2009

The impact on organizational performance of contextual factors, strategy and management control systems

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The Impact on Organizational Performance of Contextual Factors, Strategy and Management Control Systems

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Bachelor of Economics

Master of Professional Accounting

Master of Business by Research - Accounting

A thesis submitted in fulfillment of the requirements for the award of

Doctor of Philosophy (Accounting)

Supervisor: Professor Malcolm Smith

Edith Cowan University

2009

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

ABSTRACT

This dissertation examined antecedents of the use of contemporary management control systems (MCS) by testing the alignment of strategic and contextual variables with variables of contemporary systems of control in the organization. The study further explored the performance consequences of the implementation of these control systems, and the manner in which strategy can influence the organization's control culture and management accounting practices. The impact of contextual factors, notably size and structural arrangements, such as decentralization and diversification, on management's choice of control systems were also examined. Hence, the study addressed the need for a better understanding of the association between variables across the four organizational areas of context, strategy, control and performance and attempted to bridge existing gaps in the body of knowledge in relation to the nature of the relationship between variables in these areas.

Contributions of this study to existing knowledge include the integration of different relationships, across the study variables, that were separately tested in previous research, the validation of a multi-dimensional model, suggested by Langfield-Smith (1997), to measure organizational strategic orientation, the use of several theories from different disciplines to predict the different relationships included in the study model and the investigation of relationships that have been little documented or not specifically explored.

Twenty seven research hypotheses were developed and tested: the first six hypotheses concerned predicted causal relationships between the organizational strategic orientation (i.e., entrepreneurial vs. conservative) and management control systems, notably, participative budgeting, activity based costing (ABC), total quality management (TQM), just in time (JIT), innovation, and the balanced scorecard (BSC).

A further fifteen hypotheses explored the effect of the organizational contextual variables of size, decentralization, and diversification on the use of these control systems. Finally, the remaining six hypotheses tested the relationship between organizational performance and the adoption of the specified MCS in the organization.

The hypotheses were tested on a randomly selected sample of Australian manufacturing organizations through a questionnaire survey addressed to the senior management of each organization. A correlation matrix for the study constructs followed by a structural equation modeling approach was conducted to test the relationships between the variables of the study. The results of the study generated a number of highly significant correlations in support of the hypotheses. Participative budgeting and innovation proved to be more likely associated with entrepreneurial strategies, rather than conservative strategies; ABC was found to be positively associated with the size of the organization, TQM was found to be associated with decentralized structural arrangements, while BSC was positively associated with firm diversification. Both innovation and BSC were found to have significant positive effects on organizational performance.

The study is expected to benefit recent and future MCS implementers by directing their attention to appropriate use of these initiatives when certain contexts and strategic priorities are in place. The findings are also expected to advance the developed theory and add significantly to our knowledge of the inter-relationships between context, strategy, control systems and performance in manufacturing organizations.

DECLARATION

I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text.

Signature……

Date……

ACKNOLEDGEMENT AND DEDICATION

I wish to extend my sincere gratitude to Professor Malcolm Smith. Working under Professor Smith's direction enabled me to learn, develop and appreciate the knowledge and skills assumed to achieve this degree. I would like also to thank Dr. Hadrian Djajadikerta for his association in supervising this project, and to all of those who provided me with information necessary to complete this research work.

I dedicate this work to my parents Saeb and Rabiha and to my aunt Nawal for their guidance and support.

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CHAPTER 1: INTRODUCTION

Over the past two decades, the relationship between Strategy, Contextual Factors, Management Control Systems (MCS) and Performance has attracted increasing attention in the literature. Studies have looked at different strategic choices and contextual factors as antecedents to management choices of control systems. Literature interest has also been devoted to the implementation consequences of different control systems on overall performance (Merchant, 1981; Govindarajan and Gupta, 1985; Brownell, 1985; Simons, 1987; Shields and Young, 1993; White, 1993; Ittner and Larcker, 1995; Chenhall and Langfield-Smith, 1998; Hoque and James, 2000; Cagwin and Bouwman, 2002; Baines and Langfield-Smith, 2003; Said, HassabElnaby and Wier, 2003; Bisbe and Otley, 2004; Sila, 2005). Conventional approaches view MCS as passive tools used to provide information to assist managers' decision making, but contemporary approaches consider MCS as more active techniques providing individuals and business units in the organization with the power to achieve their goals (Chenhall, 2003). A general perception is noticeable in contemporary literature that the interaction of management control systems with existing organizational contextual factors, and with strategic variables reflects management's processes to react and respond to opportunities and pressures. Previous literature has also generally agreed that proper selection of MCS supporting the achievement of the organizational goals is critical for organizational endurance (Abernethy and Brownell, 1999).

The growing interest in research into the relationships spanning factors of the four areas of the organization context, strategy, MCS, and performance emphasizes the importance of these factors and indicates the need for better understanding of associations across their variables; this understanding is the main motivation of this research.

There is an increasing call for understanding of associations between MCS choices and organizational contextual factors antecedents to these choices. It is assumed in the literature that contextual factors including size and structural arrangements such as decentralization and diversification should influence management's choices of control systems. A proper management of this influence will better shape the future of the organization (Kimberly and Evanisko, 1981; Merchant, 1981; White, 1993; Holthausen, Larcker and Sloan, 1995; Bushman, Indjejikian and Smith, 1996; Krumwiede, 1997; 1998; Fritsch and Meschede, 2001; Cagwin and Bouwman, 2002; Chenhall, 2003). The growing complexity of business structures and the rising tendency of multi-nationalization in organizations have increased the need to understand the appropriateness of different MCS in different organizational structures and arrangements. The development of such understanding can help to overcome the difficulty of managing at a distance and to achieve control and strategic objectives (Langfield-Smith, 2005, p.78).

The literature has also emphasized the critical influential role of strategy. Strategy is not another contextual variable; it is rather the management perspective the implication of which can influence many other organizational factors including the control culture and management techniques. Many management accounting practices and control systems may be of potential benefit to companies depending on the degree to which certain strategies are emphasized (Chenhall, 2003). The general assumption of existing literature is that proper choice of MCS that fit the organizational strategy model is critical in the determination of the strategic implementation success and performance association (Govindarajan and Gupta, 1985; McDaniel and Kolari, 1987; Simons and Gray,1990; Simons, 1992; Gosselin, 1997; Chenhall and Langfield-Smith, 1998; Abernethy and Brownell, 1999; Kaplan and Norton, 2001a, 2001b; McAdam and Bailie, 2002; Baines and Langfield-Smith, 2003; Aragon-Sanchez and Sanchez-Marin, 2005; O'Regan and Ghobadian, 2005).

When exploring the performance consequences of MCS, studies have taken different approaches in predicting the relationships between these systems and performance. One common type of study examines the effect of MCS on performance as contingent on other organizational variables such as contextual and strategic variables and conditions (Merchant, 1981; Chenhall and Langfield-Smith, 1998; Hoque and James,

2000; Said et al., 2003; Baines and Langfield-Smith, 2003). Another approach treats MCS as moderating the relation between organizational contextual or strategic variables and performance (Abernethy and Brownell, 1999; Green, 2002). Others have suggested that MCS will have positive performance consequences when they are moderated by, or working concurrently with other control variables (Shields and Young, 1993; Cagwin and Bouwman, 2002; Maiga and Jacobs, 2003; Bisbe and Otley, 2004). There are some other studies, however, which based their predictions on assumed effective characteristics of MCS. They have treated MCS as a variable independent enough to impact performance (Kaplan and Norton, 1992; Banker, Potter and Srinivasan, 2000; Malina and Selto, 2001; Ittner, Larcker and Randall, 2003; Davis and Albright, 2003; Sila and Ebrahimpour, 2005).

It is recognized that the stream of literature has provided a basis for a generalized proposition between elements of the four organizational areas of interest (Shields, 1997; Chenhall, 2003). In spite of that, their findings suggest a need for further research.

While there appears to be a connection between strategy, context and MCS, the picture obtained from the literature is not a complete one (Shih and Yong, 2001). Despite increasing attention being directed to this area, the strategy/context-MCS-performance relationship remain, to a large extent, unexplored, little evidenced or understood (Langfield-Smith, 1997; Shields, 1997; Marginson, 2002). Specifically, empirical evidences provided by studies conducted were found to be 'fragmentary, providing limited knowledge about the forms of MCS that suit particular strategies and in fact, were incompatible and sometimes conflicting', (Langfield-Smith, 1997, p.228).

A review of the literature has confirmed these arguments. It is apparent that there are existing gaps in the body of knowledge in regard to the nature of the relationship between MCS, strategy, context and performance. There is still '*so much'* that we still need to examine, investigate and understand (Langfield-Smith, 2005, p.73). The absence of the use of common characteristics to classify strategy (as various typologies used to characterize business strategy), the use of underspecified and less consistent models and research designs, the lack of orientation towards testing more

contemporary approaches to effective control models that reflect the strategic nature of MCS, and the lack of priority accorded more integrative research on several dimensions (i.e., topics and theories) are all shortcomings that create confusion and may weaken the integration of research evidence (Langfield-Smith, 1997; Shields, 1997). It is precisely these gaps that this research is intended to address and to clarify through the examination of the influence of contextual factors and strategy on MCS and performance consequences of predicted interactions.

Based on these research contribution opportunities, the theoretical framework that is developed and tested in this study attempts to confirm, complement and integrate the associations that were discussed separately in previous research.

Contingency theory, economic theories (agency theory and transaction cost theory), psychological theories, production and operation management (POM) theories and strategic management theories are used in this study to explain predictions of associations across the research variables. The reliance on multiple theories has guided this research for two reasons:

First, as applied to this particular integrative research, a more complete model is developed by relying on a variety of theories from different disciplines. A single social science theory is limited when the need is for several predictions to underlie a multi-dimensional study model (Shields, 1997). Therefore, the use of several theories can inspire various expectations of different associations across the four tested areas. These different theories explain how different organizational contextual and strategic variables influence certain MCS implementations. They also provide the basis to predict MCS implementation impacts on organizational performance. Further, different associations among the tested MCS variables can also be explained by this variety of theories.

Second, alternative theories have a long tradition in the study of interactions across variables of strategy, contexts, MCS and performance (Langfield-Smith, 1997; Shields, 1997; Chenhall, 2003). Much of the empirical research in this area follows a contingency theory based approach. Researchers using this approach have attempted to explain the effectiveness of MCS designs that best suit the organizational size,

structure, and strategy type (Merchant, 1981; Govindarajan and Gupta, 1985; Chenhall and Langfield-Smith, 1998; Said et al., 2003). Agency theory provides predictions of interaction across the tested areas based on principal-agent relationships (Shields and Young, 1993; Holthausen et al., 1995; Ittner, Larcker and Rajan, 1997). Psychological theories provided cognitive based hypotheses used in previous relevant research. Cognitive hypotheses predict strategic implementation success and positive performance to be driven by the development of understanding, knowledge and participation of individuals in the organizational lower levels, subordinates and units (Frucot and Shearon, 1991; Kren, 1992; Barsky and Bresmer, 1999). Previous relevant studies have used product and operation management theories (POM) that deal with quality, process layout and scheduling. POM research hypotheses were based on normative recommendations of quality and management initiatives theorists (Ittner and Larcker, 1995; Alles, Datar and Lambert, 1995). Strategic management theories relating to strategy typology and strategic control were also used to explain similar previous frameworks. Strategic management studies have been based on predictions that MCS designs are more effective when compatible strategy types are in place (Miller and Friesen, 1984; Simons, 1990; Gosselin, 1997; McAdam and Bailie, 2002; Baines and Langfield-Smith, 2003; O'Regan and Ghobadian, 2005).

Consistent with the above theoretical approaches, the design of this research is empirically based. The study framework tests and explores hypotheses which have been generated through a synthesis of both empirical and case-based literature. The findings of this research form a foundation upon which researchers and practitioners can:

- Better understand how strategy and contextual variables interact to affect choices of MCS implementation; and

- Gain insights into how the design and configuration of strategic contemporary approaches to effective control models might lead to enhanced performance outcomes.

This research involves three main steps. First, on the basis of the strategic

management and management accounting literature, the extant knowledge of the Contextual factors/strategy-MCS-performance relationship is reflected in the generation of the study hypotheses. These hypotheses are tested on a randomly selected sample of Australian manufacturing organizations through a questionnaire survey. The four key variables of interest in this research are strategy, contextual factors, MCS and performance. The survey operationalizes these variables of interest through the use of instruments developed by established researchers, wherever possible. Specifically, the means by which these variables of interest are operationalized in this research, and the literature from which their measurement instruments are derived are:

- Contextual Factors: which include the variable of size and the structural variables of decentralization and diversification (Hoque and James, 2002; Green, 2002; Cagwin and Bouwman, 2002).
- Strategic orientation: based on multi-dimensional conservative vs. entrepreneurial strategic classification (Govindarajan and Gupta, 1984; McDaniel and Kolari, 1987; Parthasarthy and Sethi, 1993; Chenhall and Langfield-Smith, 1998; Baines and Langfield-Smith, 2003; Aragon-Sanchez and Sanchez-Marin, 2005; O'Regan and Ghobadian, 2005).
- MCS design: includes the contemporary management tools of participative budgeting, activity based costing (ABC), total quality management (TQM), just-in-time (JIT), innovation and the balanced scorecard (BSC) (Shields and Young, 1993; Zahra and Covin, 1993; Hoque and James, 2002; Cagwin and Bouwman, 2002; Fullerton and McWatters, 2002; Bisbe and Otley, 2004; Sila and Ebrahimpour, 2005).

- Organizational Performance: embraces both financial and non financial performance criteria (Baines and Langfield-Smith, 2003).

The second main step relies on structural equation modeling (SEM) to test the study framework. The use of SEM provides concurrent analysis of multiple relationships included in the model. It facilitates testing direct, indirect, moderating and mediating effects across the framework elements. Therefore, its use is reasonable to test such

'nomological' frameworks (Shields, 1997; Shields and Shields, 1998; Smith and Langfield-Smith, 2004). The last step of this research draws conclusions in response to the research question, and identifies and evaluates ramifications for existing theory and implications for improved practice.

The structure of this thesis includes the following chapters: Chapter 2 describes the research framework of this study and reviews relative literature. Chapter 3 discusses the study's research methodology. Chapter 4 presents the conducted data analysis. Chapter 5 reports and discusses the results. Finally, Chapter 6 includes the thesis conclusion, the research limitations and suggestions for further research.

CHAPTER 2:

KEY MOTIVATING THEORY AND LITERATURE

This chapter identifies the main themes of constructs, subjects to this study, and relationships that were expected to exist between them. This includes the theoretical framework of this research and key theories, upon which the framework was drawn. An extensive review of relevant literature and previous studies follows. The theoretical framework and the literature implications influenced the development of the twenty seven research hypotheses.

2.1 Definitions

Three key concepts are fundamental to this investigation and their use in this research warrant definition. These concepts are:

- Contextual and structural variables
- Strategic orientation
- Management Control Systems.

2.1.1 Contextual and structural variables

The interest of this study in contextual and structural variable stems from the widely argued statement that the contextual and structural characteristics of an organization significantly influence its behavior (Kimberly and Evanisko, 1981). This study will include the organizational contextual variable of size and the structural arrangements of decentralization and diversification.

Structural arrangement in the organization refers to the formal design of different functions for organizational members, or tasks to carry out organizational activities (Chenhall, 2003). Chenhall (2003) quoted the definition of structure as how the organization is differentiated and integrated. Differentiation is defined as the degree to which managements of sub-units can act as 'quasi entrepreneurs', while integration refers to the extent to which subunits act in manners consistent with organizational objectives. The degree of decentralization represents the degree to which decisions are made at lower levels of the organizational chain of command (Merchant, 1981). Diversification represents the variety of products and/or processes found in the organization (Kimberly and Evanisko, 1981).

Size, diversification and decentralization can influence organizational management control behavior. Larger organizations are more capable of improving their efficiency and have more opportunities for specialization and division of labor. The larger the organization, the greater is the need for managers to handle more information. Further, size also provides organizations with resources to expand; this implies additional administration concerns due to increased levels of complexity (Chenhall, 2003). Structural arrangements influence the efficiency of work, the motivation of individuals, information flow, and control systems. Employment of diversification permits access to broader knowledge of new ideas. Increasing the number of specialties, and higher degree of decentralization generate complexity in coordination, control and information flow (Kimberly and Evanisko, 1981; Shields and Young, 1993).

Recent calls for a better understanding of the influencing role of these factors emphasize the significance of the inclusion of these variables in this enquiry. Businesses with contemporary contextual changes no longer match with models assumed in the traditional management control literature (Otley, 1994). The increase of complexity in business structures and the spread of multinational organizations highlight the need to better understand the appropriateness of different MCS in different organizational structures and arrangements. The development of such understanding can help to overcome the difficulty of managing at a distance and achieve control and strategic objectives (Langfield-Smith, 2005, p.78).

2.1.2 Strategic orientation

Another influencing variable is the strategy type adopted by the organization. Strategy can be viewed as the way organizations behave, in relation to their mission, objectives and resources, to interact with their environment (McDaniel and Kolary, 1987) and to achieve competitive benefits over their rivals (Gibbons, Kennealy and Lavin, 2003). Strategy varies from one firm to another, as firms, even in the same industry, may vary in the way they compete and respond to their environments (O'Regan and Ghobadian, 2005).

The Miles and Snow (1978), Porter (1980) and Gupta and Govindarajan (1984) models are useful tools for broadly categorizing and understanding the different strategies followed by organizations and have proved to be the most popular in previous research. According to these taxonomies, strategy types mainly fall in one of two main categories. At one extreme of the strategy spectrum are “conservative” strategies (i.e., the defender strategy of Miles and Snow, cost-leadership of Porter, and harvest strategies of Gupta and Govindarajan). At the other end are "entrepreneurial" strategies (i.e., prospector strategy of Miles and Snow, product differentiation strategy of Porter, and build strategy of Gupta and Govindarajan (Tucker, Thorne and Gurd, 2006). In between the two strategic extremes are hybrid strategies which are a mix of the two extreme strategies (i.e., the analyser strategy of Miles and Snow, focus

strategy of Porter, and hold strategy of Gupta and Govindarajan).

Although these three main typologies are broadly similar from the perspective that strategies are mainly either conservative or entrepreneurial, the dimensions of the three typologies are different in relation to the scope and focus of each strategy classification. The scope and focus of strategies followed by particular businesses can be described along three dimensions: the typology dimension, which is best described by prospector vs. defender strategies of Miles and Snow (1978); the strategic mission dimension, which is best represented by build vs. harvest strategies of Gupta and Govindarajan (1984); and the competitive position dimension as defined in differentiation vs. cost leadership strategies suggested by Porter (1980). A comparison of different research studies that have used the range of strategic variables based on the assumed similarities of the main typologies without taking in consideration the dimensional differences of these typologies can generate confusion and may weaken the consistency of research findings (Langfield-Smith, 1997). To bridge this gap, a configuration model, suggested by Langfield-Smith (1997), of the three mentioned strategic typologies was validated in this study. The configuration model, used and tested in this study, is based on a combination of the common characteristics of the strategy variables at the two strategy type extremes (conservative vs. entrepreneurial), while taking into consideration the multi-dimensional nature of strategy (Langfield-Smith, 1997).

Clearly, strategy's influencing role on MCS is important, making it significant to this enquiry. Strategy is not another contextual variable (Chenhall, 2003); it is rather a primary means to understand action taken by organizations to achieve enhanced performance and to increase financial profitability and competitive advantage (O'Regan and Ghobadian, 2005). It is the means whereby management can influence the firm control culture and management control systems as well as many other variables. Proper choice of management control systems that fit the organizational strategy model is suggested by previous literature to be the most critical in the determination of the strategic implementation success and performance association. Many management accounting practices and management control systems may be of potential benefit to companies depending on the degree to which certain strategies are

emphasized (Chenhall and Langfield-Smith, 1998; Chenhall, 2003).

2.1.3 Management Control Systems

Contemporary MCS are not the traditional passive tools used solely to provide information to assist managers' decision making. Rather, they are now perceived as more active techniques providing individuals and business units in the organization with the power to implement their strategies and to operate successfully towards the achievement of their goals (Chenhall, 2003). The separation of management control from strategic planning and operational control had lead traditional control systems to be almost limited to accounting-based organizational tools. However, changes in contemporary business nature bring into the question whether the traditional narrow definition of management control is still appropriate. Contemporary businesses are not any more relatively large, stable, and having relatively fewer middle management roles. Rather, changes in the context within which organizations operate have taken place in the last two decades including uncertainty, organizational size, concentration and alliances, and a decline in manufacturing. These contemporary contextual changes have emphasized the role of management control systems to further include persistent reformulation of business strategy to match changes in environments faced, and to monitor the implementation of proper actions at operational levels (Otley, 1994).

The relative decline in manufacturing and increase in service-based organizations in the developed world has highlighted the knowledge and skills of the workforce in these countries in innovating and delivering relatively sophisticated products and services. Accordingly, traditional accounting control techniques have been adapted to take account of the declining role of direct labour, by modifications such as activity-based-costing (ABC) (Otley, 1994). Costing systems, therefore, have been substantially reworked with the introduction of ABC to bring forward new strategic priorities (Cagwin and Bouwman, 2002; Maiga and Jacobs, 2003).

The call for a greater level of non-financial performance measures by the use of non-financial-based compensation and the introduction of the balanced scorecard (BSC) is the most direct contemporary claim to recapture the strategic significance of MCS (Kaplan and Norton, 1992; 1996a; 1996b; Kaplan, 1994; Banker et al., 2000; Said et al., 2003). The inclusion of non-financial management controls indicates the organizational strategic thinking and adaptation to the prevalence of rapid change and its associated lack of predictability. The need for a business process orientation of contemporary MCS highlighted the importance of the inclusion of non-financial, in addition to financial, based control systems (Otley, 1994).

Increasing corporate sophistication brought greater importance to budgets as practical tools to implement strategy. Participating in the budgeting process helps top managers to better understand drivers of financial performance in different organizational levels and helps the employees to implement organizational strategy (Merchant, 1981; Barsky and Bresmer, 1999; Abernethy and Brownell, 1999). Few individuals at senior managerial levels may be insufficient to face uncertainty; management in times of uncertainty requires more active involvement and participating from individuals at different organizational levels (Otley, 1994).

As a response to modern strategic competitive priorities (Kannan and Tan, 2004), and in the contemporary context of long-term alliance between organizations, the scope of the activity of management control has extended beyond the legal boundaries of the organization. Such a context is emphasized by systems of production which have incorporated a just-in-time (JIT) philosophy (Otley, 1994). The increase in competition intensity has also motivated practices such as target costing and benchmarking, which leads to ideas of continuous improvement philosophy (Otley, 1994). Total quality management (TQM), JIT and innovation in the organization can support this philosophy and are recommended as creative and innovative ways to compete, improve performance and support strategy (Green, 2002; Langfield-Smith, 2005, p.73; Sila and Ebrahimpour, 2005) and are key aspects of strategic change (Bisbe and Otley, 2004; Davila, 2005, p.38; Vaona and Pianta, 2008).

Consistent with these perceptions, the strategic management and organizational behaviour literature has emphasized the importance of appropriate control systems

that fit the organizational strategy model to actively build and sustain valuable strategic roles (Miles and Snow, 1978; Porter, 1980; Gupta and Govindarajan, 1984), and to enable innovative strategic responses to contemporary unstable environments and increasing complexity of corporate activities (Chapman, 2005).

There is a lack of research orientation towards testing more modern approaches to effective control models that represent the nature of MCS in strategic change (Langfield-Smith, 1997). To contribute towards bridging the existing gap, MCS that are selected and examined for the purpose of this study are contemporary MCS that are identified by previous literature as key strategic management tools. The implementation of these systems was recommended to facilitate innovation in strategic responses to contemporary unstable environments and increasing sophistication of corporate activities (Otley, 1994; Chapman, 2005).

2.2 Theoretical framework

The theoretical framework that was developed and tested in this study is consistent with previous research and is empirically based. Theories that were used to explain the associations predicted between variables across the theoretical model have a long tradition in relevant previous studies of the interactions across variables of strategy, organizational contextual factors, MCS and performance. The hypotheses that were tested in this study were based on predictions of associations across variables of the four researched areas as articulated by the research question; most of these associations have been predicted and tested in previous literature. Therefore, the generation of hypotheses was based on extant knowledge, theoretical explanations and evidence provided in previous literature.

In addition to being consistent with previous studies, this study's framework is expected to extend and contribute to previous knowledge by providing a broader and a more complete model. That is, the framework that was developed and tested in this

study integrated different links that include different topics most of which been separately tested in different previous research. Contextual variables that were tested included multiple variables of size and the structural variables of decentralization and diversification. MCS tested included the different topics of budgeting (i.e., participative budgeting), performance measurement (i.e., the BSC), costing (i.e., ABC), innovation, and management initiatives (i.e., TQM and JIT). Further, the construction of the tested strategic priority variable was based on a configuration model, suggested by Langfield-Smith (1997). The suggested model was based on the common characteristics of the strategy variable at the two strategy type extremes (conservative vs. entrepreneurial), taking into consideration the multi-dimensional nature of strategy.

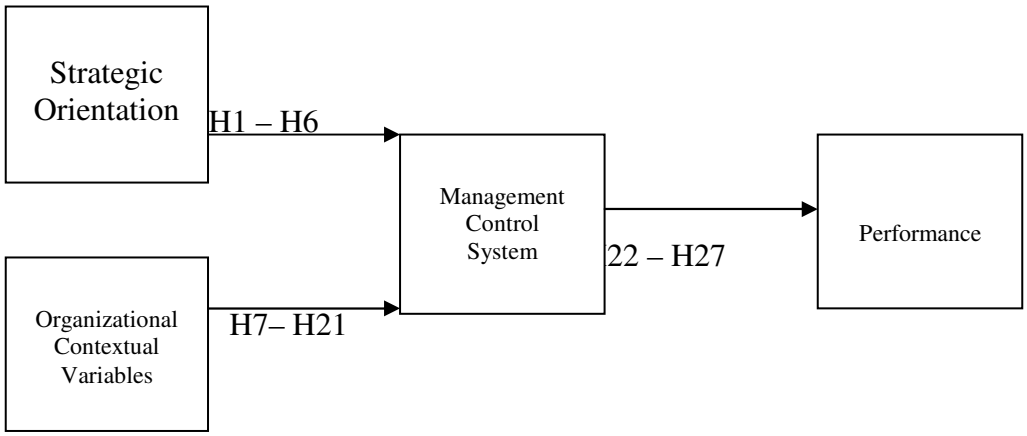

Figure 2.1: The theoretical framework

Strategy and contextual variables, the hypothesized correlations with the selected MCS variables, and the associations of these MCS with the organizational performance are depicted in Figure (2.1), which provides a simplified representation of the study theoretical framework.

However, it is needed to emphasize here that the theoretical framework of this study (Figure 2.1) does not imply the absence of direct impacts of strategy and contextual variables on the organizational performance. Rather, it represents the scope of this study, which is limited to examining the role of MCS under certain strategic orientations and contextual situations and the impact of these MCS choices on performance.

2.3 Theoretical justification underpinning this research

The theoretical orientation that was drawn upon is Contingency Theory, Economic Theory (i.e., Agency Theory and Transaction Cost Theory), Cognitive Psychological Theory, Production and Operations Management (POM) theories and Strategic Management theories. Accordingly, the logic behind assuming the existence of a relationship between the alignment of MCS and strategy, MCS and contextual factors, and MCS and the organizational performance is premised on the following line of argument.

It is assumed that contextual factors and structural arrangements should influence management's choice of control systems and that this can positively shape the future of the organization (Kimberly and Evanisco, 1981; Merchant, 1981; White, 1993; Holthausen et al., 1995; Bushman et al., 1996; Krumwiede, 1997; 1998; Fritsch and Meschede, 2001; Cagwin and Bouwman, 2002; Chenhall, 2003). It is also assumed that proper choice of management control systems that fit the organizational strategy model is critical in the determination of the strategic implementation success and performance association (Govindarajan and Gupta, 1985; McDaniel and Kolari, 1987; Ittner et al., 1997; Gosselin, 1997; Chenhall and Langfield-Smith, 1998; Abernethy and Brownell, 1999; Kaplan and Norton, 2001a; 2001b; McAdam and Bailie, 2002; Cagwin and Bouwman, 2002; Said et al., 2003; Baines and Langfield-Smith, 2003; Aragon-Sanchez and Sanchez-Marin, 2005; O'Regan and Ghobadian, 2005).

Contingency theory suggests that MCS need to fit with the circumstances in which they are required to be operated. That is, the organizational situations influence what the appropriate mode of control should be. These circumstances or situations are, to an appreciable extent, defined by the existing organizational contextual and structural factors, and the strategic priorities that have been developed by the organization. Moreover, the contingency approach argues that higher organizational performance is a contingent consequence of an appropriate alignment of MCS with strategic priorities and contextual factors (Merchant, 1981; Govindarajan and Gupta, 1985; Chenhall and Langfield-Smith, 1998; Said et al., 2003).

Economic theories (i.e., agency theory and transaction cost theory) provide predictions of the same interaction across the four tested areas. Agency theory, based on principal-agent relationships, predicts the design of MCS, under certain contextual factors and strategic priorities, to be based on the extent that such design can be informative, motivating and enabling of communication across different organizational levels. Information on lower managerial levels and communication across different levels help better resource and effort allocations, which explains the performance consequences of different MCS designs (Shields and Young, 1993; Holthausen et al., 1995; Ittner et al., 1997). Transaction cost theory predicts that MCS enhances process cost efficiency in the organization to be associated with performance consequences (Fritsch and Meschede, 2001; Cagwin and Bouwman, 2002; Sila and Ebrahimpour, 2005; Kannan and Tan, 2005).

Production and operations management theory (POM) provides normative prescriptions and descriptions of management initiatives, which underlie the study of relationships between these management initiatives and their organizational antecedents. Management control literature recommendations of successful implementation provided by theorists and advocates can influence the prediction of significant differences among different firms in their implementation of MCS as a result of differences in organizational factors (Ahire and Golhar, 1996; Kannan and Tan, 2005).

Strategic management theories explain the influence of the organizational strategic priority on the MCS choices. Strategic management theories have emphasized the importance of appropriate control systems that fit the organizational strategy model to actively build and support valuable strategic roles (Miles and Snow, 1978; Porter, 1980; Gupta and Govindarajan, 1984; Chapman, 2005).

Cognitive hypotheses expect MCS implementation success and positive performance when MCS enable the development of understanding, knowledge and participation of individuals at lower levels, subordinates and units of the organization (Frucot and Shearon, 1991; Kren, 1992; Barsky and Bresmer, 1999).

The considerable body of literature has provided a basis for generalized propositions between elements of MCS and elements of strategy and context as well as elements of MCS and performance. An integrative framework that consists of different links, explained by different theories, was used and tested in this study to uncover, relatively, generalizable findings that can enhance desired organizational outcomes. Moreover, this study's integrative research on different dimensions of topics and theories has successfully dealt with the challenges and opportunities identified by previous studies. A broader contribution is made by the inclusion of multiple links of different topics, and a more complete model was developed by relying on various theories from several disciplines (Shields, 1997).

Accordingly, this research has adopted an integrative approach to respond to the call for a contribution to extend knowledge in this area. One of the aims of this chapter, therefore, is to review the seminal literature, research and studies to obtain an indication of the state of our knowledge on how contextual factors and strategy influence choices of MCS, and the effect of the use of contemporary MCS on the overall performance. The review of literature will help to identify the implications for this research in furthering relevant research agenda.

2.4 Literature review, implications and hypotheses development

A review of relevant empirical studies on management control systems indicates that previous literature has focused on antecedents and consequences of MCS implementation.

Some studies have based their investigations solely on antecedents to MCS implementation. Organizational contextual factors, strategy types as well as other management systems have been tested as antecedents (Kimberly and Evanisko, 1981; McDaniel and Kolari, 1987; Abernethy and Lillis, 1995; Holthausen et al., 1995; Bushman et al., 1996; Gosselin, 1997; Ittner et al., 1997; Krumwiede, 1998; Abernethy and Brownell, 1999; Barsky and Bresmer, 1999; Fritsch and Meschede, 2001; McAdam and Bailie, 2002; O'Regan and Ghobadian, 2005; Aragon-Sanchez and Sanchez-Marin, 2005).

Other researchers have looked only at the consequences of the implementation of management control techniques. The impact on performance, in particular, has been examined in these studies (McGowan, 1998; Banker et al., 2000; Malina and Selto, 2001; Ittner et al., 2003; Maiga and Jacobs, 2003; Davis and Albright, 2004; Sila and Ebrahimpour, 2005).

However, there has been other literature that has addressed both antecedents and consequences (Merchant, 1981; Govindarajan and Gupta, 1985; Brownell, 1985; Shields and Young, 1993; White, 1993; Ittner and Larcker, 1995; Chenhall and Langfield-Smith, 1998; Hoque and James, 2000; Cagwin and Bouwman, 2002; Baines and Langfield-Smith, 2003; Said et al., 2003; Bisbe and Otley, 2004; Sila, 2005).

This section reviews the previous literature and explores the empirical links among the four areas addressed in this study's theoretical model (i.e., organizational context, strategy, MCS, and performance). Previous findings and implications relevant to this research will be summarized, used in the development of the study hypotheses, and

then presented graphically (Figure 2.2).

2.4.1 Strategy type and MCS

Previous literature has provided a generic typology of organizational competitive strategies. The association of the organizational choice of competitive strategy and performance is said to be determined by the level of fit between the strategy implemented with the organizational external factors and internal variables. External fit refers to the appropriateness of implemented strategy to the external environment, while internal fit refers to the matching of the organizational strategic choice with the organizational designs of structure and process. The internal fit, which includes the proper choices of MCS, is suggested to be more critical in the determination of the strategic implementation success and performance association (Miles et al., 1978; Gibbons et al., 2003).

Strategy types represent how organizations interact with their environment to achieve success (McDaniel and Kolari, 1987). A broad classification of strategic typology ranging from 'conservative' to 'opportunistic' has been developed in previous literature (Miles and Snow, 1978; Porter, 1980; Harrigan, 1980; Woo and Cooper, 1981; Miller and Friesen, 1982; Gupta and Govindarajan, 1984). The Miles and Snow taxonomy remains the most popular and frequently used in previous literature. This is attributed to the more comprehensive and complex model of strategy types they introduced in analyzing and explaining the ways organizations interact with their environments and the subsequent strategies organizations adopt to achieve their performance goals (McDaniel and Kolari, 1987; Gibbons et al., 2003).

The strategy typologies described by previous literature shows that there is an agreed upon general typology continuum representing different classifications of organizations, in regard to competitive strategy. The detailed descriptions of the main typologies in the different studies are similar, particularly in relation to the level of environmental uncertainty organizations face (Langfield-Smith, 1997; Chenhall, 2003). At one end of the strategy spectrum are "conservative" organizations. At the

other end are “entrepreneurial” businesses, who respond to their chosen environment in a manner that is almost opposite to conservative firms.

Conservatives are described as ‘defenders’, who defend their stable control of a limited portion of the market from other competitors by their offer of competitive prices or high quality goods. These organizations typically focus on cost-efficiency in their investment and administration (Miles and Snow, 1978). According to Porter (1980), conservatives are organizations of ‘cost-leadership’, whose competitive tactics distract rivals by targeting lower profits or/and minimizing investment costs. ‘Early exit’, in the case of declining industries, represents conservative organizations, where these organizations try to cut losses and recover much of its assets before it is too late by following a ‘get-out-now’ strategy (Harrigan, 1980). Conservative strategy is also represented in ‘Effective low share price competitive strategy’, where effective low share price firms, compared to ineffective low share price firms and effective high share price firms, exhibit a consistent pattern of careful allocations of resources, better cost control and restrained spending; reflected in lower R&D expenditure, less vertically integrated processes, narrower product lines, moderate advertising and smaller percentage of new products (Woo and Cooper, 1981). Conservative are also described as organizations of the successful adaptive archetype that adopt ‘adaptive’ strategies, through the competitive strategy of low cost/price, incremental change and efficiency (Miller and Friesen, 1984). According to Govindarajan and Gupta (1985), conservatives are organizations that follow a ‘harvest’ strategy, where organizations aim to maximize short-term earnings and cash flow.

Entrepreneurial organizations, according to Miles and Snow's (1978) taxonomy, are ‘prospectors’, whose priority is development, finding and exploring new products and markets, rather than efficiency and profitability. Porter (1980) described entrepreneurial firms as those of ‘differentiation’ strategy, where a firm seeks to be unique in its industry. In the case of declining industry, entrepreneurial firms are firms of ‘increased investment strategy’, where organizations accept the risk of not retrieving their investments when uncontrollable adverse events force the firm to shut early (Harrigan, 1980). ‘Effective high share price’ organizations, who cultivate broad product lines and intensive advertising and R&D expenditures, are entrepreneurial firms according to Woo and Cooper (1981). Entrepreneurial firms as introduced by

Govindarajan and Gupta (1985) are the 'build' strategy businesses, whose priority is to increase their market share rather than aim for high profitability and cash flows.

Along the strategy continuum are hybrids of the two opposite extremes of the strategy spectrum. Hybrid strategies can be either one of the main extreme strategies or a combination of both. Examples of the terminology provided by previous literature to organizations adopting hybrid strategies are: 'analyzers', that attempt to achieve a unique combination of defender and prospector strategies, such as minimizing risk while maximizing opportunity (Miles and Snow, 1978), and 'focus' strategy organizations that achieve their goals by either differentiation from better meeting the needs of a narrow competitive scope within the industry, or lower costs in serving this target segment, or both (Porter, 1980).

Langfield-Smith (1997) has suggested a strategy configuration model based on the most popular typologies of Miles and Snow (1978), Porter (1980), and Gupta and Govindarajan (1984). The Langfield-Smith model is based on the similarities suggested by these studies with the recognition of the multidimensional nature of strategy. Strategies followed by organizations and business units are of three dimensions: strategic typology (i.e., defender, analyzer and prospector), strategic mission (i.e., harvest, hold and build) and competitive position (i.e., cost-leadership and differentiation). The configuration of the three most popular typologies mentioned in one model seeks common characteristics in strategic typologies and uses them as a basis for testing the strategy variable. However, such an integrative model has not been validated in previous research (Tucker, Thorne and Gurd, 2006)

The level of correspondence between strategy type and organizational internal and external factors should contribute to enhanced organizational performance. Porter (1980) argued that either of the cost-leadership, the differentiation, or the focus strategy types will lead to successful fit of the strategy choice with external and internal factors. Porter identified the external factors as characteristics of the organization's strategic group, the organizations position within its strategic group, and common industry characteristics, such as the rate of growth of industry demand, potential for product differentiation, supplier industries and technology. The internal factor, according to Porter, is the firm's ability to execute and implement its chosen

strategy, which is, in turn, determinant of the strategy impact on profitability.

Miller and Friesen (1984) have identified successful organizations as frameworks of strategic choice along with environmental and structural variables. Miller and Friesen have developed their taxonomy of organizations' strategy making in context with the organizational external environment and internal structure. Their study has searched for the most common configurations as well as important differences among types of firms. Results of the Miller and Friesen study have provided descriptions of successful and unsuccessful prime examples of the interaction among organizational environment, strategy type, structure and performance. The study indicates that variables of strategy, structure, and environment tend to influence each other and they greatly tend to influence performance.

Miles and Snow (1978) emphasized strong internal fit of the organizational strategy choice as the way to achieve a successful implementation of strategy. Referring to literature prior to their study and to proponents of the strategic choice perspective, Miles and Snow stated that organizational behavior is only partially explained by external environmental variables. Rather, critical determinants of organizational behavior are choices made by top management regarding organizational structure and process. Miles and Snow have suggested an 'adaptive cycle' of consistent patterns to achieve the required level of internal fit for the implementation of the organizational strategic choice. The adaptive cycle involves finding solutions to the entrepreneurial problem, the engineering problem, and the administrative problem including the implementation of proper management control systems.

The influence of strategy type on management control systems and practices has been examined and explored in previous research. Conservative, defender, cost leadership, and harvest types of strategies are more focused on cost control and are more associated with formal and traditional MCS, including more objective budgeting control and formal traditional performance measurements. Strategies of prospector, build, and competitor orientation were found to be more closely associated with informal MCS, with more long term oriented and subjective performance measures (Chenhall, 2003).

2.4.1.1 Strategy type and budget participation

As a traditional accounting technique, budgeting can generally be expected to be associated with conservative and cost effective strategies rather than entrepreneurial strategy types. However, participative budgeting, with its interactive and communicative features, functions differently than the budgeting traditional purpose.

Chenhall and Langfield-Smith (1998) tested the benefits of different combinations of management techniques and management accounting practices in enhancing organizational performance relative to the competitive strategy in place. The study has adopted a contingency systems approach to best practice based on the effectiveness of an integrated *"holistic"* approach to implementing management techniques and management accounting practices. Chenhall and Langfield-Smith suggested that financial and traditional accounting measures are unlikely to explain how production processes support product differentiation and customer-focused (i.e., entrepreneurial) strategies. They explained that the process and techniques required to produce differentiated products are more diverse and complex; compared to traditional accounting techniques sufficient for manufacturing and selling low price products. Contrary to their expectation, traditional accounting system tested in their study provided high benefits to firms with differentiation strategies as well as to those with low price strategies.

