9	65	164	195	89
9b	Basic values include learning as a key to improvement	0	3	8	60	165	203	85
9c	Once we quit learning we endanger our future	4	7	17	53	115	208	119
9d	Employee learning is an investment not an expense	0	2	9	29	99	212	173

Performance Measurement Techniques

Question		Frequency of Responses						
Reference	**Description**	**1 Not at all**	**2**	**3**	**4**	**5**	**6**	**7 Great Extent**
To what extent does your council *use* the following practices?								
10a	Performance Indicators	3	1	12	10	39	142	317
10b	Benchmarking	4	16	30	80	155	139	99
10c	Balanced scorecard (BSC)	179	77	51	68	53	52	30
10d	Results & determinants framework (RDF)	313	71	37	47	18	7	5
10e	Other performance measures	42	11	8	25	37	41	52
If performance indicators (PIs) are used, please indicate to what extent your council adopts PIs that:								
12a	Have predominantly financial focus	29	55	81	151	104	66	30
12b	Measure what is easily measurable	9	33	63	99	139	110	62
12c	Are linked to the organisation's strategy	2	6	8	28	88	205	182
12d	Are compared to targets	3	3	4	13	55	195	249
12e	Focus on both financial and non-financial aspects	9	8	19	43	82	181	179
12f	Are locally developed	5	18	30	96	155	142	79
12g	Are set externally	17	21	24	72	104	158	127
12h	Are predominantly quantitative (i.e. number based)	2	7	12	77	132	206	88
12i	Are predominantly qualitative (e.g. opinions, quality of service)	14	77	128	153	95	34	14
12j	Measure the outcome of what is trying to be achieved	2	17	33	84	140	166	79
12k	Measure the ratio between inputs and outputs (efficiency)	40	80	95	124	107	49	24
To what extent does your council:								
13a	Share best practice with other departments (within or outside own council)	0	8	25	78	189	135	88
13b	Use benchmarking groups	12	52	60	97	158	91	51
13c	Learn from other council departments (within or outside own council)	0	3	22	75	179	178	63
13d	Adopt best practices from other council departments (within or outside own council)	0	7	18	80	171	182	63

Question		Frequency of Responses						
Reference	**Description**	**1 Not at all**	**2**	**3**	**4**	**5**	**6**	**7 Great Extent**
13e	Consider best practices from sources other than local authorities (e.g. other public or private sector organisations)	5	36	68	95	151	135	32
To what extent does your council use performance measures to monitor:								
14a	Your council's strategy	4	14	28	60	121	185	109
14b	Financial performance	6	18	28	53	109	187	120
14c	Competitiveness	21	63	92	122	116	72	30
14d	Quality of service	3	12	24	76	138	201	68
14e	Flexibility	44	78	111	146	89	35	14
14f	Resource utilisation	15	43	72	103	144	109	34
14g	Innovation	53	98	103	125	82	47	11
14h	Customer satisfaction	3	14	26	55	133	192	98
14i	Key business processes it has identified it needs to be good at	11	47	41	100	129	129	51
14j	Department's ability to learn, to cope with change and to improve through its people, systems and infrastructure	21	80	77	105	114	85	27

Implementation Factors

Question		Frequency of Responses						
Reference	**Description**	**1 Not at all**	**2**	**3**	**4**	**5**	**6**	**7 Great Extent**
To what extent have the following factors hindered measuring performance or using performance information in your council?								
Q22a	Difficulty obtaining valid or reliable data	29	78	72	93	145	73	32
Q22b	Difficulty obtaining data in time to be useful	34	83	78	102	131	73	21
Q22c	High cost of collecting data	38	86	94	120	111	56	14
Q22d	Existing information technology not capable of providing data needed	42	113	84	103	96	61	21
To what extent during the past 3 years has your council provided, arranged or paid for training that would help you to accomplish the following tasks:								
Q23a	Set performance goals?	36	39	54	98	151	99	34
Q23b	Develop performance measures?	37	32	55	102	142	112	32
Q23c	Use performance information to make decisions?	34	36	49	87	161	107	35
Q23d	Link the performance of the council to the achievement of the council's strategic goals?	27	28	36	86	134	129	71

Management Accounting Practices

Question		Frequency of Responses						
Reference	**Description**	**1 Not at all**	**2**	**3**	**4**	**5**	**6**	**7 Great Extent**
To what extent does your council use the following practices to set your budget:								
24a	Based on last year's budget?	6	17	32	68	149	168	77
24b	Based on policy or planned activities?	10	12	25	62	149	183	79
24c	Set from a zero base? *(zero-based budgeting)*	211	129	45	43	36	32	10
To what extent does your council use the following practices to monitor your budget:								
25a	On a cash basis? (cash actually paid out or received)	60	61	25	61	99	122	71
25b	On an accruals basis? (includes debtors and creditors)	33	26	46	68	112	116	95
25c	On a commitment basis? (includes orders)	28	23	23	58	105	155	120
To what extent does your council use the following practices to deal with costs:								
26a	Only variable costs are assigned to products or services (with fixed costs excluded)? *(marginal costing)*	151	119	58	73	41	18	2
26b	Overhead costs are divided between departments based on a standard rate? (*absorption costing)*	69	86	42	63	89	85	39
26c	Overhead costs are charged based on the activities that cause the overheads? (*activity-based costing)*	28	68	35	73	114	103	57
26d	All costs related to a project are considered from a project's conception to its completion? (*life cycle costing)*	19	64	65	83	111	92	43
26e	A benchmark cost is adopted as a best practice target, with procedures and service provision altered to achieve this target cost? (*target costing)*	126	129	77	86	36	13	4
26f	Cost information is used to support the setting and achievement of strategic objectives? (*strategic cost management)*	33	62	45	96	118	90	27
26g	Activities are related to the competitive strength of the council or its ability to provide value for money? (*value chain analysis)*	95	90	67	99	62	45	10

Performance Outcome

Question		Frequency of Responses						
Reference	**Description**	**1 Well below average**	**2**	**3**	**4**	**5**	**6**	**7 Well above average**
17	Please rate your perceived overall performance for your council relative to the national local authority average	2	7	22	79	201	162	49
18	Please rate your perceived financial performance for your council	3	4	18	127	166	151	53
20a	Number of customer complaints	3	12	27	98	182	159	42
20b	Value for money (quality versus cost)	2	5	33	96	199	153	34
20c	Variety and flexibility of services provided	2	8	31	113	192	153	19
20d	Quality of services provided	1	5	9	64	189	225	30
20e	Average costs of providing services	4	8	54	156	161	118	16
20f	Public satisfaction with the services provided	2	4	24	83	205	184	15

Performance Outcome (continued)

Question		Frequency of Responses			
Reference	**Description**	**1**	**3**	**5**	**7**
N/A[44]	UoR – FR	42	227	222	8
N/A	UoR – FM	75	174	245	5
N/A	UoR – FS	41	213	242	3
N/A	UoR – IC	50	308	136	5
N/A	UoR – VFM	39	237	188	35

Question		Frequency of Responses						
Reference	**Description**	**1**	**2.5**	**3**	**4**	**5**	**5.5**	**7**
N/A	CPA	13	38	54	110	78	138	76

Note: CPA and UoR scores were amended to fit a 1 to 7 scale for consistency with the other observed variables obtained via the research questionnaire.

Amended scores of 1, 2, 3 and 4 to 1, 3, 5 & 7

Categories of poor, weak, fair, good & excellent changed to be 1, 2, 5, 4, 5.5 and 7 to be consistent with 7 point scale

[44] The UoR and CPA data was collated from the Audit Commission's website as an objective measure of performance, rather than from the questionnaire. See Chapter 6 for more detail.

Department Size

Item	Frequency						
	<25	25-50	51-100	101-200	201-500	501-1000	>1000
Approximate number of full-time equivalent employees within department	83	91	83	74	61	46	36

Respondent Details

Respondent Age	Frequency		
	< 30 years	30-50 years	>50 years
	1	299	203

Item	Frequency (in years)						
	<1	1-5	6-10	11-15	16-20	21-25	>25
Number of years in current job	71	281	93	35	26	5	9
Number of years in current department	47	205	83	45	60	24	27

Appendix H: Descriptive Statistics and Correlation Matrices

Strategic Typology: Cost Leadership

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
Q5a	Achieving lower costs of services than other local authorities	518	1	7	4.24	1.415	4
Q5b	Making services more cost efficient	524	3	7	5.94	0.923	6
Q5c	Identifying cost savings	520	3	7	5.84	1.008	6
Q5d	Improving the utilisation of available equipment, services & facilities	523	2	7	5.57	1.085	6

Question Number (Appendix A)	Question Narrative	Q5a	Q5b	Q5c	Q5d
Q5a	Achieving lower costs of services than other local authorities	1.000	0.336**	0.373**	0.122**
Q5b	Making services more cost efficient	0.336**	1.000	0.521**	0.426**
Q5c	Identifying cost savings	0.373**	0.521**	1.000	0.355**
Q5d	Improving the utilisation of available equipment, services & facilities	0.122**	0.426**	0.355**	1.000

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

Strategic Typology: Differentiation

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
Q5e	Introducing new services	514	1	7	4.51	1.401	5
Q5f	Providing services that are better than those of other local authorities or providers	521	1	7	5.05	1.372	5
Q5g	Offering a broader range of services than other providers or local authorities	518	1	7	3.84	1.478	4
Q5h	Improving the time it takes to provide services	518	1	7	5.54	1.074	6
Q5i	Providing high quality services	523	2	7	6.30	0.822	6
Q5j	Customising services to user needs	522	2	7	5.79	1.036	6
Q5k	Providing after service support	524	1	7	4.81	1.338	5

Differentiation Correlation Matrix

Question Number (Appendix A)	Question Narrative	Q5e	Q5f	Q5g	Q5h	Q5i	Q5j	Q5k
Q5e	Introducing new services	1.000	0.278**	0.489**	0.200**	0.240**	0.241**	0.293**
Q5f	Providing services that are better than those of other local authorities or providers	0.278**	1.000	0.476**	0.232**	0.344**	0.177**	0.211**
Q5g	Offering a broader range of services than other providers or local authorities	0.489**	0.476**	1.000	0.179**	0.242**	0.235**	0.329**
Q5h	Improving the time it takes to provide services	0.200**	0.232**	0.179**	1.000	0.362**	0.289**	0.278**
Q5i	Providing high quality services	0.240**	0.344**	0.242**	0.362**	1.000	0.515**	0.420**
Q5j	Customising services to user needs	0.241**	0.177**	0.235**	0.289**	0.515**	1.000	0.499**
Q5k	Providing after service support	0.293**	0.211**	0.329**	0.278**	0.420**	0.499**	1.000

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

Resource-Based Strategy: Market Orientation

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
Q6a	Understand customer needs	523	2	7	5.74	0.893	6
Q6b	Commitment and orientation to serving customers' needs	519	3	7	5.93	0.826	6
Q6c	Measure customer satisfaction	519	2	7	5.36	1.092	5
Q6d	Managers understand how everyone can create value	521	1	7	5.07	1.051	5
Q6e	Create greater value for customers	523	2	7	5.35	1.032	5

Question Number (Appendix A)	Question Narrative	Q6a	Q6b	Q6c	Q6d	Q6e
Q6a	Understand customer needs	1.000	0.644**	0.425**	0.433**	0.482**
Q6b	Commitment and orientation to serving customers' needs	0.644**	1.000	0.463**	0.425**	0.500**
Q6c	Measure customer satisfaction	0.425**	0.463**	1.000	0.472**	0.471**
Q6d	Managers understand how everyone can create value	0.433**	0.425**	0.472**	1.000	0.617**
Q6e	Create greater value for customers	0.482**	0.500**	0.471**	0.617**	1.000

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

Resource-Based Strategy: Entrepreneurship

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
Q7a	Initiate actions to which other organisations respond	519	1	7	4.95	1.238	5
Q7b	Strong tendency to adopt high risk projects	519	1	7	3.77	1.389	4
Q7c	Dramatic changes in services	520	1	7	4.23	1.416	4
Q7d	New lines of services	521	1	7	4.24	1.334	4
Q7e	First organisation to introduce new services or techniques	517	1	7	4.42	1.464	5

Question Number (Appendix A)	Question Narrative	Q7a	Q7b	Q7c	Q7d	Q7e
Q7a	Understand customer needs	1.00	0.475**	0.393**	0.448**	0.496**
Q7b	Commitment and orientation to serving customers' needs	0.475**	1.000	0.517**	0.318**	0.394**
Q7c	Measure customer satisfaction	0.393**	0.517**	1.000	0.454**	0.373**
Q7d	Managers understand how everyone can create value	0.448**	0.381**	0.454**	1.000	0.500**
Q7e	Create greater value for customers	0.496**	0.394**	0.373**	0.500**	1.000

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

Resource-Based Strategy: Innovation

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
Q8a	Management actively seeks innovation and ideas	521	2	7	5.61	0.955	6
Q8b	Innovation is readily accepted in service or project management	520	1	7	5.28	1.026	5
Q8c	Technical innovation and research results are readily accepted	518	2	7	5.06	1.056	5
Q8d Reversed	Innovation is perceived as being too risky and is resisted	519	1	7	5.43	1.191	6

Question Number (Appendix A)	Question Narrative	Q8a	Q8b	Q8c	Q8d Reversed
Q8a	Management actively seeks innovation and ideas	1.000	0.636**	0.520**	0.344**
Q8b	Innovation is readily accepted in service or project management	0.636**	1.000	0.701**	0.409**
Q8c	Technical innovation and research results are readily accepted	0.520**	0.701**	1.000	0.395**
Q8d Reversed	Innovation is perceived as being too risky and is resisted	0.344**	0.409**	0.395**	1.000

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

Resource-Based Strategy: Organisational Learning

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
Q9a	Ability to learn is the key improvement	523	2	7	5.55	0.982	6
Q9b	Basic values include learning as a key to improvement	524	2	7	5.55	0.981	6
Q9c	Once we quit learning we endanger our future	523	1	7	5.62	1.186	6
Q9d	Employee learning is an investment not an expense	524	2	7	5.96	0.978	6

Question Number (Appendix A)	Question Narrative	Q9a	Q9b	Q9c	Q9d
Q9a	Ability to learn is the key improvement	1.000	0.694**	0.536**	0.559**
Q9b	Basic values include learning as a key to improvement	0.694**	1.000	0.542**	0.600**
Q9c	Once we quit learning we endanger our future	0.536**	0.542**	1.000	0.538**
Q9d	Employee learning is an investment not an expense	0.559**	0.600**	0.538**	1.000

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

Management Accounting Practices

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
To what extent does your council use the following practices to set your budget:							
24a	Based on last year's budget?	517	1	7	5.22	1.317	5
24b	Based on policy or planned activities?	520	1	7	5.29	1.305	6
24c	Set from a zero base? (zero-based budgeting)	506	1	7	2.41	1.683	2
To what extent does your council use the following practices to monitor your budget:							
25a	On a cash basis? (cash actually paid out or received)	499	1	7	4.46	1.969	5
25b	On an accruals basis? (includes debtors and creditors)	496	1	7	4.87	1.742	5
25c	On a commitment basis? (includes orders)	512	1	7	5.21	1.665	6
To what extent does your council use the following practices to deal with costs:							
26a	Only variable costs are assigned to products or services (with fixed costs excluded)? (marginal costing)	462	1	7	2.56	1.519	2
26b	Overhead costs are divided between departments based on a standard rate? (absorption costing)	473	1	7	3.90	1.943	4
26c	Overhead costs are charged based on the activities that cause the overheads? (activity-based costing)	478	1	7	4.49	1.762	5
26d	All costs related to a project are considered from a project's conception to its completion? (life cycle costing)	477	1	7	4.36	1.649	5
26e	A benchmark cost is adopted as a best practice target, with procedures and service provision altered to achieve this target cost? (target costing)	471	1	7	2.64	1.447	2
26f	Cost information is used to support the setting and achievement of strategic objectives? (strategic cost management)	471	1	7	4.24	1.653	4
26g	Activities are related to the competitive strength of the council or its ability to provide value for money? (value chain analysis)	468	1	7	3.25	1.702	3

MAP Correlation Matrix

Question Number (Appendix A)	24a	24b	24c	25a	25b	25c	26a	26b	26c	26d	26e	26f	26g
24a	1.000	-0.125**	-0.278**	0.141**	0.080	0.005	-0.029	0.161**	0.003	-0.002	-0.067	-0.176**	-0.119*
24b	-0.125**	1.000	0.164**	0.140**	0.138**	0.150**	0.045	-0.065	0.132**	0.313**	0.127**	0.308**	0.198**
24c	-0.278**	0.164**	1.000	0.035	0.126**	0.161**	0.047	-0.052	0.060	0.030	0.167**	0.116*	0.119*
25a	0.141**	0.140**	0.035	1.000	0.049	-0.087	0.126**	0.045	0.075	0.056	0.073	0.069	0.070
25b	0.808	0.138**	0.126**	0.049	1.000	0.291**	-0.017	0.094*	0.145**	0.124**	0.070	0.073	0.097*
25c	0.005	0.150**	0.161**	-0.087	0.291**	1.000	-0.097*	-0.077	0.078	0.232**	0.100*	0.122**	0.095*
26a	-0.029	0.045	0.047	0.126**	-0.017	-0.097*	1.000	0.142**	-0.075	0.023	0.268**	0.059	0.130**
26b	0.161**	-0.065	-0.052	0.045	0.094*	-0.077	0.142**	1.000	-0.453**	-0.140**	0.006	-0.090	-0.068
26c	0.003	0.132**	0.060	0.075	0.145**	0.078	-0.075	-0.453**	1.000	0.280**	-0.037	0.176**	0.102*
26d	-0.002	0.313**	0.030	0.056	0.124**	0.232**	0.023	-0.140**	0.280**	1.000	0.269**	0.408**	0.383**
26e	-0.067	0.127**	0.167**	0.073	0.070	0.100*	0.268**	0.006	-0.037	0.269**	1.000	0.352**	0.442**
26f	-0.176**	0.308**	0.116*	0.069	0.073	0.122**	0.059	-0.090	0.176**	0.408**	0.352**	1.000	0.509**
26g	-0.119*	0.198**	0.119*	0.070	0.097*	0.095*	0.130**	-0.068	0.102*	0.383**	0.442**	0.509**	1.000

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

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

Implementation Factors: Data Limitations

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
To what extent have the following factors hindered measuring performance or using performance information in your council?							
Q22a	Difficulty obtaining valid or reliable data	522	1	7	4.14	1.616	4
Q22b	Difficulty obtaining data in time to be useful	522	1	7	3.99	1.596	4
Q22c	High cost of collecting data	519	1	7	3.78	1.532	4
Q22d	Existing information technology not capable of providing data needed	520	1	7	3.70	1.641	4

Question Number (Appendix A)	Question Narrative	Q22a	Q22b	Q22c	Q22d
Q22a	Difficulty obtaining valid or reliable data	1.000	0.784**	0.516**	0.478**
Q22b	Difficulty obtaining data in time to be useful	0.784**	1.000	0.548**	0.481**
Q22c	High cost of collecting data	0.516**	0.548**	1.000	0.478**
Q22d	Existing information technology not capable of providing data needed	0.478**	0.481**	0.478**	1.000

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

Implementation Factors: Training

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
To what extent during the past 3 years has your council provided, arranged or paid for training that would help you to accomplish the following tasks:							
Q23a	Set performance goals?	511	1	7	4.41	1.596	5
Q23b	Develop performance measures?	512	1	7	4.45	1.588	5
Q23c	Use performance information to make decisions?	509	1	7	4.50	1.583	5
Q23d	Link the performance of the council to the achievement of the council's strategic goals?	511	1	7	4.85	1.606	5

Question Number (Appendix A)	Question Narrative	Q23a	Q23b	Q23c	Q23d
Q23a	Set performance goals?	1.000	0.889**	0.815**	0.732**
Q23b	Develop performance measures?	0.889**	1.000	0.868**	0.734**
Q23c	Use performance information to make decisions?	0.815**	0.868**	1.000	0.804**
Q23d	Link the performance of the council to the achievement of the council's strategic goals?	0.732**	0.734**	0.804**	1.000

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

PMS Component 1

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
To what extent does your council *use* the following practices?							
Q10c	Balanced scorecard (BSC)	510	1	7	3.03	1.992	2
Q10d	Results & determinants framework (RDF)	498	1	7	1.85	1.365	1
If performance indicators (PIs) are used, please indicate to what extent your council adopts PIs that:							
Q12a	Have predominantly financial focus	516	1	7	4.09	1.524	4
Q12e	Focus on both financial and non-financial aspects	521	1	7	5.76	1.336	6
Q12i	Are predominantly qualitative (e.g. opinions, quality of service)	515	1	7	3.77	1.317	4
Q12k	Measure the ratio between inputs and outputs (efficiency)	519	1	7	3.81	1.569	4
To what extent does your department:							
Q13e	Consider best practices from sources other than local authorities (e.g. other public or private sector organisations)	522	1	7	4.69	1.375	5
To what extent does your council use performance measures to monitor:							
Q14a	Your department's strategy	521	1	7	5.44	1.303	6
Q14b	Financial performance	516	1	7	5.46	1.372	6
Q14c	Competitiveness	522	1	7	4.13	1.525	4
Q14d	Quality of service	517	1	7	5.32	1.199	6
Q14e	Flexibility	520	1	7	3.62	1.459	4
Q14f	Resource utilisation	519	1	7	4.50	1.478	5
Q14g	Innovation	521	1	7	3.52	1.536	4
Q14h	Customer satisfaction	508	1	7	5.44	1.254	6
Q14i	Key business processes it has identified it needs to be good at	509	1	7	4.73	1.512	5
Q14j	Department's ability to learn, to cope with change and to improve through its people, systems and infrastructure	442	1	7	4.13	1.584	4