However, participative budgeting is an interactive feature, rather than a diagnostic feature of traditional budgeting. This interaction involves an ongoing dialogue between organizational members of different managerial levels as how to act, and how the system and behaviors can be adapted in response to different and changing variables. Participative budgeting, therefore, becomes a 'database', which facilitates organizational learning, rather than just a diagnostic 'answer machine' (Abernethy and Brownell, 1999). Interactive budgeting has been shown to benefit organizations in times of strategic change. Abernethy and Brownell (1999) found that strategic change in the organization is positively correlated with high performance when interactive budgeting is the budget style used. They observed a negative association between strategy change and high organizational performance when diagnostic (i.e., traditional) budgeting is used. Abernethy and Brownell, explained the relation

between the study variables as a function of a contractual relationship. Interactive budgeting serves the top management better to obtain information and required knowledge from lower and same level management for adaptation when a strategic change is in place.

Implications

This study adopts a contingency systems approach to best practice based on the effectiveness of an integrated approach to implementing management techniques and management accounting practices. Accordingly, participative budgeting is predicted to be more likely associated with entrepreneurial strategies, rather than conservative and cost effective strategy types. Process and techniques required to cope with entrepreneurial strategic approaches are more diverse and complex compared to traditional accounting techniques sufficient to implement conservative strategies (Chenhall and Langfield-Smith, 1998). Participative budgeting, being used as a dialogue and a tool of exchanging ideas and interaction within various management levels, has a more diverse and complex role than the traditional budgeting control role (Abernethy and Brownell, 1999).

Thus, the following hypothesis was tested:

H (1) Participative budgeting is more likely to be associated with organizations adopting entrepreneurial strategies rather than conservative strategy types.

2.4.1.2 Strategy type and ABC

Previous literature has provided various justifications that can influence predictions of ABC linkage to different strategy types. ABC was found to be of use and benefit to both strategic approaches.

Chenhall and Langfield-Smith (1998) tested the benefits gained from particular management techniques, including ABC, when an emphasis of certain strategy is in place. They stated that activity based techniques can enhance the cost effectiveness of

organizations of conservative orientations and assist in implementing low price strategies. Accordingly, they predicted higher performing firms that have low price strategies (defenders), to gain benefits from management techniques and management accounting practices including ABC. Activity based techniques, they argued, provide an understanding of how activities in the organization affect costs. These techniques may provide useful information in either controlling or reconfiguration existing business processes compared to competitors; or help managers to choose better alternatives for achieving cost advantages. Further, activity based techniques can be used in evaluating outsourcing decisions and developing a better understanding of the cost advantages of specific linkages with suppliers. Findings of Cagwin and Bouwman (2002) were consistent with this prediction; they found that the benefits of ABC were more likely in the existence of a competitive environment where cost information is important and utilized in pricing decisions, cost reduction efforts, need for special cost studies, a strategic focus, and average profit margin.

However, findings of Chenhall and Langfield-Smith (1998) suggested that activity based costing would be associated with higher performance in firms of low price strategies. While the technique provided higher benefits to differentiation firms tested in their study, Chenhall and Langfield-Smith recognized that entrepreneurial firms may also use, and benefit from, activity based techniques to improve knowledge of value drivers that can enhance their product differentiation.

Gosselin (1997) found that ABC is of more benefit to entrepreneurial firms than to conservatives. Gosselin tested the association of the decision to adopt an activity management (AM) approach and the type of strategy employed (i.e., defender, analyzer or prospector). Evidence was provided by the study on a greater association of AM adoption with prospector strategy type, rather than with defender type. Gosselin stated that AM provides better information of cost and activities and their impact on product cost and profitability. This, according to Gosselin, makes AM information of greater value to prospector organizations that face a more unpredictable and uncertain environment than organizations with a defender strategy.

Baines and Langfield-Smith (2003) confirmed that entrepreneurial strategies positively affect the use of activity-based costing. Their results indicated that a change

towards a differentiation strategy will result in an increase of the use of advanced management accounting practices such as ABC. Baines and Langfield-Smith argued that ABC involves target costing which allows management to control costs and at the same time improve customer value by maintaining customer expectations of quality and functionality.

Implications

Based on a contingency approach, this study will adopt the prediction that the use of ABC systems is more likely associated with firms adopting conservative strategies. Conservatives are more likely to have low price strategies where high importance of cost is common-place (Porter, 1980). As benefits of ABC are more readily realized in environments where costs are relatively important (Cagwin and Bouwman, 2002), organizations adopting conservative strategies will, therefore, gain benefits from ABC (Chenhall and Langfield-Smith, 1998).

However, ABC information is still of value to entrepreneurial organizations, which face an unpredictable and uncertain environment. ABC provides better information of cost as well as value driver activities. This can impact on product cost and profitability, help in differentiation of products, and maintaining or enhancing customer value (Gosselin, 1997; Chenhall and Langfield-Smith, 1998; Baines and Langfield-Smith, 2003).

Therefore, the following hypothesis was tested:

H (2) The use of ABC systems in the organization is more likely associated with conservative strategic orientation rather than entrepreneurial strategic orientation.

2.4.1.3 Strategy type and TQM and JIT

TQM initiatives were found to be associated with a prospector strategy.

Chenhall and Langfield-Smith (1998) provided evidence that firms with high performance, implementing product differentiation strategy (prospectors), will benefit highly from the combination of management techniques and management accounting practices including total quality systems (i.e., TQM).

The association of TQM implementation with differentiation strategy was confirmed by Fuentes et al. (2006). Their study investigated the relation of different strategy types with different TQM dimensions and determined the strategic configurations that favor the implementation of TQM elements. Their results suggested that differences in TQM implementation depend on the selected strategy. The study data revealed, in most cases, that the highest degree of TQM implementation was in differentiation-driven companies. The majority of cost-oriented companies showed lower levels of TQM implementation compared with companies with a differentiation focus.

The link between the organization strategy and the use of JIT was not specifically addressed in previous research. However, the empirical results of some studies may be interpreted to postulate the association of JIT with strategy type.

The empirical results of Chenhall and Langfield-Smith (1998) may be interpreted to assume the association of JIT with both differentiation and low price strategies. The study's evidence suggested that differentiation strategy was associated with management accounting quality systems. The results of the same study also found that defender strategy was associated with the adoption of management accounting systems that include improving existing processes. Both quality and improving existing processes are the focus of JIT practices (Fullerton and McWatters, 2002).

Baines and Langfield-Smith (2003) found that changes towards a differentiation strategy increase the use of advanced management and accounting practices, and implied the association between differentiation strategy and the use of both TQM and JIT initiatives. Baines and Langfield-Smith recommended that such advanced initiatives assist organizations to focus on differentiation priorities such as quality, customer service and delivery.

Implications

Based on contingency theory explanations, this study predicted that TQM and JIT management initiatives are more likely associated with an entrepreneurial strategy. Entrepreneurial strategies require firms to adopt a strong customer orientation to provide products and services that suit customers' particular needs. This includes product specifications relating to quality, delivery, or product specific characteristics. Thus, entrepreneurial firms may develop control systems that can explicitly help the company to achieve its quality and delivery targets (Chenhall and Langfield- Smith, 1998). This can be achieved by the increase of the use of advanced management practices such as TQM and JIT. These advanced initiatives assist organizations to focus on entrepreneurial strategic priorities like quality, customer service and delivery, as they emphasize the need to satisfy customers' demands (Baines and Langfield-Smith, 2003).

Thus, the following two hypotheses were tested:

H (3) The implementation of TQM management initiatives in the organization is more likely associated with entrepreneurial strategic orientation rather than conservative strategic orientation.

H (4) The implementation of JIT management initiatives in the organization is more likely associated with entrepreneurial strategic orientation rather than conservative strategic orientation.

2.4.1.4 Strategy type and innovation

Strategy type is suggested by previous studies to have an influence on innovation in the organization.

In a study conducted in the banking sector by McDaniel and Kolari (1987), the degree

of innovation was higher in banks with prospector and analyzer strategies than that of banks with defender strategies.

Similar results were found by Aragon-Sanchez and Sanchez-Marin (2005) and O'Regan and Ghobadian (2005). These two studies were conducted on small and medium enterprises: Aragon-Sanchez and Sanchez-Marin noticed that organizations with prospector strategies to be more innovative than both analyzers and defenders. O'Regan and Ghobadian revealed that prospector strategy firms conduct more innovation than those of defender strategies. O'Regan and Ghobadian argued that prospectors are more likely to undertake new product development, utilize new process technologies to access and maximize opportunities and use management techniques to improve their effectiveness.

However, Laforet (2008) found that strategic orientation was only associated with new product innovation, not with process innovation or with sustained innovation. Her results showed that prospector organizations were engaging in more new product development than defenders. The study indicated no significant difference between defenders and prospectors in their association with process innovation.

Implications

Strategic management theory suggests that firms with prospector (entrepreneurial) strategies are more innovative than those with conservative strategies.

In the strategic typologies of both Miles and Snow (1978), and Porter (1980), innovation is a basic element of entrepreneurial rather than conservative strategies. Prospectors are often the creators of a change in their industries. This change is argued by Miles and Snow as one of the major tools used by prospectors to gain advantage over competitors. Differentiation focus strategies have similar implications in Porter's model (McDaniel and Kolari, 1987).

Thus the following hypothesis was tested:

H (5) Firms with entrepreneurial strategies are more innovative than those with conservative strategies.

2.4.1.5 Strategy type and the use of BSC

To date, no previous research has specifically examined the association of strategy type (i.e., conservative vs. entrepreneurial) and the use of performance measurement using the BSC framework. However, previous studies have generally suggested that the use of non-financial performance measures and more specialized and sophisticated systems will secure an alignment of performance measurement with the associated organizational strategy type.

McAdam and Bailie (2002) explored the alignment between performance measures and business strategy and the role of the BSC as an example of business improvement models in this alignment. McAdam and Bailie argue that the alignment of business strategy and performance measurement is necessary; as there is a need for appropriate supporting performance measurement systems and mechanisms in business environments of rapid change. For that alignment to be effective, a model of more comprehensive range of performance measurements is to be developed. The study confirmed normative recommendations of the BSC theorists that a balanced system of an appropriate mix of performance measures and different perspectives will have the best alignment with business strategy.

Several previous studies have recommended that the use of non-financial performance measures is more likely associated with the adoption of entrepreneurial strategies. In firms of build or prospector strategies, the desired managerial performance is relevant to long-term goals that may take a substantial time to be translated into financial results. Therefore, the inclusion of non-financial and long-term oriented financial measures is more informative of management actions in build or prospector strategy organizations (Govindarajan and Gupta, 1985; Ittner et al., 1997). Since prospectors, on one hand, seek continually for dynamic market opportunities and have a wider product-market domain, they will tend to select performance measurements

appropriate to their strategy and accordingly rely on non-financial measures relating to customers, products, employees, and quality. Defenders, on the other hand, will tend to emphasize more financial measures (Gosselin, 2005).

Addressing the strategy and the BSC alignment more closely, findings of several studies reflected the existence of fit between entrepreneurial strategy and the usage of customer, internal process and learning and growth measures when the impact of this interaction on performance is significant. High-performing and low-cost defenders were found to place greater emphasis on measures of financial perspective (Chenhall and Langfield-Smith, 1998; Oslon and Slater, 2002; Jusoh, Ibrahim and Zainuddin, 2006; Jusoh and Parnel, 2008). These studies argued that measures of different perspectives are not equally important to different product-market strategies (Olson and Slater, 2002). The broader scope of information conveyed by the use of performance measures of different financial and non financial perspectives have a more positive effect on performance in firms emphasizing a continuous product/market development and innovation strategies. Financial performance measures may be satisfactory to stimulate efficiency in firms emphasizing defender strategy, as it helps these firms to understand their limited markets (Jusoh et al., 2006). Accordingly, these researchers argued and found that firms with differentiation or prospective strategies (i.e., entrepreneurial) will achieve better outcomes from the use of more specialized and sophisticated management control systems that include balanced performance measurements (Chenhall and Langfield-Smith, 1998).

Different findings resulted from the work of Baines and Langfield-Smith (2003), Chenhall (2005a), and Abdel-Kader and Luther (2008). Findings of these studies suggest that the use of the BSC is not necessarily associated with entrepreneurial strategy.

Baines and Langfield-Smith (2003) predicted that a strategic change towards differentiation will result in greater reliance on non-financial management accounting information. Baines and Langfield-Smith assumed that the development of an appropriate management accounting information requires the articulation of the firm's competitive strategy, so that performance towards goals and objectives is properly measured. Accordingly, they expected that the availability of non-financial accounting information provides the management of an entrepreneurial organization with

information needed to act in an environment of intense competition. However, the study of Baines and Langfield-Smith found no association between the change to differentiation strategy and the use of non-financial performance measures.

Chenhall (2005b) argued that strategic performance measurement systems (e.g., the BSC) can enhance strategic competitiveness for firms emphasizing both product differentiation and low cost-price strategies.

Abdel-Kader and Luther (2008) expected firms adopting a differentiation strategy to adopt more sophisticated management accounting practices than firms following a cost leadership strategy. Similar to Baines and Langfield-Smith (2003), Abdel-Kader and Luther presumed that there are numerous tactical options and ways available for differentiators to achieve and maintain uniqueness in the marketplace. Therefore, a differentiator will require, relatively, larger information-processing capacity. In contrast, a cost leadership strategy requires less ways and options to implement, which implies tight and less complicated control systems. Still, Abdel-Kader and Luther (2008) found the extent of adopting more sophisticated management accounting practices in organizations did not significantly differ in relation to their competitive strategies.

Implications

This study expected the use of the BSC to be more associated with organizations of an entrepreneurial strategic approach. The BSC is a specialized, sophisticated and, to a great extent, non-financial-based performance measurement system. Entrepreneurial organizations are more likely to implement such measurement systems to attain better alignment of performance measurement and strategy and to achieve their organizational performance goals.

A contingency explanation of relationships between strategy type and MCS generally suggests that the use of non-financial performance measures and more specialized and sophisticated systems is the preferred alignment with entrepreneurial business strategy and associated with such organizational strategy type (Chenhall and Langfield-Smith, 1998). The availability of systems with such larger information-processing capability

provides information needed to act in an environment of intense competition and to maintain uniqueness in the marketplace (Baines and Langfield-Smith, 2003; Gosselin, 2005; Abdel-Kader and Luther, 2008).

From an agency relationship perspective, the desired managerial performance in firms of entrepreneurial strategies is relevant to long-term goals that may take substantial time to be translated to financial results. Therefore, the BSC, with its three non-financial long-term oriented perspectives, is more informative of management actions in entrepreneurial organizations (Govindarajan and Gupta, 1985; Ittner et al., 1997).

Accordingly, the following hypothesis was tested:

H (6) Organizations adopting an entrepreneurial strategic approach are more likely to implement the BSC system than organizations with conservative strategies.

2.4.2 Contextual variables and MCS

This subsection looks at literature on associations between size, diversification and decentralization with variables of MCS.

2.4.2.1 Contextual variables and participative budgeting

Size, diversification and decentralization were found in previous literature to be associated with participative budgeting. The association of organization size, diversification and decentralization with budget participation was mainly explained as a result of the need to increase the information channels among different managerial levels within the organization and, therefore, to reduce information asymmetry.

Based on a contingency theory of organizations view, Merchant (1981) has explored

correlations of corporate contextual variables (i.e., organization size, diversification and degree of decentralization) and budgeting as an organizational control strategy. Merchant explained that larger organizations need more informative channels and methods, and diversification makes communication more difficult. Merchant proposed that the larger and more diversified the organization, the more the tendency to decentralize, and the more the tendency to implement administratively-oriented control systems. Administrative management control strategy is consistent with participative budgeting, importance placed on achieving budget plans, budget sophistication and more formal methods of communication. Results have given support to the hypothesis that larger, more diverse, and decentralized firms tend to use budgeting systems of higher middle and lower management participation, more emphasis on achieving budget plans, more formal shapes of communication, and greater sophistication in budgetary settings.

Shields and Young (1993) took an agency theory approach in their explanation of the association of organizational factors and the use of participative budgeting. The study directly linked information asymmetry in the organization to participative budgeting and budget-based incentives. Shields and Young assumed that in large, dispersed and diversified organizations, central management gains from participative budgeting by learning from lower levels and subordinates about information relevant to their environments.

However, results of two more recent studies (Kyj and Parker, 2008; Zainuddin, Yahya, Ali and Abuenniran, 2008) found no significant association between the existence of information asymmetry and the use of participative budgeting; which conflicts with the findings of Shields and Young (1993) and Merchant (1981). Kyi and Parker found no significant effect of information asymmetry on superiors' active encouragement of the use of participative budgeting. Kyj and Parker found participation to be more influenced by psychological reasons, rather than contingent to, or determined by, organizational factors and relationships to tackle information asymmetry. The findings of Zainuddin et al. also demonstrated no significant correlation between budget participating and information asymmetry.

Implications

Contingency organization theory and agency theory provide explanations of the relationship between the three contextual variables of size, diversification, and decentralization and participative budgeting.

Diversification, greater size and decentralization make communication across the firm more difficult to achieve. The larger, more diversified and more decentralized the organization, the greater the need to improve information channels and methods (Merchant, 1981). Based on a contingency theory approach, firms of such contexts tend to implement informative and communicating administratively-oriented control systems like participative budgeting.

The agency theory explanation of the association between the three organizational factors and participative budgeting is based on the same information and communication problem (i.e., information asymmetry) associated with size, decentralization and diversification factors. In large, dispersed and diversified organizations, central management gain from participative budgeting by learning from lower levels and subordinates about information relevant to their environments (Shields and Young, 1993).

Thus, the following hypotheses were tested:

H (7) The use of participative budgeting is positively associated with the size of the organization.

H (8) The use of participative budgeting is positively associated with decentralization in the organization.

H (9) The use of participative budgeting is positively associated with diversification of products and services in the organization.

2.4.2.2 Contextual variables and ABC

Previous literature indicated the association of organizational size, centralization and product diversification with the implementation of ABC.
With reference to the Cost Management Group's (CMG) 1996 Activity-Based Costing (ABC) Survey, Krumwiede (1996) reported that organization size and potentiality for cost distortion (i.e., indicated partly by diversification) were identified as 'significantly differentiating adopters and non-adopters of ABC' (Krumwiede, 1996, p. 1). Organizations adopting ABC are mostly of larger sizes and of higher diversity of products, processes and volumes than those not adopting the system. Krumwiede commented that smaller size organizations usually lack the human and monetary resources to implement and benefit from ABC, the reason attributed to non-ABC adoption. The paper noted that the higher the diversity of products, processes, and volumes in the organization, the more is the potentiality for cost distortion, and therefore, the need of a better costing system.

In a study of how certain contextual factors affect the pre-adoption, adoption and the several implementation stages of ABC, Krumwiede (1998) provided empirical evidence that the organizational factors of size and potentiality of cost distortion (i.e., related partly to diversity) have a significant impact on the decision to adopt ABC.

Cagwin and Bouwman (2002) and Askarany and Smith (2008) brought further supporting evidence. Cagwin and Bouwman listed diversity as one of the conditions favorable to obtaining benefits from ABC. Askarany and Smith's findings suggested the existence of a positive association between business size and the diffusion of ABC.

Baird, Harrison and Reeve (2004) also looked at the association of business size and decision usefulness of cost information with ABC adoption. Decision usefulness in their study was related theoretically to the potential of cost distortion in the determination of product or service costs, arising from the level of product or service diversity and the level of overhead costs relative to total cost. Baird et al. found the two organizational factors to be generally associated with activity management. Their results showed that size was associated with the first two levels of the system

adoption, while decision usefulness of cost information was associated with the final level of the adoption process.

However, looking upon the effect of diversification on ABC adoption, other studies have concluded otherwise. Maelah and Ibrahim (2007) have conducted a study on Malaysian manufacturing firms. They found that firm's potentiality for cost distortion (i.e., partly indicated by diversification) is not a significant factor in the decision to adopt ABC. Maelah and Ibrahim cited previous finding in explaining their results that even though the potential for cost distortion exists, due to the high system redesigning cost, firms seldom redesign their costing systems. Similar findings resulted from another study conducted by Al-Omiri and Drury (2007) on UK organizations from different business sectors, including manufacturing. Al-Omiri and Druri examined the extent to which potential contextual factors (i.e., including size and diversification) influence the characteristics of product costing systems. Their results found diversification not to be a significant influencing variable. However, their result confirmed size as positively influencing the complexity of product costing system.

In regard to the influence of decentralization on ABC, previous literature suggested that the implementation of ABC is easier in, and could therefore be more likely associated with, organizations of a centralized structure. Gosselin (1997) found that the adoption and implementation of ABC is associated with organizations of a mechanistic structure (i.e., less decentralized and more formalized organizations). Gosselin argued that the initiation level of ABC is different in nature from the implementation level of the system adoption. The initiation of ABC is more technical and therefore easier in organic organizations (i.e., more decentralized and less formalized organizations). However the implementation stage is more administrative than technical, which make it easier for a mechanistic organization to successfully implement. According to the findings of Liu and Pan (2007), the 'top-down' instigation of ABC adoption and hierarchical command and communication structures help to diffuse the ABC concepts effectively across the organization. Further, it is generally argued that in contexts of increasing division, firms tend to know less than they buy, rather than more, when they acquire innovation systems (Flowers, 2007).

Implications

Contingency theory and transaction cost theory explain the association of size and diversification with the implementation and adoption of ABC. The relation between decentralization and ABC adoption and implementation can be predicted with influence of production and operations management (POM) theory.

Diversity and size can be seen as favorable to obtaining benefits from ABC. Under a contingency theory explanation, ABC may have deferential impact depending when certain contextual variables are in place; which is a strong reason to believe that benefits of ABC implementation are contingent on various contextual variables. These contextual variables can be viewed as appropriate 'enabling conditions', under which ABC improves cost information and leads to improved decision making (Cagwin and Bouwman, 2002). Further, the benefits of the ABC system to firms of larger sizes and higher diversification underlie the argument of a contingent and a cost benefit relationship between these two variables and the adoption of ABC. The lack of human and monetary resources in smaller size organizations undermines these firms' need for the system and their ability to implement it. The likeliness of high cost distortion, in firms of high diversity of products, processes and volumes, highlights the benefits of ABC implementation in these firms (Krumwiede, 1997).

In organizations of centralized structure, it is easier to adopt ABC. The lack of knowledge of the acquired system resulted from the division of management in decentralized firms (Flower, 2007), the administrative (i.e., rather than the technical) nature of ABC implementation (Gosselin, 1997), the 'top-down' instigation of ABC adoption and the need for top management support to the system require a centralized organizational structure of a hierarchical command and communication (Liu and Pan, 2007).

Therefore, the following hypotheses were tested:

H (10) The implementation of ABC is positively associated with the size of the organization.

H (11) The implementation of ABC is negatively associated with decentralization in the organization.

H (12) The implementation of ABC is positively associated with diversification of products and services in the organization.

2.4.2.3 Contextual variables and TQM and JIT initiatives

There has been limited literature on the association of the organizational contextual variables and the implementation extent of TQM and JIT.

Little literature has looked at the influence of organization size on the degree of TQM adoption. Previous research mainly addressed the applicability of TQM concepts, effectiveness and success to organizations of different sizes. Previous studies have provided no evidence on the dependence of TQM adoption and implementation on the contextual variable of size. However, a review of arguments suggested that size does not impact on TQM implementation success (Ahire and Golhar, 1996; Taylor and Wright, 2003; Sila, 2005).

Ahire and Golhar (1996) found no difference between small and large firms in the implementation success of TQM initiatives. Ahire and Golhar examined whether size of the firm affects its TQM implementation strategy. Their results demonstrated no operational differences in TQM implementation attributable to size. Small and large firms, which were the subject of their study and produced high quality products, implemented TQM equally effectively.

Taylor and Wright (2003) conducted one of the first longitudinal research studies on a cohort of organizations adopting TQM. Generally, their findings revealed that size of the firm was not associated with reported success with TQM.

Sila (2005) confirmed that TQM success and benefits are not dependent on contextual factors including organizational size and the scope of operation. Sila's results showed that the fit of TQM practices with the organization structure is similar in both large and small and medium organizations. Although TQM was firstly implemented in large companies, Sila (2005) noted that small and medium companies had come a long way in employing the same practices, and benefited similarly from the same concepts.

A thorough investigation on the relation between organizations' size and the implementation of TQM initiatives was provided by Ghobadian and Gallear (1997) and the work of Taylor (1997 and 1998). Ghobadian and Gallear investigated the differences between the characteristics of small and medium entities (SMEs) and large organizations; the relationship between the organization size and exclusive characteristics of TQM; and the effect of organization size on TQM implementation. The findings of their study suggested that management concepts that apply to large firms may not necessarily work in small and medium companies. Further, certain TQM characteristics appeared to fit particular size categories while other characteristics appeared to be independent of size. Ghobadian and Gallear concluded that both large firms and SME can readily adopt TQM principles. But, because of different characteristics, small, medium and large organizations need to adapt differently to the requirements imposed by TQM.

Taylor (1997 and 1998) provided empirical data on differences in TQM implementation practices associated with organization size. Taylor (1997) examined senior executives' attitudes to, and perceptions of, TQM in regard to understanding of

its purpose and strategic approach. The results suggested that small organizations demonstrated significantly lower levels of understanding of the purpose of TQM and the strategic nature of its approach to customers and to the market environment. Small firms also displayed lack of knowledge about their customers' levels of satisfaction and were almost convinced that the impact of TQM on their business is marginal. Taylor (1998) extended the work conducted in Taylor (1997). The study provided deeper investigation of the attitudes and perceptions of senior executives reported in the earlier study by comparing these attitudes and perceptions with actions, practices and behaviors. The result of the study did not support the earlier study's prediction that TQM implementation is lower in smaller firms. Further, the positive perceptions reported in medium and larger firms were not reflected in their actual practice.

In contrast to other findings and arguments, Hendricks and Singhal (2000) found that smaller firms have significantly better financial performance from effective implementation of TQM than larger firms. However, the findings of Hendricks and Singhal did not necessarily indicate a tendency of TQM to be adopted in smaller firms. Hendricks and Singhal clarified that TQM still had a positive impact on profitability of both smaller and larger firms, but that smaller firms tend to benefit more when compared to larger firms. This was an important observation, they commented, since it is a common perception among many managers that TQM is less beneficial to smaller firms.

There has been little literature relating the implementation of JIT with specific variables of the organizational context. However, a few studies addressed the effect of organization size on the use of JIT. The findings of these studies generally indicated that larger firms are more likely to implement JIT compared with firms of smaller sizes.

In a study conducted on US organizations, White (1993) indicated that JIT has been implemented by all organizations regardless of their size. The results showed that

larger organizations have implemented JIT longer and more often than organizations of smaller sizes, but suggested that JIT manufacturing is beneficial for, and was implemented in, all organizations of their sample regardless of size.

White, Pearson and Wilson (1999) investigated further JIT implementation differences between small and large U.S. manufacturers. Their study used ten management practices that constitute the JIT concepts to examine implementation of JIT manufacturing system. They found that the most frequent JIT practices implemented in larger organizations are different from those most frequently implemented in smaller firms. Generally, all JIT practices were found more frequently implemented in larger firms. Their results also indicated that the time in years of adoption is longer in larger firms for all JIT practices; when compared to that in smaller firms. In regard to JIT performance consequences, White et al. showed that both small and large organizations had significant improvements in performance due to implementing JIT. The frequencies of performance changes, credited to JIT, were similar in firms of both size categories. However, although the study implied that JIT systems are adaptable to both large and small firms, the results suggested that larger manufacturers were more likely to implement JIT systems than smaller ones.

As far is known, no previous research to date has addressed the effect of structural variables on JIT implementation. There has been a general agreement in the literature that JIT is a strategy, the implementation of which, results in an organization structural change. Therefore, assuming that organizations select the appropriate structure for the strategy they plan to implement, the literature has only investigated the influence of JIT implementation on the organization structure (Germain, Droge and Daugherty, 1994; Claycomb, Germain and Dorgo, 1999; Green, 2002).

Implications

This study will re-test Taylor's (1997) suggestions that larger firms are more likely to adopt TQM initiatives. The contingent effect of size on TQM implementation stems from the better capabilities of larger firms to implement and benefit from quality initiatives. Smaller organizations may lack human and monetary resources, which undermines both their need of the system and their ability to implement it. It is further

expected that small organizations display significantly lower levels of understanding of the purpose of TQM and its nature as a strategic and competitive approach. Small firms may also appreciate less their customers' levels of satisfaction and are more likely to believe that the impact of TQM on their business is marginal.
Size and diversification were predicted in this study to be associated with the use of JIT initiatives in the organization based on the philosophy of these initiatives (i.e., POM theory). JIT calls for the minimization of waste by simplifying the production process, reducing set up times, and controlling material flows (Kannan and Tan, 2005). Such a need is expected to exist in larger and more diversified firms.

Accordingly the following hypotheses were tested:

H (13) The implementation of TQM initiatives is positively associated with the size of the organization.

H (14) The implementation of JIT initiatives is positively associated with the size of the organization.

H (15) The implementation of JIT initiatives is positively associated with the diversification of products and services in the organization.

2.4.2.4 Contextual variables and innovation

To date, there has been little agreement in the literature on the impact of organizational size, decentralization and diversification on innovation. The impacts of the three contextual variables on innovation were tested together in some studies. However, other studies have looked at the relation of each of these factors with innovation individually.

Kimberly and Evanisko (1981) had tested the impact of organizational factors, specifically, decentralization, specialization (i.e., diversification, as specialization in

their study represented the number of different medical specialties in the hospital), and size, on technological innovation and administrative innovation (i.e., represents process innovation due to the nature of organizations tested). Decentralization, specialization and size were significant in explaining technical innovation. Only size proved to be significant in its association with administrative innovation. However, Kimberly and Evanisko results indicated that organizational factors (i.e., size in particular) were better predictors of both innovation types than individual and environmental factors.

Holthausen et al. (1995) argued that, from a theoretical standpoint, the sign of relationship between firm size and diversification and innovation is ambiguous. While, according to some organizational literature, a positive relationship between firm's size and diversification and innovation was suggested, other literature suggested a negative association between these organizational variables and innovation. On one hand, studies argued that large firms are more likely to have ample resources to support innovation; and that firms of high diversification have more applicability to use any knowledge generated from the innovation process. On the other hand, studies that suggested negative relationships argued that large firms are more likely centralized to better control employee managers; implying bureaucracy and the tendency to inhibit innovation that is individualistic in nature. Diversification, Holthausen et al. added, could also be a sign of an agency problem, where management avoids personal risk by diversifying the firm's activities. Hence, diversified firms would be unwilling to undertake innovation risk. Holthausen et al.'s suggested that innovation was positively correlated with the firm's size, and that innovation was more likely in less diversified firms.

Other studies have specifically researched the issue of innovation relating to company size, though with inconsistent findings (Laforet, 2008). The work of Cohen and Klepper (1996) proposed and tested a theory of how firm size influences the relative amount of process and product innovation undertaken by firms. Cohen and Klepper, in an earlier study, developed a model to explain the close, often and proportional relationship between organization size and innovation practices. They argued that because firms tend to make use of their innovations mostly through their own output and firm growth resulting from innovation, larger firms typically have greater levels

of output to average the fixed costs of their innovations. Consequently, the return to innovation and, therefore, innovation itself is likely to increase in association with firm size. Cohen and Klepper (1996) built on this idea by developing a model to explain the impact of firm size on the effort committed to process innovation compared to product innovation. They argued that, on one hand, process innovations are less salable than product innovation, and are associated with less growth. This would suggest that the return on process innovation will depend more on the firms output (i.e., which is positively influenced by size). On the other hand, product innovations may be expected to provide greater returns from patenting and quicker growth in output. Accordingly, returns on product innovation are less likely to depend on firm size compared to returns on process innovation (Cohen and Klepper, 1996).

Fritsch and Meschede (2001) tested Cohen and Klepper's (1996) model. In particular their study looked at the relationship between innovation activity and firm size as well as the impact of the size factor on the organizational commitment to process innovation rather than product innovation. The study gathered data from German manufacturing companies and revealed that innovation expenditure rises less than proportionally with firm size. This indicated, with regard to innovation input, that those small firms that perform innovation activities tend to be more innovative than larger firms. The study further found that size had no significant impact on the firms' greater commitment to process innovation than product innovation.

A further insight of the influence of size on the firm innovation was provided by Vaona and Pianta (2008). The study integrated the comparison between product and process innovations and the relationship between innovation and firm size. Vaona and Pianta addressed the differences between large and small firms in the strategies, terms, and input these firms use to introduce product and process innovations. In their investigation of manufacturing companies in eight European countries, the results suggested that size influences differences in strategies and input determinants of both product and process innovations. For product innovations, the study indicated that innovation in small and medium sized firms behaved within a technological strategy shaped in patent applications leading to new products. In larger firms, with greater financial resources, the key strategy for product innovation was in opening new markets, rather than patenting. For process innovation, small and medium-sized firms,

on one hand, relied more on strategies for production flexibility. Large firms, on the other hand, relied on the acquisition of new machinery and on strategies targeting new markets, followed through cost reduction attained from new processes.

However, recent findings confirmed the existence of a positive effect of firm size on innovation. In a study conducted on small and medium non-high-tech manufacturers, Laforet (2008) found that size was positively associated with both product and process innovation. Laforet argued that size has an effect on innovation due to financial and human resources capabilities. Smaller firms would have more difficulty in supporting innovation requirements such as technical work, human resources, plant and equipment, marketing and promotion, when compared to medium-sized firms.

McAdam, Reid, Harris and Mitchell (2008) supported this positive association between firm size and innovation. In their study of small and medium sized organizations, they found size matters, as larger firms were more likely to produce new products/services.

Literature on the association between the structural arrangements of diversification and decentralization and the firm innovativeness has been slim, with a lack of recent studies to address this issue.

Baysinger and Hoskisson (1989) have quoted contradicting interpretations from the literature of the relationship between the firm's diversification and its innovation activities. For instance, some argued that diversification, through the division of the organizational structure and controls, should improve firm performance; as this encourages managers to undertake risk through R&D and innovation. Other arguments suggested that division managers, operating in diversified systems, avoid risky strategies and would prefer short-term performance goals over long-term investments in innovation. Baysinger and Hoskisson suggested that the association between firms' diversification and the level of innovation is determined rather by the type of their diversification strategy. Diversification strategies vary depending on different adopted structures and management systems of internal control that rationalize relations between the corporate head-quarters' management and managements of subunits. Their findings indicated that R&D intensity was

significantly higher in firms of 'dominant-business' diversification strategy rather than in firms where diversification was within 'related-linked' and 'unrelated-business' strategies. Baysinger and Hoskisson concluded that different diversification strategies may affect managerial willingness to undertake risk, as indicated by intensity of innovation. The implementation of 'dominant-business' diversification strategy is shaped with open relations between different levels of management and subjectivity in evaluating performance of divisions managers. 'Related-linked' and 'unrelated' diversification strategies are pursued through distant corporate-subunits relations with emphasis on strict financial controls.

Flynn (1994) considered decentralization as one of different infrastructure characteristics that strongly support innovation performance. Flynn argued that decentralized structures promote cross-functional communication and team work and, thus, facilitate the innovation development process. Results of the Flynn study supported her argument. Effective innovators in her data were more decentralized organizations.

Evidence provided by Damanpour (1996) supported the significant impact of the size and complexity structural factors on organization innovativeness. Damanpour further emphasized the significance of other group of variables as determinant to the strength of size-innovation and complexity-innovation relationships.

According to Gebert, Boerner and Lanwehr (2004), the literature recommends more decentralization of power, in organizations, for the purpose of promoting innovativeness. Gebert et al. however, argued that decentralization involves specific risks, including coordination problems. Such risks are likely to hinder innovation. They suggested that integration can overcome these risks through orientation, harmony and trust, and, therefore, further increases in innovativeness can be expected.

Implications

This study adopted the prediction of positive associations between the three

contextual variables of size, diversification and decentralization and innovation in the organization. Contingency and economic (i.e., agency and transaction cost) theoretical explanation to the predicted phenomena motivated this prediction.

Innovation was expected to be significantly associated with firm size. Large organizations have an advantage over small firms as their financials might allow them to be more capable to secure innovation. The smaller the firm, the greater the difficulty in finding the financial support for technical work, human resource, plant and equipment, marketing and promotions when compared to larger firms (Laforet, 2008). Further, larger firms are more capable of averaging their innovation fixed costs over a greater level of output. Firms, mainly, utilize their innovations through their own output; as firm growth attributed to innovation is likely limited. Hence, larger firms with greater output would generate a higher return to innovation and tend to be more innovative (Cohen and Klepper, 1996).

Firms of high diversification have more opportunities to use knowledge generated from the innovation process (following Holthausen et al., 1995).

More decentralization of power leads to more innovativeness. Decentralized structure is important to the innovative development of process; as it increases levels of communication across the organization, which in turn facilitates the effectiveness of inter-functional design teams (Flynn, 1994). Further, decentralization increases the degree of employees' contributions in shaping and influencing matters in their organizations. In decentralized structures, employees can try out changes or innovations independently within their areas of authority (Gebert et al., 2004).

Hence, the following three hypotheses were tested:

H (16) Innovation is positively associated with the size of the organization.

H (17) Innovation is positively associated with decentralization in the organization.

H (18) Innovation is positively associated with diversification of products and services in the organization.

2.4.2.5 Contextual variables and BSC

Previous interpretation of the association between the organization contextual variables and the use of the BSC were mainly based on contingency theories of the organization. The literature suggested that firm size and the way organizations are structured affect their design and use of their performance evaluation techniques. The literature generally argued that information processing constraints upon senior management, in organizations with greater communication and control problems and in firms of greater decentralization and structuring of activities, cause an increase in the use of sophisticated and specialized performance measurement (Hoque and James, 2000; Speckbacher, Bischof and Pfeiffer, 2003; Abdel-Kader and Luther, 2008).

Hoque and James (2000) suggested that size of the organization may influence the way in which firms use and design management control systems. That is, the larger the organizations the more complicated and sophisticated the management control systems. Hoque and James explained that the need to encourage effective communication channels is more apparent in larger firms; as behavioral advantages of management controls techniques in small firms are of less value. They presumed that in large organizations a wider set of information and evaluation matters exists and, therefore, more sophisticated and specialized performance evaluation techniques will need to be elaborated. Based on this argument, Hoque and James proposed a positive association between firm size and the use of the BSC.

Speckbacher et al. (2003) found a significant difference between the mean number of employees of BSC users and the mean number of employees of non-BSC users in their sample. Consistent with this notable gap between the mean numbers of

employees, their findings suggested a significant association of size and the BSC usage. Speckbacher et al.'s explanation of their result was based on the same contingency interpretation of the size-BSC relationship stated by Hoque and James (2000): larger firms are more likely to use the BSC concept.

Abdel-Kader and Luther (2008) tested the relationships of different firm characteristics including size, decentralization, and complexity of processing system (i.e., complexity of processing system in their study referred to diversity of product lines, processes, and volumes) with the sophistication of companies' management accounting practices. Abdel-Kader and Luther observed that the last three decades have witnessed notable developments in management accounting techniques including the introduction of a number of new innovative techniques (e.g., the BSC). According to Abdel-Kader and Luther, the new techniques have been argued to affect the whole process of management accounting (i.e., planning, control, decision making, and communication) and have diverted the focus from the simple traditional role of cost determination and financial control to a more sophisticated role of value-creation through improvement of resources allocation efficiency. The authors adopted the central theme of previous arguments of a contingency relationship between firm characteristics and using sophisticated management accounting techniques. The study expected firm size, decentralizations, and complexity of processing system to be significantly associated with the use of more sophisticated management accounting techniques. The authors argued that firms decentralize their structure when they face uncertainty. Therefore, more specialized and sophisticated feedback from management accounting systems can help to minimize uncertainty, assist management planning at all levels, and support managerial decision making. Abdel-Kader and Luther assumed larger firms to have more resources to implement advanced management accounting practices than smaller firms. However, their results provided evidence for the association of the use of sophisticated management accounting techniques with size and decentralization, but not with complexity of processing systems.

The Abdel-Kader and Luther findings, in regard to decentralization, are consistent with the empirical findings of Gosselin (2005); Gosselin found that decentralized firms tended to use more non-financial measures.

Implications

Size, diversification and decentralization factors are expected to be associated with the use of the BSC in the organization.

Based on the contingency theory of organizations, firm size and the way in which organizations are structured (i.e., the level of decentralization and diversification) affect their design and use of performance evaluation techniques. The larger, more decentralized, and more diversified the organization, the greater are communication and control problems and, therefore, the more the need for sophisticated and specialized management accounting techniques like the BSC. Above that, larger firms are more likely to have sufficient resources to adopt more sophisticated management accounting systems than smaller firms (Hoque and James, 2000; Speckbacher et al., 2003; Abdel-Kader and Luther, 2008).

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Hence, the following three hypotheses were tested:

H (19) The use of the BSC is positively associated with the size of the organization.

H (20) The use of the BSC is positively associated with decentralization in the organization.

H (21) The use of the BSC is positively associated with diversification of products and services in the organization.

2.4.3 MCS and performance

There has been a great interest in previous research on the impact of the MCS design on organization performance.

2.4.3.1 Participative budgeting and performance

Participative budgeting is involvement in the development of budget and specific targets by subordinate to achieve the strategic initiatives set by top management. This process helps subordinates to better understand how critical their activities are and how to drive performance (Barsky and Bresmer, 1999).

Previous research literature looked exclusively at the extent of budget participation use as a determinant of the relation between participative budgeting and performance consequences. Prior studies also viewed the relationship as more multifaceted than a direct consequence.

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Studies that investigated the direct effect of participative budgeting on performance have reported positive effects in some studies (Brownell, 1982; Leach-Lopez, Stammerjohan and McNair, 2007) and negative or no effect in others (Milani, 1975).

The other approach of investigating the relationship has viewed the link between the two variables as either contingent to or intervened by other organizational variables (Merchant, 1981; Brownell, 1981; 1982; Shields and Young, 1993; Chenhall and Langfield-Smith, 1998; Abernethy and Brownell, 1999; Douglas Clinton and Hunton, 2001; Chong and Chong, 2002).

Merchant (1981), for instance, stated that the relationship between budgeting and performance can be complex. Merchant recommended that the association of performance and administrative control systems, such as budgeting, can be better explained if it is considered along with associated organizational settings. Merchant provided evidence that the association between the use of administrative systems, including participative budgeting, and performance is positively significant in large diversified and decentralized corporations.

Other examples of studies that proposed the contingency approaches are Chenhall and Langfield-Smith (1998) and Abernethy and Brownell (1999). Chenhall and Langfield-Smith predicted the association of performance with management control systems to be contingent on the corporate strategy orientation. Chenhall and Langfield-Smith

found that budgeting, in its traditional management control role, was associated with performance in organizations that adopted low-cost strategies. Differentiation in strategic organizations provided performance benefits from management techniques that are more diverse and complex than traditional methods. Abernethy and Brownell's (1999) results supported the prediction that the interactive use of budgets is associated with the organization's performance in times of strategic change.

Prior to Chenhall and Langfield-Smith (1998) and Abernethy and Brownell (1999), Shields and Young (1993) had argued that previous literature and empirical studies on the link between participative budgeting and performance was conflicting and indicated the need for better understanding of this relationship. Shields and Young (1993) believed that information asymmetry is antecedent to participative budgeting and a budget-based incentive is a variable that moderates the relation between the use of participative budgeting and organization performance. They explained their assumption that central management can use budget participation to learn about lower level environments and to provide motivations. Based on that, superiors allocate resources to subordinates who are motivated to maximize organizational goals. Shields and Young's results confirmed this prediction; they found the use of budget–based incentives moderates the positive association between budget participation and firm performance.

Following Shields and Young's approach, Douglas Clinton and Hunton (2001) looked at the relationship between participative budgeting and performance as not being solely determined by the degree of budget participation. Their study examined the degree of agreement between participating allowed, and perceived need for participation, which they defined as the degree of participation congruence, a factor linked that to organizational performance. The study provided evidence of a positive significant correlation between participation congruence and performance.

Implications

This study expected the use of participative budgeting to be positively associated with organizational performance. The prediction of a direct relationship was based on a cognitive explanation and also on an agency theory explanation.

The cognitive approach can suggest that the budget participation process helps subordinates to better understand how critical their activities are and how to drive performance (Barsky and Bresmer, 1999).

The agency perspective inspires the assumption that participative budgeting allows the transfer of information from subordinates to superiors. This informative role of budget participation improves the efficiency of resources allocations among the different operating activities and, therefore, positively impacts on organizational performance (Shields and Young, 1993).

Hence, the following hypothesis was tested:

H (22) Participative budgeting is positively associated with organizational performance**.**

2.4.3.2 ABC, TQM and JIT and performance

Despite theoretical recommendations of an expected significant effect of the use of ABC on firm performance, there has been little evidence of direct association of ABC and performance in previous literature. Some researchers found that ABC and other management techniques complement and enhance each other in their association with the firm performance (Cagwin and Bouwman, 2002; Maiga and Jacobs, 2003; Cagwin and Barker, 2006; Banker, Bardhan and Chen, 2008). However, other findings indicated direct effects of ABC on certain financial and non-financial indicators (Kennedy and Affleck-Graves, 2001; Ittner, Lanen and Larcker, 2002).

ABC was shown to be associated with performance when the system is used concurrently with other management initiatives. Cagwin and Bouwman (2002) demonstrated that ABC contributes positively along with other management initiatives to organizational financial performance. Their study addressed organizational strategic and environmental conditions that affect the ABC efficacy, and showed that ABC success factors are predictors of performance improvement.

Results of Maiga and Jacobs (2003) and Cagwin and Barker (2006) are consistent with the Cagwin and Bouwman (2002) findings. Maiga and Jacobs recognized a positive impact of ABC and BSC interaction on performance, but Cagwin and Barker results suggested that ABC did not directly impact financial performance. Rather, financial benefits were obtained from ABC when it is concurrently used with TQM and business process reengineering (BPR).

Banker et al. (2008) also highlighted that ABC is unlikely to improve the firm performance by itself. Rather, ABC implementation impacts performance only by supporting the implementation of advanced manufacturing capabilities. Their results supported their hypothesis that there existed only an indirect relationship between ABC and plant performance. The adoption of world-class management practices completely mediated the impact of ABC on manufacturing cycle time, quality and cost reduction (i.e., representing performance).

The use of ABC system demonstrated a significant effect on the value of firms adopting the system, according to Kennedy and Affleck-Grove (2001). In a cross-sectional study on UK firms, Kennedy and Affleck-Grove matched a number of ABC adopting firms with non-adopting firms from the same industry and of similar market capitalization. Their results revealed that hold and buy stock returns of ABC adopters were significantly higher than those of non-adopting firms over the three years period beginning in the year of adoption. A further comparison based on accounting-based measures confirmed the superior stock market performance found in ABC adopters.

Some other evidence on a direct relationship between ABC and firm performance was provided by Ittner et al. (2002). They suggested that extensive use of ABC impacts directly on some, but not all, performance aspects. The study found ABC directly associated with higher quality levels and greater improvement in cycle time and quality, but not with manufacturing cost reduction. However, cost reduction was found to be associated indirectly with the use of ABC, when the relationship is mediated by quality and cycle time improvements.

General agreement was found in the literature on the positive impact of TQM on organization performance. However, some researchers merely investigated the effect

of particular TQM practices on performance (Sila and Ebrahimpour, 2005; Feng, Prajogo, Tan and Sohal, 2006; Yusuf, Gunasekaran and Dan, 2007), whilst others considered the influence of other organizational or external factors on the relationship (Chenhall, 1997; Cagwin and Barker, 2006; Abas and Yaacob, 2006; Demirbag, Tatoglu, Tekinkus and Zaim, 2006; Fuentes, Montes and Fernandez, 2006; Joiner, 2007; Kumar, Choisne, De Grosbois and Kumar, 2009;).

Sila and Ebrahimpour (2005) have tested the linkage of TQM and business performance. Their study empirically investigated the relationship among critical TQM factors and performance in terms of financial and non-financial measures; their results indicated a positive linkage between TQM and performance outcomes.

Feng et al. (2006) compared the experiences of organizations in Australia with those in Singapore with respect to the TQM and performance relationship. Feng et al. stated that TQM is multidimensional and, therefore, they tested the relationship between different dimensions of TQM with organizational performance. The use of SEM analysis validated that TQM practices take place along several dimensions. The structural model of different TQM dimensions and performance suggested quality dimensions that tend to be more organic to be associated more with innovation performance. Other dimensions that are more likely mechanistic were significantly linked in the model to quality performance.

Yusuf et al. (2007) conducted a study on the association of TQM implementation degree and performance in Chinese organizations. They gathered and analyzed data on the organizations' employee relations and operating procedures that could reveal the extent of TQM implementation. Performance was measured based on customer satisfaction and financial performance. Yusuf et al. concluded that TQM does have a direct impact on organization performance. The study noted that performance in companies that implemented TQM was better than that of companies that did not adopt the initiative. Furthermore, their results indicated that there is a positive association between the application of TQM and tangible benefits.

An enhancement to the TQM-performance potential linkage can be achieved, according to Chenhall (1997), when TQM is connected to, and used concurrently

with, relevant evaluation system. Chenhall analysis confirmed the significant influence of TQM usage on performance growth. However, the overall study results indicated that the impact of TQM implementation on organization performance is even stronger with the use of management performance measures on operation control. The study concluded that the importance of the use of appropriate management performance measurement systems, where feedback on efficiency and effectiveness of TQM and alike strategic innovations can be provided.

Cagwin and Barker (2006) confirmed that TQM initiatives have a positive significant impact on financial performance. However, indirect effect of TQM on performance was also demonstrated as the results revealed significant benefits to organizations from the concurrent use of TQM with ABC.

The study conducted by Abas and Yaacob (2006) discussed the interrelationships between TQM, Strategic Control Systems (SCS) and organizational performance. The structural equation model developed for their research indicated that TQM has a direct impact on performance. An indirect impact of TQM on performance, through the use of SCS, was also shown by the study model.

Demirbag et al. (2006) measured the interrelationships of TQM, financial and non-financial performance in manufacturing small and medium enterprises. The structural framework developed in their study indicated a strong effect of TQM on non-financial performance, but only a weak influence was found of TQM on financial performance. However, the study model indicated a strong indirect impact of TQM on financial performance, when non-financial performance was a mediating factor.

Fuentes et al. (2006) suggested that higher impact of TQM implementation on performance is a result of greater alignment of TQM implementation with the organization strategy. Fuentes et al. aimed to explain how TQM relates to business strategy, and ultimately to business performance. They investigated specifically the relation of different types of strategy with different TQM dimensions and determined the strategic arrangements that support the implementation of TQM elements. The study then investigated how effective is the role of the TQM-strategy alignment in the attainment of higher performance levels.

Joiner (2007) investigated the moderating effects of co-workers support and organization support on the association of TQM implementation with organization performance. Joiner results found that the implementation of TQM in an environment of support (i.e., organization support and co-workers support) enhance remarkably the organization performance. The data analysis, however, confirmed that the degree of implementation of TQM practices was positively related to organization performance.

Kumar et al. (2009) assumed that the TQM-performance relationship is affected by different moderating variables (e.g., time of TQM adoptions). The study further assumed that the impact of TQM practices on performance can be improved and effectively monitored only when proper performance measurement systems are used. Results of Kumar et al. provided further evidence of the positive impact of implementing TQM practices on the company's non-financial and financial performance. However, their study suggested that time of TQM adoption plays a role for the effect on outcomes to be noticed.

The main theme of previous literature agreed with the recommendation of JIT advocates, suggesting a positive impact of the system implementation on organization performance. Some of the literature investigated the mere effect of JIT implementation on performance (Inman and Mehra, 1993; Claycomb et al., 1999; Kinney and Wempe, 2002). Others, however, considered the influence on the relationship of other different variables (Sakakibara, Flynn, Schroeder and Morris, 1997; Upton, 1998; Chong, White and Prybutok, 2001; Ahmad, Mehra and Pletcher, 2004).

Inman and Mehra (1993) aimed to examine the extent to which JIT claimed benefits occur in different firms and the relationship of these benefits with financial improvement. Elements of JIT implementation were factored to two main classifications; inventory elements and utilizing elements. Financial performance was computed by adding together values for improved ROI, decrease in total cost, and improved service. The data analysis conducted indicated a significant effect of successful JIT implementation on financial success achieved by manufacturing firms utilizing the philosophy. Both inventory elements and utilization elements correlated significantly; showing that JIT is not merely an 'inventory control method'.

Claycomb et al. (1999) argued that JIT strategies aim to improve financial efficiency as it leads to an increase in revenue and a decrease in costs and, as a result, increases net income and improves profitability. Their argument was supported by the study results, where the percent of JIT conducted was positively associated with return on investment, firm profitability, and return on sales. Claycomb et al. concluded that JIT has a direct influence on financial performance as when JIT increases overall financial performance improves.

Kinney and Wempe (2002) examined the association between JIT adoption and financial performance through a comparison of adopters and non-adopters of the initiative. Their data analysis indicated that JIT adopters outperformed non-adopters in the Return on Assets (ROA) improvement over a three-year period. Kinney and Wempe also found that JIT adopters, compared to non-adopters, improve both components of ROA (i.e., profit margin and asset turnover), which indicated that JIT's benefits are not limited to reduced inventory investment and holding costs. However, further analysis of their data suggested that such superior ROA improvement was found more in larger-size adopters and in those who adopted the initiative early in time.

Beyond the investigation of a direct relationship between JIT practices and organization performance, Sakakibara et al. (1997) also investigated the combined effect of JIT and infrastructure practices on performance in manufacturing organizations. The study found no sufficient evidence to establish a significant relationship between the set of JIT practices and manufacturing performance. This finding supported the notion that the implementation benefit of JIT is not merely through the use of its practices. However, the study findings indicated that there was a statistically significant relationship between the combined set of JIT practices and infrastructure practices and the set of manufacturing performance measures. Results further indicated that infrastructure practices significantly associated with performance (i.e., more strongly the two infrastructure practices of quality management and manufacturing strategy). Accordingly, the researchers concluded that JIT may affect manufacturing performance only through its interaction with infrastructure practices and that JIT had value only when it is used to build infrastructure.

Upton (1998) investigated the impact of non-financial performance measurement use on the relationship between JIT implementation and performance. He argued that non-financial perspectives are more relevant to JIT implementation and, therefore, the use of more non-financial measures is more objective than relying on traditional financial ones. The study expected that appropriately matched performance measurement systems support and enhance the impact of JIT on overall firm performance. A comparison of adopters and non-adopters of JIT indicated the positive impact of JIT on organization performance. The use of non-financial performance measures was also higher in JIT firms. However, non-financial measurement systems use was associated with performance in both adopters and non adopters of JIT.

Chong et al. (2001) researched the relationship among organizational support, JIT implementation, and performance in US manufacturing organizations. The analysis of their data highlighted a significant direct relationship between JIT and performance. Organizational support was noted to be directly and significantly related to both JIT and performance. This implied that organizational support is moderating, rather than mediating, the relationship between JIT implementation and organization performance.

Ahmad et al. (2004) explored the relationships among JIT elements, various operating performance measures, and financial performance. The study aimed to trace direct and indirect effects of utilizing various JIT practices on financial and growth performance. Their results indicated no significant evidence to support the claim that JIT influences organization financial performance directly or indirectly through improving operative performance. Ahmed et al. suggested the non existence of a direct effect of JIT on organization performance and the need for further investigations of determents of that effect, if any.

Implications

Arguments based on transaction cost economics explanations, and observations of previous research influence the expectation that adoption of innovations such as ABC, TQM and JIT provide the potential for organizations to obtain benefits that significantly affect organization performance.

This study anticipates the implementation of ABC in organizations will be positively associated with performance. Compared to firms that do not employ ABC systems, ABC implementers are expected to have better performance. This is attributed to the superiority of information ABC provides on firms' efficiency (Cagwin and Bouwman, 2002; Ittner et al., 2002; Cagwin and Barker, 2006).

Previous arguments and observations suggested TQM initiatives to be necessarily associated with factors that lead to positive organizational results. It is widely recommended that TQM programs provide opportunities for organizations to enhance their performance by assisting managers to develop a competitive advantage through quality (Chenhall, 1997). The improvement of factors such as leadership, planning, customers, suppliers, community relations, production and supply of production and services, and benchmarking is proved to be necessary for effective TQM implementation. These factors are found to be critical in achieving positive performance results (Sila and Ebrahimpour, 2005).

The JIT philosophy of increased process efficiency leads the expectation that adopting a JIT strategy positively impacts on performance. The use of JIT is associated with inventory gain, quality, and throughput performance; JIT is not merely an 'inventory control method' (Inman and Mehra, 1993; Kinney and Wempe; 2002). The initiative, rather, encourages the minimization of waste, reduction of set up times, and more control of materials flow, which enables more efficient allocation of resources (Kannan and Tan, 2005).

Therefore, the following three hypotheses were tested:

H (23) The use of ABC is positively associated with organizational performance.

H (24) The use of TQM initiatives is positively associated with organizational performance.

H (25) The use of JIT initiatives is positively associated with organizational performance.

2.4.3.3 Innovation and Performance

There has been a general agreement in previous literature on the role of innovation as a significant influence of firm performance. Researchers investigated the effect of innovation adoption on organizational performance, as well as the influence of different organizational factors on the innovation-performance relationship. Notably, some studies were limited to product innovation in their investigation (Roberts, 1999; Bisbe and Otley, 2004; Garcia-Morales, Llorens-Montes and Verdu-Jover, 2008). Such tendency might be influenced by the conventional meaning of the term 'innovation' as to refer to 'new product related breakthroughs' (Han, Kim and Srivastava, 1998, p. 32). However, a number of other studies investigated innovation with a broader scope and made distinction between different innovation types and perspectives (Subramanian and Nilakanta, 1996; Han et al., 1998; Li, Zhao and Liu, 2006; Lin and Chen, 2007; Jimenez-Jimenez, Valle and Hernandez-Espallardo, 2008).

Subramanian and Nilakanta (1996) included an introductory review of previous literature to their study that had addressed organizational innovativeness antecedents and performance consequences. Subramanian and Nilakanta argued that the conflicting results they found in their review may be due to a 'narrow definition' of the innovation construct. The researchers also argued for the need of appropriate performance measures to be employed. To overcome these shortcomings, their research considered the conceptualization of innovation as multidimensional, and measured and tested the firm's innovativeness based on innovation of different types, periods of implementation, and persistence. The performance measurement problem was also addressed by the use of two classifications of measurement; measures of efficiency and measures of effectiveness. Accordingly, their data analysis revealed that administrative innovation was associated with efficiency performance, while technical innovativeness was found to impact both organizational effectiveness and efficiency.

Han et al. (1998) tested whether innovation is a potential mediator of the market orientation-corporate performance relationship. The authors investigated how the three market components of customer orientation, competitor orientation and inter-functional coordination affect both technical and administrative innovation so as to

affect corporate performance. Results of their analysis indicated that both technical and administrative innovations impact positively and directly on performance. The study provided some evidence on the mediating role innovation plays in the relation between the organization market orientation and performance; as market orientation in their model related positively and significantly to innovation.

Interesting evidence on the positive impact of innovation degree on performance level was provided by Roberts (1999). The study examined the relationships between product innovation level and sustainability of superior profitability within different competition situations. Roberts tested two possible scenarios: the first was maintaining high performance position by facing higher competition levels with continuous introduction of new innovations; the second was sustaining high profitability by fewer innovations, with the ability to avoid competition. Findings demonstrated that innovation influences the persistence of superior profit over time; despite higher competition. On the other hand, a very weak support was found to the anti-competition and less innovation impact on persistence of the firm above-normal profit outcomes.

Bisbe and Otley (2004) found a significant direct relationship between innovation and performance. However, the study found more positive and significant alignment between innovation and performance when more interactive MCS are used. Bisbe and Otley explain that an interactive control system enables communication, direction and integration across different levels in the organization. This allows signaling preferences of search, indicating acceptable courses consistent with the business strategy and providing the basis for selecting initiatives that have a positive impact on performance.

Li et al. (2006) argued that human resource management (HRM) is critical for both innovation and firm performance. Accordingly, their study investigated HRM, technological innovation (i.e., products and services innovation) and performance. They examined the relationship between these factors in Chinese high-tech firms so as to explain the effect of HRM practices on technological innovation and on performance. Their data analysis revealed a positive relationship between technological innovation and firm performance. The study demonstrated, further, that

firms' HRM is an important influence on technological innovation, which leads to significant performance improvement.

In a study conducted on manufacturing and service SMEs in Taiwan, Lin and Chen (2007) tested innovation prediction of performance (i.e., indicated by company sales) and what natures and types of innovation have more explanatory power for the innovation-performance relationship. Results indicated that only 'radical administrative' followed by 'incremental administrative' innovations positively explained company sales. Their finding emphasized, therefore, that ultimate benefits of innovation require commitment with support through administrative innovation.

Garcia-Morales et al. (2008) tested the influence of organization innovativeness (i.e., product innovation) on performance and predicted a positive direct association between the two variables. Garcia-Morales et al. based their prediction on suggestions that organizations with greater innovation will positively influence their environments, so as to obtain better capabilities to improve their performance and achieve persistent competitive benefits. They argued that most innovation aspects are positively linked to organizational improvement; and lack of innovation in organization projects, products, services, methods, and activities will negatively impact on its productivity and performance. Results of the study analysis confirmed the researcher's prediction as a direct relationship was found between innovation in the organization and performance.

Jimenez-Jimenez et al. (2008) tested the importance of innovation in relation to improved firm performance; they examined the roles organizational learning and market orientation play as determinants of both innovation and performance. Their results supported a positive direct relationship between innovation and performance and, therefore, provided additional support to the significance of innovation in achieving competitive advantage. The study also found that innovation mediated the impact of both market orientation and organizational learning on performance, suggesting that both variables positively influence performance by promoting innovation.

Implications

A uniform agreement was found in previous literatures on the direct positive impact innovation has on organization performance.

Strategic management theories have emphasized the importance of appropriate strategic dimensions to actively construct and maintain valuable organizational objectives (Miles and Snow, 1978; Porter, 1980; Gupta and Govindarajan, 1984; Chapman, 2005). Innovation is an integral dimension of organizational strategy, regardless of the approach in which strategy has been adopted (Subramanian and Nilakanta, 1996). The appropriateness of innovation to the organization strategy, and, therefore, to the overall organization objectives, stems from being an effective provider of competitive benefits and a method to change the organization; either as a reaction to environment changes, or as an action to influence an uncertain environment (Damanpour, 1991). Accordingly, and since performance is normally the ultimate organizational objective, the following hypothesis is tested:

H (26) Innovation is positively associated with organizational performance.

2.4.3.4 The BSC and performance

The use of a BSC type system with numbers of both financial and non-financial indicators is proposed to lead to improvement in organizational performance. Kaplan and Norton (1992) argued that a BSC performance measurement includes financial measures and complements those financial measures with non-financial measures of three perspectives. The financial measures report the results of short-term performance, while measuring the three non-financial perspectives which drive financial performance in the long run.

However, previous research has provided mixed results on the relationship between a BSC implementation and organizational performance. While some studies have brought support to a significant impact of BSC usage on improved performance (e.g.,

Hoque and James, 2000; Malina and Selto, 2001; Baines and Langfield-Smith, 2003; Davis and Albright, 2003), others have provided, to different extents, contradictory evidence (e. g., Ittner et al., 2003; Braam and Nijssen, 2004; Jusoh, Ibrahim and Zainuddin, 2008).

Generally, reliance on appropriate accounting information contributes to efficient management of the organization's resources and gradual improvement in the organizational performance. Therefore, Baines and Langfield-Smith (2003) found that a change in management accounting information towards a greater reliance on non-financial performance measures reflects positively on organizational performance.

Hoque and James (2000) expected the effect of the implementation of BSC on performance to be contingent to the organizational contextual variables. The study found that the implementation of BSC in the organization is associated with increased performance, but that this relationship does not depend on the contextual variables tested in their study.

The balanced scorecard systems present significant opportunities to the organization to improve outcomes by developing, communicating, and implementing strategy. Results of Malina and Selto (2001) indicated that managers investigated in their research responded positively to BSC by improving their performance on the implemented BSC measures. Managers, according to Malina and Selto, believed that improving their performance on the used BSC measures indicated business efficiency and profitability.

Sim and Koh (2001) investigated the effect of the use of strategically linked performance measures, which comprise both non-financial and financial perspectives, on business success. The study found that connecting measures of the four BSC perspectives to the organization strategy enabled the use of BSC performance measurement ‘as a tool for monitoring the long-term value creation process’ (Sim and Koh, 2001, p. 24).

In a quasi experimental setting, where a control group existed, Davis and Albright (2004) verified whether the implementation of a BSC leads to an improvement in

organizational financial performance. The study aimed to find out whether financial performance in firms after implementing a BSC is significantly higher than that in a similar organizational setting, where traditional performance measurement systems (i.e., non-BSC) are in use. The study was conducted in several branches of a bank, where BSC had been implemented in some branches, but not in others. Findings showed a positive enhancement in financial performance on a targeted financial measure, for the bank branches using BSC. The findings revealed, therefore, that these branches outperformed non-BSC branches on the same basis of financial measurement.

However, Braam and Nijssen (2004) advocated that the significance of the relationship between BSC usage and organization performance is rather determined by the way BSC are utilized and set to operate. Their study was based on Kaplan and Norton's emphasis of BSCs as strategic management tools, which aim to explain and support the strategy concepts and implementation. Therefore, companies need to line up their BSC with their strategy in order to receive benefits. Findings of their study provided support for their proposal. On one hand, multiplication of comprehensive and balanced measurement usage, or excessive levels of BSC employment, was found to impact negatively on organization performance. On the other hand, BSC use of measurement, with a focus on company strategy, was positively related to performance.

Contrary to evidence of positive association, Ittner et al. (2003) indicated otherwise. They examined, in financial firms, the performance association of various strategic performance measurement approaches, including BSCs. Their results suggested no significant association of the BSC use with economic performance. However, their results indicated that an extensive use of a broad set of financial and non-financial measures is associated with greater performance in the form of earning higher stock returns.

Jusoh et al. (2008) results were rather mixed. Their data analysis showed that manufacturing firms will experience improvement in performance if they apply greater usage of internal business process and innovation and learning performance measures. At the same time, usage of customer and financial measures were found not

to have significant influence on firm performance. However, support for the positive effect of the overall usage of BSC on firm performance was found, when all BSC perspectives were tested in combination.

Implications

The use of BSC performance measurement systems is proposed to lead to improvement in the organizational performance. The following agency, normative and strategic theoretical based arguments can support this expectation.

Generally, 'measurement diversity' advocates argue that the use of comprehensive sets of financial and non-financial measurement motivates managers to focus on relevant performance dimensions, and keep them from using certain measures at the expense of others (Ittner et al., 2003). Accordingly, firms can be expected to achieve higher performance when they focus on a balanced combination of financial and non-financial performance measures.

From the basic point of view, BSC are diversified performance measurement systems. Among the proposed merits of BSC, identified by the BSC theorists and advocates, is to achieve and sustain financial performance benefits (Davis and Albright, 2004). The BSC financial measures tell the results of short-term performance. Beyond that, non-financial measures, of the BSC three other perspectives, complement financial measures with long-termed performance evaluation (Kaplan and Norton, 1992).

However, the expectation of significant BSC impact on firms' results stems also from the role importance of appropriate strategic dimensions, like the BSC, to actively construct and support valuable organizational objectives (Miles and Snow, 1978; Porter, 1980; Gupta and Govindarajan, 1984; Chapman, 2005). The connection of the four BSC perspectives to strategy enables the monitoring of the strategy implementation and creation of the ultimate organization objectives (Sim and Koh, 2001).

Hence, the following hypothesis was tested:

H (27) The use of the BSC is positively associated with organizational performance.

2.5 Summary

The study theoretical framework looked at interactions across four main organizational areas; strategy, context, MCS, and performance. It assumes that the organizational strategic orientation along with the contextual variables of size, decentralization, and diversification influence the implementation of different management control systems; and this will have an overall impact on the organizational performance.

A variety of theories provided arguments that motivated explanations of different relationships across the study variables. Contingency theory suggests the need for MCS to fit with circumstances in which they are required to be operated; and that higher organizational performance is a contingent consequence of that appropriate alignment. Agency theory predicts that the design of MCS, under certain contextual and strategic conditions, is based on the extent that such design is informative and motivating to different managerial levels; a situation that will reflect in better resource and effort allocation and, therefore, improve performance. Transaction cost theory recommends appropriate MCS that enhances process cost efficiency in the organization to be associated with performance consequences. POM theories provide prescriptions of proper antecedents to MCS for successful implementations. Strategic management theories emphasize the importance of appropriate control systems that fit the organizational strategy model, to actively build and sustain valuable strategic roles. Cognitive hypotheses expect successful MCS implementation and positive performance consequences, when MCS encourage the development of understanding, knowledge, and participation of employees at lower levels.

Research to date has indicated a growing interest in the relationship between MCS, organizational strategic orientation, and organizational contextual variables. The impact of MCS on performance was also attended. The literature review conducted, for the purpose of this study, has sought to review insights provided by research

undertaken over the past four decades to address the interactions of MCS with three organizational areas: strategy, contextual variables and performance.

Previous literature on the strategy typology has provided similar classifications of strategy types that range from the conservative strategy type at one extreme to entrepreneurial strategy type at the other end. Langfield-Smith (1997) has suggested a more comprehensive strategic orientation model, which combines the three most popular prior strategy models of Miles and Snow (1978), Porter (1980), and Govindarajan and Gupta (1985). Regarding the strategy type and MCS relationships, prior studies reported greater use of TQM and innovation in organizations, when entrepreneurial strategies are in place. ABC was suggested to benefit both strategic orientations. Participative budgeting was noted as more common in organizations in times of strategic change. Although the literature findings and discussions postulate hints to expect the JIT association with both conservative and entrepreneurial strategies, and to anticipate the participative budgeting and BSC more usage in organizations that adopt entrepreneurial strategies, none of these associations has been empirically tested.

Associations between the three contextual variables: size, diversification, and decentralization and management control systems were tested in previous research. Size, diversification and decentralization were shown to associate with participative budgeting; size and diversification were found to influence ABC implementation. However, ABC was suggested to be negatively associated with decentralization. Previous studies generally indicated the likeliness of JIT to be used in larger firms; while size demonstrated no effect on the level of TQM implementation in previous findings. The influence of structural variables on the use of JIT has not yet been tested; rather, JIT was viewed by previous research as a strategy that ought to influence organizational structure. Previous research on innovation level and the three contextual variables relationships was shaped with contradicting results: while some researchers found size, decentralization and diversification positively associated with innovation, others indicated otherwise. Size was found to be associated with the implementation of the BSC. Previous literature explored the effect of structural variables on the use of performance measurement systems that includes non-financial perspectives However, the influence of decentralization and diversification on the use

of the BSC was not specifically examined.

The implementations of TQM, JIT, and innovation have been shown, in different studies, to be associated with performance in the organization. Prior results on participative budgeting's direct association with organizational performance were conflicting. ABC was found to be linked with performance when it is used concurrently with other management initiatives, or when it is extensively used. Several different studies have supported the BSC association with performance, while others have found no association or provided mixed results.

It is noticeable from the literature review that variables and relationships included in this study were separately investigated in the prior literature. This highlights the significance of this study model in integrating these variables and relationships in one empirically tested framework.

It is further obvious that previous studies were mainly descriptive and explanatory in nature, with a lack of suggestive power. This can be attributed to the reliance of these studies on theories from different disciplines other than management accounting (i.e., contingency theories, economic theories, psychological theories, etc.) to underlie their research framework; especially with the absence of theories that are unique to the management accounting field and having an impact on its practices (Malmi and Granlund, 2009). According to Malmi and Granlund, we still need the explanatory power and insights of currently used theories to explain management accounting practices and their relationships with other variables and circumstances. However, we also need the development of management accounting theories that suggest what management accounting system to use and explain how to use these systems, and under which circumstances, to positively influence on performance. The integrative approach of this study enabled the exploration of the performance consequences of interactions of different management accounting practice under different circumstances. While the study used theories from different other disciplines to underlie the explanation of the study framework, the outcome of the research aims to provide a step forward towards the development of a management accounting theory of suggestive power to the management accounting practice.

A research opportunity existed, for this study, to confirm previous findings on associations between the different constructs included in the study model. Another opportunity was to explore some links that have not yet been examined, notably, the association between strategy type and the use of BSC, participative budgeting, and JIT, and the influence of structural variables on the adoption of JIT and the use of BSC. Further opportunity for this research was to use the strategy model suggested by Langfield-Smith (1997); as this model is a more comprehensive form that combines different strategy dimensions, and has not yet been used previously in empirical research.

Based on the preliminary review and the implications of the literature, the investigation of hypotheses in these main areas was conducted by analysing the links between strategic orientation and the adoption of contemporary MCS, the impact of the organizational contextual factors on the MCS design, and the associations between the implementation of contemporary management control approaches and the organizational performance.Variables in the four areas of strategy, context, MCS and performance, relevant to this research, and their hypothesized relationships are depicted in Figure 2.2.

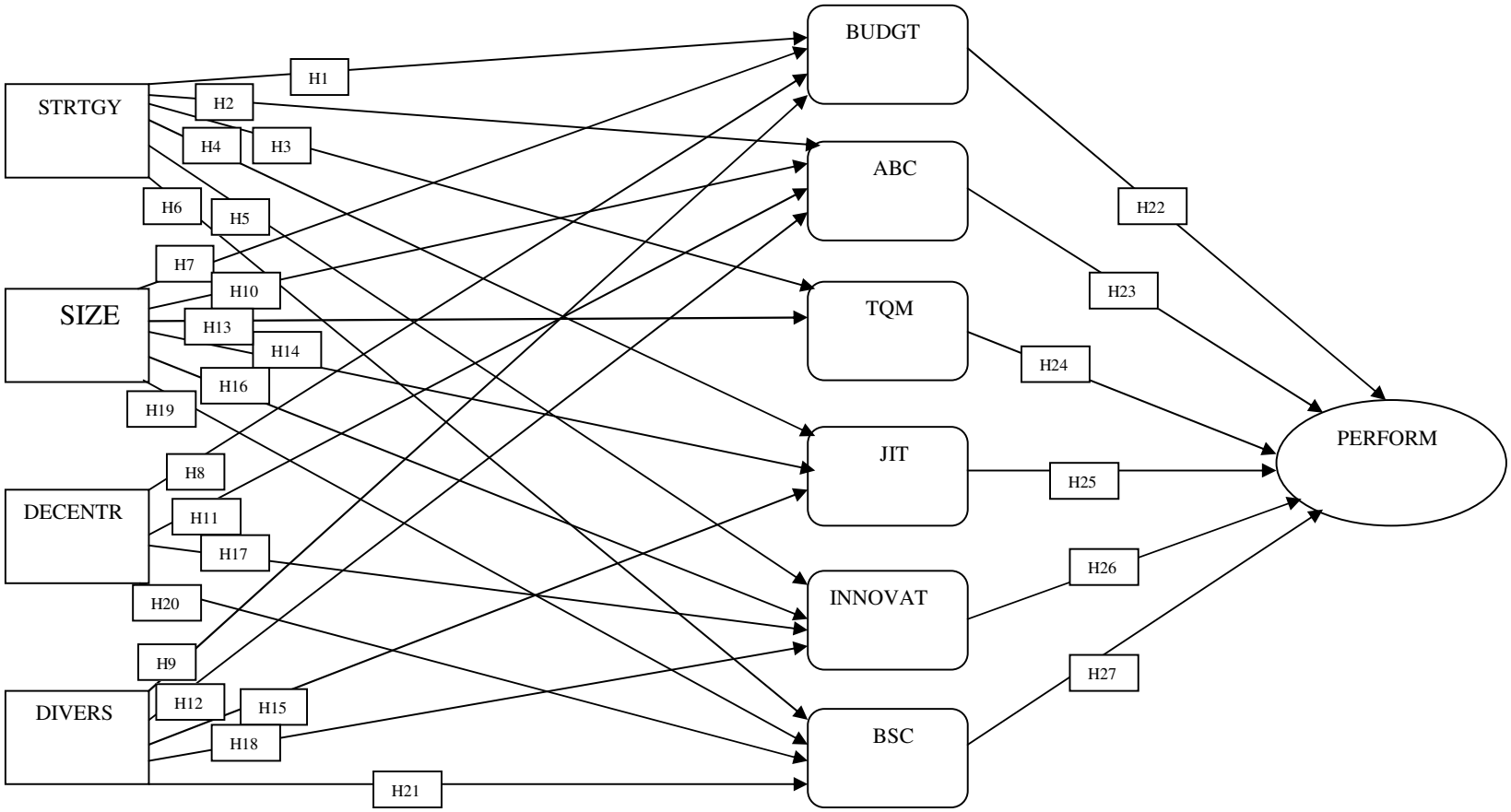

Figure 2.2: The hypothesized model

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Overview

The aim of this study is to understand how strategy and context influence the use of contemporary MCS in organizations and to gain insights into how the design and configuration of contemporary approaches to effective control models might lead to enhanced organizational performance outcomes.

Based on the outcomes of the literature review, and the research objectives, variables of strategy, context, MCS and performance have been identified and relationships between these variables formed the basis of the theoretical model of the study. This chapter addresses how the research project has been designed and executed in order to investigate the research question. In particular, the chapter outlines the approach in conducting the research.

To test the study model, this research has collected and analyzed information to measure the study variables through the observations of Chief Executives and top managers of Australian manufacturing companies. The data collected related to: the strategy type adopted by the organization, the contextual variable for organizational size and the structural arrangements of decentralization and diversification, the use of contemporary MCS identified from the literature as key strategic management tools, and the organizational performance.

The survey instrument used (i.e., the questionnaire) was pre-tested prior to postage by a small group of academics and managers. This pilot test of the instrument resulted in

few changes to wording and presentation of the questionnaire.

From the sample of 1000 manufacturing companies, 105 surveys were collected. Survey data were subjected to standard statistical testing in order to ensure representativeness and generalizability across the sample population. Data were then used to test the research hypotheses concerning these variables.

3.2 The Survey

Aspects of the survey that seemed likely to affect the response quantity or quality (i.e., response and measurement errors) were identified and shaped in such a way that the best possible responses could be obtained (Dillman, 2000, p. 9). These included the design of the survey method, instrument and process and the selection of the survey measures.

A mailed survey questionnaire was used as it is, generally, among the most popular data collection methods in business research (Ghauri and Gronhaug, 2005). This approach suited the needs of this study for three reasons: Firstly, low administrative cost is the principal strength of the written questionnaire, compared with conducting interviews with a sample of 1000 organizations geographically dispersed across Australia. The low cost allows a large sample size and, therefore, minimizes the sampling error. Secondly, the level of anonymity, provided to respondents, encourages more candid responses. Thirdly, it avoids the potential bias introduced by the interviewer as well as the tendency for respondents to give answers they assume the interviewer wants to hear in personal interviews (Salant and Dillman, 1994, p. 35; Brownell, 1995). However, vulnerability to non-response error, the lack of control over what happens to the questionnaire after it is mailed and the difficulty of testing for non-response bias are major weaknesses of mailed questionnaires (Salant and Dillman, 1994, p. 36, 37).

The type of primary data required to investigate the study hypotheses was respondents' attitudes and perceptions of the measured variables. Compared to the use of more objective measures, individuals' perceptions are considered appropriate to this study for two reasons: First, it is argued that appropriate selection of individual participants allows the collection of relatively objective information. Appropriate individuals (i.e., top executives) have sufficient understanding of their organizational processes and their perceptions and opinions largely determine these processes (Snow and Hambrick, 1980; Baines and Langfield-Smith, 2003). Second, 'self-typing' of participant perception is still more appropriate for data collection as it allows a relatively large data base to be generated for hypothesis testing (Snow and Hambrick, 1980).

The survey used a structured questionnaire with closely defined alternatives; a mail survey would not be recommended if the study used an unstructured questionnaire with open ended questions. However, a high non-response rate is a common problem with mail surveys using structured questionnaire (Ghauri and Gronhaug, 2005).

The survey implementation procedures and the questionnaire were designed to minimize non-response and measurement errors and to increase the speed with which the questionnaires were returned, following Dillman (2000).

3.2.1 The survey implementation process

The survey was sent out in two mailings (on 31st of July, 2007 and a follow-up mailing on 15th of October, 2007). The first mailing included a questionnaire with an information letter (i.e., cover letter) and a self-addressed, postage-paid envelope. The mailing also included a self-addressed, postage-paid reply card, which respondents were asked to return separately from the survey questionnaire. The postcard asked respondents to indicate if they wanted to receive an aggregate response summarizing the findings of the study at the end of the project. The second mailing contained the

same contents as the first mailing in addition to a reminder letter.

As anonymity of respondents was guaranteed, it was not possible to identify completed returned questionnaires of the first mailing with particular respondents. Nevertheless, the returned reply postcards and the received apology e-mails and letters helped towards a better identification of those who did not respond to the firstly mailed survey. This helped a better targeting of the follow-up to those who had not responded to the first mailing and therefore avoided the cost of approaching the entire sample again by the second mailing (Brownell, 1995).

The survey process and response to the survey were viewed as a social exchange, which hopefully minimized the non-response error. Social exchange is a human behavior theory that explains the development and continuation of individuals actions as motivated by the return expected from these actions. Accordingly, emphasis was directed at how perceived rewards from responding can be increased, how perceived costs of responding can be reduced and how trust can be established that the eventual rewards will outweigh the costs of responding (Dillman, 2000, p. 14).

Expressions of positive regard and gratitude were included as a way of providing perceived rewards of participation to respondents. Personalization by typing names of individual participants and the positions they hold in their organizations was to create a belief on the part of the respondent that she/he receives individual attention from the researcher. The signed information letter (see Appendix 1) with a proper salutation and the provision of the researcher's contact phone number and email address to call with queries together give the feel of an individually written letter. The information letter also expressed an appreciation of the respondents' time that would be consumed in answering the survey. Further, appreciation of the contribution respondents would make by responding was implied in the information letter. The letter provided an economic description of the research project and pointed out the significance of the respondents' assistance in achieving the study objectives by providing their perceptions of the survey variables (Dillman and Frey, 1974; Dillman, 2000, p. 15). However, except for the self-addressed, postage-paid card included in the mailed survey, tangible rewards, particularly financial, were not budgeted in this study. The card was to be sent back by respondents, separately from their answered

questionnaire, if they wanted a summary of the study findings to be sent to them after the study was completed.