PMS Component 1

Question Number (Appendix A)	Q10c	Q10d	Q12a	Q12e	Q12i	Q12k	Q13e	Q14a	Q14b	Q14c	Q14d	Q14e	Q14f	Q14g	Q14h	Q14i	Q14j
Q10c	1.000	0.443**	0.139**	0.198**	0.106*	0.213**	0.167**	0.200**	0.230**	0.266**	0.161**	0.312**	0.240**	0.265**	0.163**	0.211**	0.227**
Q10d	0.443**	1.000	0.220**	0.123**	0.258**	0.322**	0.165**	0.115*	0.196**	0.270**	0.145**	0.327**	0.255**	0.303**	0.119**	0.239**	0.282**
Q12a	0.139**	0.220**	1.000	0.308**	0.225**	0.330**	0.127**	0.139**	0.448**	0.325**	0.183**	0.271**	0.373**	0.254**	0.159**	0.179**	0.284**
Q12e	0.198**	0.123**	0.308**	1.000	0.225**	0.368**	0.154**	0.286**	0.468**	0.295**	0.334**	0.262**	0.427**	0.261**	0.327**	0.233**	0.328**
Q12i	0.106*	0.258**	0.225**	0.225**	1.000	0.348**	0.241**	0.228**	0.129**	0.275**	0.303**	0.310**	0.258**	0.325**	0.336**	0.237**	0.229**
Q12k	0.213**	0.322**	0.330**	0.368**	0.348**	1.000	0.306**	0.247**	0.384**	0.452**	0.279**	0.407**	0.494**	0.442**	0.277**	0.303**	0.389**
Q13e	0.167**	0.165**	0.127**	0.154**	0.241**	0.306**	1.000	0.224**	0.211**	0.265**	0.255**	0.323**	0.249**	0.341**	0.274**	0.228**	0.297**
Q14a	0.200**	0.115*	0.139**	0.286**	0.228**	0.247**	0.224**	1.000	0.453**	0.324**	0.422**	0.277**	0.363**	0.297**	0.442**	0.341**	0.328**
Q14b	0.230**	0.196**	0.448**	0.468**	0.129**	0.384**	0.211**	0.453**	1.000	0.453**	0.374**	0.299**	0.538**	0.277**	0.349**	0.299**	0.355**
Q14c	0.266**	0.270**	0.325**	0.295**	0.275**	0.452**	0.265**	0.324**	0.453**	1.000	0.473**	0.526**	0.503**	0.520**	0.371**	0.376**	0.391**
Q14d	0.161**	0.145**	0.183**	0.334**	0.303**	0.279**	0.255**	0.422**	0.374**	0.473**	1.000	0.410**	0.471**	0.380**	0.653**	0.357**	0.373**
Q14e	0.312**	0.327**	0.271**	0.262**	0.310**	0.407**	0.323**	0.277**	0.299**	0.526**	0.410**	1.000	0.579**	0.698**	0.376**	0.461**	0.510**
Q14f	0.240**	0.255**	0.373**	0.427**	0.258**	0.494**	0.249**	0.363**	0.538**	0.503**	0.471**	0.579**	1.000	0.527**	0.371**	0.455**	0.485**
Q14g	0.265**	0.303**	0.254**	0.261**	0.325**	0.442**	0.341**	0.297**	0.277**	0.520**	0.380**	0.698**	0.527**	1.000	0.324**	0.416**	0.540**
Q14h	0.163**	0.119**	0.159**	0.327**	0.336**	0.277**	0.274**	0.442**	0.349**	0.371**	0.653**	0.376**	0.371**	0.324**	1.000	0.315**	0.286**
Q14i	0.211**	0.239**	0.179**	0.233**	0.237**	0.303**	0.228**	0.341**	0.299**	0.376**	0.357**	0.461**	0.455**	0.416**	0.315**	1.000	0.443
Q14j	0.227**	0.282**	0.284**	0.328**	0.229**	0.389**	0.297**	0.328**	0.355**	0.391**	0.373**	0.510**	0.485**	0.540**	0.286**	0.443**	1.000

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

PMS Component 2

Question Number (Appendix A)	Question Narrative	N	Min	Max	Mean	S.D.	Median
To what extent does your department *use* the following practices?							
Q10a	Performance indicators	524	1	7	6.39	0.994	7
Q10b	Benchmarking	523	1	7	5.25	0.320	5
If performance indicators (PIs) are used, please indicate to what extent your department adopts PIs that:							
Q12c	Are linked to the department's or council's strategy	519	1	7	5.96	1.076	6
Q12d	Are compared to targets	522	1	7	6.25	0.963	6
Q12e	Focus on both financial and non-financial aspects	521	1	7	5.76	1.336	6
Q12f	Are locally developed	525	1	7	5.13	1.315	5
Q12g	Are set externally	523	1	7	5.31	1.545	6
Q12j	Measure the outcome of what is trying to be achieved	521	1	7	5.22	1.284	5
To what extent does your department:							
Q13a	Share best practice with other departments (within or outside own council)	523	2	7	5.30	1.149	5
Q13b	Use benchmarking groups	521	1	7	4.56	1.514	5
Q13c	Learn from other council departments (within or outside own council)	520	2	7	5.34	1.039	5
Q13d	Adopt best practices from other council departments (within or outside own council)	521	2	7	5.33	1.068	5
To what extent does your department use performance measures to monitor:							
Q14a	Your council's strategy	521	1	7	5.44	1.303	6
Q14b	Financial performance	521	1	7	5.46	1.372	6
Q14d	Quality of service	522	1	7	5.32	1.199	6
Q14h	Customer satisfaction	521	1	7	5.44	1.254	6

PMS Component 2

Question Number (Appendix A)	Q10a	Q10b	Q12c	Q12d	Q12e	Q12f	Q12g	Q12j	Q13a	Q13b	Q13c	Q13d	Q14a	Q14b	Q14d	Q14h
Q10a	1.000	0.471**	0.366**	0.404**	0.319**	0.172**	0.336**	0.252**	0.223**	0.283**	0.187**	0.201**	0.422**	0.257**	0.397**	0.344**
Q10b	0.471**	1.000	0.324**	0.317**	0.245**	0.214**	0.154**	0.233**	0.341**	0.678**	0.357**	0.335**	0.316**	0.274**	0.294**	0.269**
Q12c	0.366**	0.324**	1.000	0.494**	0.261**	0.403**	0.092*	0.356**	0.301**	0.280**	0.314**	0.330**	0.405**	0.288**	0.358**	0.287**
Q12d	0.404**	0.317**	0.494**	1.000	0.442**	0.266**	0.257**	0.356**	0.270**	0.291**	0.221**	0.209**	0.373**	0.311**	0.292**	0.247**
Q12e	0.319**	0.245**	0.261**	0.442**	1.000	0.198**	0.192**	0.303**	0.189**	0.203**	0.155**	0.152**	0.286**	0.468**	0.334**	0.327**
Q12f	0.172**	0.214**	0.403**	0.266**	0.198**	1.000	-0.159**	0.269**	0.225**	0.169**	0.178**	0.228**	0.241**	0.238**	0.326**	0.348**
Q12g	0.336**	0.154**	0.092*	0.257**	0.192**	-0.159**	1.000	0.108*	0.151**	0.103*	0.124**	0.150**	0.216**	0.077	0.170**	0.172**
Q12j	0.252**	0.233**	0.356**	0.356**	0.303**	0.269**	0.108*	1.000	0.305**	0.202**	0.210**	0.222**	0.268**	0.234**	0.323**	0.241**
Q13a	0.223**	0.341**	0.301**	0.270**	0.189**	0.225**	0.151**	0.305**	1.000	0.372**	0.628**	0.579**	0.343**	0.236**	0.340**	0.317**
Q13b	0.283**	0.678**	0.280**	0.291**	0.203**	0.169**	0.103*	0.202**	0.372**	1.000	0.387**	0.320**	0.206**	0.212**	0.282**	0.245**
Q13c	0.187**	0.357**	0.314**	0.221**	0.155**	0.178**	0.124**	0.210**	0.628**	0.387**	1.000	0.825**	0.288**	0.203**	0.358**	0.321**
Q13d	0.201**	0.335**	0.330**	0.209**	0.152**	0.228**	0.150**	0.222**	0.579**	0.320**	0.825**	1.000	0.298**	0.199**	0.330**	0.298**
Q14a	0.422**	0.316**	0.405**	0.373**	0.286**	0.241**	0.216**	0.268**	0.343**	0.206**	0.288**	0.298**	1.000	0.453**	0.422**	0.442**
Q14b	0.257**	0.274**	0.288**	0.311**	0.468**	0.238**	0.077	0.234**	0.236**	0.212**	0.203**	0.199**	0.453**	1.000	0.374**	0.349**
Q14d	0.397**	0.294**	0.358**	0.292**	0.334**	0.326**	0.170**	0.323**	0.340**	0.282**	0.358**	0.330**	0.422**	0.374**	1.000	0.653**
Q14h	0.344**	0.269**	0.287**	0.247**	0.327**	0.348**	0.172**	0.241**	0.317**	0.245**	0.321**	0.298**	0.442**	0.349**	0.653**	1.000

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

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

Performance Outcome: Component 1 (Use of Resources)

Question Element	N	Min	Max	Mean	S.D.	Median
Financial Management (FM)	499	1	7	3.721	1.486	5
Financial Standing (FS)	499	1	7	3.828	1.295	5
Value for Money (VFM)	499	1	7	3.878	1.475	5
Internal Control (IC)	499	1	7	3.385	1.227	5
Financial Reporting (FR)	499	1	7	3.789	1.326	5
Q17	522	1	7	5.210	1.071	5

Question Number (Appendix A)	FM	FS	VFM	IC	FR	Q17
FM	1.000	0.577**	0.605**	0.451**	0.413**	0.339**
FS	0.577**	1.000	0.546**	0.514**	0.373**	0.265**
VFM	0.605**	0.546**	1.000	0.446**	0.294**	0.345**
IC	0.451**	0.514**	0.446**	1.000	0.330**	0.258**
FR	0.413**	0.373**	0.294**	0.330**	1.000	0.236**
Q17	0.339**	0.265**	0.345**	0.258**	0.236**	1.000

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

Performance Outcome: Component 2

Question Element	N	Min	Max	Mean	S.D.	Median
Please rate your perceived overall performance for your department relative to the national local authority average (Q17)	522	1	7	5.21	1.071	5
Number of customer complaints (Q20a)	523	1	7	5.08	1.146	5
Value for money (quality versus cost) (Q20b)	522	1	7	5.07	1.066	5
Variety and flexibility of services provided (Q20c)	518	1	7	4.97	1.050	5
Quality of services provided (Q20d)	523	1	7	5.35	.919	5
Public satisfaction with the services provided (Q20f)	517	1	7	5.12	.968	5

Question Number (Appendix A)	Q17	Q20a	Q20b	Q20c	Q20d	Q20f
Q17	1.000	0.344**	0.487**	0.465**	0.580**	0.477**
Q20a	0.344**	1.000	0.363**	0.355**	0.424**	0.479**
Q20b	0.487**	0.363**	1.000	0.443**	0.454**	0.418**
Q20c	0.465**	0.355**	0.443**	1.000	0.593**	0.459**
Q20d	0.580**	0.424**	0.454**	0.593**	1.000	0.612**
Q20f	0.477**	0.479**	0.418**	0.459**	0.612**	1.000

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

Performance Outcome: Component 3

Question Element	N	Min	Max	Mean	S.D.	Median
Please rate your perceived overall performance for your department relative to the national local authority average(Q17)	522	1	7	5.21	1.071	5
Please rate your perceived financial performance for your department (Q18)	522	1	7	5.13	1.105	5
Value for money (quality versus cost) (Q20b)	522	1	7	5.07	1.066	5
Average costs of providing services (Q20e)	517	1	7	4.70	1.117	5

Question Number (Appendix A)	Q17	Q18	Q20b	Q20e
Q17	1.000	0.502	0.487	0.350
Q18	0.502	1.000	0.498	0.505
Q20b	0.487	0.498	1.000	0.572
Q20e	0.350	0.505	0.572	1.000

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

Performance Outcome Component 4: CPA

Question Element	N	Min	Max	Mean	S.D.	Median
CPA overall score	507	1	7	4.72	1.454	5