The survey questionnaire and wording of the information letter implied that low social costs were incurred by respondents. The letter estimated 25 minutes for completing the questionnaire. The letter implied that the success of the survey depended on the respondents' participation rather than the necessity for the respondent's participation. The survey subjects of strategy, context, MCS and performance were within the respondents' expertise and knowledge. The postage-paid, self-addressed envelope made it more convenient for respondents to mail back their responses. Further, explanation was offered for why the information required by the survey was important and that the information provided would be kept anonymous (Dillman, 2000, p. 17).

The self-addressed, postage-paid post card was intended to serve as an instrument for establishing trust with participants that the promised outcomes of the study in understanding better the relationships between the study variables of strategy, context, MCS and performance would actually happen. The card also indicated trust in participants who could request of a copy of the results without returning their questionnaire (Dillman, 2000, p. 19).

3.3 Design of the questionnaire

The questionnaire was written after the study variables were identified (i.e., based on the outcomes of the literature review, and based on the research objectives and questions). The questionnaire (see Appendix 1*)* was designed as a convenient and effective data collection mechanism to measure these variables of interest (i.e., strategy, context, MCS and performance variables) (Cavana, Delahaye and Sekaran, 2001).

The wording and general appearance of the questionnaire were designed to maximise the likelihood of return through brevity and ease of completion, and to still tap

respondents' attitudes and perceptions. The questionnaire was reviewed by four different advisors to check whether critical issues such as precision, brevity, understanding, the level of difficulty, the willingness to answer sensitive questions, and the time it takes to answer the questionnaire were addressed (Ghauri and Gronhaug, 2005).

The questionnaire consisted of five sections and was limited to 26 main questions (i.e., most of the 26 questions had different parts). The questions were designed to collect demographic and other data for measuring the study variables. As in many other studies, the instrument was constructed so that analysis could be conducted at the appropriate level of knowledge for individual respondents (Gupta and Govindarajan, 1984; McDaniel and Kolari, 1987; Parthasarthy and Sethi, 1993; Chenhall and Langfield-Smith, 1998; Hoque and James, 2000; Baines and Langfield-Smith, 2003; Aragon-Sanchez and Sanchez-Marin, 2005; O'Regan and Ghobadian, 2005).

As will be further described in this section, most of the questionnaire measurement items were adopted from previous research. The adoption of previously used instruments is not just for their frequent use. Rather, such adoption is cost effective and enhances the research's relevancy, validity and comparability. Furthermore, the history of the adopted measurement instruments indicates that prior users were probably satisfied with the relevance and reliability of these measures (Brownell, 1995).

3.3.1 Demographics

The demographic data collected covered both the respondents and their organizations. Such data helps describe the sample characteristics and makes commencing the questionnaire non-taxing. However, care was taken to avoid questions that threatened participants' anonymity (Brownell, 1995; Cavana et al., 2001). These open-ended questions, in Section A of the questionnaire, yielded data on the title of each respondent's position, years in their position, the state in which each respondent's

organization was located and the name of each respondent's organization (optional). Questions involving closely defined alternatives were used for collecting data on the number of employees each responding organization have, and the relevant Australian and New Zealand Standard Industrial Classification (ANZSIC) code for each organization.

3.3.2 Measurement of the study variables

This sub-section describes the variables the study measured (strategy, context, MCS, and performance) and how the survey items were used to measure these variables.

The relevant questions consisted of closed items that measured responses as closely defined alternatives on a five point interval Likert scale to help respondents make quick decisions (except for strategy items which were measured on two point scales). However, care was taken to ensure that the alternatives were not overlapping categories, and that all possible alternatives were given. In other words, alternatives attached to each question have been carefully selected to be mutually exclusive and collectively exhaustive to avoid respondents' confusion (Cavana et al., 2001).

Table 3.1 describes each variable, the questionnaire item used to measure this variable, and their sources. Table 3.2 illustrates the extent to which the questionnaire instrument was used to test the study hypotheses.

Variables of interest	Questionnaire Question #	Questionnaire Section	Sources questionnaire items adopted from
Strategic Orientation			
Entrepreneurial	1 - 3	B	McDaniel and Kolari (1987); Aragon-Sanchez and Sanchez-Marin (2005); O'Regan and Ghobadian (2005)
Conservative	1 - 3	B	Gupta and Govindarajan (1984); Parthasarthy and Sethi (1993); Chenhall and Langfield-Smith (1998); Baines and Langfield-Smith (2003)
Organizational context			
Size	4	A	Hoque and James (2000)
Decentralization	2	C	Green (2000)
Diversification	1	C	Cagwin and Bouwman (2002)
MCS			
BSC	9	D	Hoque and James (2000)
ABC	10 - 13	D	Cagwin and Bouwman (2002)
Participative Budgeting	1 - 5	D	Shields and Young (1993)
TQM	7	D	Sila and Ebrahimpour (2005)
JIT	8	D	Fullerton and McWatters (2002)
Innovation	8	D	Zahra and Covin (1993); Bisbe and Otley (2004)
Performance	1-2	E	Baines and Langfield-Smith (2003)

Table 3.1: The study's variables of interest with reference to their measurement instruments in the mail questionnaire and reference to previous studies that have used these instruments

Hypotheses	Questions
H (1) Participative budgeting is more likely to be associated with organizations adopting entrepreneurial strategies rather than conservative strategy types.	Q1-Q3 (Sec B) and Q1-Q5 (Sec D)
H (2) The use of ABC systems in the organization is more likely to be associated with conservative strategic orientation rather than entrepreneurial strategic orientation.	Q1-Q3 (Sec B) and Q10-Q13 (Sec D)
H (3) The implementation of TQM management initiatives in the organization is more likely to be associated with entrepreneurial strategic orientation rather than conservative strategic orientation.	Q1-Q3 (Sec B) and Q6 (Sec D)
H (4) The implementation of JIT management initiatives in the organization is more likely to be associated with entrepreneurial strategic orientation rather than conservative strategic orientation.	Q1-Q3 (Sec B) and Q7 (Sec D)
H (5) Firms with entrepreneurial strategies are more innovative than those with conservative strategies.	Q1-Q3 (Sec B) and Q8 (Sec D)
H (6) Organizations adopting an entrepreneurial strategic approach are more likely to implement the BSC system than organizations with conservative strategies.	Q1-Q3 (Sec B) and Q9 (Sec D)
H (7) The use of participative budgeting is positively associated with the size of the organization.	Q4 (Sec A) and Q1-Q5 (Sec D)
H (8) The use of participative budgeting is positively associated with decentralization in the organization.	Q2 (Sec C) and Q1-Q5 (Sec D)
H (9) The use of participative budgeting is positively associated with diversification of products and services in the organization.	Q1 (Sec C) and Q1-Q5 (Sec D)
H (10) The implementation of ABC is positively associated with the size of the organization.	Q4 (Sec A) and Q10-Q13 (Sec D)
H (11) The implementation of ABC is negatively associated with decentralization in the organization.	Q2 (Sec C) and Q10-Q13 (Sec D)
H (12) The implementation of ABC is positively associated with diversification of products and services in the organization. .	Q1 (Sec C) and Q10-Q13 (Sec D)
H (13) The implementation of TQM initiatives is positively associated with the size of the organization.	Q4 (Sec A) and Q6 (Sec D)
H (14) The implementation of JIT initiatives is positively associated with the size of the organization.	Q4 (Sec A) and Q7 (Sec D)

Hypotheses	Questions
H (15) The implementation of JIT initiatives is positively associated with the diversification of products and services in the organization.	Q1 (Sec C) and Q7 (Sec D)
H (16) Innovation is positively associated with the size of the organization.	Q4 (Sec A) and Q8 (Sec d)
H (17) Innovation is positively associated with decentralization in the organization.	Q2 (Sec C) and Q8 (Sec d)
H (18) Innovation is positively associated with diversification of products and services in the organization.	Q1 (Sec C) and Q8 (Sec D)
H (19) The use of the BSC is positively associated with the size of the organization.	Q4 (Sec A) and Q9 (Sec d)
H (20) The use of the BSC is positively associated with decentralization in the organization.	Q2 (Sec C) and Q9 (Sec d)
H (21) The use of the BSC is positively associated with diversification of products and services in the organization.	Q1 (Sec C) and Q9 (Sec D)
H (22) Participative budgeting is positively associated with organizational performance**.**	Q1-Q5 (Sec D) and Q1-Q2 (Sec E)
H (23) The use of ABC is positively associated with organizational performance.	Q10-Q13 (Sec D) and Q1-Q2 (Sec E)
H (24) The use of TQM initiatives is positively associated with organizational performance.	Q6 (Sec D) and Q1-Q2 (Sec E)
H (25) The use of JIT initiatives is positively associated with organizational performance.	Q7 (Sec D) and Q1-Q2 (Sec E)
H (26) Innovation is positively associated with organizational performance.	Q8 (Sec D) and Q1-Q2 (Sec E)
H (27) The use of the BSC is positively associated with organizational performance.	Q9 (Sec D) and Q1-Q2 (Sec E)

Table 3.2: Hypotheses tested in this study with reference to locations of the measurement instruments in the mailed questionnaire

3.3.2.1 Measurement of strategic orientation

This study measured the participant organizations' strategic orientation based on the configuration model, suggested by Langfield-Smith (1997), which has not yet been tested empirically. However, the model combines the three most popular strategic taxonomies of Miles and Snow (1978), Porter (1980) and Gupta and Govindarajan (1984). Accordingly, this study views organizational strategies as having three dimensions: strategic typology (i.e., the Miles and Snow defenders vs. prospectors); strategic mission (i.e., Porter's cost-leadership vs. differentiation strategies); and competitive position (i.e., the Gupta and Govindarajan harvest vs. build strategies). One model is used to seek common characteristics in these three strategic taxonomies, which then form the basis for describing and testing the overall strategy variable in terms of two main extremes of entrepreneurial or conservative (following Tucker, Thorne and Gurd, 2006). Questions 1-3 of Section B measured these three dimensions and were designed to test H1 - H6.

As discussed by Snow and Hambrick (1980), at least four options are available for identifying and measuring the organizational strategic orientation: (1) investigator inference; (2) self-typing; (3) external assessment; and (4) objective indicators. However, due to the size and nature of the study sample the self-typing approach was selected that allowed the organization’s senior managers to characterize its strategic orientation. Although the other three approaches are more objective, self-typing was still more appropriate for data collection as it generated a relatively large data base for hypothesis testing. Further, senior managers' perceptions and opinions are still significant as they largely determine the organization's strategy (Snow and Hambrick, 1980).

The paragraph method was selected for measuring the model's three dimensions of strategic orientation. This entailed showing the participants paragraphs of two alternative descriptions of each of the Miles and Snow (1978) strategy typology, Porter (1980) strategy mission and Gupta and Govindarajan (1984) competitive position taxonomies. However, this method was used in different previous studies to

measure strategy (Snow and Hrebiniak, 1980; Gupta and Govindarajan, 1984; McDaniel and Kolari, 1987; Aragon-Sanchez and Sanchez-Marin, 2005; O'Regan and Ghobadian, 2005). The alternative paragraphs, used in the questionnaire, were derived from instruments used in O'Regan and Ghobadian (2005) for the strategy typology; Porter (1980) for the strategy mission and Gupta and Govindarajan (1984) for the competitive position. These paragraphs described the nature, rather than provided labels, of the three classifications. Managers seldom conceive strategy in the same terms as the researcher. Labels like “Cost Leadership”, “Differentiation”, “Defender”, and “Prospector” …etc may have conceptual aid to researchers but they may not capture the nature of strategy as seen by those who formulate and implement it (Snow and Hambrick, 1980). Further, alternative paragraphs were outlined (Appendix A) in a random manner and were not ranked so as not to indicate a preferable type (O'Regan and Ghobadian, 2005).

Each respondent was asked to indicate the Miles and Snow classification, that matched their strategic typology dimension (see Q1, Section B, Appendix A), by indicating which one of the following statements (anchored as 0-1) best described his/her firm:

- 0 = "Competing on the basis of price, quality, delivery or service, and operating efficiency based on a strong emphasis on maintaining existing markets" (Defender type i.e., conservative).
- 1 = "Continually seeking opportunities and using flexibility to adapt and respond rapidly and creatively to the changing external environment" (Prospector type i.e., entrepreneurial).

To measure the strategic mission dimension of the strategy model, participants were asked to indicate the Porter classification that was most appropriate to their organization (see Q2, Section B, Appendix A). The choice (anchored as 0-1) was between:

- 0 = "Operating efficiency, product selling price, aggressive pursuit of scale economics, process innovation for cost minimization and product availability" (Cost leadership strategy i.e., conservative).

- 1 = "Product variety, volume flexibility, entering new markets, speed in innovation, fast delivery, frequent new product introductions, fast market response and unique product features" (Differentiation strategy i.e., entrepreneurial).

The competitive position dimension of the study's strategic model was measured by asking participants to rate the more relevant of two Gupta and Govindarajan's statements (anchored as 0-1) to their firm (see Q3, Section B, Appendix A). The two statements were:

- 0 = "Maximize profitability and cash flow in the short-to-medium term; be willing to sacrifice market share if necessary" (Harvest strategy i.e., conservative).
- 1 = "Increase sales and market share; be willing to accept low return on investment in the short-to-medium term, if necessary" (Build strategy i.e., entrepreneurial).

Following Hoque and James (2000), the average score for these three dimensions was considered an appropriate aggregation of the participant's perception of his/her organization's overall strategy (i.e., whether the overall organizational strategy is more likely conservative or entrepreneurial). The resulting measure was used in testing hypotheses H1- H6 (see table 3.2).

3.3.2.2 Measurement of the organizational contextual variables

The contextual variables measured included organizational size, decentralization and diversification.

3.3.2.2.1 Size

The precise measure of size could be important depending on the dimensions of the MCS (Chenhall, 2003). As the MCS tested in this study were largely about individuals' activities, the number of employees was selected as an appropriate measure. Other alternative measures of size include profits, sales volume, assets and share valuation. However, the financial nature of these measures can negatively affect comparability between organizations as they may use different accounting treatments (Chenhall, 2003). Chenhall argued that the number of employees correlated with financial measures in previous studies and has been the preferred measure of size in most contingency-based MCS studies.

Size was measured based on a five point scale of number of employees, adopted from Hoque and James (2000). The scale ranged from 1 = "under 149 employees" to 5 = "1000 employees or greater". Respondents were asked to indicate the point on the scale that best represented the recent status of their organizations. Q4 in Section A of the study questionnaire was used to measure this contextual variable (see Table 3.1 and Appendix A) and used in testing hypotheses H7, H10, H13, H14, H16 and H19 (see Table 3.2).

3.3.2.2.2 Decentralization

Q2 in Section C of the survey questionnaire was used to measure the degree of decentralization in the organization (i.e., the extent to which decision are made at lower levels of the corporate hierarchy) (Table 3.1). The study adopted an instrument used by Green (2002); similar instruments have been used in earlier research (Merchant, 1981). A score was given for the level in the organization at which each of 14 standard decisions (e.g., selecting suppliers) can be made. The theoretical range for this measure was 1 = "chief executive or above the chief executive" to 5 = "first level supervisor or individual below first level supervisor" (Appendix A).

Following Green (2002), the 14-item scale was developed to measure three decentralization perspectives. The first was scheduling perspective that explained the extent of decentralization for scheduling related decisions (i.e., production volume, product scheduling and delivery dates to customers and priority of orders). The second was strategic perspective that examined the decentralization degree in decisions of strategic nature (i.e., selecting suppliers, goods to be manufactured, location of factories, number of factories to operate, location of field warehouses, and number of field houses to operate). The third perspective has described decentralization extent in marketing decisions (i.e., distribution service levels, pricing, channels of distribution, advertizing/promotion strategy and target market selection).

Following Hoque and James (2000), a mean score was calculated for each of the decentralization perspectives. An average of these three means was then used to measure the overall extent of decentralization and to test hypotheses H8, H11, H17 and H20 (see Table 3.2).

3.3.2.2.3 Diversification

The degree of diversification, the extent of the breadth of product line expansion, was measured by the use of an instrument adopted from Cagwin and Bouwman (2002). Q1 in Section C of the questionnaire asked respondents to rate their perceptions of seven statements addressing different aspects of their organization's product diversity (see Table 3.1). Respondents indicated their perceptions on a 5-point Likert scale ranging from 1 = "strongly disagree" to 5 = "strongly agree" (Appendix A). The mean of the seven ratings given by each respondent to the seven statements indicated the overall degree of diversification of each respondent's firm and contributed towards testing hypotheses H9, H12, H15, H18 and H21 (see table 3.2).

3.3.2.3 Measurement of MCS

3.3.2.3.1 The use of the BSC

The BSC usage was measured by using a 20-item scale, adopted from Hoque and James (2000), which includes items that incorporate Kaplan and Norton's (1992) four dimensions of the BSC. For Question 9 of Section D, respondents indicated the extent to which each item is used in their organizations to assess performance (Table 3.1). Respondents have rated their perceptions on a fully anchored, 5-point Likert scale ranging from 1 = "not at all" to 5 = "to a great extent" (Appendix A).

Following Hoque and James (2000), a mean score was calculated for each of the four BSC perspectives. An average of these four perspectives' means was then used to measure the use of BSC and to test hypotheses H6, H19, H20, H21 and H27 (see Table 3.2).

3.3.2.3.2 The use of ABC

The measurement instrument for ABC use was adopted from Cagwin and Bouwman (2002). Accordingly, Questions 10 – 13 in Section D of the questionnaire measure the use of ABC as the average of 19 five-point Likert measures of ABC use (see Table 3.1). The instrument's 19 items composite four dimensions: the breadth, the depth, the integration in evaluation system and the time since the implementation of ABC. Breadth was addressed by measuring the use of ABC by organizational sectors such as manufacturing, re-engineering and top management. Depth was assessed by measuring its use for specific applications, activities and decisions, such as product costing and pricing decisions. Both level of integration of ABC into the firm's

strategic and performance evaluation systems and length of time since ABC implementation began were measured (Cagwin and Bouwman, 2002) (Appendix A).

As with the method used to measure the overall BSC use, the average of these four dimension means represented the overall rate of ABC usage (following Hoque and James, 2000) and was included in the testing of hypotheses H2, H10, H11, H12 and H23 (Table 3.2).

3.3.2.3.3 The extent of participative budgeting

The extent of participative budgeting was measured using Q1-Q5 of Section D (Appendix A), following Shields and Young (1993) (Table 3.1). The first three questions were: (1) "How important is the manager's contribution to the setting of the budgets?" (2) "How important is it that budgets include changes that were suggested by the managers?" and (3) "How important is it that a budget is not finalized until a manager is satisfied with it?" These questioned were anchored: 1= "Not at All Important" to 5= "Extremely Important". The fourth question, "How influential do you feel that the managers are in setting the budgets?" was anchored by: 1= "Not at All Influential" to 5= "Extremely Influential". The fifth question is "How frequently does central management initiate budget-related discussions with the managers?", anchored by: 1= "Extremely Infrequently" to 5= "Extremely Frequently" (Shields and Young, 1993) (Appendix A). The average of ratings indicated the overall rate of the use of participative budgeting and included in testing hypotheses H1, H7, H8, H9 and H22 (Table 3.2).

3.3.2.3.4 The use of TQM

A five-point Likert scale was developed using a 17 question TQM measurement instrument adopted from Sila and Ebrahimpour (2005) and included in Question 6 of Section D of the study questionnaire (see Table 3.1). Respondents were asked to indicate the extent each of 17 quality tools is used in quality management of their organizations. The 17 quality tools are: brainstorming; cause and effect/fishbone diagrams; flowchart; Gantt chart; tree diagram; check sheet; control charts; data points; histogram; Pareto; process capability; scatter diagram; storyboard case study; starting teams; maintaining teams; ending teams/projects; and effective meetings (Appendix A). The average of ratings of the 17 quality tools has then been calculated as an indicator of the overall rate of the use of TQM. Responses to the TQM measurement instrument have been used in the testing of hypotheses H3, H13 and H24 (Table 3.2).

3.3.2.3.5 The use of JIT

Adopted from Fullerton and McWatters (2002), Q7 in Section D of the questionnaire tested the degree of JIT practice implementation (Table 3.1). A five-point Likert scale was used to rate ten statements representing JIT practices. The scale was anchored as 1= "No Intention"; 2= "Beginning/Considering"; 3= "Partially"; 4= "Substantially"; 5= "Fully". The ten statements were developed to measure three determinant factors of JIT use. The first factor was a manufacturing component that explained the extent to which organizations had implemented general manufacturing techniques associated with JIT. These manufacturing techniques together represent elements of a JIT philosophy. The second factor was a quality component that examined the degree to which firms had implemented procedures for improving process and product quality. JIT implementation requires high levels of quality in the organization's production and processes. The third factor has described the extent to which companies have implemented JIT purchasing and *kanban*. This is a unique JIT factor as the likelihood,

that firms who are not fully committed to a JIT program, would adopt these practices is low (Fullerton and McWatters, 2002) (Appendix A).

The mean scores calculated for each of the three JIT factors were averaged to represent overall JIT usage, following Hoque and James (2000) and to test hypotheses H4, H14, H15 and H25 (Table 3.2).

3.3.2.3.6 The level of innovation

Several methods have been used to measure innovation in other studies. Various statistics on patents have been used including publicly available information on the number of patents granted and the number of citations to prior patents (see Holthousen et al., 1995). Other researchers used R&D expenditure on products and/or processes as an indicator of innovation (see Fritsch and Meschede, 2001). In contrast, others used self-typing methods which asked participants to rate their perceptions of innovation in their organizations (Kimberly and Evanisko, 1981; Zahra and Covin, 1993; Fullerton and McWatters, 2002; Bisbe and Otley, 2004; Aragon-Sanchez and Sanchez-Marin, 2005).

Consistent with other studies, self-typing measurement of innovation in the organization was used for the present research. Specifically, Q8 of Section D assessed technological and process innovation and product innovation. The construct of the instrument scale and items to measure process and technology innovation were adopted from Zahra and Covin (1993). Items to measure product innovation were adopted from Bisbe and Otley (2004) (see Table 3.1). Accordingly, respondents were asked to rate the extent to which their firms focus on technology and process innovation (i.e., represented by three items) and product innovation (i.e., represented by four items) in comparison to their competitors. A five-point Likert scale was used to rate the instrument items for both types of innovation anchored as: 1= "Much lower"; 2= "Lower"; 3= "Neutral"; 4= "Higher"; and 5= "Much Higher".

A mean score was calculated for each of the two innovation types. The average of these two means was used to represent the overall degree of innovation in each organization (following Hoque and James, 2000) and to test hypotheses H5, H16, H17, H18 and H26 (see Table3.2).

3.3.2.4 Measurement of performance

In accordance with previous research (Gupta and Govindarajan, 1984; Chenhall and Langfield-smith, 1998; Baines and Langfield-Smith, 2003; Bisbe and Otley, 2004) performance was perceived here as the degree of goal attainment along several financial and nonfinancial dimensions.

Adopted from Baines and Langfield-Smith (2003), the measurement instrument used to measure performance was based on subjective data gathered from participants' perceptions rather than on objective performance data. Different performance measurement criteria should be used to reflect differences in goals and priorities implied by different strategies and contexts in different organizations. Therefore, objective data is of limited value to this study as it may not be appropriate to use the same criteria to evaluate the performance of every business. Instead, the researcher assigned different weightings to various performance criteria for each tested organization. Further, objective measures alone are usually of short-term scope and therefore cannot capture the effect of strategic MCS implementation on performance (Gupta and Govindarajan, 1984; Govindarajan and Fisher, 1990). Baines and Langfield-Smith (2003) looked at interactions of variables of contextual factors, strategy and MCS as they affect organizational performance and that approach was followed here with the intention of building on these foundations and providing improvement.

Baines and Langfield-Smith (2003) measured organizational performance using a two-part measure. First, respondents were asked to compare the change in their

business performance over the past three years, relative to their competitors, based on financial and non-financial dimensions of performance. The second part of the measure required participants to assess the same performance dimensions according to the importance to their businesses. The determination of the final rating of each performance dimension was calculated by multiplying the respective "performance" and "importance" rates. A single performance rating was calculated, for each firm, as the weighted-average for all dimensions (Baines and Langfield-smith, 2003).

Following Baines and Langfield-smith (2003), Q1-2, Section E measured the performance variable (Table 3.1). Respondents were asked to rate their perceptions of the first part on a five-point Likert scale anchored from 1= "Well Below" to 5= "Well Above". For the importance measure, a five-point Likert scale ranged from 1= "No Importance" to 5= "Extremely Important". Performance dimensions tested were: return on investment, profit, cash flow from operation, cost control, development of new products, sales volume, market share, market development and personal development (Appendix A). The single overall measure was used to test hypotheses H22-27.

3.4 The study population

The population subject to this study is the Australian manufacturing industry. Hence, the survey was conducted on a selection of manufacturing companies across Australia.

At December, 2007, the number of active manufacturing businesses on the Australian Bureau of Statistics Business Register (ABSBR) was 105,789 (Australian Bureau of Statistics, 2007).

The Australian and New Zealand Standard Industrial Classification (ANZSIC) definition of manufacturing is ‘the physical or chemical transformation of materials or components into new products, whether the work is performed by machinery or by

hand'. This includes activities, undertaken by a manufacturing business, that are not strictly manufacturing activities (e.g., repair or installation of goods produced). This view of manufacturing includes all of the activities of just those organizations whose principal activity is manufacturing. The manufacturing activities undertaken by private individuals or organizations, whose principal activity is not manufacturing, are excluded from the ANZSIC definition and accordingly from this study's view (Australian Bureau of Statistics, 2008). The ANZSIC views the manufacturing industry under nine classifications (Figure 3.1). This study adopts this classification, which is also used by the Australian Bureau of Statistics (ABS).

According to the 2007 Australian Bureau of Statistics (ABS) count of businesses, the population of manufacturing businesses is comprised of 7% (i.e., 7158 firms) Food, Beverage and Tobacco manufacturing firms, 9% (i.e., 9483 firms) Textile, Clothing, Footwear and Leather manufacturing firms, 8% (i.e., 8106 firms) Wood and Paper Product manufacturing firms, 12% (i.e., 12507 firms) Printing, Publishing and Recorded Media firms, 6% (i.e., 6591 firms) Petroleum, Coal, Chemical and Associated Product manufacturing firms, 4% (i.e., 4197 firms) Non-Metallic Mineral Product manufacturing firms, 18% (i.e., 19257 firms) Metal Product manufacturing firms, 22% (i.e., 23136 firms) Machinery and Equipment manufacturing firms and 14% (i.e., 15354 firms) Other Manufacturing firms (Australian Bureau of Statistics, 2004) (Figure 3.1).

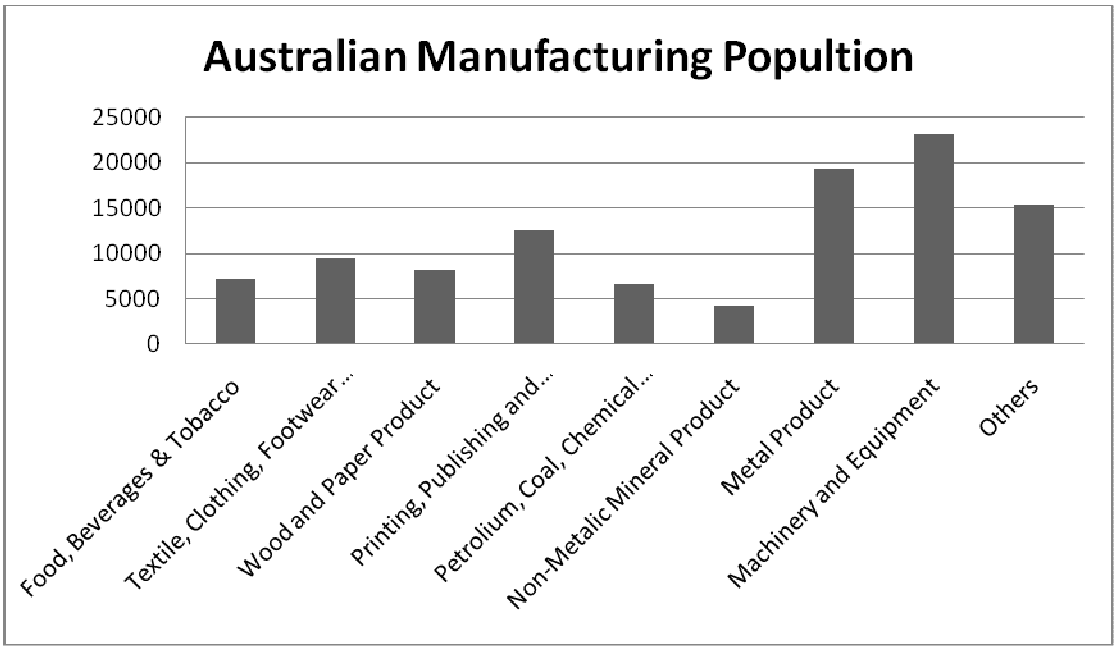

Figure 3.1: The distribution of the population of 105,789 Australian manufacturing organizations over the nine ANZSIC manufacturing classifications

3.5 The sample

After the determination of the research problem, and the development of an appropriate research design and data collection instrument, the next step in the research process was to select those elements from which the information will be collected.

Generalizability of this research's findings to the entire population of manufacturing organizations in Australia is a key aim of this study. Since the conclusions of the research are derived from the selected sample and then inferred to represent the whole Australian manufacturing population, the requirement of this research was to obtain quantitative representative data from a large number of geographically dispersed Australian manufacturing companies across the different ANZSIC classifications. Proper sample selection and an appropriate sample size are central to justifying any decisions concerning the study's hypotheses.

Stratified random sampling was used to construct a representative targeted sample of 1000 organizations to survey from the Australian manufacturing industry. The stratification of the population was based on the nine ANZSIC manufacturing classifications.

3.5.1 Determining the targeted sample size

The determination of an appropriate number of organizations to be selected from the whole population of Australian manufacturing companies involved a cost-benefit exercise. The representativeness, precision and statistical significance, of the study findings, increase as the sample size increases (i.e., as the sampling error decreases). Meanwhile, the larger the targeted sample size the more expensive the research (Dillman, 2000, p. 9; Smith, 2003, p. 56). However, for the population of 105,789 Australian manufacturing organizations (which the study expect to be about evenly split and relatively varied for characteristics of their strategy, context, MCS and performance) a sample of 90 usable responses (i.e., the least responses we expected) should be enough to sustain study estimates within a sampling error of approximately +10 per cent and -10 percent, at the 95 percent confidence level (Salant and Dillman, 1994, p. 55). In view of that, the largest affordable targeted sample size was determined to be 1000 organizations based on selection of an inclusive and representative targeted sample.

3.5.2 The selection of the targeted sample

The targeted sample included 1000 Australian manufacturing organizations from all ANZSIC manufacturing industry classifications. The selected sample targets were located in all different states across Australia. These companies were randomly selected from the 30,549 manufacturing business records listed by Business Who's Who of Australia (Dun and Broadstreet, 2007). This approach was used by Hoque and James (2000).

A stratified random sampling approach was used by dividing the Australian manufacturing firms' population into nine ANZSIC groups. The choice to stratify the population according to manufacturing classifications is taken as organizations of different manufacturing classifications might vary in their context, strategy and MCS.

The targeted sample of 1000 firms was then selected in proportion to the number of firms of the business records listed under each of the nine ANZSIC classifications in Business Who's Who of Australia. Accordingly, the targeted sample comprises 68 Food, Beverage and Tobacco manufacturing firms, 90 Textile, Clothing, Footwear and Leather manufacturing firms, 77 Wood and Paper Product manufacturing firms, 118 Printing, Publishing and Recorded Media firms, 62 Petroleum, Coal, Chemical and Associated Product manufacturing firms, 39 Non-Metallic Mineral Product manufacturing firms, 182 Metal Product manufacturing firms, 219 Machinery and Equipment manufacturing firms and 145 Other Manufacturing firms (Figure 3.2).

In fact, the frame list of businesses provided by the Business Who's Who of Australia does not include all Australian manufacturing organizations, thus making it impossible to give all organizations in the Australian manufacturing population a known chance of being included in the sample survey. However, while such 'coverage error' can be prohibitive for some mail surveys, it does not present a problem for this survey. This is because, in general, and specifically in characteristics relevant to the research variables, organizations which are not listed in the Business Who's Who of Australia are not different from those which are listed (Dillman, 2000, p. 10).

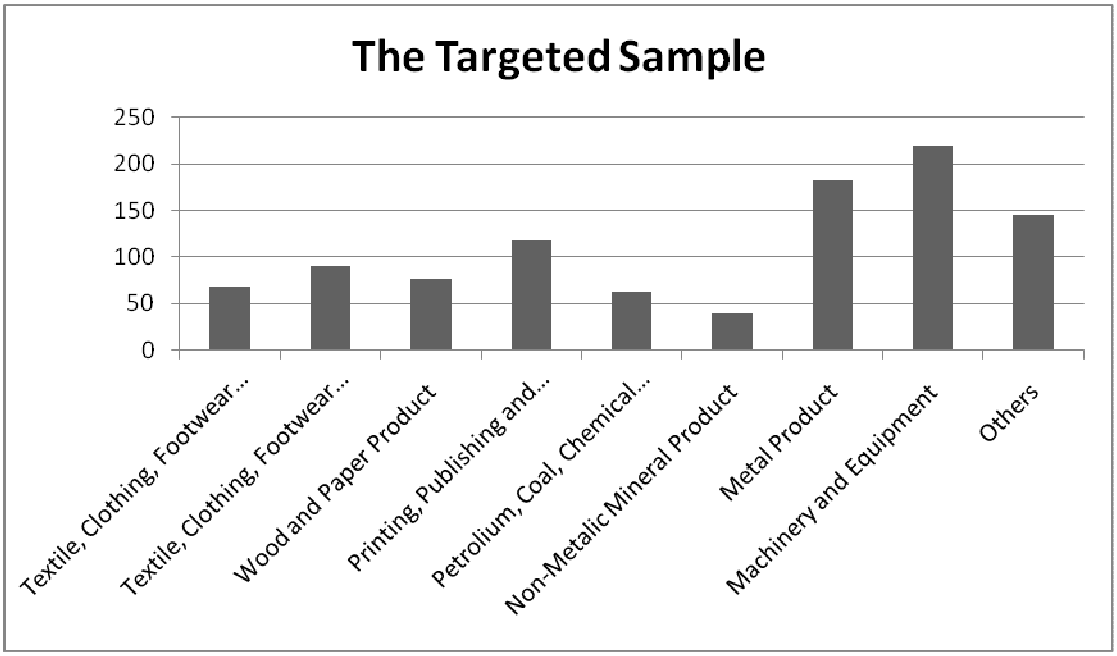

Figure 3.2: The distribution of the targeted sample of 1000 Australian manufacturing organizations over the nine ANZSIC manufacturing classifications

CHAPTER 4: DATA ANALYSIS

Data analysis will be presented in this chapter. Initially, response rate and response evaluation are included, and the demographic characteristics of the sample are presented. Results of factor analysis and reliability tests for construct measurements are presented and validity of the resulting scales discussed. Description of the sample in accordance with survey items, used to measure the study constructs, is also discussed.

Finally, analysis, necessary to evaluate the relationships among the constructs, is presented. A correlation matrix for the study constructs is included and described. Additionally, the structural equation modeling analysis is described**.**

4.1 Response rate

The overall response rate was 10.5%. Of the 1000 surveys mailed out, 105 with usable data were received. Fifty five responses were received after the first survey mailing; the second mailing yielded fifty further responses. While the number of responses was adequate to perform the necessary analysis for hypothesis testing, the response rate was disappointing. However, the response was expected to be on the low side because one of the contributions of this study is that we simultaneously consider multiple variables, necessitating a longer than average instrument.

The 895 non-responses included 38 apologies, 86 surveys returned by post as undelivered; the remaining 771 were non-responding sample targets.

Apologies were received either by email, phone calls or as posted written letters of apology. Those who apologized have cited reasons such as a general lack of time and resources to respond to surveys, organizational policies not allowing a response to surveys, inappropriateness of the survey questions to their organizations, organization not engaged in manufacturing activities and organization not in business any more. Ten questionnaires were sent back by respondents with no answers in them; these blank responses were considered as quick apologies.

Some of the undelivered returned surveys have the reason for the mail not to be delivered written on the returned envelope. For undelivered surveys which were returned with no clear reason, searching for information via the internet and making phone calls to companies whose mail was undelivered helped in identifying reasons for unsuccessful delivery. Reasons found were: change of addresses, wrong addresses, individuals targeted to answer the survey were not there; post office boxes are not used and some surveys were refused at destination. Despite the use of a respected secondary source of information for addresses, future research should directly double-check addresses of individuals and of businesses targeted in the sample before the survey is mailed out.

Thirty organizations, from the sample of 771 organizations that did not respond, apologize or return their surveys were contacted by telephone to investigate reasons. Explanations given were consistent with the reasons provided by those who had apologized, that is, due to time and resources constraints and organizational policy towards surveys. However, the high non-response rate might also be attributed to the length of the questionnaire (14 pages including the information letter) and to the lack of motivation. A higher response rate might be expected if the questionnaire was of a lesser number of pages and a reward plan was offered to participants to motivate their response.

The non-response information is summarized by Table 4.1.

Non-response Category	Number of non-responses
Apologies	
Apologies (via email)	19
Apologies (via mail)	18
Apologies (via phone)	1
Sent back un-answered	10
Total apologies	38
Returned to sender	
Address changed	6
Wrong address (due to data base fault)	20
Wrong address (due to printing fault)	1
Addressed manager left the company	14
P.O.Box is not used	41
Rejected	4
Total returned to sender	86
Not returned	771
Total Non-responses	**895**

Table 4.1: Non-response by categories

4.2 Demographic description of responding organizations

Completion of the study survey requires responses to five demographic questions reflecting the size, manufacturing classification and geographic location of respondents' organizations. Respondents were also asked to provide the title of their positions and number of years in that position.

This section includes a general frequency distribution of participants on the different demographic items.

4.2.1 Size

Following Hoque and James (2000), 'size' was described based on the number of employees (See Chapter 3, Section 3.3.2.2.1).

The size of responding organizations was distributed over the five size categories of the measurement scale. The majority of respondents (i.e., 55 out of 105 organizations) were within the smallest size category (i.e., under 149 employees). The other 50 participants were distributed over the other categories with the exception of two organizations who did not answer this part of the questionnaire (Table 4.2).

Size Categories	Frequency	Percent
Under 149 employees	55	52.4
150 - 299 employees	16	15.2
300 - 499 employees	12	11.4
500 - 999 employees	10	9.5
1000 employees or greater	10	9.5
Total	103	98.1
Missing	2	1.9
Total	105	100.0

Table 4.2: The distribution of responding firms over size categories

4.2.2 Manufacturing classification

This study adopts the Australian and New Zealand Standard Industrial Classification (ANZSIC), which is used by the Australian Bureau of Statistics (Australian Bureau of Statistics, 2008). ANZSIC views manufacturing industry as nine classifications (see Table 4.3). For sample selection, the targeted 1000 organizations were selected accordingly. The whole Australian manufacturing population was stratified into the nine ANZSIC groups. Then, the number of organizations targeted was randomly

selected in proportion to the number of organizations of each group to the whole population.

However, 103 of the 105 organizations responding have selected the manufacturing classification question. The distribution of responding organizations over the ANZSIC groups was not consistent in most of the nine manufacturing classifications with that of targeted firms and, therefore, with the population. This proportional difference is mostly obvious in Machinery and Equipment manufacturing, from which only one organization responded, and in Metal Product manufacturing, from which only six organizations have responded. The targeted 1000 organizations included 199 Machinery and Equipment manufacturing companies and 171 Metal Product manufacturing companies (Table 4.3).

4.2.3 Geographic dispersion

The targeted 1000 organizations were randomly selected from manufacturing companies distributed over the six states of Australia. Responses were received from companies located in the states of Western Australia, Victoria, New South Wales, South Australia and Queensland. A hundred and two organizations have responded to the geographic location part of the questionnaire. Table 4.4 below describes the distribution of responding firms over different states of Australia.

4.2.4 Individuals who answered the questionnaire

Survey letters were addressed to appropriate individuals (i.e., senior management personnel) who have sufficient understanding of processes in their organizations and whom perceptions and opinions largely determine these processes (Snow and Hambrick, 1980; Baines and Langfield-Smith, 2003).

ANZSIC Classifications	Frequency	Percent
Food, Beverage & Tobacco	18	17.1
Textile, Clothing, Footwear and Leather	14	13.3
Wood and Paper Product	20	19.0
Printing, Publishing and Recorded Media	9	8.6
Petroleum, Coal, Chemical and Associated Product	6	5.7
Non-Metallic Mineral Product	2	1.9
Metal Product	6	5.7
Machinery and Equipment	1	1.0
Other Manufacturing	27	25.7
Missing	2	1.9
Total	105	100.0

Table 4.3: Responding firms' distribution over the nine ANZSIC manufacturing industry classifications

State	Frequency	Percent
Victoria	35	33.3
Western Australia	24	22.9
New South Wales	24	22.9
South Australia	11	10.5
Queensland	8	7.6
Total	102	97.1
Missing	3	2.9
Total	105	100.0

Table 4.4: Geographical distribution of responding firms

Respondents identified their positions as CEOs, directors, managers, accountants or financial related officers, and other administrative positions (Table 4.5). Participants' relevant experience in the positions they currently occupied ranged from less than two years to more than 15 years (Table 4.6). Respondents to questions related to the personnel participants' positions and years in their positions were 101. Four respondents from the 105 valid returned surveys did not provide answers to these two questions.