Appendix I: SEM Path Results

Total Effects

Variable	Item	Differentiation	Cost Leadership	Training	Data Limitations	Bench-marking	RDF	Innovation
Benchmarking	β	0.494	0.079	0.127	-0.032	0	0	0
	p	0.001	0.473	0.001	0.382	...	...	...
RDF	β	0.363	0.118	0.235	-0.024	0	0	0
	p	0.023	0.529	0.001	0.69	...	...	...
Innovation	β	0.509	0.187	0.035	-0.008	0.223	0.029	0
	p	0	0.062	0.008	0.37	0.001	0.454	...
Organisational Learning	β	0.565	0.023	0.04	-0.008	0.219	0.05	0
	p	0.001	0.455	0.001	0.383	0.001	0.158	...
Entrepreneurship	β	0.51	0.023	0.044	-0.006	0.067	0.153	0
	p	0.001	0.46	0.001	0.526	0.257	0.018	...
Market Orientation	β	0.675	0.012	0.021	-0.004	0.085	0.043	0
	p	0.001	0.448	0.032	0.373	0.047	0.111	...
CMAP	β	-0.176	0.454	0.044	-0.007	0.129	0.118	-0.146
	p	0.264	0.004	0.002	0.363	0.04	0.012	0.251

Total Effects (continued)

Variable	Item	Differentiation	Cost Leadership	Training	Data Limitations	Bench-marking	RDF	Innovation
Non-Financial Performance	β	0.291	0.08	0.014	-0.004	0.123	-0.006	-0.02
	p	0.051	0.346	0.222	0.48	0.005	0.879	0.845
UoR Performance	β	0.096	0.122	0.004	0	0	0.019	-0.069
	p	0.692	0.529	0.819	0.945	0.984	0.864	0.674
Financial Performance	β	-0.212	0.513	0.035	-0.008	0.215	0.031	0.083
	p	0.474	0.007	0.01	0.368	0.001	0.507	0.545
CPA Performance	β	0.262	-0.11	-0.011	0.001	-0.017	-0.036	-0.339
	p	0.11	0.53	0.461	0.708	0.835	0.62	0.037

Total Effects (continued)

Variable	Item	Organisational Learning	Entrepreneurship	Market Orientation	CMAP	Non-Financial Performance	UoR Performance	Financial Performance
Benchmarking	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
RDF	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Innovation	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Organisational Learning	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Entrepreneurship	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Market Orientation	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
CMAP	β	-0.027	0.33	1.716	0	0	0	0
	p	0.834	0.001	0.026	...	...	...	...

Total Effects (continued)

Variable	Item	Organisational Learning	Entrepreneurship	Market Orientation	CMAP	Non-Financial Performance	UoR Performance	Financial Performance
Non-Financial Performance	β	-0.008	0.264	1.699	-0.134	0	0	0
	p	0.972	0.007	0.001	0.135	...	...	...
UoR Performance	β	-0.179	0.308	2.061	0.076	0	0	0
	p	0.437	0.056	0	0.633	...	...	...
Financial Performance	β	-0.12	0.086	3.569	-0.264	0	0	0
	p	0.702	0.325	0	0.081	...	...	...
CPA Performance	β	-0.189	0.377	0.67	-0.149	0	0	0
	p	0.277	0.005	0.253	0.281	...	...	...

Direct Effects

Variable	Item	Differentiation	Cost Leadership	Training	Data Limitations	Bench-marking	RDF	Innovation
Benchmarking	β	0.494	0.079	0.127	-0.032	0	0	0
	p	0.001	0.473	0.001	0.382	...	...	...
RDF	β	0.363	0.118	0.235	-0.024	0	0	0
	p	0.023	0.529	0.001	0.69	...	...	...
Innovation	β	0.388	0.166	0	0	0.223	0.029	0
	p	0.001	0.063	...	...	0.001	0.454	...
Organisational Learning	β	0.439	0	0	0	0.219	0.05	0
	p	0.001	...	...	...	0.001	0.158	...
Entrepreneurship	β	0.421	0	0	0	0.067	0.153	0
	p	0.001	...	...	...	0.257	0.018	...
Market Orientation	β	0.618	0	0	0	0.085	0.043	0
	p	0.001	...	...	...	0.047	0.111	...
CMAP	β	-1.413	0.454	0	0	0	0	-0.146
	p	0.027	0.005	...	...	...	...	0.251

Direct Effects (continued)

Variable	Item	Differentiation	Cost Leadership	Training	Data Limitations	Bench-marking	RDF	Innovation
Non-Financial Performance	β	-1.105	0.135	0	0	-0.032	-0.118	-0.04
	p	0.001	0.221	...	...	0.651	0.034	0.738
UoR Performance	β	-1.101	0.097	0	0	-0.14	-0.106	-0.058
	p	0.018	0.638	...	...	0.266	0.231	0.724
Financial Performance	β	-2.923	0.598	0	0	-0.086	-0.132	0.045
	p	0	0.016	...	...	0.515	0.181	0.765
CPA Performance	β	-0.286	0.02	0	0	0.018	-0.103	-0.36
	p	0.572	0.913	...	...	0.907	0.241	0.032

Direct Effects (continued)

Variable	Item	Organisational Learning	Entrepreneurship	Market Orientation	CMAP	Non-Financial Performance	UoR Performance	Financial Performance
Benchmarking	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
RDF	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Innovation	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Organisational Learning	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Entrepreneurship	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Market Orientation	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
CMAP	β	-0.027	0.33	1.716	0	0	0	0
	p	0.834	0.001	0.026	...	...	...	...

Direct Effects (continued)

Variable	Item	Organisational Learning	Entrepreneurship	Market Orientation	CMAP	Non-Financial Performance	UoR Performance	Financial Performance
Non-Financial Performance	β	-0.011	0.308	1.928	-0.134	0	0	0
	p	0.928	0.005	0.001	0.135	...	...	...
UoR Performance	β	-0.177	0.282	1.93	0.076	0	0	0
	p	0.444	0.107	0.001	0.633	...	...	...
Financial Performance	β	-0.127	0.173	4.022	-0.264	0	0	0
	p	0.72	0.119	0.001	0.081	...	...	...
CPA Performance	β	-0.193	0.426	0.926	-0.149	0	0	0
	p	0.303	0.005	0.118	0.281	...	...	...

Indirect Effects

Variable	Item	Differentiation	Cost Leadership	Training	Data Limitations	Bench-marking	RDF	Innovation
Benchmarking	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
RDF	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Innovation	β	0.121	0.021	0.035	-0.008	0	0	0
	p	0	0.438	0.008	0.37	...	...	...
Organisational Learning	β	0.126	0.023	0.04	-0.008	0	0	0
	p	0	0.455	0.001	0.383	...	...	...
Entrepreneurship	β	0.088	0.023	0.044	-0.006	0	0	0
	p	0.011	0.46	0.001	0.526	...	...	...
Market Orientation	β	0.057	0.012	0.021	-0.004	0	0	0
	p	0.018	0.448	0.032	0.373	...	...	...
CMAP	β	1.236	0	0.044	-0.007	0.129	0.118	0
	p	0.022	0.941	0.002	0.363	0.04	0.012	...

Indirect Effects (continued)

Variable	Item	Differentiation	Cost Leadership	Training	Data Limitations	Bench-marking	RDF	Innovation
Non-Financial Performance	β	1.397	-0.055	0.014	-0.004	0.155	0.112	0.019
	p	0.001	0.212	0.222	0.48	0.036	0.046	0.197
UoR Performance	β	1.196	0.025	0.004	0	0.14	0.124	-0.011
	p	0.003	0.8	0.819	0.945	0.141	0.048	0.416
Financial Performance	β	2.711	-0.086	0.035	-0.008	0.3	0.163	0.039
	p	0	0.338	0.01	0.368	0.032	0.092	0.173
CPA Performance	β	0.547	-0.13	-0.011	0.001	-0.035	0.067	0.022
	p	0.19	0.077	0.461	0.708	0.688	0.135	0.274

Indirect Effects (continued)

Variable	Item	Organisational Learning	Entrepreneurship	Market Orientation	CMAP	Non-Financial Performance	UoR Performance	Financial Performance
Benchmarking	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
RDF	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Innovation	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Organisational Learning	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Entrepreneurship	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
Market Orientation	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...
CMAP	β	0	0	0	0	0	0	0
	p	...	...	...	...	...	...	...

Indirect Effects (continued)

Variable	Item	Organisational Learning	Entrepreneurship	Market Orientation	CMAP	Non-Financial Performance	UoR Performance	Financial Performance
Non-Financial Performance	β	0.004	-0.044	-0.229	0	0	0	0
	p	0.708	0.08	0.064	...	...	...	...
UoR Performance	β	-0.002	0.025	0.13	0	0	0	0
	p	0.715	0.53	0.421	...	...	...	...
Financial Performance	β	0.007	-0.087	-0.453	0	0	0	0
	p	0.732	0.042	0.031	...	...	...	...
CPA Performance	β	0.004	-0.049	-0.256	0	0	0	0
	p	0.675	0.205	0.187	...	...	...	...

Appendix J: SEM Modification Process

Step 1:

- FTE (Department size) observed variable removed. Highly skewed (15.948) and positive kurtosis distribution (278.085).
- Err38 variance fixed to zero as slightly negative at -0.000. Err38 variance is the measurement error for the Financial Standing observed variable for UoR performance outcome unobserved variable.

Step 2:

Added co-variances between following items:

- Cost leadership residual error - Differentiation residual error
- Market orientation residual error – Differentiation residual error
- CPA performance outcome residual error – UoR performance outcome residual error
- Financial reporting measurement error – CPA performance outcome residual error
- Q18 (financial performance outcome) measurement error – Q17 (non-financial performance outcome) measurement error
- Entrepreneurship residual error – Innovation residual error
- Q6a (market orientation) measurement error – Q6b (market orientation) measurement error
- Organisational learning residual error – Innovation residual error
- Market orientation residual error – Organisational learning residual error

Added regression path between following items:

- Differentiation – Market orientation
- Differentiation – Organisational learning

Step 3:

Added co-variances between following items:

- Q8a (innovation) measurement error – Entrepreneurship residual error
- Q14f (RDF) measurement error – Cost leadership residual error

Added regression path between following items:

- Differentiation – Innovation
- Cost leadership – Innovation
- Differentiation – Entrepreneurship

Step 4:

- Res2 (financial performance outcome residual error) variance fixed to zero (changed from -0.025).

References

Abdel Halim, A.M.S. (2004) *A Contingency Model of Activity-Based Costing (ABC) Systems: An Empirical Investigation in the UK's Manufacturing Business Units*. Unpublished Ph.D. Thesis, University of Southampton.

Abernethy, M.A. and Stoelwinder, J.U. (1991) Budget use, task uncertainty, system goal orientation and subunit performance: A test of the 'fit' hypothesis in not-for-profit hospitals. *Accounting, Organizations and Society*, 16(2), 105-120.

Accounts Commission (1998) *The Measures of Success: Developing a Balanced Scorecard to Measure Performance.* Edinburgh: Accounts Commission for Scotland.

Aidemark, L.G. (2001) The meaning of balanced scorecards in the health care organisation. *Financial Accountability and Management,* 17(1), 23-40.

Allen, R. E. (Ed.) (1990) *The Concise Oxford Dictionary of Current English*. 8th Ed. Oxford: Oxford University Press.

Anderson, T.W. (1984) *An Introduction to Multivariate Statistical Analysis*. 2nd ed. New York: John Wiley and Sons.

Anderson, J.L. (1998) 'Techniques' for governance. *The Social Science Journal,* 35(4), 493-508.

Anderson, J.C. and Gerbing, D.W. (1988) Structural equation modelling in practice: a review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.

Andrews, R., Boyne, G.A. and Walker, R.M. (2006) Strategy content and organizational performance: An empirical analysis. *Public Administration Review*, 66(1), 52–63.

Andrews, R., Boyne, G.A., Law, J. and Walker, R.M. (2009) Strategy formulation, strategy content and performance: An empirical analysis. *Public Management Review*, 11(1), 1-22.

Anthony, R.N. (1989) Reminiscences about management accounting. *Journal of Management Accounting Research*, 1(Fall), 1-20.

Arbuckle, J.L. (2006) *Amos 7.0 User's Guide*. USA: Amos Development Corporation.

Arbuckle, J.L. (2007) *Amos 16.0 User's Guide*. USA: Amos Development Corporation.

Ardalan, K. (2003) Theories and controversies in finance: a paradigmatic overview. *International Journal of Social Economics,* 30(2), 199-209.

Argote, L. (1982) Input uncertainty and organizational coordination in hospital emergency units. *Administrative Science Quarterly*, 27, 420-434.

Arnaboldi, M. and Lapsley, I. (2003) Activity based costing, modernity and the transformation of local government: a field study. *Public Management Review*, 5(3), 346-75.

Atkinson, A.A., Balakrishnan, R., Booth, P., Cote, J.M., Groot, T. and Malmi, T. (1997) New directions in management accounting research. *Journal of Management Accounting Research*, 9, 70-108.

Audit Commission (2000) *Aiming to Improve: The Principles of Performance Measurement.* London: Audit Commission.

Audit Commission (2005a) *CPA - The Harder Test*. London: Audit Commission.

Audit Commission (2005b) *Code of Audit Practice: For Local Government Bodies*. London: Audit Commission.

Audit Commission (2009) *Use of Resources Guidance* [online]. Available at: http://www.audit-commission.gov.uk/useofresources/guidance/Local_government2.htm. [Accessed 11.05.2009]

Audit Commission, Audit Scotland, CIPFA, Northern Ireland Audit Office and Wales Audit Office (2007) *Improving Information to Support Decision-Making: Standards for Better Quality Data.* London: Audit Commission.

Audit Commission and I&DeA (Improvement and Development Agency) (2002) *Acting on Facts: Using Performance Measurement to Improve Local Authority Services.* Northampton: Audit Commission and I&DeA.

Auzair, S.M. and Langfield-Smith, K. (2005) The effect of service process type, business strategy and life cycle stage on bureaucratic MCS in service organizations. *Management Accounting Research*, 16(4), 399-421.

Baines, A. and Langfield-Smith, K. (2003) Antecedents to management accounting change: a structural equation approach. *Accounting Organizations and Society*, 28(7-8), 675-698.

Ball, A. (2001) Discovering its own relevance? Reflections on the 'new' management accounting in the public sector. *Accounting Forum*, 25(3), 283-299.

Ballantine, J., Brignall, S., and Modell, S. (1998) Performance measurement and management in public health services: a comparison of U.K. and Swedish practice. *Management Accounting Research*, 9(1), 71-94.

Banker, R.D., Potter, G., and Srinivasan, D. (2000) An empirical investigation of an incentive plan that includes nonfinancial performance measures. *The Accounting Review*, 75(1), 65-92.

Barrow, M. (2006) *Statistics for Economics, Accounting and Business Studies*. 4th ed. Harlow, England: Financial Times Prentice Hall.

Bentler, P.M. and Chou, C-P. (1987) Practical issues in structural modelling. *Sociological Methods and Research*, 16(1), 78-117.

Bevan, G. and Hood, C. (2006) What's measured is what matters: Targets and gaming n the English public health care system. *Public Administration,* 84(3): 517-538.

Bisbe, J. and Otley, D. (2004) The effects of the interactive use of management control systems on product innovation. *Accounting, Organizations and Society*, 29(8), 709-737.

Bjørnenak, T. and Olson, O. (1999) Unbundling management accounting innovations. *Management Accounting Research*, 10(4), 325-338.

Blunch, N.J. (2008) *Introduction to Structural Equation Modelling Using SPSS and AMOS.* Los Angeles: SAGE.

Bolton, N. and Leach, S. (2002) Strategic Planning in Local Government: A study of organisational impact and effectiveness. *Local Government Studies*, 28(4), 1-21.

Bourque, B. and Fielder, E.P. (1995) *How to Conduct Self-Administered and Mail Surveys*. Thousand Oaks: Sage Publications.

Bouwens, J. and Abernethy, M.A. (2000) The consequences of customization on management accounting system design. *Accounting, Organizations and Society*, 25, 221-241.

Bowerman, M. and Ball, A. (2000) Great expectations: benchmarking for Best Value. *Public Money and Management*, 20(2), 21-26.

Bowerman, M., Ball, A. and Francis, A. (2001) Benchmarking as a tool for the modernisation of Local Government. *Financial Accountability and Management*, 17(4), 321-329.

Boyne, G. (2000) External regulation and Best Value in Local Government. *Public Money and Management*, 20(3), 7-12.

Boyne, G.A. and Walker, R.M. (2004) Strategy content and public service organizations. *Journal of Public Administration, Research and Theory*, 14(2), 231-252.

Brignall, S. (1993) Performance Measurement and Change in Local Government: A General Case and a Childcare Application. *Public Money and Management*, 13(4), 23-30.

Broad, M., Goddard, A. and Von Alberti, L. (2007) Performance, strategy and accounting in Local Government and Higher Education in the UK. *Public Money and Management*, 27(2), 119-126.

Broadbent, J. (1999) The state of public sector accounting research: The APIRA conference and some personal reflections. *Accounting, Auditing and Accountability Journal*, 12(1), 52-57.

Broadbent, J. (2003) Comprehensive Performance Assessment: The crock of gold at the end of the performance rainbow? *Public Money and Management*, 23(1), 5-8.

Broadbent, J. and Gutherie, J. (1992) Changes in the Public Sector: A review of recent "alternative" accounting research. *Accounting, Auditing and Accountability Journal*, 5(2), 3-31.

Broadbent, J. and Laughlin, R. (1998) Resisting the "new public management": Absorption and absorbing groups in schools and GP practices in the UK. *Accounting, Auditing and Accountability Journal*, 11(4), 403-435.

Bromwich, M. and Lapsley, I. (1997) Decentralisation and management accounting in central Government: Recycling old ideas? *Financial Accountability and Management*, 13(2), 181-201.

Brouthers, K.D. and Roozen, F.A. (1999) Is it time to start thinking about strategic accounting? *Long Range Planning*, 32(3), 311-322.

Brown, R. L. (1997) Assessing specific mediational effects in complex theoretical models. *Structural Equation Modeling*, 4(2), 142-156.

Brown, R.E., Myring, M.J. and Gard, C.G. (1999) Activity-based costing in Government: Possibilities and pitfalls. *Public Budgeting and Finance*, 19(2), 3-21.

Burns, T. and Stalker, G.M. (1961) *The Management of Innovation*. London: Tavistock.

Burrell, G. and Morgan, G. (1979) *Sociological Paradigms and Organisational Analysis: Elements of Sociology of Corporate Life*. Aldershot, Hampshire: Ashgate Publishing.

Butt, H.A. (1987) Value for money: The experience of Local Government in the United Kingdom. *Public Budgeting and Finance*, 7(4), 5-11.

Byrne, B. (2001) *Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Cabinet Office (2001) *Getting It Together: A Guide to Quality Schemes and the Delivery of Public Services*. London: Cabinet Office.

Cabinet Office (2005) *Guide to the Centre of Government – Part III: The Modernising Agenda.* Available at: http://archive.cabinetoffice.gov.uk/roleofcentre/modagenda.htm [Accessed 26.06.2005]

Carter, N. (1991) Learning to measure performance: The use of indicators in organizations. *Public Administration*, 69, 85-101.

Cavalluzzo, K.S. and Ittner, C.D. (2004) Implementing performance measurement innovations: Evidence from Government. *Accounting, Organizations and Society*, 29, 243-267.

Chandler, A. D. (1962) *Strategy and Structure*. New York: Doubleday.

Chapman, C.S. (1997) Reflections on a contingent view of accounting. *Accounting, Organizations and Society*, 22(2), 189-205.

Chenhall, R.H. (2003) Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. *Accounting, Organizations and Society*, 28(2-3), 127-168.

Chenhall, R.H. (2004) The role of cognitive and affective conflict in early implementation of activity-based cost management. *Behavioural Research in Accounting*, 16, 19-44.

Chenhall, R.H. and Langfield-Smith, K. (1998) The relationship between strategic priorities, management techniques and management accounting: An empirical investigation using a systems approach. *Accounting, Organizations and Society*, 23(3), 243-264.

Chenhall, R.H. and Morris, D. (1986) The impact of structure, environment, and interdependence on the perceived usefulness of management accounting systems. *The Accounting Review*, LXI(1), 16-35.

Chia, Y.M. (1995) Decentralization, management accounting systems (MAS) information characteristics and their interaction effects on managerial performance: A Singapore study. *Journal of Business Finance and Accounting*, 22(6), 811-830.

Chong, V.K. (1996) Management accounting systems, task uncertainty and managerial performance: A research note. *Accounting, Organizations and Society*, 21(5), 415-421.

CIPFA (Chartered Institute of Public Finance and Accountancy) (1998) *Measuring Up: An Executive Guide to Performance Measurement in the Public Services.* London: Chartered Institute of Public Finance and Accountancy.

Coombs, H.M. and Jenkins, D.E. (1994) *Public Sector Financial Management*. 2nd ed. London: International Thomson Business Press.

Czaja, R. and Blair, J. (1996) *Designing Surveys.* California: Pine Forge Press.

Davis, S. and Albright, T. (2004) An investigation of the effect of balanced scorecard implementation on financial performance. *Management Accounting Research*, 15(2), 135-153.

Davison, M.L. (1983) *Multidimensional Scaling*. New York: John Wiley and Sons.

DCLG and IDeA (2010a) *Local Innovation Awards Scheme* [online]. Available at: http://www.localinnovation.idea.gov.uk/idk/core/page.do?pageId=17489065 [Accessed 16.05.2010]

DCLG and IDeA (2010b) *About the building economic resilience theme* [online]. Available at: http://www.localinnovation.idea.gov.uk/idk/core/page.do?pageId=17580754 [Accessed 24.05.2010]

Dent, J.F. (1990) Strategy, organization and control: Some possibilities for accounting research. *Accounting, Organizations and Society*, 15(1/2), 3-25.

Department for Communities and Local Government (2009) *Local Authority Revenue Expenditure and Financing England 2008-09 Final Outturn Statistical Release 3rd December 2009*. Department for Communities and Local Government.

Department of Communities and Local Government (2010) *Local Innovation Awards Scheme* [online]. Available at: http://www.communities.gov.uk/localgovernment/efficiencybetter/localinnovationawardscheme [Accessed 16.05.2010]

DETR (Department of the Environment, Transport and the Regions) (1999) *Local Government Act.* HMSO: UK. Available at: http://www.opsi.gov.uk/ACTS/acts1999/ukpga_19990027_en_1 [Accessed 18.01.2010]

De Vaus, D. (2002) Surveys in Social Research. 5th ed. London: Routledge.

Devine, K., O'Clock, P. and Lyons, D. (2000) Health-care financial management in a changing environment. *Journal of Business Research*, 48(3), 183-191.

Dixon, J.K. (1993) Grouping Techniques. *In:* Munro, B.H. and Page, E.B., eds. *Statistical Methods for Health Care Research*. 2nd ed., 245-274. Philadelphia: J.B. Lippincott Company.

Drazin, R. and Van de Ven, A.H. (1985) Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, 30, 514-539.

Drury, C. (1996) *Management and Cost Accounting*. 4th ed. London: International Thomson Business Press.