Generally, the study has accomplished the objective of gathering data from organizations of different manufacturing classifications that are distributed geographically over Australia. The objective of collecting perceptions of administrative personnel with specific knowledge of their organizations' context, strategy, control systems and performance was also accomplished.

Personal Participant Position	Frequency	Percent
CEO	16	15.2
Director	50	47.6
Manager	13	12.4
Accountants and financial officers	18	17.1
Others	4	3.8
Total	101	96.2
Missing	4	3.8
Total	105	100.0

Table 4.5: Participants administrative positions

Participant Years in Position	Frequency	Percent
Less than 2 years	7	6.7
2 to 5 years	25	23.8
6 to 10 years	29	27.6
11 to 15 years	18	17.1
More than 15 years	22	21.0
Total	101	96.2
Missing	4	3.8
Total	105	100.0

Table 4.6: Participants' years in administrative positions

4.3 Measurement

Respondents were required to answer 121 strategy, context, MCS and performance questionnaire items. These items consolidated to form 11 summary variables (i.e., the constructs of the study), that were ultimately used in the structural equation modeling analysis. Summary variables included strategy (STRTGY), size (SIZE), decentralization (DECENTR), diversification (DIVERS), participative budgeting (BUDGT), ABC, TQM, JIT, innovation (INNOVAT), BSC and performance (PERFORM).

The study used summated scales, for which several indicator variables and dimensions were averaged in a composite measure to represent the study constructs. Summed scales increase the reliability of measurement, as measurement error that might occur in each single scale will be averaged. Another benefit of this measurement is its ability to represent the multiple aspects of a concept in a single measure, and therefore, to combine multiple indicators into a single measure representing what is held in common across the set of measures (Hair, Anderson, Tathman and Black, 1998).

Instruments used are all borrowed from previous literature and their psychometric properties (that is, reliability and validity) have been established by the developers. However, analysis was conducted to make sure that these instruments actually measured the study constructs.

Initially, the survey instrument was tested and modified through the pilot phase of the study. After data collection, responses were refined using exploratory factor analysis and Cronbach's coefficient alpha to establish the measures' validity and internal reliability as suggested by Churchill (1979). Finally, correlations of all constructs (i.e., summary variables) were examined to detect whether some of these correlations were high to the extent that it might be necessary to question the measures' validity. High correlation between variables, when they are distinct and different, may undermine the instrument used to measure these variables. However, the correlation matrix of study constructs (Table 4.26) did not include high correlations that might suggest the presence of multicollinearity. All correlations were less than r = 0.75 (Cavana et al., 2001).

The following subsections describe each measure and the results of the analytical procedure conducted to establish their validity and reliability.

4.3.1 Strategy measurement

STRTGY was measured by calculating the average rate of three strategic dimensions: strategic typology (i.e., the Miles and Snow defenders vs. prospectors), strategic mission (i.e., Porter's cost-leadership vs. differentiation strategies) and competitive position (i.e., the Gupta and Govindarajan harvest vs. build strategies). Hence, one model is used to seek common characteristics in these taxonomies which then formed the basis to describe and test the overall STRTGY in terms of the two main extremes of entrepreneurial vs. conservative (following Tucker, Thorne and Gurd, 2006).

As discussed in Chapter Three (i.e., Section 3.3.2.1), three single survey items were used to measure the three strategy dimensions. Generally, single item measures are

argued to be of *much* less value compared to multi-item measures in serving behavioral research. Churchill (1979) criticized their value as they usually have an extent of specificity and uniqueness, in a way that they may have low correlation with the constructs they measure and relate to other constructs as well; they categorize respondents to a relatively small number of groups; and they have considerable measurement error and produce unreliable responses. Churchill argued that reliability increases and measurement error decreases when multi-items combine to measure the attribute, as specificity and uniqueness can be averaged out, and fine distinctions can be made among people, when a larger number of respondents groups are categorized.

However, despite criticisms, this method was still viewed as enabling firms to provide objective answers and avoid unnecessary bias (O'Regan and Ghobadian, 2005) and has been widely used in previous studies (i.e., Snow and Hrebiniak, 1980; Gupta and Govindarajan, 1984; McDaniel and Kolari, 1987; Aragon-Sanchez and Sanchez-Marin, 2005; O'Regan and Ghobadian, 2005).

4.3.2 Size measurement

As described in previous sections (i.e., Section 3.3.2.2.1 and Section 4.2.1), size was measured using the number of employees (Q4, Section A, Appendix 1).This particular measure was selected as an appropriate measure since the MCS tested were largely about individuals' activities (Chenhall, 2003).

4.3.3 Decentralization measurement

As previously stated in Chapter Three (i.e., Section 3.3.2.2.2), DECENTR was computed as the average of three decision area perspectives (i.e., scheduling, strategic and marketing). A principal component analysis (PCA) with varimax rotation was performed to determine whether the 14 decentralization measures, used in the survey, can be grouped according to the three decision area dimensions (i.e., scheduling, strategic and marketing), as suggested by the developers and previous users of the

same instrument. Items were grouped as expected, except for those addressed 'production volume', 'selecting suppliers', 'goods to be manufactured' and 'distribution service levels'. The loadings of these four items were below minimal statistical and practical loading levels (Hair et al., 1998, p.111) on the 'strategic' dimension, where they were expected to group. Rather, 'production volume', 'selecting suppliers' and 'goods to be manufactured' were more likely grouped with the 'scheduling' factor items while the 'distribution service levels' measure was grouped with the 'marketing' items (see Table 4.7).

Cronbach's Alpha	0.97	0.87	0.83	
	Strategic	**Marketing**	**Scheduling**	**Cronbach's Alpha if Item Deleted**
Product Scheduling			**.750**	.755
Delivery dates to customers and orders priority			**.608**	.797
Production volume			**.627**	.797
Selecting suppliers			**.725**	.794
Goods to be manufactured			**.787**	.809
Location of factories	**.935**			.961
Number of factories to operate	**.934**			.962
Location of field warehouses	**.892**			.962
Number of field warehouses to operate	**.888**			.958
Distribution service levels		**.742**		.888
Pricing		**.554**		.864
Channels of distribution		**.727**		.850
Advertising/promotion strategy		**.609**		.859
Target market selection		**.630**		.869

Table 4.7: Goodness-of-fit analysis of decentralization items

Reliability analysis of the three perspectives scales indicated Cronbach's alpha values of 0.83 for 'scheduling', 0.97 for 'strategic' and 0.89 for 'marketing'. Green (2002)

reported alpha values of 0.85, 0.87 and 0.87 for the three perspectives respectively. The deletion of any of the items did not indicate improvement of alpha to the dimension in which it belonged.

4.3.4 Diversification measurement

PCA was performed on the survey's seven statements used to address different aspects of product diversity (see Chapter Three, Section 3.3.2.2.3). Results of the factor analysis revealed that the seven items loaded on a single factor with eigenvalue 2.81.

Initial analysis of reliability indicated a Cronbach's alpha value of 0.74 for the seven scales. The analysis revealed that deletion of two items (the fourth and the sixth items, see Question1, Section C, Appendix 1) would increase alpha to 0.77. Results of the factor analysis indicated loading of these two items on the factor to be less than statistically significant (0.50). Accordingly, a decision was taken to eliminate them from the analysis. The resulting alpha (0.77) corresponded with that reported by Cagwin and Bouwman (2002) (Table 4.8).

Cronbach's Alpha	0.77	
	Factor loading	**Cronbach's Alpha if Item Deleted**
Major differences in lot sizes between products	.792	.714
Major differences in production volumes between products	.833	.693
Major changes in production volumes within products overtime	.690	.747
Product lines are diverse	.637	.757
Frequent changes to products, services and processes	.672	.743

Table 4.8: Goodness-of-fit analysis of diversification measures

Accordingly, the mean score of the remaining five survey items was used to measure DIVERS.

4.3.5 Participative budgeting measurement

The mean response to five survey questions was the BUDGET measure (see Section 3.3.2.3.3 of Chapter Three). Results of PCA revealed that the five survey questions converged into one anticipated factor with eigenvalue 3.76, accounting for 75.1% of the total variance of the data.

High reliability was indicated for the BUDGT measure, as Cronbach's alpha value was 0.92 (Table 4.9). Shields and Young (1993) reported alphas for the same instrument of 0.83.

Cronbach's Alpha	0.92	
	Factor loading	**Cronbach's Alpha if Item Deleted**
Importance of the manager's contribution to the setting of the budgets	.918	.879
Importance of budgets' inclusion of changes that were suggested by the managers	.905	.884
Importance of that a budget is not finalized until a manager is satisfied with it	.881	.890
Influence of managers in setting the budgets	.911	.880
Frequency of central management initiation of budget-related discussions with the managers	.697	.933

Table 4.9: Goodness-of-fit analysis of participative budgeting measures

4.3.6 ABC measurement

As described in Chapter Three (i.e., Section 3.3.2.3.2), an ABC instrument of 19 items was used, comprising four dimensions: 'breadth', 'depth', 'integration' in evaluation system and 'time' since the implementation of ABC.

PCA, on data received from ABC adopters in the sample, was performed to test unidimentionality of the 19 ABC measures. Results of the analysis revealed that 17 of the 19 items loaded on a single factor with eigenvalue 5.93. These 17 items were items used to measure 'breadth', 'depth' and 'integration' of ABC. The 'depth' measure addressing 'outsourcing decisions' had the minimal accepted loading level on that factor (Tabachnick and Fidell, 1996) and was, therefore, excluded from further analysis. The 'time' single item, which was already anticipated to be independent, loaded on another factor (Table 4.10).

The three unidimensional constructs (i.e., 'breadth', 'depth' and 'integration', represented by the remaining 17 items) were combined into a single construct labelled as ABC 'implementation'. This was consistent with Cagwin and Bouwman (2002), as their analysis confirmed the unidimensionality of 'breadth', 'depth' and 'integration' scales.

The initial Cronbach's alpha for all the 18 scales (i.e., before the item deletion) was 0.86. The analysis revealed that exclusion of the deleted item increased alpha to 0.87, which gave support to the deletion decision (Table 4.10). Cagwin and Bouwman (2002) reported an alpha of 0.94 for the 19 ABC scales combined.

Therefore, ABC 'implementation' was modified by the length of 'time' since implementation had occurred to measure the overall ABC use. The average of the 17 'implementation' rates and the 'time' rate was calculated to represent ABC.

Cronbach's alpha	0.87		
	Implementation	Time	Cronbach's Alpha if Item Deleted
Design engineering	.677		.862
Manufacturing engineering	.643		.864
Production management	.540		.868
Plant manager	.648		.866
Top management	.524		.868
Marketing	.734		.859
Corporate finance	.538		.870
Product use	.546		.869
Cost management	.384		.875
Pricing decisions	.524		.869
Product mixing decisions	.400		.874
Determine customer profitability	.684		.862
As an off-line analytic tool	.511		.872
Performance Measurement	.368		.873
tied to the competitive strategies of the business	.799		.855
linked to evaluation of non-accounting personnel	.760		.862
linked to compensation of non-accounting personnel	.526		.872
How long it has been since ABC was implemented	-.068	.437	N/A

Table 4.10: Goodness-of-fit analysis of ABC measures

4.3.7 TQM measurement

PCA was conducted on the 17 five-point scales used to measure TQM (see Section 3.3.2.3.4 of Chapter Three). The 17 scales loaded sufficiently on one factor with eigenvalue 7.24 (Table 4.11).

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Reliability analysis indicated 0.91 value of Cronbach's alpha (Table 4.11). Sila and Ebrahimpour (2005) reported alpha values ranged from 0.76 to 0.90 for the different scales used in their study, including the TQM tools' scale.

Accordingly, the average usage rate of these 17 tools has then been calculated as an indicator of the overall TQM.

Cronbach's alpha	0.91	
	Factor Loading	**Cronbach's Alpha if Item Deleted**
Brainstorming	.572	.910
Cause and effect / Fishbone diagrams	.614	.908
Flowchart	.543	.910
Gantt chart	.367	.915
Tree diagram	.654	.907
Check sheet	.670	.907
Control charts	.679	.906
Data points	.754	.904
Histogram	.667	.907
Pareto analysis	.698	.906
Process capability	.550	.910
Scatter diagram	.747	.905
Storyboard case study	.657	.907
Starting teams	.721	.905
Maintaining teams	.718	.905
Ending teams / projects	.746	.904
Effective meetings	.619	.908

Table 4.11: Goodness-of-fit analysis of TQM measures

4.3.8 JIT measurement

Following Fullerton and McWatters, 2002, ten statements were developed to measure three determinant components of JIT use, which are a manufacturing component; a quality component; and a third factor described the extent to which companies have implemented JIT purchasing and *kanban* (see Section 3.3.2.3.5 in Chapter Three).

Responses were refined with an exploratory PCA to determine whether the measures used in the survey can be grouped according to the three JIT components. With varimax rotation, the results of the factor analysis confirmed the same three perspectives (Table 4.12). Factors extracted, with eigenvalues greater than one, were three in number, explaining 69% of the total data variance.

Cronbach's alpha	0.86	0.91	0.58	
	Manufacturing	**Quality**	**JIT**	**Cronbach's Alpha if Item Deleted**
Focused factory	.772			.833
Group technology	.853			.835
Action plans to reduce setup times	.646			.825
Total productive maintenance	.602			.824
Multi-function employees	.586			.832
Uniform work load	.520			.838
Product quality improvement		.908		N/A
Process quality improvement		.890		N/A
Kanban system			.830	N/A
JIT purchasing			.780	N/A

Table 4.12: Goodness-of-fit analysis of JIT measures

Cronbach's alpha was 0.86 for the manufacturing component, 0.91 for the quality component and 0.59 for the third JIT factor. Fullerton and McWatters (2002) reported 0.83, 0.95 and 0.68 for the three dimensions respectively. The third dimension's alpha value of 0.58 was considered acceptable. According to Nunnally (1978) (quoted by Fullerton and McWatters) alpha values of 0.50-0.60 are still acceptable for exploratory research.

The mean scores calculated for each of the three JIT factors were averaged to represent JIT in each responding organization.

4.3.9 Innovation measurement

Respondents were asked to rate the extent to which their firms focus on technology and process innovation (i.e. represented by three questionnaire items) and product innovation (i.e. represented by four items) in comparison to their competitors (see Chapter Three, Section 3.3.2.3.6 for further discussion).

Exploratory PCA, with varimax rotation, conducted on the seven scales confirmed the existence of the 'process' and 'product' innovation components. The two factors revealed explained 79% of the total variance in the data (Table 4.13).

Reliability analysis indicated Cronbach alpha values of 0.90 for technology and process innovation scales and 0.89 for product innovation scales. Zahra and Covin (1993) reported an alpha of 0.89 and Bisbe and Otley (2004) reported an alpha value of 0.83 for similar process and production innovation scales respectively.

Mean scores were calculated for each of the two innovation types. The average of the two means was used to represent overall INNOVAT in each organization.

Cronbach's alpha	0.89	0.90	
	Product	Process	Cronbach's Alpha if Item Deleted
Level of automation of plans and facilities		.900	.838
Using the latest technology in production		.905	.839
Capital investment in new equipment and Machinery		.829	.883
The launching of new products	.849		.841
Modification to already existing products	.791		.902
In new products, being first-to-market	.869		.852
The percentage of new products in product portfolio	.838		.848

Table 4.13: Goodness-of-fit analysis of Innovation measures

4.3.10 BSC measurement

As described in Chapter Thee (i.e., Section 3.3.2.3.1), BSC was measured by using a 20-item survey instrument incorporating Kaplan and Norton's (1992) four perspectives of the BSC (i.e., financial, internal, innovation and customer perspectives).

PCA with varimax rotation was performed to determine whether the survey items used can be grouped according to the BSC's four perspectives. The factor analysis reveals the existence of five factors with eigenvalues greater than one, representing 67% of the total data variance. Items representing financial, internal process and innovation perspectives loaded on three different factors respectively. This indicates that items representing these three perspectives can be grouped as anticipated. Customer perspective items loaded on two factors; three of the eight items were loading on a fifth factor, while the other five items grouped under the fourth factor (Table 4.14).

Cronbach's alpha	0.71	0.84	0.85	0.75	0.70	
	Financial	**Internal**	**Innovation**	**Customer 1**	**Customer 2**	Cronbach's. Alpha if Item Deleted
Operating income	.845					.538
Sales growth	.845					.516
Return on investment	.538					.856
Labour efficiency variance		.765				.804
Rate of material scrap loss		.885				.801
Material efficiency variance		.906				.784
Manufacturing lead time		.376				.830
Ratio of good output to total output		.481				.816
Percent of defective products shipped		.447				.823
Number of new products launched			.869			.743
Number of new products			.748			.861
Time to market new products			.824			.742
Survey of customer satisfaction					.764	.535
Number of customer complaints					.795	.491
Market share					.442	.764
Percent of shipment returned due to poor quality				.384		.724
On-time delivery				.365		.728
Warranty repair cost				.675		.713
Customer response time				.699		.640
Cycle time from order to delivery				.692		.703

Table 4.14: Goodness-of-fit analysis of the BSC measures

Cronbach alpha was 0.71 for the financial perspective, 084 for the internal perspective, 0.85 for the innovation perspective and 0.75 and 0.70 for the two customer perspective factors respectively (Table 4.14). Hoque and James (2000) reported 0.75, 0.76, 0.67 and 0.62 alpha values for the four perspectives respectively.

Therefore, a mean score was calculated for each of the 'financial', 'internal' and 'innovation' perspectives. The customer perspective was measured as the average of the means of its two components. An average of these four resulting means was then used to measure BSC.

4.3.11 Performance measurement

As previously discussed in Chapter Three (i.e., Section 3.3.2.4), a two-part measure was used to measure PERFORM. The determination of the final rate of each performance dimension was calculated by multiplying the respective "change" and "importance" rates. For each firm, a single PERFORM rate was then calculated as the weighted-average for all nine dimensions.

Cronbach alpha indicated a value 0.87 for the 'change' measures and 0.78 for the 'importance' measures. Reliability analysis of both parts did not suggest that deletion of any item would increase alpha.

Therefore, refining of responses using exploratory factor analysis and Cronbach's coefficient alpha has generally confirmed the measures' validity and internal reliability. However, this analysis of each construct survey measures suggested modifications to dimensionality and the number of survey items comprising some instruments. Measurement items in some instruments belonged to construct dimensions different than the dimensions anticipated in previous literature (e.g., items addressed 'production volume', 'selecting suppliers', 'goods to be manufactured' and 'distribution service levels' in the DECENTR measurement instrument). Unidimensionality of some constructs' survey items was revealed, rather than multi dimensionality suggested by previous literature (e.g., ABC survey instrument). Measurement variables of some constructs were found to have additional dimensions than was anticipated by previous research (e.g., the fifth factor revealed for the BSC survey items). Further, analysis conducted motivated the decision to eliminate items

in some construct instruments (e.g., the deletion of the fourth and the sixth items from the measurement instrument of DIVERS and the item addressing 'outsourcing decisions' from measuring ABC).

4.4 Descriptive statistics of the study variables

Measures of frequency, central tendency and dispersion were obtained for the interval-scaled survey items. All measurement items were tapped on a five point scale from 1 to 5, except for strategy items, which were tapped on a two point scale from 0 to 1. This section will report the mean as a measure of central tendency and the range and the standard deviation as measures of dispersion and spread. Central tendency and dispersion are used in the following subsections to describe how the whole, as well as the vast majority of the sample, ranged in accordance to different measurement variables used to measure the main constructs (Tables 4.16 - 4.25). The description as well concludes how the main constructs ranged in all, as well as most of the sample (Table 4.15).

Summary variable	N	Min	Max	Mean	Std. Deviation
STRTGY	105	.00	1.00	.4125	.3241
SIZE	105	1.00	5.00	2.0680	1.3747
DECENTR	105	1.00	4.79	2.0829	.6728
DIVERS	105	1.14	5.00	3.3639	.7180
BUDGT	105	1.00	5.00	3.8928	.8183
ABC	105	1.00	4.62	1.8104	1.2025
TQM	105	1.06	4.00	2.7519	.7220
JIT	105	1.00	4.78	2.9898	.7735
INNOVAT	105	1.00	4.88	3.3045	.7709
BSC	105	1.22	4.88	3.3572	.5985
PERFORM	105	1.33	4.80	2.7695	.7604

Table 4.15: Descriptive statistics of the summary variables

4.4.1 Strategy

Of the one hundred and five respondents, 101 have answered the three questionnaire items, which addressed STRTGY.

The response frequency to the strategic typology questionnaire item indicates that the majority of responding organizations were defenders rather than prospectors.

The strategic mission question frequency response indicates that the majority of respondents had Cost Leadership rather than Differentiation as their strategic mission.

In regard to the competitive position item, responses frequency indicates that the competitive position of the majority of responding organizations was Harvest rather than Build strategy. Table 4.16 summarizes the descriptive statistics of respondents' perceptions of the three strategy dimensions.

Strategy Dimension	Frequency	Percent
Strategic Typology		
Defenders	73	72
Prospectors	28	28
Strategic Mission		
Cost Leadership	64	63
Differentiation	37	37
Competitive Position		
Harvest	41	40
Build	60	60

Table 4.16: Descriptive statistics of the three strategy dimensions used to measure STRTGY in responding organizations

The average of each participant's answers to the three strategy questions reflected the

participant perception of his/her organization's strategic orientation and represented the overall measure of STRTGY in that organization. The mean value of STRTGY for all responding organizations indicates that participant organizations were more likely conservatives than entrepreneurial. STRTGY range shows that there were organizations who were extremely conservative and others who were extremely entrepreneurial. However, the standard deviation indicates that the majority of respondents ranged from conservative to moderately entrepreneurial (Table 4.15).

4.4.2 Size

One hundred and three organizations answered the single SIZE questionnaire item. The frequency distribution, as shown in Table 4.2 and discussed in Section 4.2.1 of this chapter, indicates that responding organizations were distributed over the five size categories. However, over 75% of responding organizations were under 500 employees in size; and the majority of the sample (i.e., 52.4%) was organizations with a number of employees of less than 150 individual.

4.4.3 Decentralization

For all the tested decision areas, the decision authority, in responding organizations, ranged from the highest executive management level to first level supervisors, or individuals below. However, the mean and the standard deviation statistics indicate that decentralization in the majority of studied organizations ranged differently from some decision areas to others (Table 4.17).

Low to high degree for decentralization existed, in regard to decisions of 'product scheduling', 'delivery dates to customers' and 'priority of orders' and 'product volume'. The authority to make decisions relevant to these areas ranged generally in most responding organizations from the high managerial level of 'divisional manager' to the low level of 'sub-department manager'.

Standard decisions	N	Min	Max	Mean	Std. Deviation
Scheduling decisions					
Product scheduling	104	1.00	5.00	3.1058	1.1735
Delivery dates to customers and priority of orders	104	1.00	5.00	3.1058	1.1484
Product volume	104	1.00	5.00	2.5673	1.0026
Selecting suppliers	105	1.00	5.00	2.2952	.9499
Goods to be manufactured	105	1.00	5.00	2.2476	1.1075
Strategic decisions					
Location of factories	105	1.00	5.00	1.2476	.8856
Number of factories to operate	103	1.00	5.00	1.2718	.8878
Location of field warehouses	102	1.00	5.00	1.4706	.9196
Number of field warehouses to operate	102	1.00	5.00	1.4608	.9084
Marketing decisions					
Distribution service levels	97	1.00	5.00	2.3196	1.0262
Pricing	105	1.00	5.00	1.9714	.9452
Channels of distribution	104	1.00	5.00	2.2500	.8786
Advertising/promotion strategy	105	1.00	5.00	1.9619	.8979
Target market selection	105	1.00	5.00	1.8857	.8914

Table 4.17: Descriptive statistics of decentralization in tested decision areas

Responses indicated mostly low to moderate decentralization degrees in the decision areas of 'selecting suppliers', 'goods to be manufactured', 'distribution service levels', pricing, 'channels of distribution', 'advertising/promotion strategy' and 'target market selection'. Authority to make decisions in these areas ranged generally from the highest managerial level of 'chief executives or above' to the moderate level of 'functional managers'.

Low degrees of decentralization were shown in the remaining four decision areas of 'location of factories', 'number of factories to operate', 'location of field warehouses', 'number of field warehouses to operate'. Decisions relevant to these areas were mostly made at the highest management levels of 'division managers' and 'chief executives or above the chief executive' level.

However, the overall decentralization (DECENTR) in responding organizations showed that, for most responding firms, the decision making authority ranged from the highest managerial level of 'chief executive managers or above' to the moderate level of 'functional managers'. Still, there were organizations that were very centralized as well as others with very high decentralization degrees (Table 4.15).

4.4.4 Diversification

'Strong agreements' as well as 'strong disagreements' were found regarding the relevance of the tested aspects of product diversification to tested organizations. However, means and standard deviations implied that the majority of perceptions ranged differently within different product diversity aspects (Table 4.18).

Participants were mostly 'neutral' to 'strongly agreeing' that, in their organizations, there were 'major differences between products in lot sizes' and in 'product volumes'.

Most responses ranged from 'disagreeing' to 'strongly agreeing' that there were 'major changes in production volumes between their products overtime'. They also ranged similarly in their perception of the diversity of their organizations' product lines.

Respondents generally ranged between 'disagreements' to 'agreements' in their perceptions of 'the non-similarity of support department costs for each product in their firms'. Most perceptions also 'disagreed' to 'agreed' that there were frequent changes to products, services and processes.

Responses mostly showed negative agreement that 'within product lines, products require different processes to design, manufacture and distribute' in studied firms. Most participants ranged from 'strong disagreement' to 'neutral agreement' in their perception of this diversification characteristic.

Statistics, describing respondents' perceptions of characteristics used to measure DIVERS, are depicted in Table 4.18.

Diversification aspect	N	Minimum	Maximum	Mean	Std. Deviation
Major differences in lot sizes between products	104	1.00	5.00	3.8269	1.2880
Major differences in production volumes between products	105	1.00	5.00	4.1905	1.0660
Major changes in production volumes within products overtime	104	1.00	5.00	3.6442	1.1141
Costs of support departments are not similar for each product	104	1.00	5.00	3.0192	1.1657
Product lines are diverse	105	1.00	5.00	3.7048	1.1842
Within product lines, products require different processes to design, manufacture and distribute	105	1.00	5.00	2.1143	1.0314
Frequent changes to products, services and processes	105	1.00	5.00	3.0476	1.2199

Table 4.18: Descriptive statistics of diversification aspects in the studied sample

Overall, DIVERS in participant organizations perceived as ranged from almost the lowest degree of diversification to the highest. However, most participants were perceived as ranging from moderately to highly diversified (Table 4.15).

4.4.5 Participative budgeting

The descriptive statistics in Table 4.19 summarizes participants' perceptions of the five participative budgeting aspects, used to measure BUDGT, in their organizations.

Most participants were positive in their perceptions of 'the importance, in their organizations, of the contributions of managers to the setting of the budgets', 'the inclusion in the budgets of changes that were suggested by the managers' and 'the satisfaction of managers before budgets are finalized'. Though, each of these three budgeting issues was viewed by some participants as 'not at all important' and by others as 'extremely important'.

Participative budgeting related issues	N	Min	Max	Mean	Std. Deviation
Importance of the manager's contribution to the setting of the budgets	103	1.00	5.00	4.1748	.9333
Importance of budgets' inclusion of changes that were suggested by the managers	103	1.00	5.00	3.9903	.9235
Importance of that a budget is not finalized until a manager is satisfied with it	102	1.00	5.00	3.8137	1.0315
Influence of managers in setting the budgets	103	1.00	5.00	3.9126	.9405
Frequency of central management initiation of budget-related discussions with the managers	103	1.00	5.00	3.5728	.9661

Table 4.19: Descriptive statistics of participative budgeting aspect

In general, perceptions were positive towards 'how influential managers were in setting the budgets'. Still, the role of managers was viewed by some respondents as 'not at all influential' in setting the budgets, while others viewed the managers' role as 'extremely influential'.

'Central management initiation of budget-related discussions with the managers' was generally perceived as positively frequent. However, responses ranged from "extremely infrequent" to "extremely frequent".

Overall, the extent of participative budgeting (BUDGT) was measured by calculating the mean of each respondent's rating of the five tested budgeting issues. BUDGT ranged from the highest to the lowest extremes of the measurement range. The range indicated that there were some organizations that have an extremely high extent as well as others that have an extremely low extent of participative budgeting. However, most of participating organizations showed positive degrees of participative budgeting (Table 4.15).

4.4.6 ABC

The questionnaire instructed only those respondents whose organizations had implemented, or contemplated implementing, ABC to answer the ABC questions. As a result, 35 respondents, 33 per cent of the total, indicated that their businesses were users of ABC. This was within the range of percentages found in previous research, which reported that 23 to 44 per cent of respondents were using ABC (Krumwiede, 1996; Carwin and Bouwman, 2002).

Descriptive statistics of the four ABC usage dimensions in user organizations are summarized in Table 4.20.

In regard to the breadth of ABC use in decision making, participants generally ranged from 'strong disagreement' to 'agreement' for 'design engineering' decisions. They mostly 'disagreed' to 'agreed' for decision making related to 'manufacturing engineering', 'plant manager' and 'marketing'. Most perceptions ranged from 'neutral' to 'strong agreement' for 'production management', 'top management' and 'corporate finance' decisions.

The depth of ABC use in decisions of 'product mixing' and 'outsourcing' and 'as an

ABC dimension (ABC users, N=35)	N	Min	Max	Mean	Std. Deviation
Breadth: the use of ABC in decision making for:					
Design engineering	32	1.00	5.00	2.5625	1.2165
Manufacturing engineering	22	1.00	5.00	3.1250	1.0999
Production management	32	1.00	5.00	3.8750	.8328
Plant manager	32	1.00	5.00	3.3437	1.2342
Top management	32	2.00	5.00	3.9688	.9667
Marketing	32	1.00	5.00	3.2812	1.1977
Corporate finance	32	1.00	5.00	3.5938	1.0734
Depth: the use of ABC for the following purposes:					
Product costing	35	2.00	5.00	4.1429	.8793
Cost management	35	2.00	5.00	4.1143	.8668
Pricing decisions	35	1.00	5.00	3.8571	1.0042
Product mixing decisions	34	1.00	5.00	3.2353	1.1297
Determine customer profitability	35	1.00	5.00	3.5714	1.1190
As an off-line analytic tool	35	1.00	5.00	3.0857	1.1212
Outsourcing decisions	34	1.00	5.00	3.5882	1.1578
Performance Measurement	35	1.00	5.00	3.8571	1.0331
Integration into strategic and performance evaluation system: ABC is:					
tied to the competitive strategies of the business	35	1.00	5.00	3.4857	1.1973
linked to evaluation of non-accounting personnel	35	1.00	5.00	3.0571	1.0831
linked to compensation of non-accounting personnel	35	1.00	5.00	2.7714	1.0596
Length of time since ABC implementation					
How long it has been since ABC was implemented	33	1.00	5.00	3.5455	1.6600

Table 4.20: Descriptive statistics of ABC usage in tested organizations

off-line analytic tool' were perceived as 'disagreement' to 'agreement' for most participants. Depth ranged mostly from 'neutrally' to 'strongly agreed' upon for

decisions of ‘product costing’, ‘cost management’, ‘pricing’, ‘determination of customer profitability’ and ‘performance measurement’.

Participants generally ranged from ‘disagreement’ to ‘strong agreement’ that ABC was ‘tied to the competitive strategies of the business’. Perceptions mostly ranged from ‘disagreement’ to ‘agreement’ that ABC was ‘linked to evaluation’ and ‘compensation’ of non-accounting personnel.

Responses reported that the length of time since ABC implementation in most responding businesses ranged from two to five years.

For non-ABC users in respondent organizations, the values of “1” were used to substitute the missing values in the ABC parts of their returned questionnaire. This was to reflect the non-usage of ABC in these organizations and, therefore, to facilitate the data analysis. Accordingly, ABC for the whole sample (i.e., 105 organizations of users and non-users of ABC) indicated that the majority of the sample ranged from none, or marginal to moderate use levels of the system (Table 4.15).

4.4.7 TQM

The use extent of the 17 measured quality tools in the sample organizations is described in Table 4.21.

The use of quality tools in the sample ranged from ‘not at all’ used to used ‘to a great extent’; except for ‘tree diagrams’ and ‘cause and effect/fishbone diagrams’, where the maximum for these two tools was that it was ‘often’ used. However, the majority of the sample ranged differently in each of the 17 quality tools.

The majority ranged from ‘not at all’ used to ‘neutral’ usage for ‘cause and effect / fishbone diagrams’, ‘tree diagram’, ‘scatter diagram’, ‘storyboard case study’ and ‘starting team’.

Organizations mostly ranged from ‘not at all’ used to ‘often’ used for ‘data points’, ‘histogram’, ‘Pareto analysis’ and ‘ending teams / projects’.

The use of ‘brainstorming’, ‘flowchart’, ‘Gantt chart’, ‘check sheet’, ‘control chart’, ‘process capability’ and ‘maintaining teams’ ranged from ‘not often’ to ‘often’.

Most organizations ranged between ‘neutrally’ and ‘to a great extent’ in their use of ‘effective meetings’.

Quality tools	N	Min	Max	Mean	Std. Deviation
Brainstorming	104	1.00	5.00	3.1250	1.0766
Cause and effect / Fishbone diagrams	103	1.00	4.00	2.1650	1.0204
Flowchart	103	1.00	5.00	2.9806	1.0935
Gantt chart	101	1.00	5.00	2.7921	1.2026
Tree diagram	101	1.00	4.00	2.2574	.9965
Check sheet	103	1.00	5.00	3.2427	1.3021
Control charts	101	1.00	5.00	3.3465	1.2036
Data points	101	1.00	5.00	2.7327	1.3183
Histogram	102	1.00	5.00	2.5784	1.1470
Pareto analysis	102	1.00	5.00	2.5098	1.1752
Process capability	102	1.00	5.00	3.3725	1.0893
Scatter diagram	102	1.00	5.00	2.0882	.9555
Storyboard case study	101	1.00	5.00	2.0297	1.1266
Starting teams	103	1.00	5.00	2.3786	1.1641
Maintaining teams	104	1.00	5.00	2.8173	1.1639
Ending teams / projects	104	1.00	5.00	2.6250	1.2243
Effective meetings	104	1.00	5.00	3.7404	.9243

Table 4.21: Descriptive statistics of the use of quality tools in the sample

Overall degree of TQM use in participating organizations ranged from almost 'not at all' to 'often'. The degree ranged from 'not often' to 'often' in most of the sample (Table 4.15).

4.4.8 JIT

Descriptive statistics of the ten practices that describe JIT use in the sample organizations are provided in Table 4.22.

JIT practices	N	Min	Max	Mean	Std. Deviation
Manufacturing Practices					
Focused factory	101	1.00	5.00	2.2871	1.3367
Group technology	101	1.00	5.00	2.2277	1.2952
Action plans to reduce setup times	103	1.00	5.00	2.9320	1.2700
Total productive maintenance	103	1.00	5.00	3.1068	1.2903
Multi-function employees	103	1.00	5.00	3.4660	1.1784
Uniform work load	101	1.00	5.00	2.8911	1.2157
Quality Practices					
Product quality improvement	103	1.00	5.00	3.7864	.9145
Process quality improvement	103	1.00	5.00	3.8252	.9333
JIT practices					
Kanban system	97	1.00	5.00	2.0103	1.2788
JIT purchasing	100	1.00	5.00	2.6800	1.3400

Table 4.22: Descriptive statistics of JIT practices in the sample organizations

For each of the ten practices, there were organizations that had 'no implementation intention' as well as others who had 'full' implementation. However, the majority of

the sample ranged differently in some of these techniques than did in others.

For the manufacturing components techniques, the sample largely ranged from 'no implementation intention' to 'substantial' use of 'focused factory' and 'group technology'. Usage mostly ranged from 'considered/beginning' to 'substantial' for 'action plans to reduce setup times', 'total productive maintenance', 'multi-function employees' and 'uniform work load'.

The two quality improvement procedures, 'product quality' and 'process quality', ranged in most organizations from 'partial' to 'full' implementation.

Mostly, the use of the '*Kanban* system' ranged between 'no intention' and 'partial', while 'JIT purchasing' use was between 'no intention' and 'substantial'.

Overall JIT ranged in most organizations between usage 'considering or beginning' to 'substantial' use. Though, there were organizations who reported none or marginal implementation as well as others who reported almost full usage (Table 4.15).

4.4.9 Innovation

Table 4.23 depicts descriptive statistics of responses to survey items used to measure aspects of technology and process innovation and product innovation in the sample.

The presence of different innovation aspects varies in the sample organizations from 'much lower' to 'much higher' in comparison to major competitors.

Most organizations ranged between 'lower' and 'higher' than competitors in technology and process innovation aspects of 'levels of automation of plants and facilities', 'using the latest technology in production' and 'capital investment in new equipment and machinery'.

The sample largely ranged similarly in product innovation aspects of 'launching of new products', 'modifications to already existing products', 'being first-to-market in new products' and 'the percentage of new products in product portfolio'.

Innovation measurement item	N	Min	Max	Mean	Std. Deviation
Technology and process innovation					
Level of automation of plants and facilities	102	1.00	5.00	3.1863	1.0599
Using the latest technology in production	102	1.00	5.00	3.3235	1.0260
Capital investment in new equipment and machinery	102	1.00	5.00	3.2647	1.0334
Product innovation					
The launching of new products	100	1.00	5.00	3.4700	.9688
Modifications to already existing products	100	1.00	5.00	3.4200	.8897
In new products, being first-to-market	99	1.00	5.00	3.3636	1.0638
The percentage of new products in product portfolio	100	1.00	5.00	3.1500	1.0188

Table 4.23: Descriptive statistics of innovation aspects in the sample organizations

Overall INNOVAT ranged in the sample from much lower to much higher than competitors. Though, most organizations ranged between the two opposites of 'lower' and 'higher' (Table 4.15).

4.4.10 BSC

Table 4.24 includes descriptive statistics of the twenty BSC performance measures use in the sample organizations.

BSC performance measures	N	Min	Max	Mean	Std. Deviation
Financial perspective					
Operating income	102	1.00	5.00	4.5196	.72754
Sales growth	103	1.00	5.00	4.4660	.72512
Return on investment	103	1.00	5.00	3.9515	1.06990
Internal perspective					
Labour efficiency variance	102	1.00	5.00	3.5294	1.16641
Rate of material scrap loss	103	1.00	5.00	3.3107	1.15495
Material efficiency variance	103	1.00	5.00	3.3883	1.12226
Manufacturing lead time	103	1.00	5.00	3.5340	.99819
Ratio of good output to total output	103	1.00	5.00	3.1942	1.31401
Percent of defective products shipped	102	1.00	5.00	3.4510	1.23182
Innovation perspective					
Number of new products launched	101	1.00	5.00	2.7624	1.19288
Number of new products	100	1.00	5.00	1.8200	1.14926
Time to market new products	101	1.00	5.00	2.5248	1.30839
Customer perspective					
Survey of customer satisfaction	103	1.00	5.00	3.0583	1.17844
Number of customer complaints	103	1.00	5.00	3.6505	1.07292
Market share	103	1.00	5.00	3.5146	1.06517
Percent of shipment returned due to poor quality	102	1.00	5.00	3.4608	1.31006
On-time delivery	103	1.00	5.00	4.2718	.78208
Warranty repair cost	104	1.00	5.00	2.4423	1.29845
Customer response time	104	1.00	5.00	3.0096	1.33289
Cycle time from order to delivery	105	1.00	5.00	3.3619	1.32378

Table 4.24: Descriptive statistics of the extent to which performance measures used to represent BSC are used in the sample

Performance measures tested ranged in the sample from ‘not used at all’ to ‘great’ extent of usage. Though, the majority of tested organizations ranged differently in some measures than in others.

Financial measures were highly used. In most of the sample, ‘operating income’, ‘sales growth’ ranged from ‘often’ to a ‘great’ usage extent. ‘Return on investment’ ranged from ‘neutrally’ used to a ‘great’ extent of usage.

Of internal performance measures, ‘labor efficiency variance’, ‘rate of material scrap loss’, ‘material efficiency variance’, ‘ratio of good output to total output’ and ‘percent of defective products shipped’ were between ‘not often’ to ‘often’ used in most of the sample organizations. ‘Manufacturing lead time’ was mostly ranged from ‘neutral’ to a ‘great’ extent of usage.

Innovation performance measures were reported to be less used. ‘Number of new products launched’ mostly ranged from ‘not often’ to ‘often’ usage. ‘Number of new products’ and ‘time to market new products’ ranged mostly from ‘not at all’ to ‘neutrally’ use.

The extent, to which most participant organizations use customer measures, differs in some measures from others. Most organizations were between ‘not at all’ and ‘often’ users of ‘warranty repair cost’. The use of ‘survey of customer satisfaction’ and ‘customer response time’ ranged mostly between ‘not often’ and ‘often’. The usage range of ‘percent of shipment returned due to poor quality’ and ‘cycle time from order to delivery’ was mostly between ‘not often’ to ‘great’ extent. ‘Number of customer complaints’ and ‘market share’ ranged mostly from ‘neutral’ to ‘great’ extent of usage. High degree of usage was rated for ‘on time delivery’, where the use of this performance measure ranged from ‘often’ to ‘great extent’ in most of the sample organizations.