Drury, C. and Tayles, M. (1995) Issues arising from surveys of management accounting practice. *Management Accounting Research*, 6(3), 267-280.

DTLR (Department for Transport, Local Government and the Regions) 1998 *Modern Local Government: In Touch with the People.* DTLR: London. Available at: http://www.communities.gov.uk/documents/localgovernment/pdf/144890.pdf [Accessed 18.01.2010]

DTLR (Department for Transport, Local Government and the Regions) (2001) Strong Local Leadership: Quality Public Services. DTLR: London. Available at: http://www.communities.gov.uk/documents/localgovernment/pdf/143810.pdf [Accessed 18.01.2010]

DTLR (Department of Transport, Local Government and the Regions) (2002) The Local Government (Best Value) Performance Plans and Reviews Amendment and Specified Dates Order Statutory Instrument 2002 No. 305. Available at: http://www.opsi.gov.uk/si/si2002/20020305.htm [Accessed 22.01.2010]

Dunk, A.S. (2004) Product life cycle cost analysis: The impact of customer profiling, competitive advantage, and quality of IS information. *Management Accounting Research*, 15(4), 401-414.

Dunleavy, P. and Hood, C. (1994) From old public administration to new public management. *Public Money and Management*, 14(3), 9-16.

Easterby-Smith, M., Thorpe, R., and Lowe, A. (1991) *Management Research: An Introduction.* London: SAGE Publications.

Enticott, G. (2003) Researching Local Government using electronic surveys. *Local Government Studies*, 29(2), 52-67.

Everitt, B. (1980) *Cluster Analysis: An SSRC Review of Current Research*. 2nd ed. New York: Halsted Press.

Field, A.P. (2005) *Discovering Statistics Using SPSS: And Sex, Drugs and Rock 'n' Roll*. 2nd ed. London: SAGE Publications.

Fink, A. (1995) *The Survey Handbook: The Survey Kit*. Thousand Oaks: SAGE Publications.

Fiol, C.M. and Lyles, M.A. (1985) Organizational learning. *Academy of Management Review*, 10(4), 803-813.

Fisher, J. (1994) Technological interdependence, labor production functions, and control systems. *Accounting, Organizations and Society*, 19(6), 493-505.

Fisher, J. (1995) Contingency-based research on management control systems: Categorisation by level of complexity. *Journal of Accounting Literature*, 14, 24-53.

Fitzgerald, L., Johnston, R., Brignall, T.J., Silvestro, R. and Voss, C. (1991) *Performance Measurement in Service Businesses*. London: CIMA.

Flynn, N. (1986) Performance measurement in public sector services. *Policy and Politics*, 14(3), 389-404.

Flynn, N. and Talbot, C. (1996) Strategy and strategists in UK Local Government. *Journal of Management Development*, 15(2), 24-37.

Freeman, T. (2002) Using performance indicators to improve health care quality in the public sector: A review of the literature. *Health Services Management Research*, 15(2), 126-137.

Galbraith, J. (1973) *Designing Complex Organisations*. Massachusetts: Addison-Wesley Publishing Company.

Gerdin, J. (2005) Management accounting system design in manufacturing departments: An empirical investigation using a multiple contingencies approach. *Accounting, Organizations and Society*, 30, 99-126.

Gerdin, J. and Greve, J. (2004) Forms of contingency fit in management accounting research - A critical review. *Accounting, Organizations and Society*, 29(3-4), 303-326.

Gershon, P. (2004) *Releasing Resources to the Front Line: Independent Review of Public Sector Efficiency*. London: HMSO.

Ghobadian, A. and Ashworth, J. (1994) Performance measurement in Local Government - Concept and practice. *International Journal of Operations and Production Management*, 14(5), 35-51.

Gill, J. and Johnson, P. (2002) *Research Methods for Managers*. London: SAGE Publications.

Gioia, D. and Pitre, E. (1990) Multiparadigm perspectives on theory building. *Academy of Management Review*, 15(4), 584-602.

Goddard, A. (1997) Organisational culture and budgetary control in a UK Local Government organisation. *Accounting and Business Research*, 27(2), 111-123.

Goddard, A. (2005) Accounting and NPM in UK Local Government - Contributions towards governance and accountability. *Financial Accountability and Management*, 21(2), 191-218.

Gordon, L.A. and Miller, D. (1976) A contingency framework for the design of accounting information systems. *Accounting, Organizations and Society*, 1(1), 59-69.

Gordon, L.A. and Narayanan, V.K. (1984) Management accounting systems, perceived environmental uncertainty and organizational Structure: An empirical investigation. *Accounting, Organizations and Society*, 9(1), 33-47.

Govindarajan, V. (1988) A contingency approach to strategy implementation at the business-unit level: Integrating administrative mechanisms with strategy. *Academy of Management Journal*, 31(4), 828-853.

Govindarajan, V. and Fisher, J. (1990) Strategy, control systems, and resource sharing: Effects on business-unit performance. *Academy of Management Journal*, 33(2), 259-285.

Govindarajan, V. and Gupta, A.K. (1985) Linking control systems to business unit strategy: Impact on performance. *Accounting, Organizations and Society*, 10(1), 51-66.

Govindarajan, V. and Shank, J.K. (1992) Strategic cost management: Tailoring controls to strategies. *Journal of Cost Management*, Fall, 14-24.

Gresov, C. (1989) Exploring fit and misfit contingencies. *Administrative Science Quarterly*, 34, 431-453.

Groot, T. and Budding, T. (2004) The influence of new public management practices on product costing and service pricing decisions in Dutch Municipalities. *Financial Accountability and Management,* 20(4), 421-443.

Groot, T. and Budding, T. (2008) New public management's current issues and future prospects. *Financial Accountability and Management*. 24(1), 1-13.

Guilding, C., Cravens, K.S. and Tayles, M. (2000) An international comparison of strategic management accounting practices. *Management Accounting Research*, 11(1), 113-135.

Gul, F. (1991) The effects of management accounting systems and environmental uncertainty on small business managers' performance. *Accounting and Business Research*, 22(85), 57-61.

Gul, F. and Chia, Y.M. (1994) The usefulness of management accounting systems, functional differentiation and managerial effectiveness. *Accounting, Organizations and Society*, 19(4/5), 413-426.

Gupta, A.K. and Govindarajan, V. (1984a) Business unit strategy, managerial characteristics, and business unit effectiveness at strategy implementation. *Academy of Management Journal*, 27(1), 25-41.

Gupta, A.K. and Govindarajan, V. (1984b) Build, hold, harvest: Converting strategic intentions into reality. *Journal of Business Strategy*, 4, 34-47.

Guthrie, J., Olson, O. and Humphrey, C. (1999) Debating developments in new public financial management: The limits of global theorising and some new ways forward. *Financial Accountability and Management*, 15(3/4), 209-228.

Hair, J.F. Jr., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998) *Multivariate Data Analysis*. 5th ed. London: Prentice-Hall International.

Hambrick, D.C. (1980) Operationalizing the concept of business-level strategy in research. *Academy of Management Review*, 5(4), 567-575.

Hartmann, F.G.H. (2000) The appropriateness of RAPM: Toward the further development of theory. *Accounting, Organizations and Society*, 25, 451-482.

Hayes, D.C. (1977) The contingency theory of managerial accounting. *The Accounting Review*, LII(1), 22-39.

Henri, J.F. (2006a) Organizational culture and performance measurement systems. *Accounting, Organizations and Society*, 31(1), 77-103.

Henri, J.F. (2006b) Management control systems and strategy: A resource-based perspective. *Accounting, Organizations and Society*, 31(6), 529-558.

Herbert, T.T. and Deresky, H. (1987) Generic strategies: An empirical investigation of typology validity and strategy content. *Strategic Management Journal*, 8(2), 135-147.

Hickey, M.L. (1993) Structural Equation Models: Latent Variables. *In:* Munro, B.H. and Page, E.B., eds. *Statistical Methods for Health Care Research*. 2nd ed. Philadelphia: J. B. Lippincott Company. pp. 295-319.

Hood, C. (1991) A public management for all seasons? *Public Administration*, 69(1), 3-19.

Hood, C. (1995) The "new public management" in the 1980s: Variations on a theme. *Accounting, Organizations and Society*, 20(2-3), 93-109.

Hopper, T., Otley, D. and Scapens, B. (2001) British management accounting research: Whence and whither: Opinions and recollections. *The British Accounting Review*, 33(3), 263-291.

Hopper, T. and Powell, A. (1985) Making sense of research into the organisational and social aspects of management accounting: A review of its underlying assumptions. *Journal of Management Studies*, 22(5), 429-457.

Hoque, Z. and James W. (2000) Linking balanced scorecard measures to size and market factors: Impact on organizational performance. *Journal of Management Accounting Research*, 12, 1-17.

House of Commons (2009) *Reviewing Gershon and Lyons* [online] Available at: http://www.parliament.the-stationery-office.co.uk/pa/cm200809/cmselect/cmtreasy/520/52005.htm [Accessed 24.05.2010]

Howell, D. C. (1989) Fundamental Statistics for the Behavioural Sciences. 2nd ed. Boston: PWS-Kent Publishing Company.

Hoyle, R.H. (1995) The Structural Equation Modeling Approach: Basic Concepts and Fundamental Issues. *In:* Hoyle, R.H., ed. *Structural Equation Modeling: Concepts, Issues, and Applications*. 1st ed. Thousand Oaks, California: SAGE Publications. 1995, 1-15.

HM Treasury, Cabinet Office, National Audit Office, Audit Commission and Office for National Statistics (2001) *Choosing the Right Fabric: A Framework for Performance Information*. London: Audit Commission, Cabinet Office, Office for National Statistics, National Audit Office and HM Treasury.

Humphrey, C. and Scapens, R.W. (1992) Whatever happened to the liontamers? An examination of accounting change in the public sector. *Local Government Studies*, 18(3), 141-147.

Hussey, J. and Hussey, R. (1997) *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. Houndmills, Hampshire: Macmillan Press.

Hyndman, N.S. and Eden, R. (2000) A study of the coordination of mission, objectives and targets in U.K. executive agencies. *Management Accounting Research*, 11(2), 175-191.

Hyvönen, J. (2007) Strategy, performance measurement techniques and information technology of the firm and their links to organizational performance. *Management Accounting Research*, 18(3), 343-366.

I&DeA (Improvement and Development Agency) (2005) *Manager's Guide to Performance Management.* London: I&DeA.

IPF (Institute of Public Finance) (2008) *Delivering Efficiency: Understanding the Cost of Local Government Services.* London: Department for Communities and Local Government.

Imoisili, O.A. (1989) The role of budget data in the evaluation of managerial performance. *Accounting, Organizations and Society*, 14(4), 325-355.

Irani, Z. and Elliman, T. (2008) Creating social entrepreneurship in local government. *European Journal of Information Systems*, 17, 336-342.

Ittner, C.D. and Larcker, D.F. (1997) Quality strategy, strategic control systems, and organizational performance. *Accounting, Organizations and Society*, 22(3-4), 293-314.

Ittner, C.D. and Larcker, D.F. (1998a) Are nonfinancial measures leading indicators of financial performance? An analysis of customer satisfaction. *Journal of Accounting Research*, 36(Supplement), 1-35.

Ittner, C.D. and Larcker, D.F. (1998b) Innovations in performance measurement: Trends and research implications. *Journal of Management Accounting Research*, 10, 205-238.

Ittner, C.D., Larcker, D.F. and Randall, T. (2003) Performance implications of strategic performance measurement in financial services firms. *Accounting, Organizations and Society*, 28, 715-741.