Overall, BSC in tested organizations ranged from marginal to great extent of usage. However, the extent of usage was most likely positive as most of the sample ranged from ‘neutral’ to ‘often’ users (Table 4.15).

4.4.11 Performance

Table 4.25 provides descriptive statistics of the performance and importance of tested performance dimensions in the sample organizations.

Performance dimension	N	Min	Max	Mean	Std. Deviation
Change on					
Return on investment	102	1.00	5.00	3.4608	1.0213
Profit	101	1.00	5.00	3.4356	1.0336
Cash flow from operation	101	1.00	5.00	3.5545	.9846
Cost control	102	2.00	5.00	3.4902	.7803
Development of new products	100	1.00	5.00	3.1800	1.1226
Sales volume	101	1.00	5.00	3.5545	.9744
Market share	100	1.00	5.00	3.5700	.9239
Market development	101	1.00	5.00	3.4554	.8310
Personal development	100	1.00	5.00	3.2200	.9701
Importance of					
Return on investment	105	1.00	5.00	3.8857	1.0499
Profit	105	3.00	5.00	4.3810	.7388
Cash flow from operation	105	2.00	5.00	4.2667	.7998
Cost control	105	3.00	5.00	4.2095	.7030
Development of new products	104	1.00	5.00	3.4135	1.0759
Sales volume	105	2.00	5.00	4.2095	.7298
Market share	105	2.00	5.00	3.8000	.8705
Market development	105	1.00	5.00	3.5714	.8419
Personal development	105	1.00	5.00	3.5619	.9086

Table 4.25: Descriptive statistics of the sample organizations' performance on different financial and non-financial dimension, and the importance of these dimensions to these businesses

During the three years prior to the survey, sample organizations ranged, on the different performance dimensions, in comparison to major competitors, from 'well below' to 'well above'; except for 'cost control', where none of respondents was 'well below' competitors.

Most organization in the sample ranged from 'below' to 'above' competitors in their 'return on investment', 'profit', 'development of new products' and 'personal development'. Most ranged comparatively from 'average' to 'above' average in 'cost control', 'market share' and 'market development'. They mostly ranged from 'average' to 'well above' average compared to competitors in regard to 'cash flow' from operation and 'sales volume'.

Perceptions of the importance to participant organizations of 'return on investment', 'development of new products' and 'market development' ranged from 'none' to 'extreme' importance. None of participants rated 'cash flow from operation', 'sales volume' and 'market share' as 'not important'. All respondent organizations viewed both 'profit' and 'cost control' between 'important' and 'extremely important' to their businesses.

'Development of new products' mostly ranged from 'little importance' to 'highly important'. 'Market development' and 'personal development' ranged to most participants from 'important' to 'highly important'. The vast majority of participant organizations rated 'return of investment' and 'market share' from 'important' to 'extremely important'. Highest ratings were for the importance of 'profit', 'cash flow from operation', 'cost control' and 'sales volume', where rates mostly ranged from 'highly' to 'extremely' important.

Overall PERFORM ranged from almost extremely low to almost extremely high. However, the range was in most businesses between below average to above average (Table 4.15).

To summarize, descriptive statistics showed that sample organizations reported measures distributed from the lowest to the highest level of each summary variable. Still, organizations were more likely conservative than entrepreneurial in their strategy, centralized than decentralized, diversified and less than average in size. The use of MCS in the sample was more likely to be high for participative budgeting, low for ABC, below average for TQM and JIT and above average for innovation and BSC. Performance in the sample organizations was generally below average (Table 4.15).

4.5 Pearson correlation matrix

Table 4.26 contains the correlation matrix for the main study constructs. Many of the correlation coefficients were of the expected sign and strength.

STRTGY and SIZE exhibited a negative relationship (R=-0.174, significant at the 0.10 level). STRTGY also correlated positively with INNOVAT (R=0.189, significant at the 0.10 level) and BUDGT (R=0.204, significant at the 0.05 level).

SIZE and DIVERS were positively related (R=0.193, significant at the 0.05 level). SIZE also related positively to ABC (R=0.298, significant at the 0.01 level) and BSC (R=0.168, significant at the 0.10 level).

DECENTR correlated positively with BUDGET (R=0.188, significant at the 0.10 level) and TQM (R=0.358, significant at the 0.01 level).

DIVERS correlated positively with SIZE (R=0.193, significant at the 0.05 level) and BSC (R=218, significant at the 0.05 level).

BUDGT exhibited negative relations with STRTGY (R=-0.174, significant at the 0.10 level) and positive relations with DECENTR (R=0.188, significant at the 0.10 level), TQM (R=0.424, significant at the 0.01 level), JIT (R=0.385, significant at the 0.01 level), INNOVAT (R=0.384, significant at the 0.01 level) and BSC (R=0.200,

significant at the 0.05 level). BUDGT exhibited no significant correlation with PERFORM.

ABC positively correlated with SIZE (R=0.298, significant at the 0.01 level), JIT (R=0.358, significant at the 0.01 level) and BSC (R=0.196, significant at the 0.05 level) and PERFORM (R=0.161, significant at the 0.10 level).

TQM correlated positively with DECENT (R=358, significant at the 0.01 level), BUDGET (R=0.424, significant at the 0.01 level), JIT (R=0.617, significant at the 0.01 level), INNOVAT (R=0.423, significant at the 0.01 level), BSC (R=0.444, significant at the 0.01 level) and PERFORM (R=0.321, significant at the 0.01 level).

JIT correlated positively with BUDGET (R=0.385, significant at the 0.05 level), ABC (R=0.358, significant at the 0.01 level), TQM (R=0.617, significant at the 0.01 level), INNOVAT (R=0.423, significant at the 0.01 level), BSC (R=0.472, significant at the 0.01 level) and PERFORM (R=0.265, significant at the 0.01 level).

INNOVAT had positive relationships with BUDGET (R=0.384, significant at the 0.01 level), TQM (R=0.436, significant at the 0.01 level), BSC (R=0.604, significant at the 0.01 level) and PERFORM (R=0.545, significant at the 0.01 level).

BSC exhibited positive relationships with SIZE (R=0.168, significant at the 0.10 level), DIVERS (R=0.218, significant at the 0.05 level), BUDGET (R=0.200, significant at the 0.05 level), ABC (R=0.196, significant at the 0.05 level), TQM (R=0.444, significant at the 0.01 level), JIT (R=0.472, significant at the 0.01 level), INNOVAT (R=0.604, significant at the 0.01 level) and PERFORM (R=0.586, significant at the 0.01 level).

Variables	STRTGY	SIZE	DECENTR	DIVERS	BUDGT	ABC	TQM	JIT	INNOVAT	BSC	PERFORM
STRTGY	1										
SIZE	-.174(*)	1									
DECENTR	.011	.006	1								
DIVERS	.045	.193(**)	.090	1							
BUDGT	.204(**)	.038	.188(*)	-.123	1						
ABC	-.147	.298(***)	-.098	.0.28	.134	1					
TQM	.048	.134	.358(***)	-.065	.424(***)	.150	1				
JIT	-.066	.147	.087	-.048	.385(***)	.358(***)	.617(***)	1			
INNOVAT	.189(*)	-.042	.020	.003	.384(***)	.096	.436(***)	423(***)	1		
BSC	.128	.168(*)	.023	.218(**)	.200(**)	.196(**)	.444(***)	.472(***)	.604(***)	1	
PERFORM	.058	.147	-.057	.070	.108	.161(*)	.321(***)	.265(***)	.545(***)	.586(***)	1

* Correlation is significant at the 0.10 level (2-tailed).

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

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

Table 4.26: Pearson correlation matrix

To summarize, STRTGY had significant and positive relationships with BUDGET and INNOVAT. SIZE correlated significantly and positively with ABC and BSC. DECENTR significantly and positively correlated with BUDGT and TQM. DIVERS exhibited positive and significant relation with BSC. ABC, TQM, JIT, INNOVAT and BSC exhibited positive and significant correlations with PERFORM. Table 4.27 includes the correlation coefficients and signs of the hypothesized relationships, resulted from the correlation matrix, compared against the expected signs of these relationships.

No.	Parameter	Correlation Coefficient	Significance	Resulted Sign	Expected Sign
1	STRTGY → BUDGT	.204	P < .05	Positive	Positive
2	STRTGY → ABC	.147	P > .10	Negative	Negative
3	STRTGY → TQM	.048	P > .10	Positive	Positive
4	STRTGY → JIT	.066	P > .10	Negative	Positive
5	STRTGY → INNOVAT	.189	P < .10	Positive	Positive
6	STRTGY → BSC	.128	P > .10	Positive	Positive
7	SIZE → BUDGT	.038	P > .10	Positive	Positive
8	DECENTR → BUDGT	.188	P < .10	Positive	Positive
9	DIVERS → BUDGT	.123	P > .10	Negative	Positive
10	SIZE → ABC	.298	P < .01	Positive	Positive
11	DECENTR → ABC	.098	P > .10	Negative	Negative
12	DIVERS → ABC	.28	P > .10	Positive	Positive
13	SIZE → TQM	.134	P > .10	Positive	Positive
14	SIZE → JIT	.147	P > .10	Positive	Positive
15	DIVERS → JIT	.048	P > .10	Negative	Positive
16	SIZE → INNOVAT	.042	P > .10	Negative	Positive

No.	Parameter	Correlation Coefficient	Significance	Resulted Sign	Expected Sign
17	DECENTR → INNOVAT	.020	P > .10	Positive	Positive
18	DIVERS → INNOVAT	.003	P > .10	Positive	Positive
19	SIZE → BSC	.168	P < .10	Positive	Positive
20	DECENTR → BSC	.023	P > .10	Positive	Positive
21	DIVERS → BSC	.218	P < .05	Positive	Positive
22	BUDGT → PERFORM	.108	P > .10	Positive	Positive
23	ABC → PERFORM	.161	P < .10	Positive	Positive
24	TQM → PERFORM	.321	P < .01	Positive	Positive
25	JIT → PERFORM	.265	P < .01	Positive	Positive
26	INNOVAT → PERFORM	.545	P < .01	Positive	Positive
27	BSC→ PERFORM	.586	P < .01	Positive	Positive

Table 4.27: Correlation coefficients of hypothesized relationship resulting from Pearson correlation matrix

However, correlation coefficients do not necessarily indicate causation or directness of association. Thus, SEM modeling was then performed to provide greater insight of these relationships (Baines and Langfield-Smith, 2003; Ahmad et al., 2004).

4.6 Structural equation modeling analysis

The structural equation modeling (SEM) capabilities of LISREL 8.7 software were employed to test the hypothesized relationships between the study constructs by testing the model as a whole. Two models are presented in this section: the hypothesized structural model and an alternative 'good fit' structural model.

4.6.1 The hypothesized model

Relationships were examined between the independent variables of STRTGY, SIZE, DECENTR and DIVERS and the dependent variables of BUDGT, ABC, TQM, JIT, INNOVAT, BSC and PERFORM. The hypothesized model is presented in Figure 4.1 Rectangles represent measured variables. Absence of a line connecting variables implies lack of hypothesized direct effect.

Figure 4.1 illustrates the hypotheses that STRTGY and SIZE each directly affects BUDGT, ABC, TQM, JIT, INNOVAT and BSC. DECENTR directly affect BUDGT, ABC, INNOVAT and BSC. DIVERS affect directly STRTGY, ABC, JIT, INNOVAT and BSC. The hypothesized model illustrated depicts also the direct effect of BUDGET, ABC, TQM, JIT, INNOVAT and BSC on PERFORM. Table 4.28 includes structural equations from the hypothesized model.

BUDGT = 3.64 + 0.58*STRTGY + 0.066*SIZE + 0.24*DECENTR - 0.17*DIVERS, Errorvar.= 0.60 , R^2 = 0.11
ABC = 1.90 - 0.38*STRTGY + 0.27*SIZE - 0.19*DECENTR - 0.021*DIVERS, Errorvar.= 1.47 , R^2 = 0.11
TQM = 2.52 + 0.16*STRTGY + 0.077*SIZE, Errorvar.= 0.51 , R^2 = 0.023
JIT = 3.10 - 0.084*STRTGY + 0.088*SIZE - 0.070*DIVERS, Errorvar.= 0.58 , R^2 = 0.029
INNOVAT = 3.10 + 0.45*STRTGY - 0.0046*SIZE + 0.022*DECENTR - 0.0049*DIVERS, Errorvar.= 0.57 , R^2 = 0.036
BSC = 2.63 + 0.27*STRTGY + 0.069*SIZE + 0.0038*DECENTR + 0.13*DIVERS, Errorvar.= 0.32 , R^2 = 0.08
PERFORM = 0.32 - 0.11*BUDGT + 0.056*ABC + 0.11*TQM - 0.12*JIT + 0.35*INNOVAT + 0.50*BSC, Errorvar.= 0.33 , R^2 = 0.36

Table 4.28: Structural equations from the hypothesized model (i.e., the initial structural model)

Goodness-of-fit statistics for this initial (hypothesized) structural model are displayed in Table 4.29.

Degrees of Freedom = 22
Minimum Fit Function Chi-Square = 206.97 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 254.14 (P = 0.0)
Chi-Square Difference with 0 Degree of Freedom = 0.00 (P = 1.00)
Estimated Non-centrality Parameter (NCP) = 232.14
90 Percent Confidence Interval for NCP = (184.52 ; 287.22)

Minimum Fit Function Value = 1.99
Population Discrepancy Function Value (F0) = 2.32
90 Percent Confidence Interval for F0 = (1.85 ; 2.87)
Root Mean Square Error of Approximation (RMSEA) = 0.32
90 Percent Confidence Interval for RMSEA = (0.29 ; 0.36)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 3.64
90 Percent Confidence Interval for ECVI = (3.06 ; 4.08)
ECVI for Saturated Model = 1.32
ECVI for Independence Model = 4.13

Chi-Square for Independence Model with 55 Degrees of Freedom = 391.34
Independence AIC = 413.34
Model AIC = 364.14
Saturated AIC = 132.00
Independence CAIC = 453.53
Model CAIC = 565.11
Saturated CAIC = 373.16

Normed Fit Index (NFI) = 0.47
Non-Normed Fit Index (NNFI) = -0.37
Parsimony Normed Fit Index (PNFI) = 0.19
Comparative Fit Index (CFI) = 0.45
Incremental Fit Index (IFI) = 0.50
Relative Fit Index (RFI) = -0.32

Critical N (CN) = 21.24

Root Mean Square Residual (RMR) = 0.11
Standardized RMR = 0.20
Goodness of Fit Index (GFI) = 0.69
Adjusted Goodness of Fit Index (AGFI) = 0.077
Parsimony Goodness of Fit Index (PGFI) = 0.23

Table 4.29: Goodness-of-fit statistics for the hypothesized model (i.e., initial structural model

The independence model that tests the hypothesis that variables are uncorrelated with one another was easily rejected, $x^2(55, N = 105) = 391.34$, $p < .01$. The hypothesized model was tested next, $x^2(22, N = 105) = 254.14$, $p < .01$. A chi-square difference test indicated a significant improvement in fit between the independence model and

the hypothesized model but only marginal support was found for the hypothesized model in terms of chi-square (x^2)[1] test statistics and different fit indices. The chi-square tests have very small associated p-values (0.000) indicating a poor fit. Values for root mean square error of approximation (RMSEA)[2], root mean square residual (RMR)[3] and standardized root mean square residual (SRMSR)[3] all significantly exceed the 0.05 level that is recommended. Goodness-of-fit indices fall short of the recommended 0.90 level. Generally, the results indicate that this initial model did not achieve good fit status (Table 4.29) (Bollen, 1989; Hoyle, 1995; Tabachnick and Fidell, 1996; Holmes-Smith, 2000).

1- Chi-square (x^2): 'It is a measure of the absolute discrepancy between the matrix of implied variances and covariances ($\sum$) to the matrix of empirical sample variances and covariances (**S**)' (Holmes-Smith, 2000, p. 104).

2- Root mean square error of approximation (RMSEA): 'Takes into account the error of approximation in the population and relaxes the stringent requirement on x^2 that the model holds exactly in the population' (Holmes-Smith, 2000, p. 106).

3- Root mean square residual (RMR) and standardized root mean square residual (SRMSR): These two fit indices are residual based as they reflect 'the average differences between the sample variances and covariances and the estimated population variances and covariances' (Tabachnick and Fidell, 1996, p. 752).

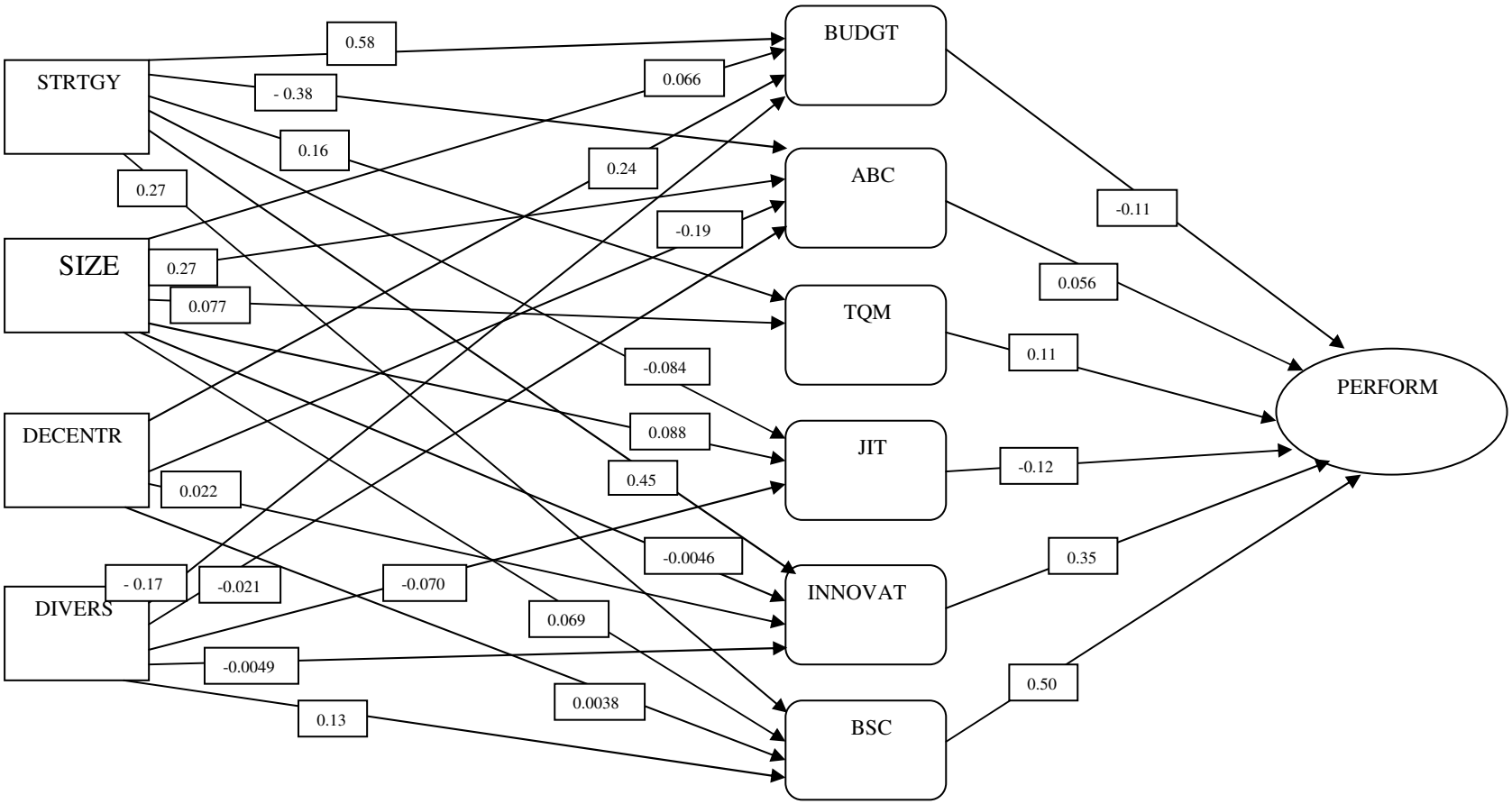

Figure 4.1: The hypothesized model (The initial structural model)

4.6.2 The modified model

Modifications were performed in an attempt to develop a better fitting model. On the basis of a modification indices test, 11 paths to the model were added. These paths are those predicting participative budgeting from TQM, JIT and INNOVAT, a path predicting TQM from decentralization, paths predicting JIT from ABC and TQM, paths predicting INNOVAT from TQM and JIT and paths predicting BSC from TQM, JIT and INNOVAT. The model was then re-estimated, $x^2(11, N = 105) = 12.91$, $p = 0.30$. Figure 4.2 depicts the modified model. Table 4.30 includes structural equations from the modified model; Table 4.31 displays goodness-of-fit statistics for the modified structural model.

BUDGT = 1.49 + 0.16*TQM + 0.21*JIT + 0.22*INNOVAT + 0.47*STRTGY + 0.034*SIZE + 0.15*DECENTR - 0.13*DIVERS, Errorvar.= 0.47 , R^2 = 0.28

ABC = 1.52 - 0.38*STRTGY + 0.27*SIZE - 0.19*DECENTR - 0.021*DIVERS, Errorvar.= 1.47 , R^2 = 0.11

TQM = 1.91 + 0.15*STRTGY + 0.075*SIZE + 0.38*DECENTR, Errorvar.= 0.44 , R^2 = 0.15

JIT = 0.96 + 0.16*ABC + 0.62*TQM - 0.14*STRTGY - 0.010*SIZE - 0.011*DIVERS, Errorvar.= 0.33 , R^2 = 0.43

INNOVAT = 2.01 + 0.35*TQM + 0.26*JIT + 0.40*STRTGY - 0.059*SIZE - 0.15*DECENTR + 0.056*DIVERS, Errorvar.= 0.42 , R^2 = 0.28

BSC = 0.96 + 0.13*TQM + 0.15*JIT + 0.35*INNOVAT + 0.10*STRTGY + 0.046*SIZE - 0.070*DECENTR + 0.15*DIVERS, Errorvar.= 0.18 , R^2 = 0.51

PERFORM = 0.21 - 0.11*BUDGT + 0.056*ABC + 0.11*TQM - 0.12*JIT + 0.35*INNOVAT + 0.50*BSC, Errorvar.= 0.33 , R^2 = 0.42

Table 4.30: Structural equation from the modified model

Degrees of Freedom = 11
Minimum Fit Function Chi-Square = 12.91 (P = 0.30)
Normal Theory Weighted Least Squares Chi-Square = 12.51 (P = 0.33)
Chi-Square Difference with 0 Degree of Freedom = 0.0 (P = 1.00)
Estimated Non-centrality Parameter (NCP) = 1.51
90 Percent Confidence Interval for NCP = (0.0 ; 14.51)

Minimum Fit Function Value = 0.12
Population Discrepancy Function Value (F0) = 0.015
90 Percent Confidence Interval for F0 = (0.0 ; 0.15)
Root Mean Square Error of Approximation (RMSEA) = 0.037
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.11)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.53

Expected Cross-Validation Index (ECVI) = 1.45
90 Percent Confidence Interval for ECVI = (1.32 ; 1.47)
ECVI for Saturated Model = 1.32
ECVI for Independence Model = 4.13

Chi-Square for Independence Model with 55 Degrees of Freedom = 391.34
Independence AIC = 413.34
Model AIC = 144.51
Saturated AIC = 132.00
Independence CAIC = 453.53
Model CAIC = 385.67
Saturated CAIC = 373.16

Normed Fit Index (NFI) = 0.97
Non-Normed Fit Index (NNFI) = 0.97
Parsimony Normed Fit Index (PNFI) = 0.19
Comparative Fit Index (CFI) = 0.99
Incremental Fit Index (IFI) = 0.99
Relative Fit Index (RFI) = 0.84

Critical N (CN) = 200.24

Root Mean Square Residual (RMR) = 0.035
Standardized RMR = 0.045
Goodness of Fit Index (GFI) = 0.98
Adjusted Goodness of Fit Index (AGFI) = 0.87
Parsimony Goodness of Fit Index (PGFI) = 0.16

Table 4.31: Goodness-of-fit statistics for the modified structural model

The modified model, as structured, fitted the data well. The P-values of 0.30 and 0.33 associated with the chi-square tests exceeded the recommended 0.05 value and indicated a good fit for the model. The values for RMSEA (0.037), RMR (0.035) and SRMR (0.045) fall below the recommended 0.05 level. Values for normed fit index

(NFI)[1] (0.97), nonnormed fit index (NNFI)[1] (0.97), comparative fit index (CFI)[2] (0.99) and goodness of fit index (GFI)[3] (0.98) all exceed the recommended 0.90 level indicating good fit. This indicates that the model was significantly improved after the addition of these paths and this modified structural model achieved a good fit status. LISREL modification indices for this version did not recommend any additional modification to improve the model (Bollen, 1989; Hoyle, 1995; Tabachnick and Fidell, 1996; Holmes-Smith, 2000).

Because post hoc model modifications were performed, a correlation was calculated between the hypothesized model parameter estimates and the parameter estimates from the modified model, $R = .85$, $p < .01$; this indicates that parameter estimates were hardly changed despite modification of the model.

Six parameters, from the twenty seven hypothesized parameters, were shown significant in the resulted modified model (Figure 4.2). These parameters represent positive associations between STRTGY and BUDGT; STRTGY and INNOVAT; SIZE and ABC; DECENTR and TQM; DIVERS and BSC; INNOVAT and PERFORM; and BSC and PERFORM. However, the structured estimates of parameters coefficients resulting from the structural modified model will be used in the next chapter to test the hypothesis and to further analyze relationships across the study constructs.

1- Normed fit index (NFI) and nonnormed fit index (NNFI): NFI 'evaluates the estimated model by comparing the χ^2 value of the model to χ^2 value of the independent model'. However, 'the NFI may underestimate the fit of the model in good-fitting models with small samples. An adjustment to the NFI that incorporates the degrees of freedom in the model yields the nonnormed fit index (NNFI)' (Tabachnick and Fidell, 1996, p. 749).

2- Comparative fit index (CFI): This index also assesses the model fit relative to the independent model, but with the use of different approach. It 'employs the noncentral χ^2 distribution with noncentrality parameters' (Tabachnick and Fidell, 1996, p. 749).

3- Goodness of fit index (GFI): calculates 'a weighted proportion of variance in the sample covariance matrix accounted for by the estimated population covariance matrix' (Tabachnick and Fidell, 1996, p. 750).

4.7 Summary

Data analyzed in this chapter was based on 105 respondents out of 1000 Australian manufacturing organizations targeted by the survey. Respondents were organizations of different sizes and manufacturing classifications and were geographically dispersed in five different Australian states. Personnel who answered the questionnaire occupied different senior management positions. Their managerial position and relevant years of experience entitled them to a specific knowledge of their organizations in regard to the study subjects.

Analysis was conducted to make sure that the survey instruments, measured the study constructs, were valid and reliable. Factor analysis was used to verify the validity of survey items, comprising constructs' instruments, and dimensionality of these items. Cronbach alpha was used to indicate reliability. As a result, dimensionality and number of measures of some instruments were modified.

Descriptive statistics of the studied sample showed characteristics of these organizations in terms of the study measures as well as generally in terms of the main constructs. Most of the sample was conservative in their strategy. Context wise, they were more likely centralized, diversified and less than average in size. Their adoption of MCS varied from high for participative budgeting, above average for innovation and BSC, below average for TQM and JIT and low for ABC. Performance, compared to competitors, was perceived as below average in most organization in the studied sample.

Finally, analysis, necessary to evaluate the relationships among the constructs, was conducted. A correlation matrix for the study constructs indicated the significance of some correlations, which was predicted to be significantly associated by the study. However, correlation is not sufficient to indicate direct associations. Therefore, structural equation modeling analysis was then conducted.

Goodness-of-fit statistics, of the study hypothesized model did not reach recommended levels, and the model's Chi-square was significant ($p < 0.05$);

therefore, the hypothesized model was rejected. The addition of eleven relationships resulted in a modified model with an acceptable model fit for a number of fit indices, and insignificance Chi-square ($p > 0.05$).

Resulting estimates of the structured parameters in the modified structural model confirmed the significance of six hypothesized relationships. It was noticed that not all correlations proved significant in the correlation matrix analysis were confirmed, by the structural modified model, to be direct associations. However, the following chapter reports further detailed analysis, which includes examinations of direct and indirect relationships between the model variables.

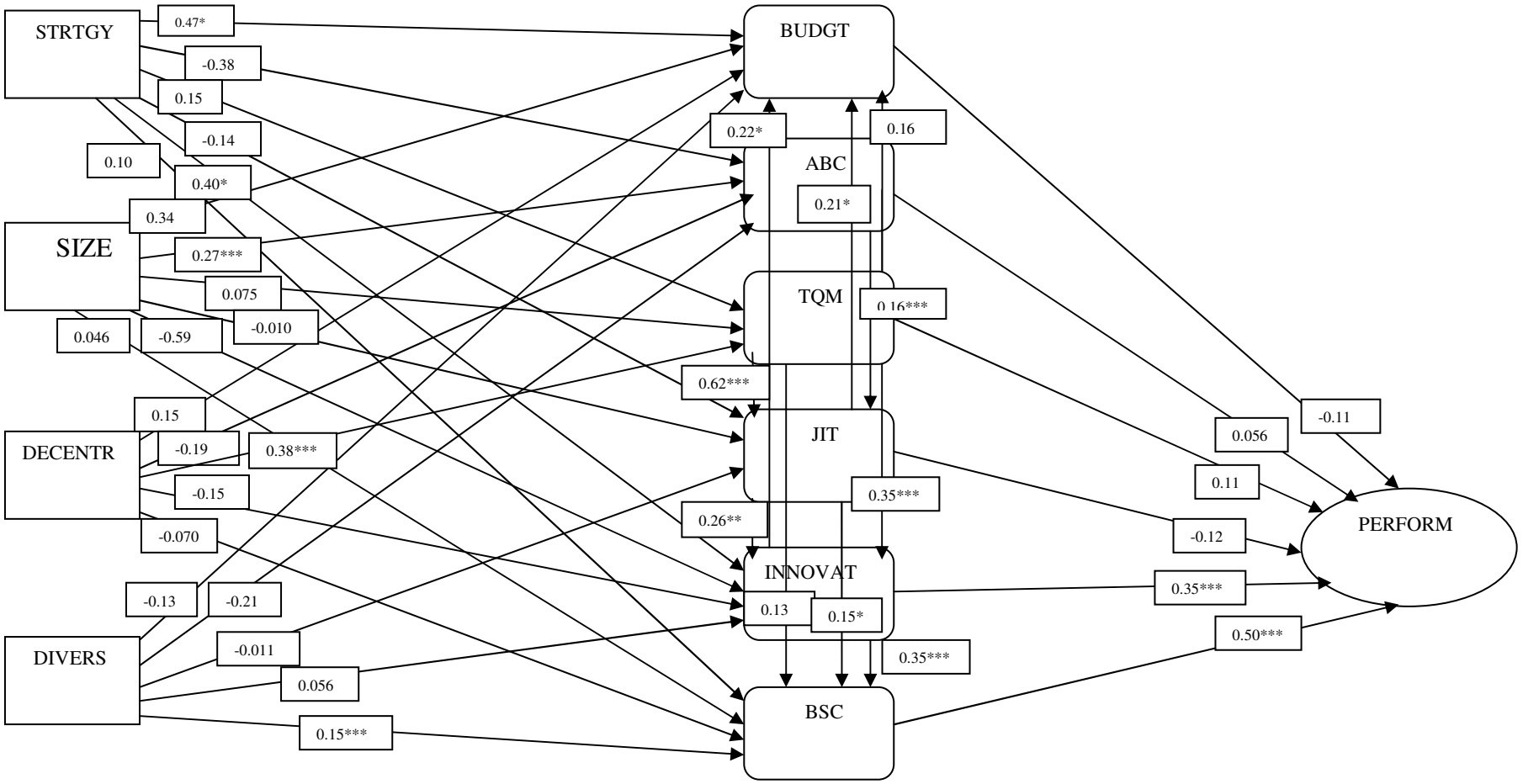

Figure 4.2: The Modified Model

CHAPTER 5: RESULTS

This chapter presents the results of the research. The first section compares the results extracted from the modified accepted model (Figure 4.2) against the researched twenty seven hypotheses respectively. The second section discusses other relationships between the study's constructs, added to modify the hypothesized structural model to become more statistically sound. Finally, the rest of the chapter embraces analysis and discussions of the concluding study model (Figure 5.1).

5.1 Hypotheses testing

The purpose of testing H1-27 was to see whether context and strategy factors influence the adoption and implementation of MCS and the effect of that on the overall performance of the organization. Specifically, H1-6 predicted the relationship between the organization strategic orientation and the use of the specific MCS subjects to the study; H7-21 looked at the influence of context factors on the MCS use; and H22-27 evaluated the impact of these interactions on the overall organization performance.

Results from the structural equation modeling analysis, described in Chapter 4, provided information necessary to evaluate the study hypotheses. The statistical analysis results (i.e., based on information indicated by the modified structural model (Figure 4.2)) are set out in Table 5.1, where a coefficient of ±1 would indicate perfect correlation. Only correlations with *p*-values of 0.10 or less indicate a statistically significant relationship between the two variables concerned (Baines and Langfield-

Smith, 2003).

No.	Parameter	Structural Coefficient	Standard Error	T-Value	P-Value	Significance
1	STRTGY → BUDGT	0.47	0.22	2.11	0.06	Yes
2	STRTGY → ABC	-0.38	0.38	-0.99	0.34	No
3	STRTGY → TQM	0.15	0.21	0.74	0.47	No
4	STRTGY → JIT	-0.14	0.18	-.075	0.47	No
5	STRTGY → INNOVAT	0.40	0.21	1.96	0.08	Yes
6	STRTGY → BSC	0.10	0.14	0.77	O.46	No
7	SIZE → BUDGT	0.034	0.053	0.63	0.54	No
8	DECENTR → BUDGT	0.15	0.11	1.37	0.20	No
9	DIVERS → BUDGT	-0.13	0.083	-1.57	0.14	No
10	SIZE → ABC	0.27	0.091	2.9	0.01	Yes
11	DECENTR → ABC	-0.19	0.18	-1.03	0.33	No
12	DIVERS → ABC	-0.021	0.15	-0.14	0.89	No
13	SIZE → TQM	0.075	0.049	1.53	0.15	No
14	SIZE → JIT	-0.010	0.045	-0.22	0.83	No
15	DIVERS → JIT	-0.011	0.069	-0.16	0.88	No
16	SIZE → INNOVAT	-0.59	0.050	-1.19	0.26	No
17	DECENTR → INNOVAT	-0.15	0.10	-1.41	0.19	No
18	DIVERS → INNOVAT	0.056	0.079	0.71	0.49	No
19	SIZE → BSC	0.046	0.032	1.41	0.19	No
20	DECENTR → BSC	-0.070	0.068	-1.04	0.32	No
21	DIVERS → BSC	0.15	0.051	3.04	0.01	Yes
22	BUDGT → PERFORM	-0.11	0.081	-1.33	0.21	No
23	ABC → PERFORM	0.056	0.048	1.16	0.27	No
24	TQM → PERFORM	0.11	0.11	1.03	0.33	No
25	JIT → PERFORM	-0.12	0.11	-1.13	0.28	No
26	INNOVAT → PERFORM	0.35	0.099	3.48	0.01	Yes
27	BSC→ PERFORM	0.50	0.13	3.86	0.00	Yes

Table 5.1: Regression coefficients of hypothesized parameters

5.1.1 Testing Hypothesis 1

Hypothesis 1 was developed to test whether participative budgeting is more likely associated with organizations adopting entrepreneurial strategies rather than conservative strategy types.

The result of testing the relationship between strategy and participative budgeting is set out in Table 5.1. The findings provide evidence of a significant and positive association between STRTGY and BUDGT. The structural coefficient for the path between the two constructs was 0.47. The accompanying *t*-value was 2.11 (p = 0.06). This means that there was a significant direct effect of strategy on participative budgeting within the p = 0.10 accepted level. The positive sign of the structural coefficient indicates that the association of participative budgeting was with the entrepreneurial, rather than with the conservative strategy. The result confirms the study prediction. Hypothesis 1, accordingly, was accepted.

The observed association between participative budgeting and entrepreneurial strategy is consistent with previous literature findings and explanation. Participative budgeting is an interactive informative and communicative use of budgeting and it represents a departure from the traditional budgeting diagnostic and control role (Abernethy and Brownell, 1999). The departure from the traditional use of budgeting suits the implementation of entrepreneurial strategies, which requires management techniques to be more diverse and complex than its traditional use. The traditional budgetary performance measures and variance analysis were identified in previous research as suitable for firms emphasizing the conservative strategic approach. This was explained as conservative strategies, with their main focus on controlling costs, gain benefits from traditional management and accounting techniques (Chenhall and Langfield-Smith, 1998).

5.1.2 Testing Hypothesis 2

The second prediction was that the use of ABC systems in the organization is more

likely associated with a conservative strategy, rather than with an entrepreneurial strategic orientation.

The analysis result of testing the relationship of strategy and ABC is presented in Table 5.1. The structural coefficient for the path from STRTGY to ABC was -0.38. The accompanying *t*-value was -0.99 ($p = 0.34$). The negative direction of the correlation suggested that the association, if any, was more towards a conservative, rather than an entrepreneurial, strategy. However, the preference towards the conservative direction was not significant, within any accepted significant level ($p > 0.10$), to give support to the study prediction. Hypothesis 2, as a result, was rejected.

Therefore, the use of ABC was not significantly more associated with conservative strategies than with an entrepreneurial strategy. Except Gosselin (1997), none of the previous literature reviewed has provided evidence that the use of ABC was greater with a specific type of strategy than with other types. Studies either looked at the benefit associated with ABC when certain strategic conditions are in place (e.g., Chenhall and Langfield-Smith, 1998; Cagwin and Bouwman, 2002), or tested the association of its use with one strategy type without, at the same time, testing the association with other types (e.g., Baines and Langfield-Smith, 2003).

The instrument used to measure the strategy variable was limited to the scope of the study; that is to answer the question whether the tested MCSs were more associated with one strategic orientation than with the other. For this reason, the non significant preference of ABC to one of the two strategies did not necessarily mean that ABC was, or was not, significantly associated with both of them. Hence, it is possible that ABC was associated with both strategy types. ABC is argued to be a strategic management tool that has the potency to be integrated in both strategic considerations (Chenhall and Langfield-Smith, 1998).

It also might be that the activity based technique had a lack of appreciation from organization of both strategic orientations. Chenhall and Langfield-Smith (1998) also argued that despite the potentiality of activity based techniques, the success of these initiatives has been largely anecdotal and its ability to deliver the promised benefits has been questioned. It has even been reported that some critics reject the idea that

ABC is a strategic management system, as the main focus of ABC is on cost allocation accuracy, not strategic implementation support (Langfield-Smith, 2007).

It is recommended, for future investigation, to test independently the association of each strategy type with the use of ABC. The development of a study instrument to measure the implementation extent of each strategy type independently (i.e., entrepreneurial and conservative), could increase our understanding of the relationship.

5.1.3 Testing Hypotheses 3 and 4

Hypothesis 3 predicted that the implementation of TQM management initiatives is more likely associated with entrepreneurial strategic orientation, rather than conservative orientation. The prediction of the 4th hypothesis was that the implementation of JIT management initiatives in the organization is more likely associated with entrepreneurial, rather than conservative, strategies.

As presented in Table 5.1, the structural coefficient of the path between STRTGY and TQM was 0.15 with an accompanying *t*-value of 0.74 ($p = 0.47$). The positive structural coefficient agreed that the association preference of TQM, if any, is towards entrepreneurial, rather than conservative, strategic orientation. Still, the affiliation was not significant, at any accepted significant level ($p > 0.10$), to be consistent with the study prediction. Accordingly, Hypothesis 3 was rejected.

The analysis result of the association between STRTGY and JIT (see Table 5.1) showed a -0.14 structural coefficient accompanied with a *t*-value of -0.75 ($p = 0.47$). Contrary to the study prediction, the relationship sign was not positive and the link between the two variables was not significant within any conventional significant level ($p > 0.10$). Accordingly, Hypothesis 4 was not supported, and therefore, rejected.

The use of TQM and JIT, therefore, was not associated more with one particular

strategy type than with the other. However, the instrument used to measure the strategy variable was limited to the scope of the study; that is to answer the question whether the tested MCS are associated more with one strategic orientation than with the other. For this reason, the non significant preference of TQM and JIT to one of the two strategies does not indicate the extent of association of the two techniques with each of the two strategies. However, the non difference shown in the implementation of these systems towards any of the two strategic orientations may still be consistent with the findings of Chenhall and Langfield-Smith (1998) where both strategy types demonstrated an association with improving quality and existing system process.

Hence, it is recommended to develop and use a strategy measurement instrument that will be able to measure independently the implementation extent of both strategy types. This will enable testing of the correlation with each strategy type independently, and therefore, allow further investigation and interpretation of the relationships.

5.1.4 Testing Hypothesis 5

The fifth prediction was that firms with entrepreneurial strategies are more innovative than those with conservative strategies.

The results set out in Table 5.1 show a significant and positive relationship between STRTGY and INNOVAT. The structural coefficient of the link between the two study constructs was 0.40 with an accompanying *t*-value of 1.96. The relationship was significant within the $p < 0.10$ level ($p = 0.08$). The positive sign of the association supports the prediction that it is entrepreneurial strategies, rather than conservatives, that have more influence on innovation in the organization. Hence, the result of the analysis supports the acceptance of Hypothesis 5.

The result confirmed previous research findings that entrepreneurial organization are more likely to engage in new product development and use process technologies to access and maximize new opportunities and increase their overall effectiveness

(McDaniel and Kolari, 1987; Aragon-Sanchez and Sanchez-Marin, 2005; O'Regan and Ghobadian, 2005). This is consistent with the view that emphasis on innovation is evidence of management acceptance of the entrepreneurial product-market dynamic domain and their commitment of resources to achieve objectives relative to that domain (Miles and Snow, 1978). Miles and Snow argued that organizations with prospector (i.e., entrepreneurial) focus operate in an environment that is more dynamic than those of defender strategies (i.e., conservative). Unlike conservatives, entrepreneurial firms' key competence is that of finding and developing new markets and product opportunities. For this reason, innovation is one of the highest priorities (i.e., perhaps even more important than high profitability), as it helps the entrepreneurial organization to maintain a reputation as an innovator in product and market development.

5.1.5 Testing Hypothesis 6

Hypothesis 6 predicted that organizations adopting an entrepreneurial strategic approach are more likely to implement the BSC system than organizations with conservative strategies.

A positive non-significant relationship was found between STRTGY and BSC. The structural coefficient of the path between the two constructs was 0.10. The accompanying *t*-value was 0.77 ($p = 0.46$) (Table 5.1). Only the positive sign of the relationship agreed with the hypothesis' expectation. However, the association, although positive, was not significant, at any accepted significance level ($p > 010$), to provide support to the predicted significant difference. Hypothesis 6, accordingly, was rejected.

The result was consistent with findings of Baines and Langfield-Smith (2003), where no association was found between the change to differentiation strategy and the use of non-financial performance measures. The findings were also consistent with Abdel-Kader and Luther (2008), where the extent of adopting more sophisticated management accounting practices in organizations did not significantly differ in

association with competitive strategies.

The measurement of the relationship was sufficient to answer the study question (i.e., whether the BSC was more likely used when entrepreneurial strategy is in place). However, the result does not specify the association extent of each strategy type with the use of the BSC. Accordingly, one of two situations may be the reason of the non-significant difference found in the result: the first possible situation is that both strategies were associated with the use of the BSC, but the extent of both associations was not significantly different; the other possibility might be that none of the two strategy types was significantly associated with the BSC.

The possibility of similar association between the BSC use and both strategies is consistent with the argument and findings of Chenhall (2005b). Strategic performance measurement systems, like the BSC, assist in developing competitiveness in both entrepreneurial and conservative strategies by explaining how various activities influence each other in the organization. In entrepreneurial scenarios, the informative effect of such interactive systems helps organizations to successfully understand and manage the increasing complexity in interdependence relationships across operational, strategic and other various organizational aspects. The systems can also focus attention on how to respond to the change and diversity in customer demand. For conservatives, competitiveness on costs can also be achieved when the inter-effects of different business activities are understood by the way they are explained within integrative strategic measurement systems. Effective cost-price strategies may be supported by the use of integrative information that assists developing close relationships and connections with suppliers and customers. Close relations with suppliers can be of a critical help in lowering costs. Through customer relationships, the firm may cooperate with customers towards the development of products at particular costs (Chenhall, 2005b).

As stated above, the non-significant difference in the BSC association with both strategies might indicate an actual non significant association with either strategy type. It might also be a non-association with the set of performance measures used in this study to measure the four BSC perspectives. It should be noted that the BSC measurement instrument used in this research might not precisely detect the strategic

connection of an actual BSC usage. It picks up the frequency and extent of firms' usage of quantitative performance measures of different perspectives (Hoque and James, 2000). In other words, it might be that the set of performance measures used in this study did not reflect or capture the general intention or the explicit reference of each BSC perspective, especially when testing the alignment with strategy. However, these measures were originally adopted from Kaplan and Norton (1992) by Hoque and James (2000), and used in similar contexts to measure the use of BSC by manufacturing firms (Hoque and James, 2000; Jusoh et al., 2006; Jusoh and Parnel, 2008).

Generally speaking, alignment of performance measures and business strategy is of a dynamic nature and at a certain extent of complexity. Wide taxonomies of performance measures serve to add to this complexity (McAdams and Bailie, 2002). McAdams and Bailie therefore chose to use, instead, inductive case-based approaches to measure the strategy and performance measurement alignment. 'How' and 'why' questions, they argued, can be more appropriate in investigating such a multifaceted and dynamic correlation, as it enables deeper appreciation of deferent experiences.

5.1.6 Testing Hypotheses 7, 8, and 9

The use of participative budgeting was predicted to be positively correlated with firm size (Hypothesis 7), decentralization (Hypothesis 8), and diversification of products and services in the organization (Hypothesis 9).

The structural coefficient between SIZE and BUDGT was 0.034 with a *t*-value of 0.63 ($p = 0.54$) (Table 5.1). The correlation between the two variables was positive but not significant within any accepted significant level ($p > 0.10$). The result, therefore, was not consistent with the study prediction and Hypothesis 7 was rejected.

DECENTR and BUDGT were positively, but not significantly, associated. The structural path between the two constructs had a coefficient of 0.15, with a *t*-value of 1.37 ($p = 0.20$) (Table 5.1). This indicated that the relation was, although positive, not

significant within an acceptable significant level ($p > 0.10$). Accordingly, Hypothesis 8 was rejected.

DIVERS and BUDGT were neither positively nor significantly associated. The structural coefficient between the two constructs was -0.13. The accompanying *t*-value was -1.57 ($p = 0.14$) (Table 5.1). The negative and non-significant ($p > 0.10$) relationship contradicted the prediction of the study. Therefore, Hypothesis 9 was rejected.

The study results indicated that none of the three contextual and structural variables is antecedent to more use of participative budgeting in the organization. Actually, size, decentralization and diversification variables were theoretically assumed, in the three predicted hypotheses, to be surrogates of information asymmetry. This was based on assumptions (Merchant, 1981; Shields and Young, 1993) that information asymmetry is common-place in organizations of these context characteristics. The findings, therefore, did not lend support to Merchant's (1981) suggestions that the use of participative budgeting in organizations of such contexts is to advance informative channels and tools (i.e., contingency theory of organizations), or to enable head management to learn from lower levels and subordinates about information pertinent to their environments (i.e., agency theory), following to Shields and Young (1993).

It can be inferred here that information asymmetry is not a necessary influence of more participative budgeting use. This is consistent with evidence provided by Kyj and Parker (2008) and Zainuddin et al. (2008). Kyj and Parker results showed that information asymmetry had no effect on superior management encouragement of subordinates to participate in setting budgets. Rather, top management use participative budgeting to affect subordinates' morale, feeling of self respect and satisfaction (i.e., when the superiors have a 'considerate leadership-style'). Superior management also allows participating, Kyj and Parker suggested, because of concerns about organizational justice, when the performance evaluation is based on budget goals. According to Zainuddin et al., budget participation was found to be associated with task variety, but not with information asymmetry.

Findings of this study and the two quoted recent studies above, when compared with

results of early literature like Merchant (1981) and Shields and Young (1993), may indicate a declining tendency in recent days towards the use of participative budgeting as a tool to deal with information asymmetry. It may be that budget participation is not necessary when information gained from other information channels and tools are sufficient, especially with fast improving development being achieved recently in informative and communication techniques. However, further investigation may reveal reasons for such a decline.

5.1.7 Testing Hypothesis 10

The prediction in Hypothesis 10 was that implementation of ABC is positively associated with size of the organization.

SIZE showed direct positive and strong influence on ABC. The structural coefficient of the link between the two constructs was 0.27. The accompanying *t*-value was 2.90 ($p = 0.01$) (Table 5.1). The relationship, therefore, was positively significant at the 0.01 level, which was consistent with the study expectation. Hypothesis 10, accordingly, was accepted.

The result confirmed previous literature's findings of a positive significant association between the size of the business and adoption of ABC (Krumwiede, 1997; 1998; Askarany and Smith, 2008). It could be that smaller organizations lack human and monetary resources, what undermines these firms' need of the system and their ability to implement it. Larger firms' benefit of using ABC and their ability to implement the system could make the influence of size on ABC adoption significantly positive.

5.1.8 Testing Hypothesis 11

Hypothesis 11 predicted that the implementation of ABC is negatively associated with decentralization in the organization.

The coefficient of the structural path between DECENTR and ABC was -0.19 with a *t*-value of –1.03 (p = 0.33) (Table 5.1). The association was negative but not significant at any accepted level of significance (p > 0.10). Hypothesis 11, as a result, was rejected.

The tendency for ABC to be implemented in centralized, rather than decentralized, organizations was not significant. This indicates that the adoption extent of ABC was not significantly different in decentralized organizations from that in organizations of centralized structures.

This result was not consistent with reasoning provided by previous literature, which suggest that ABC is more likely to be adopted in organizations with a centralized structure. That expectation stemmed mainly from the consistent evidences provided by previous research on the importance of the support of high management levels to the success of the ABC implementation process (Shields, 1995; Shields and McEwen, 1996; Krumwiede, 1997; 1998; McGowan and Klammer, 1997; Baird, Harrison and Reeve, 2007). Top management support and hierarchical decision making and communication structure was suggested to help effective implementation of ABC concepts across the organization and facilitate the 'top-down' establishment of the adoption process (Liu and Pan, 2007). It was also argued that the implementation nature of the system is more administrative than technical, which makes it easier for a centralized organization to successfully implement it (Gosselin, 1997). Above that, it was expected that the division of management in decentralized organizations can result in a dispersion of knowledge of acquired innovations in general (i.e., the ABC system is the example here) (Flowers, 2007). However, the findings of this research did not suggest that these reasons necessitated the likeliness of ABC adoption to be more in centralized firms.

It could be that centralized firms were not different from those of decentralized structures in regard to the style required for facilitating the ABC adoption. If so, this could be a reason to explain the 'no difference' found in the adoption of the system between tested centralized and decentralized firms. It is possible that high level management support to the system, in some organizations, is associated by a decentralized style of management support, thereby minimizing the autocratic

impression of the implementation process (Brewer, 1998). However, this explanation of the result still needs further investigation.

5.1.9 Testing Hypothesis 12

According to Hypothesis 12 the implementation of ABC is positively correlated with diversification of products and services in the organization.

The coefficient of the structural path between DIVERS and ABC was -0.021 with a *t*-value of –0.14 (p = 0.89) (Table 5.1). Results indicated that the association was negative and not significant at any conventional significant level (p > 0.10). Accordingly, Hypothesis 12 was rejected.

The result indicated no sign of association between diversification of products and processes and the adoption of ABC in the studied organizations. It can be that diversification does not necessarily lead to cost distortion or that the cost distortion associated with diversification does not necessitate the redesign of the cost system.

When testing the influence of cost distortion on ABC adoption, previous studies have looked at diversification together with other factors including the level of overhead cost relative to total costs and the usefulness of information generated by the system to decision making (Krumwiede, 1998; Baird, Harrison and Reeve, 2004). This study has tested only diversification as a surrogate of cost distortion. It is possible that diversification on its own is not a sufficient cause for cost distortion and, therefore, for the need for the substitution of traditional costing systems with ABC.

It could also be that the cost of redesigning the costing system is higher than the effect of the cost distortion associated with diversification in tested organizations. The cost of redesigning a costing system is normally perceived to be very high. Hence, an organization would not change its existing system if the net present value of the benefits from improved product cost is less than the cost of redesigning a new system (Maelah and Ibrahim, 2007).

The likeliness of these possible causes of the result can be enhanced when considering the fact that this study was conducted only on manufacturing organization, where the percentage of overhead costs to the total cost can be significantly less than that of other business sectors (see data analysis of Al-Omiri and Druri, 2007). A lesser percentage of overhead cost to total cost can indicate less distortion of the cost associated with diversification and, therefore, less likeliness of diversification to be a reason for manufacturing firms to adopt ABC.

5.1.10 Testing Hypothesis 13

The implementation of TQM initiatives, as predicted in Hypothesis 13, is significantly associated with the size of the organization.

The structural coefficient between SIZE and TQM was 0.075 with an accompanying *t*-value of 1.53 ($p = 0.15$) (see Table 5.1). The link was not significant enough ($p > 0.10$) to suggest that SIZE and TQM were significantly related. Therefore, Hypothesis 13 was not accepted.

Although the positive sign of the relationship between the two variables showed a tendency of TQM adoption to correlate with larger organizations, the correlation was not sufficiently significant to confirm such a tendency. Accordingly, the result suggested no significant effect of size of organizations on adoption of TQM.

The result confirmed previous research suggestions that size should not have an effect on the decision to adopt and implement TQM (Taylor, 1998; Ahire and Golhar, 1996; Ghobadian and Gallear, 1997; Taylor and Wright, 2003; Sila, 2005). This was also consistent with the theoretical dialogue of TQM, its components and definitions, which mainly progress without taking into account organizational size. However, size should still influence the way in which TQM is adopted and implemented (Hansson and Klefsjo, 2008). There are considerable structural differences between small and large organizations, which can impact on the planning and implementation of the system. Differences exist between organizations of different sizes in regard to

structure, policy making procedures, and use of resources. Accordingly, management initiatives that work in large organizations may not necessarily work in small organizations. Unmodified adoption of these initiatives to fit the organizational size requirements can produce adverse results. In conclusion, the primary research of this study and previous studies can imply that basic concepts of TQM are equally applicable in large and smaller organizational contexts, though, details and methods of implementation can differ (Ghobadian and Ghallear, 1997).

5.1.11 Testing Hypothesis 14

Hypothesis 14 predicted that the implementation of JIT initiatives is positively associated with the size of the organization.

The coefficient of the structural path between SIZE and JIT was -0.010, with a *t*-value of –0.22 ($p = 0.83$). The correlation was negative in sign and non-significant at any accepted significant level ($p > 0.10$) (see Table 5.1). As this was not consistent with Hypothesis 14, the hypothesis was rejected.

Therefore, the implementation of JIT was not found to be more affiliated with organizations of larger size. This result was not consistent with suggestions of previous literature (White, 1993; White et al., 1999) and the prediction of this research.

The inconsistency of this study results with findings of White (1993) and White et al. (1999) (i.e., the likeliness of more JIT implementation in larger firms) could be attributed to the inconsistency of the data analysis methods used. While the previous two studies used descriptive statistics analysis to compare JIT implementation frequencies in different size categories, this study used SEM analysis to examine the association between size of organizations and their JIT implementation. Further, since JIT was introduced in the early 1980s, the spread of JIT adoption has progressed at an accelerated rate (White et al., 1999). The decade of time difference between those previous results and this research could have brought more introductions of smaller

firms to JIT implementation.

However, this study result might suggest that JIT was used in organizations of different sizes. This mainly agreed with White (1993) and White et al. (1999) recommendations that JIT is adaptable and can benefit both large and small manufacturers.

5.1.12 Testing Hypothesis 15

Implementation of JIT initiatives was predicted in Hypothesis 15 to be positively correlated with diversification of products and services in the organization.

As set out in Table 5.1, the structural path between DIVERS and JIT was -0.011. The accompanying *t*-value was –0.16 (p = 0.88). The negative and non-significant correlation, at any accepted significant level (p > 0.10), contradicted the prediction in Hypothesis 15. Accordingly, the hypothesis was rejected.

The result indicated that products and processes diversification does not influence the implementation of JIT. The philosophy of the JIT initiative calls for the elimination of waste by simplifying the production process, reduction in set up times, and controlling material flows, a need that is expected to exist in more diversified firms. However, the result may indicate that JIT was not utilized in these organizations to facilitate their diversification.

5.1.13 Testing Hypothesis 16

Hypothesis 16 predicted innovation to be positively associated with organization size. The structural coefficient between SIZE and INNOVAT was -0.059. The accompanying *t*-value was –1.19 (p = 0.26). The association was negative and non-significant within any accepted significant level (p > 0.10) (see Table 5.1). The inconsistency of this result with the study prediction leads to the rejection of

Hypothesis 16.

Findings of this study did not support previous suggestions that larger firms are more innovative because they have more financial capabilities than smaller firms to secure innovation (Laforet, 2008), or as a result of their ability to average their innovation fixed costs and exploit their innovation over a greater level of output (Cohen and Klepper, 1996). However, the result did not confirm either the previous conclusion that small firms tend to be more innovative than larger firms (Fritsch and Meschede, 2001).

Despite the non significant difference between larger and smaller firms in the level of their innovativeness, firm size may still have direct effects on aspects of innovation other than its level. Such aspects may act as mediators or moderating factors in determining the relationship between firm size and its innovativeness. Larger and smaller firms may still have similar innovation levels, while differing, for instance, in strategies and input determinants of their innovation. For example, Vaona and Pianta (2008) found that product innovation in small and medium sized firms varies within a strategy based on patent submissions leading to new products. In larger firms, with greater financial capabilities, the key strategy for product innovation is in opening new markets, with less significance attached to patenting for these firms. For process innovation, small and medium-sized firms, on the one hand, depend more on strategies for production flexibility; large firms, on the other hand, rely on the acquisition of new machinery and on strategies targeting new markets, achieved through the cost minimization resulting from new processes. Therefore, the availability of resources and levels of outputs that vary according to the firm size may not affect the firm level of innovation. Rather, such factors may influence the firm's perspectives and means in pursuing its targeted level of innovation.

5.1.14 Testing Hypothesis 17

According to Hypothesis 17, innovation is positively associated with decentralization

in the organization.

The coefficient of the structural path between DECENTR and INNOVAT was -0.15 accompanied with *t*-value of -1.41 (p = 0.19) (see Table 5.1). The negative and non-significant (p > 0.10) association between the two constructs was inconsistent with Hypothesis 17 prediction. This resulted in a rejection of the hypothesis.

The result indicated that the level of innovation in the organization was not directly influenced by decentralization. The negative sign of the correlation indicated that the association was rather towards centralized structures. However, the relationship was not statistically significant at any conventional level.

The findings did not support suggestions found in previous literature (i.e., quoted by Gelbert et al., 2004) that innovation increases in decentralized organizations, where employees can influence different aspects of their organizations and have the opportunity to change and introduce innovations independently. Further, this result provided no support to previous arguments that centralized organizations imply bureaucracy and therefore fewer tendencies to innovation (Holthausen et al., 1995).

It might not be sufficient to test the relationship between decentralization and firm innovation by looking solely at the level of decentralization. The inconclusive result suggested the need to identify other factors in addition to the decentralization extent that potentially influence the decentralization and innovation relationship (Damanpour, 1996). The decentralization style implemented in the organizations, for instance, may impact significantly on the relationship. A suggested decentralization style that can lead to more innovation is a decentralization concurrently accompanied by organizational policy of integration. Integrity helps to reduce innovation risks through orientation and the creation of harmony, and trust (Gebert et al., 2004).

5.1.15 Testing Hypothesis 18

Innovation, according to Hypothesis 18, is positively correlated with diversification of

products and services in the organization.

The structural coefficient between DIVERS and INNOVAT was 0.056. The accompanying *t*-value was 0.71 ($p = 0.49$) (see Table 5.1). The results showed a positive sign of the relationship. However, the non significance of the link ($p > 0.10$) was inconsistent with the study prediction. Accordingly, Hypothesis 18 was not supported, and therefore, rejected.

The findings suggested no significant effect of diversification on the level of firm innovation. This was not consistent with contingency suggestions of previous literature that firms of high diversifications are more innovative because they have more opportunities to use any knowledge generated from the innovation process. The result does not either support agency predictions that innovation is more in less diversified firms as managers may diversify the firm's operations to reduce their personal risk, and therefore, would be reluctant to risk innovation (Holthausen et al., 1995).

The inconclusive findings, regarding this relationship, might be due to the assumption adopted that the association between diversification and innovation is solely determined by the level of diversification in the firm. It might be necessary to identify other factors of possible influence on the relationship (Damanpour, 1996). Possible influences might include the choice of diversification strategy and the use of measurement systems to evaluate subunits and divisions managers. This would be consistent with Baysinger and Hoskisson's (1989) suggestions that the relationship between corporate diversification and intensity of innovation activities is determined by the choice of diversification strategy. The adoption of structures and management systems of internal control that rationalize relations between the corporate head quarters' management and managements of subunits can influence subunits and divisions managers willingness to undertake the innovation risk.

5.1.16 Testing Hypothesis 19

Hypothesis 19 predicted that the use of the BSC is positively associated with size of the organization.

The structural coefficient between SIZE and BSC was 0.046, with a *t*-value of 1.41 (p = 0.19). The analysis result indicated that the two variables, although positively correlated, were not significantly linked (p > 0.10) (see Table 5.1). The non-significance of association found was not consistent with the study prediction. Accordingly, Hypothesis 19 was rejected.

This finding was not consistent with previous research findings that size was a significant influence on the use of sophisticated and specialized management accounting technique, including performance evaluation systems like the BSC (Hoque and James, 2000; Speckbacher et al., 2003; Abdel-Kader and Luther, 2008). The results indicated no significant increase in the use of the BSC in larger firms, which means that the system was used in tested organizations regardless of the size.

The expected positive influence of firm size on the use of BSC stemmed from the expectation of increasing information and communication problems in larger firms and from the assumption of the availability of more resources, and therefore more affordability, in larger firms to adopt and implement the system. It is possible, in the light of the findings, that the number of employees (i.e., the size measure used in this study) did not sufficiently reflect the increase in information and communication problems that require BSC implementation; or that the number of employees did not sufficiently indicate the organization's ability to use sophisticated techniques like the BSC.

5.1.17 Testing Hypothesis 20

The prediction of this hypothesis was that the use of the BSC is positively associated with decentralization in the organization.

The structural coefficient between DECENTR and BSC was -0.070 with an accompanying *t*-value of -1.04 ($p = 0.32$) (see Table 5.1). The negative and non-significant correlation ($p > 0.10$) between the two constructs indicates that decentralization and the use of BSC in the organization were not positively and not significantly associated. This was inconsistent with the prediction of Hypothesis 20, and therefore, the hypothesis was rejected.

The results indicated no significant difference in the use of the BSC between firms of different centralization and decentralization levels, which means that the system was used in tested organizations regardless of their decision making decentralization status.

The results were not consistent with previous research findings that decentralization was a significant influence on the use of sophisticated and specialized management accounting techniques and on the inclusion of non-financial measurement in performance evaluation systems (Gosselin, 2005; Abdel-Kader and Luther, 2008). However, the non association found between decentralization and the use of the BSC may still confirm other previous findings that decentralization is not associated with the use of objective and broad scope performance measurement systems (Chenhall and Morris, 1986).

The expectation of significant correlation between decentralization and the use of the BSC was based on previous research which argued that firms decentralize their structure when they face uncertainty. Therefore, it was predicted that more use of sophisticated management accounting systems can help to reduce uncertainty, support management at different levels in their planning and control, and improve managers' decision making (Abdel-Kader and Luther, 2008). The non association found in this study might indicate that decentralization in tested firms was not necessarily used to face information problems such as uncertainty. The finding might, alternatively, be a sign of non-application of objectivity and scope broadness in the process of performance evaluation in decentralized organizations.

Generally speaking, a further investigation of the intent of structural arrangements (i.e., decentralization) can provide better understanding of their relationships with the

use of management accounting systems (i.e., the BSC). However, investigating the effect of the BSC use on managers' performance in decentralized structures may also provide some explanation of the lower than expected use of the system in decentralized organizations (Chenhall and Morris, 1986).

5.1.18 Testing Hypothesis 21

This hypothesis predicted the use of the BSC to be positively associated with diversification of products and services in the organization.

The structural coefficient of the path between DIVERS and BSC was 0.15 accompanied with a *t*-value of 3.04. The link was positive and significant at the 0.01 significance level (Table 5.1). The analysis results indicated the predicted positive association between DIVERS and BSC. Therefore, Hypothesis 21 was accepted.

The analysis findings supported strongly the association between diversification of products and processes and the organization use of the BSC. This was consistent with the central theme on previous arguments, which based on contingency explanation of the influence of the organizational context on the use of specialized and sophisticated management accounting systems (Abdel-Kader and Luther, 2008). The use of a sophisticated performance evaluation system like the BSC can help in managing the complexity of diversified firms.

5.1.19 Testing Hypothesis 22

Hypothesis 22 predicted participative budgeting to be positively associated with organizational performance**.**

The coefficient of the path from BUDGT to PERFORM in the structural model was -0.11 with an accompanying *t*-value of -1.33 (p = 0.21) (see Table 5.1). This means that there was no evidence of a positive direct effect of participative budgeting on

performance. The effect was neither positive nor significant within any accepted significant level ($p > 0.10$). The result was inconsistent with Hypothesis 22, and therefore, the hypothesis was rejected.

The study findings did not support the cognitive and agency expectations of a direct relation between the two variables. Participative budgeting, with the help it provides to subordinates to better understand how critical their activities are and how to drive performance, and with the better information it provides to superiors to improve the efficient allocation of resources (Shields and Young, 1993), had no significant direct impact on performance.

It has been argued that the relationship between participative budgeting and organizational performance may not be clear by looking solely at the extent of budget participating (Douglas Clinton and Hunton, 2001). It can be, therefore, that the framework used in this study, to test the relationship between participative budgeting and performance, is a limitation to the study result.

It is strongly recommended for future research to test the relationship within a theoretical framework that systematically explains participative budgeting existence (Shields and Shields, 1998). Shields and Shields argued that developing a general theory of the reason, why participative budgeting exists, helps in identifying other variables which should be included in its theoretical network. Such a theoretical network should specify the nature of the relationships across the included variables (i.e., antecedent, independent, dependent, moderators, mediating, and consequent variables).

Following shields and Shields (1998), a development to the study model could be achieved by adopting a theory to explain the use of budget participation (i.e., economic, psychological or sociological theory explanation). Such a theory can then be used to identify antecedent as well as consequent variables of participative budgeting that influence its effect on organizational performance.

By adopting economic theory reasoning, for instance, the possible existence of information asymmetry as an antecedent to participative budgeting and budget slack

(i.e., rather than performance) as a direct consequence may explain the non existence of a significant direct effect of participative budgeting on the organization outcome. Information asymmetry arises when subordinates' information exceed that of their superiors. When information asymmetry exists, the use of participative budgeting gives superior management the opportunity to gain access to private information held by their subordinates. But subordinates may hide or misrepresent some of their information, which can result in budgets with slack (Dunk, 1993). Slack can have a negative effect on profits, as it creates bias in budgets and can lead to costly planning inefficiency and greater compensations and prerequisite consumptions of subordinates (Fisher, Maines, Peffer and Sprinkle, 2002).

Psychological approaches in explaining the use of participative budgeting could lead to the identification of different theoretical variable networks. For example, participating in the budget setting process affects subordinates' morale, feeling of self respect and satisfaction (Shields and Shields, 1998). This can motivate the assumption that the use of participative budgeting by superiors expresses a 'considerate leadership style' of mutual respect, trust and support. The existence of participation may also be explained as a desire to create an impression of fairness when a budget-based performance evaluation plan is in place (Kyj and Parker, 2008). Considerate leadership and/or budget-based evaluation plans may be identified here as antecedent variables. Job performance and/or job satisfaction may be direct consequences to participative budgeting, rather than organizational performance.

5.1.20 Testing Hypothesis 23

The prediction in Hypothesis 23 was that the use of ABC is positively associated with the organizational performance.

The structural coefficient between ABC and PERFORM was 0.056 with a *t*-value of 1.16 ($p = 0.27$) (Table 5.1). Despite the positive sign of the relationship, the result did not provide an evidence of a direct effect of ABC implementation on performance. The association between the two constructs was not significant within any accepted

significant level ($p > 0.10$). For that reason, the result was inconsistent with Hypothesis 23, and therefore, the hypothesis was rejected.

The non-significant direct impact found of ABC on firm performance confirmed the central theme of previous findings (Cagwin and Bouwman, 2002; Ittner et al., 2002; Maiga and Jacobs, 2003; Cagwin and Barker, 2006; Banker et al., 2008). The results are also consistent with previous suspicions that have questioned the ability of ABC to deliver promised benefits. Despite the potentiality of the ABC techniques, it has been argued that the literature advocating its potentiality was largely normative and the success of these initiatives has been largely anecdotal and not firmly challenged (McGowan and Klammer, 1997; Chenhall and Langfield-Smith, 1998).

However, the correlation coefficient between the two variables (R=0.161, significant at the 0.10 level) (Table 4.26) might still suggest the possibility of indirect impact of ABC on performance. ABC may influence the firm performance by supporting and facilitating the implementation of other manufacturing capabilities, which may then have a significant positive effect on performance (Cagwin and Bouwman, 2002; Maiga and Jacobs, 2003; Cagwin and Barker, 2006; Banker et al., 2008). ABC may also impact directly certain performance aspects, which through their impact influence indirectly other aspects (Ittner et al., 2002).

5.1.21 Testing Hypothesis 24

In this hypothesis, the use of TQM initiatives was predicted to be positively associated with organizational performance.

The coefficient of the structural path between TQM and PERFORM was 0.11 with a *t*-value of 1.03 ($p = 0.33$) (Table 5.1). The result confirmed the positive sign of the relationship between the two constructs. However, the result did not indicate that the link was significant, at any accepted significance level ($p > 0.10$), to give support to the study prediction. Accordingly Hypothesis 24 was rejected.

The result suggested no direct impact of TQM implementation on organization performance. This appeared inconsistent with previous findings that suggested the existence of a direct impact (Sila and Ebrahimpour, 2005; Cagwin and Barker, 2006; Abas and Yaacob, 2006; Yusuf et al., 2007; Joiner, 2007; Kumar et al., 2009). This inconsistency with foregoing results on TQM and performance relationship calls attention to the need for further research that investigates the conditions under which the direct effect of TQM on performance improvement occurs, and identifies how components of performance are affected by the initiative (Cagwin and Barker, 2006).

However, the non significance of the structural coefficient between TQM and performance indicates that the direct relationship was insignificant within the SEM framework. However, this may not eliminate the possibility of an indirect relationship within the model between the two variables; especially when the correlation coefficient of the two variable in the correlation matrix (Table 4.26) was highly significant ($R=0.321$, $p < 0.01$ level). Indirect impact of TQM on organization performance was frequently suggested in previous literature, where the effect of TQM was mediated by different management initiatives and organizational factors (Cagwin and Barker, 2006; Abas and Yaacob, 2006; Joiner, 2007).

5.1.22 Testing Hypothesis 25

The prediction of this hypothesis was that the use of JIT initiatives is positively associated with performance in the organization.

The structural coefficient between JIT and PERFORM was -0.12. The accompanying *t*-value was -1.13 ($p = 0.28$) (Table 5.1). The result indicated that the association between the two constructs was neither positive nor significant at any accepted significance level ($p > 0.10$). This contradicts the study prediction. Therefore, Hypothesis 25 was rejected.

The analysis, therefore, indicated no direct influence of JIT implementation on organization performance. This was consistent with some previous findings, where no

direct effect was found of the initiative on organization results (Sakakibara et al., 1997; Ahmad et al., 2004). It is worthwhile to mention here that this result did not necessarily contradict with some other previous findings of a direct relationship. Performance in this study was measured by the use of multiple broad financial and non-financial indicators. Direct impact of JIT, in the literature reviewed, was found to be either on financial performance (Claycomb et al., 1999) or on narrow-scoped performance measures that are closely related to the JIT process (Chong et al.,2001).

The significant correlation coefficient of the two variables (R=0.265, $p < 0.01$), indicated in the correlation matrix (Table 4.26), provided a preliminary agreement with previous studies' findings, suggesting significant association between the two variables (Inman and Mehra, 1993; Upton, 1998; Kinney and Wempe, 2002). However, correlation alone does not show causal relation; especially given that the relationship was not shown to have a direct effect within the study structural framework. Nevertheless, the structured analysis of direct relationship between the two variables did not necessarily imply the non existence of an indirect relationship between them.

5.1.23 Testing Hypothesis 26

Innovation, according to this hypothesis, is positively associated with organizational performance.

The structural coefficient between INNOVAT and PERFORM was 0.35. The accompanying *t*-value was 3.48 ($p < 0.01$) (Table 5.1). The result provided support to Hypothesis 23. A positive significant association, at the 0.01 level, is found between innovation and organization performance.

The data analysis, therefore, was consistent with the findings of previous literature on the critical impact of innovation on the overall result of companies (Subramanian and Nilakanta, 1996; Han et al., 1998; Roberts, 1999; Li et al., 2006; Bisbe and Otley, 2004; Lin and Chen, 2007; Garcia-Morales et al., 2008; Jimenez-Jimenez et al., 2008)

and provided additional evidence of the importance of innovation as an effective strategic tool and a source of competitive advantage. The importance of innovation in building and sustaining organizational objectives, including performance, stems from being an effective source of competitive advantage as well as being a means to change the organization, either as a response to changes in its environment or as an action taken to influence an environment (Damanpour, 1991). The continuous evidence on innovation effectiveness on performance supports the emphasis of strategic management theories on the importance of appropriate strategic dimensions, like innovation, to actively build and sustain valuable organization objectives (Miles and Snow, 1978; Porter, 1980; Gupta and Govindarajan, 1984; Chapman, 2005).

5.1.24 Testing Hypothesis 27

According to H27, the use of the BSC is positively associated with organizational performance.

The coefficient of the structural path between BSC and PERFORM was 0.50, with a *t*-value of 3.86 ($p < 0.01$). Hypothesis 27 was supported at the 0.01 level, where the result indicated a positive strong association between the use of the BSC and performance.

Findings, generally, have provided empirical evidence on the appropriateness of the BSC as an informative system that contributes significantly to efficient management of the organization's resources and to improvement in organizational performance (Baines and Langfield-Smith, 2003). The BSC is a management strategic tool as it presents significant opportunities to the organization to build up, communicate and implement its strategy. Linkage of BSC measures to the organization's strategy and relevant strategic initiatives and activities result in performance improvement on these measures. The study findings, therefore, lend support to the effectiveness of the BSC. The strong direct impact of using the BSC on organization performance can imply that improving performance on the BSC measures indicates business efficiency and profitability (Malina and Selto, 2001; Sim and Koh, 2001).

Therefore, the structural analysis has provided support to six hypotheses out of the study twenty seven hypotheses. Strategic orientation towards the entrepreneurial approach proved to have a direct influence on budget participation as well as on organizational innovation (i.e., H1 and H5). Size direct effect on ABC and diversification direct effect on the BSC were also proved to be significant (i.e., H10 and H21. Only innovation and the use of the BSC were proved to impact directly and significantly on the organization performance (i.e., H26 and H27).

However, the study found no evidence to support the other twenty one hypotheses. The analysis found no direct relationship between the organizational strategic orientation and the use of ABC, TQM, JIT or the BSC (i.e., H2, H3, H4 and H6). No direct effect was found of organization size on participative budgeting, TQM, JIT, innovation and the BSC (i.e., H7, H13, H14, H16 and H19), of decentralization on participative budgeting, ABC, innovation and the BSC (i.e., H8, H11, H17 and H20) and of diversification on budget participating, ABC, JIT and innovation (i.e., H9, H12, H15 and H18). No significant direct impact was found of budget participating, ABC, TQM and JIT on the organizational performance (i.e., H22, H23, H24 and H25).

It is needed to emphasize here that the hypotheses testing involved the existence of direct relationships between variables included in the hypotheses. The hypothesis testing results, therefore, do not include the investigation of non-direct relationships across these variables. A detailed analysis of indirect relationships among the study constructs will be discussed in section 5.4 of this chapter.

A summary of the hypothesis testing is provided in Table 5.2.

Hypothesis	Support/reject
H (1) Participative budgeting is more likely to be associated with organizations adopting entrepreneurial strategies rather than conservative strategy types.	Supported
H (2) The use of ABC systems in the organization is more likely to be associated with conservative strategic orientation rather than entrepreneurial strategic orientation.	Rejected
H (3) The implementation of TQM management initiatives in the organization is more likely to be associated with entrepreneurial strategic orientation rather than conservative strategic orientation.	Rejected
H (4) The implementation of JIT management initiatives in the organization is more likely to be associated with entrepreneurial strategic orientation rather than conservative strategic orientation.	Rejected
H (5) Firms with entrepreneurial strategies are more innovative than those with conservative strategies.	Supported
H (6) Organizations adopting an entrepreneurial strategic approach are more likely to implement the BSC system than organizations with conservative strategies.	Rejected
H (7) The use of participative budgeting is positively associated with the size of the organization.	Rejected
H (8) The use of participative budgeting is positively associated with decentralization in the organization.	Rejected
H (9) The use of participative budgeting is positively associated with diversification of products and services in the organization.	Rejected
H (10) The implementation of ABC is positively associated with the size of the organization.	Supported
H (11) The implementation of ABC is negatively associated with decentralization in the organization.	Rejected
H (12) The implementation of ABC is positively associated with diversification of products and services in the organization..	Rejected
H (13) The implementation of TQM initiatives is possitively associated with the size of the organization.	Rejected
H (14) The implementation of JIT initiatives is positively associated with the size of the organization.	Rejected
H (15) The implementation of JIT initiatives is positively associated with the diversification of products and services in the organization.	Rejected

Hypothesis	Support/reject
H (16) Innovation is positively associated with the size of the organization.	Rejected
H (17) Innovation is positively associated with decentralization in the organization.	Rejected
H (18) Innovation is positively associated with diversification of products and services in the organization.	Rejected
H (19) The use of the BSC is positively associated with the size of the organization.	Rejected
H (20) The use of the BSC is positively associated with decentralization in the organization.	Rejected
H (21) The use of the BSC is positively associated with diversification of products and services in the organization.	Supported
H (22) Participative budgeting is positively associated with organizational performance**.**	Rejected
H (23) The use of ABC is positively associated with organizational performance.	Rejected
H (24) The use of TQM initiatives is positively associated with organizational performance.	Rejected
H (25) The use of JIT initiatives is positively associated with organizational performance.	Rejected
H (26) Innovation is positively associated with organizational performance.	Supported
H (27) The use of the BSC is positively associated with organizational performance.	Supported

Table 5.2: Summary of hypotheses testing

5.2 MCS interactions

The accepted modified structural model (Figure 4.2) has resulted from the addition of eleven parameters to the hypothesized model (Figure 2.2). These parameters represent different relationships across the six MCS tested in the study. The statistical results of the eleven modifications are presented in Table 5.3 followed by a discussion of these relationships.

No.	Parameter	Structural Coefficient	Standard Error	T-Value	P-Value	Significance
1	JIT → BUDGT	0.21	0.12	1.77	0.10	Yes
2	INNOVAT → BUDGT	0.22	0.11	2.04	0.07	Yes
3	TQM → BUDGT	0.16	0.13	1.25	0.24	No
4	DECENTR → TQM	0.38	0.099	3.86	0.00	Yes
5	ABC → JIT	0.16	0.047	3.45	0.01	Yes
6	TQM → JIT	0.62	0.080	7.78	0.00	Yes
7	TQM → INNOVAT	0.35	0.12	2.99	0.01	Yes
8	JIT → INNOVAT	0.26	0.11	2.39	0.04	Yes
9	TQM → BSC	0.13	0.080	1.61	0.14	No
10	JIT → BSC	0.15	0.071	2.07	0.06	Yes
11	INNOVAT → BSC	0.35	0.064	5.38	0.00	Yes

Table 5.3: Regression coefficient of parameters added in model re-specification

5.2.1 TQM, JIT, innovation and Participative budgeting

The modified structural model suggested that increased innovation, as well as usage of JIT, have direct significant impacts on more usage of participative budgeting in the organization. The modified model suggested the inclusion of a path between TQM and budget participation. However, although the path was positive, it was not significant.

The structural coefficient of the path between JIT and BUDGT was 0.21, the accompanying *t*-value of 1.77 (p = 0.10). The result indicated that the association between the two constructs was positively significant at the 0.10 level.

The coefficient of the structural path between INNOVAT and BUDGT was 0.22, with a *t*-value of 2.04 (p = 0.07). The association between the two variables, accordingly, was positive and significant at the 0.10 level (Table 5.3).

The coefficient of the structured parameter linking TQM to BUDGT was 0.16. The *t*-

value of the link was 1.25 (p = 0.24). The analysis suggested that the direct effect of TQM on participative budgeting is positive, but not significant within a conventionally accepted significance level (p > 0.10).

Generally speaking, the exercise of appropriate and contemporary informative practices to support utilization of innovation, JIT, and TQM is important for effective implementation of such strategic management techniques (Chenhall and Langfield-Smith, 1998). Considering the interactive use of information involved in budget participation, it is likely that more participation in budgeting is appropriate to the implementation process of these strategic initiatives. Support to the implementation process of these initiatives can eventuate from the dialog across different organizational levels, and from the learning and data creation involved in participative budgeting (Abernethy and Brownell, 1999).

5.2.2 Decentralization and TQM

Decentralization demonstrated positive and strong influence on the use of TQM, according to the modified model (Figure 4.2).

The structural coefficient between DECENTR and TQM was 0.38. The accompanying *t*-value was 3.86 (p = 0.00) (Table 5.3). The analysis result indicated that the two constructs were positively and strongly associated at the 0.01 level.