Jackson, A. and Lapsley, I. (2003) The diffusion of accounting practices in the new "managerial" public sector. *International Journal of Public Sector Management*, 16(5), 359-372.

Jackson, P. (1988) The management of performance in the public sector. *Public Money and Management*, 8(4), 11-16.

Jackson, P.M. (1993) Public service performance evaluation: A strategic perspective. *Public Money and Management*, 13(4), 9-14.

Jacobs, K. (1997) The decentralisation debate and accounting controls in the New Zealand public sector. *Financial Accountability and Management*, 13(4), 331-343.

Johnsen, A. (2005) What does 25 years of experience tell us about the state of performance measurement in public policy and management? *Public Money and Management*, 25(1), 9-18.

Johnson, G. and Scholes, K. *Exploring Corporate Strategy*. 5th ed. London: Prentice Hall.

Johnson, H. and Kaplan, R.S. (1991) *Relevance Lost: The Rise and Fall of Management Accounting*. Boston: Harvard Business School Press.

Jones, R. and Pendlebury, M.W. (1989) Management Accounting in Local Government - the education service. *In:* Pendlebury, M.W., ed. *Management Accounting in the Public Sector*. Oxford: Heinemann Professional Publishing. pp. 8-24.

Kaplan, R.S. and Norton, D.P. (1992) The balanced scorecard - Measures that drive performance. *Harvard Business Review*, 70(1), 71-79.

Kaplan, R.S. and Norton, D.P. (1996a) Using the balanced scorecard as a strategic management system. *Harvard Business Review*, 74(1), 75-85.

Kaplan, R.S. and Norton, D.P. (1996b) Linking the balanced scorecard to strategy. *California Management Review*, 39(1), 53-79.

Kim, J. and Mueller, C.W. (1994) Introduction to Factor Analysis: What It Is and How to Do It. *In:* Lewis-Beck, M.S., ed. *Factor Analysis and Related Techniques*. 5th ed. pp. 1-74.

Kline, R.B. (1998) Software Programs for Structural Equation Modeling: Amos, EQS and LISREL. *Journal of Psychoeducational Assessment*, 16(4), 343-364.

Kline, R.B. (2005) Principles and Practice of Structural Equation Modeling. 1st ed. New York: The Guilford Press.

Kloot, L. (1997) Organisational learning and management control systems: Responding to environmental change. *Management Accounting Research*, 8(1), 47–73.

Kloot, L. and Martin, J. (2000) Strategic performance management: A balanced approach to performance management issues in local government. *Management Accounting Research*, 11(2), 231-251.

Kober, R., Ng, J. and Paul, B.J. (2007) The interrelationship between management control mechanisms and strategy. *Management Accounting* Research, 18(4), 425-452.

Knutsson, H., Mattisson, O., Ramberg, U. and Tagesson, T. (2008) Do strategy and management matter in municipal organisations? *Financial Accountability and Management*, 24(3), 295-319.

Kruskal, J.B. and Wish, M. (1978) *Multidimensional Scaling: Quantitative Applications in the Social Sciences Series*. Newbury Park, California: Sage Publications.

Kumar, K. and Subramanian, I. (1997) Porter's strategic types: Differences in internal processes and their impact on performance. *Journal of Applied Business Research*, 14(1), 107-123.

Lapsley, I. (1988) Research in public sector accounting: An appraisal. *Accounting, Auditing and Accountability Journal*, 1(1), 21-33.

Lapsley, I. (1999) Accounting and the new public management: Instruments of substantive efficiency or a rationalising modernity? *Financial Accountability and Management*, 15(3/4), 201-207.

Lapsley, I. (2000) Management accounting and the state: Making sense of complexity. *Management Accounting Research*, 11(2), 169-173.

Lapsley, I. (2001) Accounting, modernisation and the state. *Financial Accountability and Management*, 17, 299-302.

Lapsley, I. (2008) The NPM agenda: Back to the future. *Financial Accountability and Management*, 24(1), 77-96.

Lapsley, I. (2009) New public management: The cruellest invention of the human spirit? *Abacus*, 45(1), 1-21.

Lapsley, I. and Wright, E. (2004) The diffusion of management accounting innovations in the public sector: A research agenda. *Management Accounting Research*, 15(3), 355-374.

Langfield-Smith, K. (1997) Management control systems and strategy: A critical review. *Accounting, Organizations and Society*, 22(2), 207-232.

Laughlin, R. (1995) Methodological themes. Empirical research in accounting: Alternative approaches and a case for "middle-range" thinking. *Accounting, Auditing and Accountability Journal*, 8(1), 63-87.

Lawrence, P. and Lorsch, J. (1967) Organization and Environment: Managing Differentiation and Integration. 1st ed. Cambridge, Massachusetts: Harvard University, Graduate School of Business Administration.

Lawrence, S. and Sharma, U. (2002) Commodification of education and academic labour-Using the balanced scorecard in a university setting. *Critical Perspectives on Accounting*, 13(5/6), 661-677.

Leach, S. and Charteris, S. (2000) Managing the budgetary process in a hung council. *Public Administration*, 78(4), 793-814.

Leeuw, F.L. (1996) Performance auditing, new public management and performance improvement: Questions and answers. *Accounting, Auditing and Accountability Journal*, 9(2), 92-102.

Leifer, R. and Huber, G.P. (1977) Relations among perceived environmental uncertainty, organizational structure, and boundary-spanning behavior. *Administrative Science Quarterly*, 22, 235-247.

Libby, T. and Waterhouse, J. (1996) Predicting change in management accounting systems. *Journal of Management Accounting Research*, 8, 137-150.

Likierman, A. (1994) Management accounting in UK central Government - Some research issues. *Financial Accountability and Management*, 10(2), 93-115.

Llewellyn, S. and Tappin, E. (2003) Strategy in the public sector: Management in the wilderness. *Journal of Management Studies*, 40(4), 955-982.

Local Government Association (2005) *About Local Government* [online]. Available at: http://www.local.gov.uk/default.asp?sID=1088162663359 [Accessed 08.07.2005]

Loehlin, J. (1987) *Latent Variable Models: An Introduction to Factor Analysis, Path, and Structural Analysis*. 1st ed. New Jersey: Lawrence Erlbaum Associates.

Lucey, T. (1996) *Quantitative Techniques*. 5th ed. London: Letts Educational.

Lucey, T. (2002) *Quantitative Techniques*. 6th ed. London: Letts Educational.

Lynch, R. (2000) Corporate Strategy. 2nd ed. Harlow, Essex: Pearson Education.

Macintosh, N.B. (1994) *Management Accounting and Control Systems: An Organizational and Behavioral Approach*. Chichester: John Wiley and Sons.

Macintosh, N.B. and Daft, R.L. (1987) Management control systems and departmental interdependencies: An empirical study. *Accounting, Organizations and Society*, 12(1), 49-61.

Maiga, A.S. and Jacobs, F.A. (2008) Extent of ABC use and its consequence. *Contemporary Accounting Research*, 25(2), 533-566.

Malina, M.A. and Selto, F.H. (2001) Communicating and controlling strategy: An empirical study of the effectiveness of the balanced scorecard. *Journal of Management Accounting Research*, 13, 47-90.

Malmi, T. and Brown, D.A. (2008) Management control systems as a package – Opportunities, challenges and research directions. *Management Accounting Research*, 19(4), 287-300.

Mak, Y.T. (1989) Contingency fit, internal consistency and financial performance. *Journal of Business Finance and Accounting*, 16(2), 273-300.

Martin, S. and Bovaird, T. (2005) *Meta-evaluation of the Local Government Modernisation Agenda: Progress report on service improvement in Local Government*. London: Office of the Deputy Prime Minister.

Mayston, D. (1985) Non-profit performance indicators in the public sector. *Financial Accountability and Management*, 1(1), 51-74.

McAdam, R. and Walker, T. (2003) An inquiry into balanced scorecards within Best Value implementation in UK Local Government. *Public Administration*, 81(4), 873-892.

McCabe, B., McKendrick, J. and Keenan, J. (2002) Best Value in Scottish Local Authorities – As simple as ABC? *Journal of Finance and Management in Public Services*, 2(2), 43-54.

McChlery, S. (1999) *Management Accounting: Open Learning Material Professional 1.* London: Chartered Institute of Public Finance and Accountancy.

McChlery, S. (2001) *Accounting for Decision Making: Open Learning Material Professional 2*. London: Chartered Institute of Public Finance and Accountancy.

Merchant, K.A. (1981) The design of the corporate budgeting system: Influences on managerial behavior and performance. *The Accounting Review*, LVI(4), 813-829.

Merchant, K.A. (1984) Influences on departmental budgeting: An empirical examination of a contingency model. *Accounting, Organizations and Society*, 9(3/4), 291-307.

Mia, L. and Chenhall, R.H. (1994) The usefulness of management accounting systems, functional differentiation and managerial effectiveness. *Accounting, Organizations and Society*, 19(1), 1-13.

Mia, L. and Goyal, M. (1991) Span of control, task interdependence and usefulness of MAS information in not-for-profit Government organizations. *Financial Accountability and Management*, 7(4), 249-266.

Miah, N.Z. and Mia, L. (1996) Decentralization, accounting controls and performance of Government organizations: A New Zealand empirical study. *Financial Accountability and Management*, 12(3), 173-190.

Midwinter, A. (2001) New Labour and the Modernisation of British Local Government: A critique. *Financial Accountability and Management*, 17, 311-320.

Mile, R.E. and Snow, C.C. (1978) *Organizational Strategy, Structure, and Process*. 1st ed. New York: McGraw-Hill.

Miller, D. (1983) The correlates of entrepreneurship in three types of firms. *Management Science*, 29(7), 770-791.

Modell, S. (2004) Performance measurement myths in the public sector: A research note. *Financial Accountability and Management*, 20(1), 39-55.

Munro, B.H. (1993a) Differences Among Group Means: Multifactorial Analysis. *In:* Munro, B.H. and Page, E.B., eds. *Statistical Methods for Health Care Research*. 2nd ed. Philadelphia: J.B. Lippincott Company. pp. 129-144.

Munro, B.H. (1993b) Analysis of Covariance. *In:* Munro, B.H. and Page, E.B., eds. *Statistical Methods for Health Care Research*. 2nd ed. Philadelphia: J.B. Lippincott Company. pp. 145-155.

Munro, B.H. (1993c) Logistic Regression. *In:* Munro, B.H. and Page, E.B., eds. *Statistical Methods for Health Care Research*. 2nd ed. Philadelphia: J.B. Lippincott Company. pp. 229-244.

Munro, B.H. (1993d) Regression. *In:* Munro, B.H. and Page, E.B., eds. *Statistical Methods for Health Care Research*. 2nd ed. Philadelphia: J.B. Lippincott Company. pp. 193-228.

Mulcahy, C.C. and Mulcahy, M.E. (1995) Innovation as the key to a redesigned and cost effective local government. *Marquette Law Review*, 78(2), 549-582.

Mullins, D.R. and Zorn, C.K. (1999) Is activity-based costing up to the challenge when it comes to privatization of Local Government services? *Public Budgeting and Finance*, 19(2), 37-58.

Naman, J.L. and Slevin, D.P. (1993) Entrepreneurship and the concept of fit: A model and empirical tests. *Strategic Management Journal*, 14(2), 137-153.

Narver, J.C. and Slater, S.F. (1990) The effect of a market orientation on business profitability. *Journal of Marketing*, 54(4), 20-35.

Norreklit, H. (2000) The balance on the balanced scorecard a critical analysis of some of its assumptions. *Management Accounting Research*, 11(1), 65-88.

Nunnally, J. (1967) Psychometric Theory. 1st ed. New York: McGraw-Hill.

ODPM (Office of the Deputy Prime Minister) (2003) *Building on Success: A guide to the second generation of local public service agreements.* London, ODPM. Available at: http://www.communities.gov.uk/documents/localgovernment/pdf/133706.pdf [Accessed 22.01.2010]

OGC (Office of Government Commerce) (2005) *Performance Management* [online]. Available at: URL:http:www.ogc.gov.uk/sdtoolkit/reference/deliverylifecycle/perform_mgmt.html [Accessed 25.06.2005]

Oppenheim, A.N. (1992) *Questionnaire Design, Interviewing and Attitude Measurement*. 2nd ed. London: Pinter.

Osborne, D. and T. Gaebler (1993) *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector.* New York: Plume.

Otley, D. (1990) The contingency theory of management accounting. *Accounting, Organizations and Society*, 5(4), 413-428.

Otley, D. (1994) Management control in contemporary organizations: Towards a wider framework. *Management Accounting Research*, 5, 289-299.

Otley, D. (1995) Management Control, Organisational Design and Accounting Information Systems. *In:* Ashton, D,. Hopper, T. and Scapens, R.W., eds. *Issues in Management Accounting*. 2nd ed. Harlow, Essex: Pearson Education. pp. 45-63.

Otley, D. (1999) Performance management: A framework for management control systems research. *Management Accounting Research*, 10(4), 363-382.

Otley, D. (2001) Extending the boundaries of management accounting research: Developing systems for performance management. *British Accounting Review*, 33, 243-261.

Otley, D. and Pollanen, R.M. (2000) Budgetary criteria in performance evaluation: A critical appraisal using new evidence. *Accounting, Organizations and Society*, 25(4-5), 483-496.

Pallot, J. (1999) Beyond NPM: Developing strategic capacity. *Financial Accountability and Management*, 15(3/4), 419-426.

Palmer, A.J. (1993) Performance measurement in Local Government. *Public Money and Management*, 13(4), 31-36.

Pampel, F.C. (2000) *Logistic Regression: A Primer*. Thousand Oaks, California: Sage Publications.

Pendlebury, M.W. (1985) *Management Accounting in Local Government*. London: Institute of Cost and Management Accountants.

Pendlebury, M.W. (1989) Introduction. *In:* Pendlebury, M.W., ed. *Management Accounting in the Public Sector*. Oxford: Heinemann. pp. 1-7.

Pendlebury, M.W. (1994) Management accounting in Local Government. *Financial Accountability and Management*, 10(2), 117-129.

Perrow, C. (1967) A framework for the comparative analysis of organizations. *American Sociological Review*, 32(2), 194-208.

Perrow, C. (1970) *Organizational Analysis: A Sociological View*. London: Tavistock.

Porter, M. (1980) *Competitive Strategy: Techniques for Analyzing Industries and Competitors.* New York: Free Press.

Public Sector Benchmarking Service (2005) *What is Benchmarking?* [online] Available at: URL:http://www.benchmarking.gov.uk/about_bench/whatisit.asp [Accessed 02.09.2005]

Rashman, L. and Hartley, J. (2002) Leading and learning? Knowledge transfer in the Beacon Council Scheme. *Public Administration*, 80(3), 523-542.

Rashman, L. and Radnor, Z. (2005) Learning to Improve: Approaches to mproving Local Government services. *Public Money and Management*, 25(1), 19-26.

Rayburn, J.M. and Rayburn, L.G. (1991) Contingency theory and the impact of new accounting technology in uncertain hospital environments. *Accounting, Auditing and Accountability Journal*, 4(2), 55-75.

Reid, G.C. and Smith, J.A. (2000) The impact of contingencies on management accounting system development. *Management Accounting Research*, 11(4), 427-450.

Ryan, B., Scapens, R.W. and Theobold M. (1992) *Research Method and Methodology in Finance and Accounting*. London: Academic Press.

Saunders, M., Lewis, P. and Thornhill, A. (2007) *Research Methods for Business Students*. 4th ed. Harrow: Prentice Hall.

Schoonhoven, C.B. (1981) Problems with contingency theory: Testing assumptions hidden within the language of contingency theory. *Administrative Science Quarterly*, 26(3), 349-377.

Schumacker, R.E. and Lomax, R.G. (2004) *A Beginner's Guide to Structural Equation Modeling*. 2nd ed. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Seal, W. (2003) Modernity, modernization and the deinstitutionalization of incremental budgeting in Local Government. *Financial Accountability and Management*, 19(2), 93-116.

Selto, F.H., Renner, C.J. and Young, S.M. (1995) Assessing the organizational fit of a just-in-time manufacturing system: Testing selection, interaction and systems models of contingency theory. *Accounting, Organizations and Society*, 20(7/8), 665-684.

Selwyn, N. and Robson, K. (1998) Using e-mail as a research tool. *Social Research Update*, Issue 21.

Shields, M.D., Deng, F.J. and Kato, Y. (2000) The design and effects of control systems: Tests of direct- and indirect-effects models. *Accounting, Organizations and Society*, 25(2), 185-202.

Shook, C.L., Ketchen, D.J. Jnr, Hult, G.T. and Kacmar, K.M. (2004) An assessment of the use of structural equation modeling in strategic management research. *Strategic Management Journal*, 25(4), 397-404.

Simons, R. (1987) Accounting control systems and business strategy: An empirical analysis. *Accounting, Organizations and Society*, 12(4), 357-374.

Skousen, C.R. (1990) Budgeting practices in Local Governments of England and Wales. *Financial Accountability and Management*, 6(3), 191-208.

Slater, S. and Narver, J. (1995) Market orientation and the learning organization. *Journal of Marketing*, 59(3), 63-74.

Slater, S.F. & Narver, J.C. (1998) Customer-led and market-oriented: Let's not confuse the two. *Strategic Management Journal*, 19(10), 1001-1006.

Slater, S.F. and Narver, J.C. (1999) Market-oriented is more than being customer-led. *Strategic Management Journal*, 20(12), 1165-1168.

Slater, S.F. & Narver, J.C. (2000) The positive effect of a market orientation on business profitability: A balanced replication. *Journal of Business Research*, 48(1), 69-73.

Smith, D. and Langfield-Smith, K. (2004) Structural equation modelling in management accounting research: Critical analysis and opportunities. *Journal of Accounting Literature*, 23, 49-86.

Smith, M. (2000) Strategic management accounting. *Management Accounting (CIMA)*, January, 40-42.

Smith, P. (1990) The use of performance indicators in the Public Sector. *Journal of the Royal Statistical Society, Series A*, 153(1), 53-72.

Smith, P. (1993) Outcome-related performance indicators and organizational control in the public sector. *British Journal of Management*, 4(3), 135-151.

Smith, P. (1995) Performance indicators and outcome in the public sector. *Public Money and Management*, 15(4), 13-16.

Spicer, B.H. (1992) The resurgence of cost and management accounting: A review of some recent developments in practice, theories and case research methods. *Management Accounting Research*, 3(1), 1-37.

SPSS (2006) *SPSS Base 15.0 User's Guide*. USA: SPSS.

Stevens, J. (1996) *Applied Multivariate Statistics for the Social Sciences*. 3rd ed. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Stevens, J.M. and McGowan, R.P. (1983) Managerial strategies in municipal Government organizations. *The Academy of Management Journal*, 26(3), 527-534.

Strategy Unit (2002) *The Future of Local Government. Interim Report: Analysis*. London: HMSO.

Tabachnick, B. and Fidell, L.S. (2007) *Using Multivariate Statistics*. 5th ed. Boston: Allyn and Bacon.

Taylor, W.B. (1981) The use of life cycle costing in acquiring physical assets. *Long Range Planning*, 14(6), 32-43.

Thomas, A.P. (1991) Towards a contingency theory of corporate financial reporting systems. *Accounting, Auditing and Accountability Journal*, 4(4), 40-57.

Thompson, J.D. (1967) *Organizations in Action*. New York: McGraw-Hill.

Thompson, G.D. (1995) Problems with service performance reporting: The case of public art galleries. *Financial Accountability and Management*, 11(4), 337-350.

Tichelar, M. (1998) Evaluating performance indicators: Current trends in Local Government. *Local Government Studies*, 24(3), 29-35.

Tse, A. (1998) Comparing the response rate, response speed and response quality of two methods of sending questionnaires: Email vs. mail. *Journal of the Market Research Society,* 40(4), 353-61.

Ullman, J.B. (2007) Structural equation modeling. *In:* Tabachnick, B. and Fidell, L.S., eds. *Using Multivariate Statistics*. 5th ed. Boston: Allyn and Bacon. pp. 676-780.

Urdang, L. (1991) *The Oxford Thesaurus: An A-Z Dictionary of Synonyms.* Oxford: Oxford University Press.

Van de Ven, A.H. and Drazin, R. (1985) The concept of fit in contingency theory. *Research in Organizational Behavior*, 7, 333-365.

Verbeeten, F.H.M. (2008) Performance management practices in public sector organizations: Impact on performance. *Accounting, Auditing and Accountability Journal*, 21(3), 427-454.

Walker, R. M. and Jeanes, E. (2002) Innovation in a regulated service: The case of English housing associations. *Public Management Review*, 4(1), 525-550.

Walker, R. M., Jeanes, E. and Rowlands, R. (2002) Measuring innovation – applying the literature-based innovation output indicator to public services. *Public Administration*, 80(1), 201-214.

Waterhouse, J.H. and Tiessen, P. (1978) A contingency framework for management accounting systems research. *Accounting, Organizations and Society*, 3(1), 65-76.

West, S.G., Finch, J.F and Curran, P.J. (1995) Structural Equation Models With Nonnormal Variables: Problems and Remedies. *In:* Hoyle, R.H., ed. *Structural Equation Modeling Concepts, Issues and Applications.* Thousand Oaks: Sage. pp. 56-75.

Widener, S.K. (2004) An empirical investigation of the relation between the use of strategic human capital and the design of the management control system. *Accounting, Organizations and Society*, 29(3/4), 377-399.

Wilson, J. (2004) Comprehensive Performance Assessment - Springboard or dead-weight? *Public Money and Management*, 24(1), 63-68.

Wilson, R. (1995) Strategic Management Accounting. *In:* Ashton, D., Hopper, T. and Scapens, R.W., eds. *Issues in Management Accounting*. 2nd ed. Harlow, England: Pearson Education. pp. 159-190.

Wilson, R.M.S and Chua, W.F. (1993) *Managerial accounting: Method and meaning*. 2nd ed. London: Chapman and Hall.

Wisniewski, M. and Olafsson, S. (2004) Developing balanced scorecards in local authorities: A comparison on experience. *International Journal of Productivity and Performance Management*, 53(7), 602–610.

Woods, M. (2009) A contingency theory perspective on the risk management control system within Birmingham City Council. *Management Accounting Research*, 20(1), 69-81.

Woods, M. and Grubnic, S. (2008) Linking Comprehensive Performance Assessment to the balanced scorecard: Evidence from Hertfordshire County Council. *Financial Accountability and Management*, 24(3), 343-361.

Woodward, J. (1980) *Industrial Organization: Theory and Practice*. 2nd ed. Oxford: Oxford University Press.

Worthington, A. and Dollery, B. (2000) An empirical study of frontier efficiency measurement techniques in Local Government. *Local Government Studies*, 26(2), 23-52.

Young, K. (2005) Local Public Service Agreements and Performance Incentives for Local Government. *Local Government Studies*, 31(1), 3-20.