The analysis output can imply the suitability of a decentralized organizational structure to the adoption of TQM innovations. The implied structure fitness for decentralized firms, possibly, comes from the ability of these structures to accommodate critical factors to effective TQM implementation (McAdam and Kelly, 2002; Black and Porter, 1996). It is argued that higher decentralized systems require employees at lower levels to be at relatively higher levels of education, training or professionalism (Kleiner and Hendrick, 2008). Hence, it is likely that decentralized organizations are more capable of providing personnel having the necessary expertise for the TQM implementation process. Further, the implementation of TQM involves

sophisticated nature of work and the need for latest innovations and continuous upgrading of processes. This requires an environment of team work consistent with a decentralized style of decision making (Escriba-Moreno and Canet-Giner, 2006). Such a flexible structure will foster the autonomy, cross-functionality, commitment and trust necessary for effective work teams and efficient implementation processes (Staniforth, 1994; Flynn, 1994).

5.2.3 ABC and JIT

The data analysis showed ABC to impact positively and significantly on the implementation of JIT. The structural coefficient between ABC and JIT was 0.16. The accompanying *t*-value was 3.45 (p = 0.01). The two constructs, accordingly, were positively and strongly correlated at the 0.01 level (Table 5.3).

The association found between the two systems is consistent with previous literature's findings and conclusions. It has been often recommended that ABC be employed along with other strategic innovations to complement and enhance one another, rather than ABC alone being a sufficient cause for improvement. ABC has a potential benefit to other initiatives as it often provides more accurate information about processes. The adoption of other initiatives, hence, can mediate the impact of ABC on enhancements in cost reduction, manufacturing cycle time and quality (Cagwin and Bouwman, 2002; Maiga and Jacobs, 2003; Cagwin and Barker, 2006; Banker et al., 2008). Further understanding of the study finding can be attained when the basic roles of each of the two initiatives are specifically considered. JIT philosophy is a lean production technique that is based on minimizing waste and non-value-added activities. This requires better understanding of products and support costs and factors .that drive these costs. The existence of a sophisticated costing system like ABC motivates the implementation of JIT as it is based on cost activities and the identification of cost drivers (Turney, 1992; Al-Omiri and Druri 2007).

5.2.4 TQM and JIT

TQM initiatives were shown by the study's modified framework to positively influence the implementation of JIT programs. The structural coefficient between TQM and JIT was 0.62. The accompanying *t*-value was 7.78 (p = 0.00) (Table 5.3). The result indicated that the two variables were positively and highly associated at the 0.01 level.

Explanations of the positive impact of TQM use on JIT adoption can be stated in an argument of two directions. On the one hand, the adoption of TQM encourages the use of JIT for potential benefits of JIT in supporting TQM practices and enhancing its performance. On the other hand, the implementation of JIT can be motivated when TQM initiatives are in place for the potentiality of TQM to benefit JIT performance and practices. According to Flynn, Sakakibara and Schroder (1995), effects of JIT on quality performance eventuate for three reasons. First, the reduction of inventory levels minimizes potentials for spoilage and handling damage and allows for the exposure of quality problems through 'work station part starvation'. Second, the reduction of lot size improves process feedback and reduces the number of potential defective items to be generated if a process fault occurs. Third, several infrastructure aspects that are of support to JIT processes may also benefit quality performance. In the mean time, benefits of TQM practices to JIT performance, as suggested by Flynn et al., can be summarized to occur on two main levels: first, the reduction of process variances, as quality initiatives result in less need for safety and cycle stock inventory levels; second, the reduction of cycle times because quality improvement lessens time wastage results from rework on defective items.

This finding provided empirical support to the dependence relationship between JIT and TQM. Notably, the association between the two innovations has been well documented (Flynn, Schroeder, Flynn, Sakakibara and Bates, 1997) but empirical evidence on this issue has been rare.

5.2.5 TQM and innovation

Innovation in the organization was positively and significantly associated with the use of TQM initiatives. The structural coefficient of the path between TQM and INNOVAT was 0.35. The accompanying *t*-value was 2.99 (p = 0.01) (Table 5.3). The result indicated a positive and significant direct link between the two constructs at the 0.01 level.

The results indicated a strong impact of using TQM practices on organizational innovativeness. This may be consistent with the notion that quality shapes the base for the development of other manufacturing capabilities (Flynn, 1994). However, the foundation TQM provides to innovation is reflected in the creation of an innovative climate within the organization.

It has been argued that TQM principles of empowerment, involvement and team work are substantial in creating an innovative culture and, therefore, providing the necessary base for innovation in the organization (Prajogo and Sohal, 2003; Hoang, Igel and Loasirihongthong, 2006; McAdam et al., 2008).

However, it is not only sharing of a common platform that may explain the significant effect of TQM on innovation (Singh and Smith, 2004). It is also the common purpose both strategic initiatives have to achieve competitive benefits. Quality requirements go beyond quality production and reducing complaints. Rather it seek continuous enhancement of customer satisfaction through innovativeness in such as rapid response and the offering of new products and services (Mahesh, 1993). Thus, the main purpose of both management initiatives is common; that is to satisfy the customers with the help of continuous improvement. When quality is a strategic dimension of the organization, then each type of innovation goes through the TQM process to achieve competitive advantages (Kanji, 1996).

5.2.6 JIT and innovation

The association between JIT use and organizational innovation was indicated as significantly positive. The structural coefficient between JIT and INNOVAT was 0.26, with a *t*-value of 2.39 (p = 0.04) (Table 5.3). The result indicated that the relationship between the two constructs was positively significant at the 0.05 level.

The result provided empirical evidence on the positive influence of JIT adoption on organizational innovativeness. This influence can stem from the organizational infrastructure available in JIT firms that is appropriate to innovativeness. It has been argued that effects of JIT philosophy on the organizational design change is a fundamental organizational condition needed for innovation (Gunasekaran and Cecille, 1998). JIT elements such as quality management, continuous improvement, reduced set ups, team work, effective use of technology, employee empowerment and other principles compose a climate that is also required for innovation processes (Meybodi, 2005). The indicated JIT significant impact on innovativeness, therefore, supports the notion that JIT is not only an inventory reduction and a logistic process; rather it is a philosophy that influences many other organizational dimensions (Sakakibara et al., 1997; Kinney and Wempe, 2002).

5.2.7 JIT, innovation, TQM and the BSC

The use of BSC was shown to be positively influenced by organizational innovation and the implementation of JIT. The structural coefficient of the link between JIT and BSC was 0.15, with a *t*-value of 2.07 (p = 0.06) (Table 5.3). The link between the two variables was, accordingly, positive and significant at the 0.10 level. The structural coefficient of the path between INNOVAT and BSC was 0.35. The accompanying *t*-value was 5.38 (p = 0.00) (Table 5.3). The result indicated a positive and strong association between the two variables at the 0.01 level.

A parameter connecting TQM to the BSC was suggested to be added as part of the modifications resulted in the modified accepted model (Figure 4.2). The structural

coefficient of the TQM-BSC link was 0.13 with t-value of 1.61 ($p = 0.14$) (Table 5.3). The sign of the TQM direct association with the BSC was positive, although not significant ($p > 0.10$). It is possible that the use of a larger sample size would have increased the statistical power sufficiently to result in significant association between the two variables (Cagwin and Bouwman, 2002).

The association between the use of these strategic initiatives and the adoption of the BSC is, intuitively, explained, considering the mutual strategic dimensions of these management initiatives and the BSC. The study framework indicated a strong support of the Kaplan and Norton (1996b) argument of the value of BSC as the *'cornerstone'* for contemporary strategic management systems. Adoption of innovative management initiatives reflects a significant customer focus towards the achievement of competitive advantage and involves major changes in the organizational structure in the direction of team work support (Mahesh, 1993; Kanji, 1996; Gunasekaran and Cecille, 1998). Thus, there is an increased need for relevant information, which is more likely non-financial, to address these characteristics and support decision making and operations (Baines and Langfield-Smith, 2003). The BSC is 'open and informal, include broad scope information, benchmarking and performance measures that indicate links between strategy and operations' (Chenhall, 2003, p. 141). Proper implementation of the BSC system, hence, provides an appropriate control system that is likely to support drives for excellence (Abdel-Kader and Luther, 2008). In the light of these arguments, the study model implied that the BSC is used to help companies in implementing strategic initiatives towards becoming 'best in class,' 'the number one supplier' or an 'empowered organization' (Kaplan and Norton, 1996b).

To summarize, the modified study model has included eleven parameters in addition to the twenty seven parameters of the study hypotheses. These additional links represented different relationships between the MCSs subject to the study. Nine of these links represented significant associations between different MCS pairs and were represented in paths predicting participative budgeting from JIT and innovation; TQM from decentralization; JIT from ABC and TQM; innovation from TQM and JIT; and BSC from JIT and innovation. The other two added parameters had a weak statistical power to be significant but their inclusion in the structural equations was necessary

for the model to be statistically sound (Bollen, 1989, p. 46). These two parameters linked TQM to participative budgeting and TQM to the BSC.

5.3 The concluding model

To provide a clearer picture of the results, a number of insignificant paths were deleted from the model. Those paths represented all relationships proved to be insignificant in the previously modified accepted model (Figure 4.2). The outcome of these deletions resulted in the concluding final structural model depicted in Figure 5.1. The concluding model was a further improvement in model fit and the significance of parameters.

P-values of 0.24 and 0.30 associated with the chi-square tests exceeded the recommended 0.05 value and indicated a good fit for the model. The values for RMSEA (0.034), RMR (0.049) did not exceed the recommended 0.05 level. Values for NFI (0.90), NNFI (0.97), CFI (0.98) and GFI (0.94) all exceeded the recommended 0.90 level indicating good fit. This showed that the model still fits the data after the deletion of these paths and that the concluded final structural model achieved a good fit status (Bollen, 1989, Hoyle, 1995, Tabachnick and Fidell, 1996).

Because of ad hoc deletion changes to the model, a correlation was calculated between the concluding model parameter estimates (Figure 5.1) and the same parameters estimated by the previous modified model (Figure 4.2), $R = 0.943$, $p < 0.01$; this indicates that estimates were hardly changed despite deletion of non-significant paths. Tables 5.4, 5.5 and 5.6 include the structured equations from the final model, goodness-of-fit statistics for the model and a summary of the regression coefficients of each path in the model respectively (Tabachnick and Fidell, 1996).

BUDGT = 1.43 + 0.32*JIT + 0.24*INNOVAT + 0.46*STRTGY, Errorvar.= 0.51 , R^2 = 0.24
(0.40) (0.10) (0.11) (0.23) (0.072)
3.58 3.06 2.24 2.03 7.07

ABC = 1.26 + 0.28*SIZE, Errorvar.= 1.50 , R^2 = 0.089
(0.22) (0.089) (0.21)
5.70 3.12 7.07

TQM = 1.97 + 0.38*DECENTR, Errorvar.= 0.45 , R^2 = 0.13
(0.21) (0.10) (0.064)
9.16 3.83 7.07

JIT = 0.99 + 0.16*ABC + 0.62*TQM, Errorvar.= 0.33 , R^2 = 0.43
(0.24) (0.045) (0.079) (0.046)
4.13 3.67 7.79 7.07

INNOVAT = 2.00 + 0.27*TQM + 0.28*JIT + 0.46*STRTGY, Errorvar.= 0.44 , R^2 = 0.26
(0.32) (0.11) (0.11) (0.20) (0.062)
6.28 2.40 2.56 2.27 7.07

BSC = 0.89 + 0.21*JIT + 0.37*INNOVAT + 0.16*DIVERS, Errorvar.= 0.19 , R^2 = 0.48
(0.28) (0.063) (0.062) (0.051) (0.026)
3.18 3.40 6.06 3.18 7.07

PERFORM = 0.052 + 0.30*INNOVAT + 0.52*BSC, Errorvar.= 0.35 , R^2 = 0.40
(0.34) (0.096) (0.12) (0.049)
0.15 3.09 4.18 7.07

Table 5.4: Structural equation from the final model

Degrees of Freedom = 34
Minimum Fit Function Chi-Square = 39.35 (P = 0.24)
Normal Theory Weighted Least Squares Chi-Square = 37.84 (P = 0.30)
Chi-Square Difference with 1 Degree of Freedom = 1.72 (P = 0.19)
Estimated Non-centrality Parameter (NCP) = 3.84
90 Percent Confidence Interval for NCP = (0.0 ; 23.11)
Minimum Fit Function Value = 0.38
Population Discrepancy Function Value (F0) = 0.038
90 Percent Confidence Interval for F0 = (0.0 ; 0.23)
Root Mean Square Error of Approximation (RMSEA) = 0.034
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.082)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.66
Expected Cross-Validation Index (ECVI) = 1.24
90 Percent Confidence Interval for ECVI = (1.09 ; 1.32)
ECVI for Saturated Model = 1.32
ECVI for Independence Model = 4.13
Chi-Square for Independence Model with 55 Degrees of Freedom = 391.34
Independence AIC = 413.34
Model AIC = 123.84
Saturated AIC = 132.00
Independence CAIC = 453.53
Model CAIC = 280.96
Saturated CAIC = 373.16
Normed Fit Index (NFI) = 0.90
Non-Normed Fit Index (NNFI) = 0.97
Parsimony Normed Fit Index (PNFI) = 0.56
Comparative Fit Index (CFI) = 0.98
Incremental Fit Index (IFI) = 0.99
Relative Fit Index (RFI) = 0.84
Critical N (CN) = 149.17
Root Mean Square Residual (RMR) = 0.049
Standardized RMR = 0.069
Goodness of Fit Index (GFI) = 0.94
Adjusted Goodness of Fit Index (AGFI) = 0.88
Parsimony Goodness of Fit Index (PGFI) = 0.48

Table 5.5: Goodness-of-fit statistics for the modified structural model

No.	Parameter	Structural Coefficient	Standard Error	T-Value	P-Value	Significance
1	STRTGY → BUDGT	0.46	0.23	2.03	0.05	Yes
2	STRTGY → INNOVAT	0.46	0.20	2.27	0.03	Yes
3	SIZE → ABC	0.28	0.089	3.12	0.00	Yes
4	DECENTR → TQM	0.38	0.10	3.83	0.00	Yes
5	DIVERS → BSC	0.16	0.051	3.18	0.00	Yes
6	ABC → JIT	0.16	0.045	3.67	0.00	Yes
7	TQM → JIT	0.62	0.079	7.79	0.00	Yes
8	TQM → INNOVAT	0.27	0.11	2.40	0.02	Yes
9	JIT → BUDGT	0.32	0.10	3.06	0.00	Yes
10	JIT → INNOVAT	0.28	0.11	2.56	0.02	Yes
11	JIT → BSC	0.21	0.063	3.40	0.00	Yes
12	INNOVAT → BUDGT	0.24	0.11	2.24	0.03	Yes
13	INNOVAT → BSC	0.37	0.062	6.06	0.00	Yes
14	INNOVAT → PERFORM	0.30	0.096	3.09	0.00	Yes
15	BSC → PERFORM	0.52	0.12	4.18	0.00	Yes

Table 5.6: Regression coefficients in the final model

5.4 Discussion

An overview of the results can be made clearer when looking at the final model in Figure 5.1. The model in its final shape reveals an interesting picture of various direct and indirect relationships across strategy, context, MCS and performance areas. Table 5.7 (i.e., provides regression analysis of indirect relationships) along with Table 5.6 and Figure 5.1 inspire the following discussion of the study results on how organization strategic orientation and context influence implementation, use and interactions of MCS to improve performance.

No	Indirect Relationship	R	Standard Error	t-value	p-value
1	STRTGY → INNOVAT → BUDGT	0.110	0.070	1.58	0.12
2	STRTGY → INNOVAT → BSC	0.170	0.082	2.13	0.04
3	STRTGY → total → PERFORM	0.226	0.110	2.12	0.04
4	STRTGY → INNOVAT → PERFORM	0.138	0.074	1.86	0.07
5	STRTGY→INNOVAT→BSC→PERFORM	0.088	0.041	1.92	0.06
6	SIZE → ABC → JIT	0.046	0.019	2.38	0.02
7	SIZE → ABC → JIT → total → BUDGT	0.018	0.009	2.03	0.05
8	SIZE → ABC → JIT → INNOVAT	0.013	0.007	1.74	0.09
9	SIZE → ABC → JIT → total → BSC	0.014	0.007	2.10	0.04
10	SIZE → ABC→JIT→ total →PERFORM	0.011	0.006	1.98	0.06
11	DECENTR → TQM → JIT	0.236	0.069	3.44	0.00
12	DECENTR → TQM → total → BUDGET	0.116	0.041	2.83	0.01
13	DECENTR → TQM → total → INNOVAT	0.169	0.057	2.97	0.01
14	DECENTR → TQM → total → BSC	0.112	0.369	3.10	0.00
15	DECENTR → TQM → total → PERFORM	0.109	0.038	2.92	0.01
16	DIVERS → BSC → PERFORM	0.083	0.033	2.53	0.02
17	ABC → JIT → total → BUDGT	0.063	0.024	2.61	0.01
18	ABC → JIT → INNOVAT	0.045	0.022	2.06	0.05
19	ABC → JIT → total → BSC	0.050	0.019	2.57	0.01
20	ABC → JIT → total → PERFORM	0.038	0.016	2.38	0.02
21	TQM → JIT → INNOVAT	0.174	0.072	2.42	0.02
22	TQM → total → BUDGET	0.316	0.069	4.59	0.00
23	TQM → total → BSC	0.294	0.059	4.99	0.00
24	TQM → total → PERFORM	0.289	0.065	4.46	0.00
25	JIT → INNOVAT → BUDGET	0.067	0.041	1.66	0.11
26	JIT → total → PERFORM	0.239	0.075	3.20	0.01
27	INNOVAT → BSC → PERFORM	0.192	0.055	3.51	0.00

Table 5.7: Regression coefficients of indirect relationships in the final model

Strategic orientation had direct effects only on innovation and participative budgeting,

where both systems were associated with the organization's entrepreneurial strategy. The dynamic environment of entrepreneurial organizations explains such affiliations. Based on Miles and Snow (1978), these organizations react to their environment with continuous internal and external development. Externally, they search for new opportunities through new products or markets. Internally, they invest in new product innovations and support that with innovativeness in their process. Flexible, communicative and informative administrative systems are further needed for entrepreneurial firms either to reduce uncertainty or to facilitate their main innovative focus, or both. The direct relationship of entrepreneurial strategy with innovation, therefore, reflected the main focus of this strategy type on innovativeness, while the direct association with participative budgeting is consistent with the informative and communicative role participative budgeting plays in reducing uncertainty (Simons, 1991).

Entrepreneurial orientation in tested organizations showed indirect impacts on the use of the BSC ($R= 0.17$, $p = 0.04$) and on participative budgeting ($R= 0.11$, $p = 0.12$). The two indirect effects came through innovation. While such interactions may indicate the potentiality of budget participation and the use of the BSC in facilitating entrepreneurial innovativeness, the indirect effect on budget participation was not sufficiently significant ($p > 0.10$). This may lend support to the privileged role the BSC plays in strategy implementation, which is monitoring the creation of the organizational long-term value (Sim and Koh, 2001), rather than being only an informative and communicating tool.

The overall impact of entrepreneurial strategy on organization performance (i.e., with the intervening of MCSs) was significant at the $p < 0.05$ level ($R = 0.226$, $p = 0.04$). This impact was through two indirect routes. The first was from strategy to performance via innovation ($R = 0.138$, $p = 0.07$); the second was passing through innovation and the BSC ($R = 0.088$, $p = 0.06$). This indicated that, within the study model, the significant performance consequences of entrepreneurial strategic orientation eventuate from innovativeness. However, while innovation on its own can translate significantly the entrepreneurial strategy into performance ($p < 0.10$), the strategy relationship with performance can further significantly enhanced when the BSC system is in use.

No particular effect was shown of the organization strategic orientation on the use of ABC, TQM or JIT. Although this is somewhat surprising, it is not totally unexpected. It may lend support to previous signals that these systems are strategic management tools that have the potency to be integrated in both strategic considerations (i.e., entrepreneurial and conservative) (Chenhall and Langfield-Smith, 1998).

The only MCS that was directly associated with size is ABC which indicates the benefit of ABC to larger firms as well as their ability to implement it (Krumwiede, 1996). However, size associated strongly with ABC ($p < 0.01$) and influenced indirectly the use of JIT ($R = 0.046$, $p = 0.02$), participative budgeting ($R = 0.018$, $p = 0.05$), innovation ($R = 0.013$, $p = 0.09$), the BSC ($R = 0.014$, $p = 0.04$) and, therefore, performance ($R = 0.011$, $p = 0.06$). Hence, the benefits of ABC to larger firms can reflect on their ability to implement other strategic initiatives, innovations and management control tools and impact on the performance efficiency of these systems.

Direct association of decentralized structures was only through the implementation of TQM. The strong association between the two variables highlighted the appropriateness of decentralized structures to the implementation of TQM initiatives. The higher level of expertise within lower levels employees (Kleiner and Hendrick, 2008) and the better environment of team work resulted from decentralized decision making (Escriba-Moreno and Canet-Giner, 2006; Staniforth, 1994; Flynn, 1994) may explain the suitability of decentralized firms to accommodate TQM. However, decentralization's strong association with TQM consequently impacted on the use of JIT ($R = 0.236$, $p = 0.00$), participative budgeting ($R = 0.116$, $p = 0.01$), innovation ($R = 0.169$, $p = 0.01$), the BSC ($R = 0.112$, $p = 0.00$) and, as a result, on performance improvement ($R = 0.109$, $p = 0.01$). This showed a picture of the efficiency of the decentralization and TQM combination. It motivates the implementation of innovative initiatives, encourages the use of management control and monitoring tools and, therefore, leads to positive performance effects.

Diversification association was limited to the BSC implementation. The BSC is a sophisticated performance evaluation system and its association with diversified structures is understandable, considering the complexity of these structures (Abdel-

Kader and Luther, 2008). No impact of diversification was shown in the model on other MCSs. However, the strong association of diversification with the BSC impacted significantly organizational performance ($R = 0.083$, $p = 0.02$), which indicated the BSC efficiency in managing diversified firms complexity.

The only influence on ABC implementation was organization size, with no influence of strategy type, decentralization or diversification. This might indicate the applicability of this management initiative to large organizations with different strategic orientations and different levels of decentralized and diversified structures. However, ABC is a strategic management initiative that has the potential to work and benefit in both strategic considerations (Chenhall and Langfield-Smith, 1998). The necessary top management support for the system implementation to succeed might be provided in the tested organizations, regardless of different decentralization levels (Brewer, 1998). Further, diversification might not necessarily lead to cost distortion and, therefore, to the need for ABC use; especially given that the tested organizations were manufacturing companies and the level of overhead costs in some manufacturing companies is relatively low (Maelah and Ibrahim, 2007; Al-Omiri and Druri (2007).

The direct effect of the use of ABC was only on the implementation of JIT. Considering the support to JIT initiatives with the existence of a sophisticated costing system like ABC, this strong association is understandable. JIT philosophy is a lean production technique that focuses on elimination of waste and non-value-added activities. ABC support stems from the provision of better understanding of what creates products and support costs and what are the cost drivers. The relationship, apparently, was strongly significant ($p < 0.01$) and lead to consequent indirect effects of ABC on the use of participative budgeting ($R =0.063$, $p = 0.01$), the level of organizational innovation ($R = 0.045$, $p = 0.05$) and the use of the BSC ($R = 0.050$, $p = 0.01$). No direct effect of ABC was found on organizational performance. However, the strong effect of ABC on JIT implementation and its consequent interactions with innovation and the BSC resulted in an indirect effect on performance ($R = 0.038$, $p = 0.02$). This indirect performance impact of ABC was consistent with previous recommendations that ABC is not individually a sufficient condition for improvement. The system capability in influencing the organization performance, therefore, is by supporting the implementation of other manufacturing initiatives,

which may then have a significant positive effect on performance (Cagwin and Bouwman, 2002; Maiga and Jacobs, 2003; Cagwin and Barker, 2006; Banker et al., 2008).

With the exception of the decentralization influence, organizational strategic orientation and tested contextual variables were not shown to be antecedents to TQM implementation. This indicated that quality initiatives were implemented in, most likely, decentralized organizations, which exhibit different strategic choices, different sizes and different diversification levels. This was consistent with previous indications that quality initiatives can be integrated in both conservative and entrepreneurial strategies (Chenhall and Langfield-Smith, 1998) and basic concepts of TQM can be equally applicable in large and smaller organizational contexts (Ghobadian and Ghallear, 1997).

The influence of TQM initiatives to the overall innovativeness of the organization was manifested in its significant direct impact on the use of JIT innovations ($p < 0.01$), which affected indirectly on the level of organizational innovation ($R = 0.174$, $p = 0.02$). Furthermore, TQM had its own direct effect on the level of innovation ($p < 0.05$). The 'innovative' influence of TQM, as a result, caused significant indirect total effects on the use of budget participating, ($R = 0.316$, $p = 0.00$), the use of the BSC ($R = 0.294$, $p = 0.00$) and as well on performance ($R = 0.289$, $p = 0.00$).

Antecedents to JIT implementation were ABC and TQM. Obviously, the explanatory power of TQM to JIT ($R = 0.63$) was much higher compared to that of ABC ($R = 0.16$). This higher association between JIT and TQM reflected the reciprocal relationship between the two initiatives. In other word, the 'give-and-take' benefits between the two systems strengthened the ties between them (Flynn et al., 1995). JIT implementation showed no direct association with strategy or organization size. The model did not suggest associations with decentralization and diversification either. This indicated that the system is implementable in organizations of different strategies, sizes and levels of decentralized and diversified structures. However, size and decentralization indirectly impact on JIT through ABC and TQM may imply that larger sizes and decentralized structures necessitate the use of JIT when ABC and TQM are in place. The use of JIT has direct significant effects on organizational

innovation and the use of budget participation and the BSC. Its direct effect on innovation and the use of the BSC impacted significantly, but indirectly, on organization performance ($R = 0.239$, $p = 0.01$).

Organizational innovation level was not associated with size, decentralization or diversification. It could be that the effect of these variables on innovation do not necessarily relate to the 'level' of innovation (Vaona and Pianta, 2008; Gebert et al., 2004; Baysinger and Hoskisson, 1989). The model can be a confirmation to the suggestion that it might be necessary to identify other factors of possible influence on these variables and innovation relationships (Damanpour, 1996). However, direct antecedents to innovation, in addition to entrepreneurial strategic orientation, were TQM and JIT. This was consistent with previous findings and arguments that the effect of JIT and TQM on the organizational culture and design is a fundamental condition for the organizational appropriateness to accommodate innovation and that JIT and TQM create an innovative climate and share with innovation the same competitive purpose (Gunasekaran and Cecille, 1998; Meybodi, 2005; Prajogo and Sohal, 2003; Hoang, Igel and Loasirihongthong, 2006; McAdam, et al., 2008). Innovation impact on the use of the BSC and performance was direct and highly significant ($p < 0.01$). Innovation effects on performance demonstrated the importance of innovation as an effective strategic tool in responding to and influencing the organizational competitive environment (Miles and Snow, 1978; Porter, 1980; Gupta and Govindarajan, 1984; Damanpour, 1991; Chapman, 2005).

The use of participative budgeting was not directly influenced by any of the three tested contextual variables of size, decentralization and diversification. Rather, the application of this tool was influenced, in addition to entrepreneurial orientation in strategy, by other MCSs either directly (i.e., JIT and innovation) or indirectly (i.e., ABC and TQM). This may indicate a decline of this tool's suggested role in reducing information asymmetry in larger, decentralized and diversified structures (Merchant, 1981; Shields and Young, 1993) and highlight its role in facilitating the implementation of other MCS and the organizational entrepreneurial strategy. Budget participation is a contemporary informative practice that facilitates utilization of innovation, JIT, and TQM and ABC and is important for effective implementation of such strategic management initiatives (Chenhall and Langfield-Smith, 1998).

Considering the informative benefits involved in budget participation, it is likely that more participation in budgeting is appropriate to the implementation process of these strategic initiatives. Support to the implementation process of these initiatives can eventuate from the interactive use of information across different organizational levels and the dialog, learning and data creation involved in participative budgeting (Abernethy and Brownell, 1999). However, no direct or indirect effect of participative budgeting was found in the use of other management systems or on performance.

The non direct association of the BSC with particular strategic choice or with tested contextual variables, except for diversification, indicated the applicability of the system to, most likely, diversified organizations of different strategy types, sizes and decision making structures. On the other hand, the use of the system was shown to be encouraged either directly or indirectly by the use of innovation, JIT, TQM and ABC. This highlighted the role of the BSC in facilitating the implementation of these techniques as well as monitoring the value creation of these initiatives (Sim and Koh, 2001), the role which proved to associate directly, significantly and strongly with improved organizational performance ($p < 0.01$).

It is noteworthy that the BSC and participative budgeting were different in the way they related to other management systems, compared with other systems. While the use of BSC and budget participation were influenced by, but not influencing, the use of other MCS, the uses of ABC, TQM, JIT and innovation were both affected by and affecting the use of other systems. This may underlie the distinction between ABC, TQM, JIT and innovation as management initiatives or techniques and the BSC and participative budgeting as management administrative tools.

Finally, only the BSC and innovation had a direct effect on performance. The other MCSs impact on performance was although significant, but mediated with innovation and, to a greater extent, with the BSC. The BSC demonstrated a significant role in bridging the gap between the effect of TQM, JIT, ABC, and, partly, innovation and the organizational performance. The indirect significant performance effect of TQM, JIT and ABC can explain the significant correlations signaled in the correlation matrix (Table 4.26) between these management initiatives and performance. Therefore, although the correlation matrix indicated significant relationships between ABC,

TQM and JIT, these particular relationships became insignificant in the presence of other variables when the relationships between all variables are included in a single structured model (Baines and Langfield-Smith, 2003).

5.5 Summary

The study tested twenty seven hypotheses against the modified structured model (Figure 4.2), which was resulted from the data analysis in Chapter 4. The analysis only provided support for six hypotheses.

However, the significant relationships presented in the final concluding model (Figure 5.1) provided a clearer picture of how strategic orientation and context influence the implementation of the six tested MCS. The model demonstrated the way these MCS then interact to bridge the gap between the organization's strategic and contextual characteristics and improved performance.

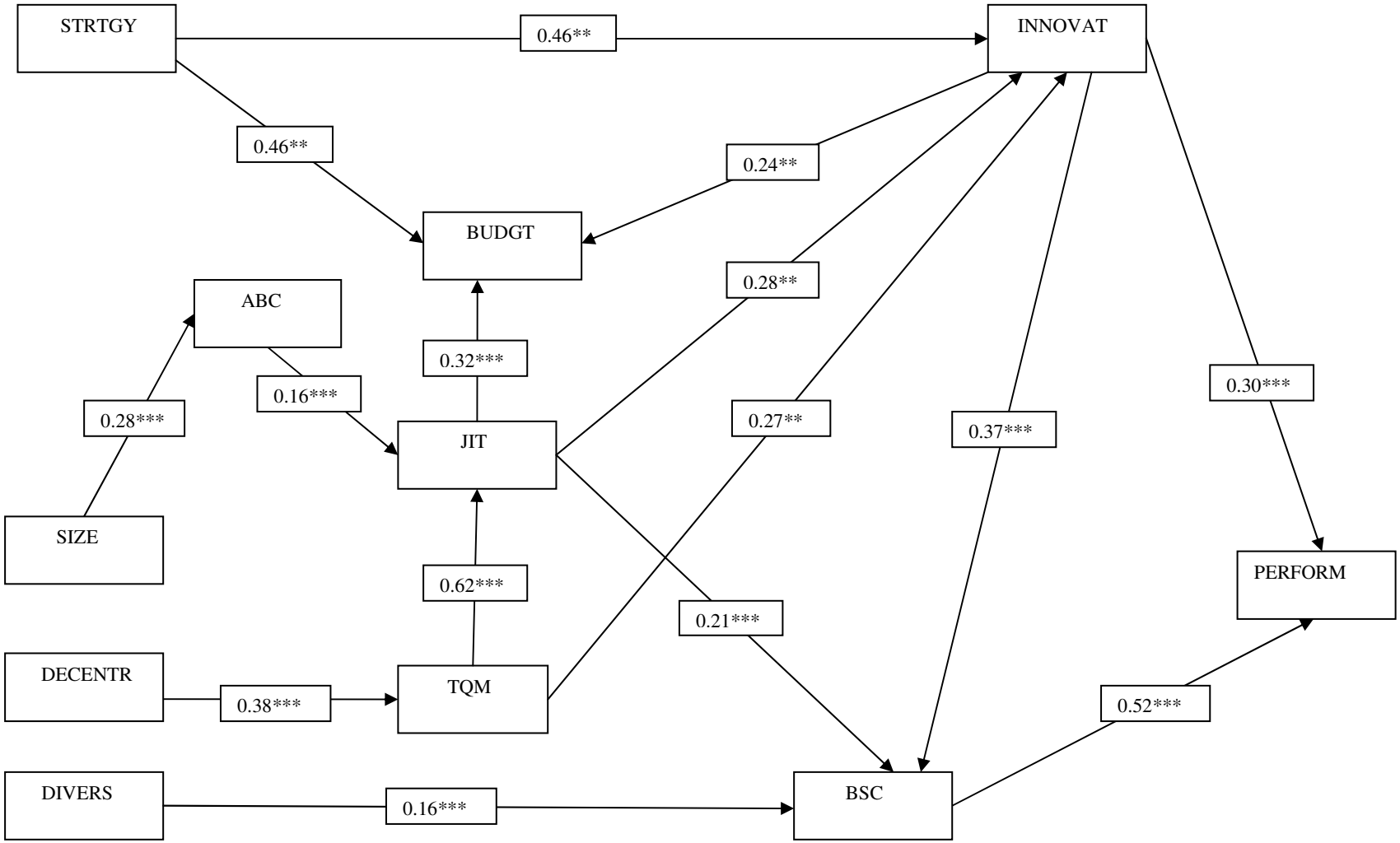

Figure 5.1: The Final Model

CHAPTER 6:
CONCLUSION, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

6.1 Conclusion

There has been an increased attention to the active role of MCS in the organization setting. Conventional views of MCS, as passive tools used mainly to provide information to assist managers' decision making, are now outdated. Management control techniques and initiatives in contemporary businesses have rather taken a dynamic position. They provide these businesses with the power to implement their strategy and achieve their goals. However, an appropriate use is a condition. The internal environment of the organization is to a great extent determined by its strategic orientation as well as its different structural and contextual variables. A proper fit of management initiatives with the organizational strategy and context is critical for a positive reflection on the organizational results and, hence, for the organizational survival. It is for that reason contemporary literature has extensively looked at strategic and contextual antecedents to MCS implementations and at the impact of that on organization performance.

However, there is always 'so much' that we need to investigate, explore and understand. There has been a lack of more integrative research on several dimensions of the whole picture. Different relationships across the four areas of strategy, context, MCS and performance were separately investigated in previous research. This has resulted in

fragmentary evidence and several inconsistencies. There was an absence of the use of common characteristics to classify strategy, as various strategy typologies were used in different studies. Less consistent models, research designs and theories were used to address similar topics. Lack of orientation towards testing more modern approaches to effective control models that represent the strategic nature of MCS is also noteworthy. Further, evidence on several relationships across variables of these areas remained to a great extent little documented and, sometimes, unexplored.

An initial attempt of this study, to bridge these gaps in previous knowledge, was the integration of significant variables of strategy, context, MCS and performance in one model. Nevertheless, a fraction of the story won't tell much. The theoretical framework of this investigation, therefore, was developed and tested to confirm, complement and integrate several associations between these variables that were discussed separately in previous studies. The use of single model and research method would overcome inconsistency of previous findings. This integration was further strengthened when multiple theories from different disciplines were used to underlie the model predictions.

Contingency theory, agency theory, psychological theories, product and operation management theories and strategic management theories have a long tradition in the study of interactions across strategy, context, MCS and performance variables. However, the use of a single theory to provide comprehensive perspectives on the study phenomena is limited with the exclusion of others. Therefore, the multiple-use of these theories enabled this study to explain how different organizational contexts and strategic orientation influence certain MCS implementations, how these control initiatives associate and empower other initiatives and systems and what the impact of this concert on performance improvement is.

Most of the instrument items used to measure the study variables was adopted from previous research. Nevertheless, the history of prior use of these instruments provided preliminary confidence of the relevancy and reliability of these measures. The prior use of these measures indicated that their ex-users were satisfied with their relevance and

reliability and that these items were used in studies, the results of which have confirmed and extended results of their users' priors. However, strategic orientation was exceptional in regard to the instrument used in this study to measure its variable.

The study was the first to empirically test a strategic orientation measurement model that was suggested by Langfield-Smith (1997). The model is a configuration of the three most popular strategic classifications of Miles and Snow (1978), Porter (1980) and Gupta and Govindarajan (1984). Although these three main classifications of strategic orientation are mainly similar, their dimensions are different in relation to the scope and focus of each classification. Langfield-Smith recommended that a comparison of different research studies that have used the range of strategic variables, based on the assumed similarities of the main typologies without taking in consideration the dimensional differences of these typologies, can create confusion and may weaken the integration of research evidence. The combination of common characteristics of the strategy variables at the two strategy type extremes (conservative vs. entrepreneurial), taking into consideration the multi-dimensional nature of strategy, was an empirical validation of the Langfield-Smith suggestions, and was a main contribution of this study.

The six management control techniques that have been included in this investigation reflect the study orientation towards testing contemporary approaches to effective control models that represent the strategic nature of MCS. The expansion of size and the use of more sophisticated production methods in contemporary organizations lead to the introduction of ABC to bring forward new strategic priorities. The interactive nature of participative budgeting helps the employees to implement the organizational strategy and its informative role helps to reduce uncertainty. The use of non-financial performance measures in addition to financial measure by the introduction of the BSC is a direct claim to recapture the strategic significance of MCS. TQM, JIT and innovation are creative and innovative ways to compete and support strategy in contemporary unstable environments and increasing sophistication of business activities. These management initiatives and their relationships with other organizational variables were subject to investigation in previous literature. However, including them all in a single study was not attempted prior

to this study.

The theoretical framework of the study (Figure 2.1) predicted the general direction of influence across the four organization areas of interest. However, the structured model, concluded from the SEM analysis conducted on the study data (Figure 5.1), provided a specific 'road map' of the flow of influence across the study variables.

The resulting model indicated that entrepreneurial strategic orientation directly influences innovation and participative budgeting. This highlights the main focus of entrepreneurial firms in searching for new opportunities and markets and the internal arrangement of these firms to support this external focus and reduce uncertainty involved. While innovation in new products is a vehicle to expand current domains and reach new markets and opportunities, innovation is also needed in facilitating the production process. The mediating role, innovation performed between entrepreneurial strategy and organization performance, provides further evidence on the significance of innovation to entrepreneurial firms. Interactive, informative use of participative budgeting helps with the communication of the firm strategy across different employee levels as well as reducing uncertainty.

Particular fits between the organization context and MCS were indicated in the positive direct relationships between size and ABC, decentralization and TQM and diversification and the BSC.

Size influence on ABC implementation confirmed previous findings that the larger the firm the more the need for advanced costing systems like ABC and the greater the ability to implement it. The direct link found between decentralization and TQM indicates the appropriateness of a decentralized structure in TQM implementation. This can be due to the higher level of expertise within lower level employees in decentralized organizations and to the team work climate resulted from decentralized decision making. Both expertise and team work are important for TQM validation. The effect of diversification on the use of BSC supported the general theme of previous notions that the greater the

complexity, sophistication and communicational problems, the more the need for sophisticated and more specialized accounting techniques. However, this study was the first to, specifically, test the relationship of decentralization and diversification with the use of the BSC. The study evidence found on the significant influence of diversification on the BSC indicates the complexity and sophistication of diversified structures and of the need for BSC reports to reduce uncertainty, provide control, monitor planning and improve decision making.

Only the BSC and innovation were directly linked to organization performance. This indicates the key role these two management systems play in the efficiency realization of other organizational capabilities. The absence of a direct performance effect of TQM, JIT and ABC does not contradict previous literature findings of an existence of such impact. Rather, the presence of these techniques with other variables in one structural model provided an insight of how these initiatives work concurrently with other management systems to significantly impact on performance improvement, even though that impact might be indirect.

The benefit of ABC eventuated through its support to JIT implementation. This is consistent with the previous notion that the system influence on the organization performance is from the support it provides to the implementation of other management initiatives. TQM and JIT affect performance because they foster innovation and because of the close monitoring of their value creation through the use of the BSC. The impact of innovation on performance is even stronger with the use of the BSC performance measures on the innovation operation control. The key role, the BSC demonstrated in linking these management innovations to performance, provides support to the Kaplan and Norton (1996b) argument of the value of BSC as the ‘cornerstone’ for contemporary strategic management systems.

6.2 Limitations to the study

Like similar empirical studies (see for example, Hoque and James, 2000; Cagwin and Bouwman, 2002; Baines and Langfield-Smith, 2003), there are limitations to this study that should be considered in interpreting the results.

First, the sample selection includes companies from different manufacturing and geographic areas as a stratified sampling process was used to increase generalizability. Still, the study analysis involved only a small proportion of all manufacturing companies in Australia. Therefore, the low response rate needs to be considered, and may undermine the generalizability of the results. Further, the usable sample size of 105 responses though adequate, is not a 'generous' size for SEM analysis. A greater sample size would have provided more confidence in the analysis results.

Second, the study was conducted only on manufacturing organizations. Therefore, interpretation of the study results to other business sectors should be done with care. An extension to the study to include organizations from different business areas is also recommended.

Third, this research has collected and analyzed information to measure the study variables through the observations of Chief Executives and top managers of the organizations surveyed. It is assumed that appropriate selection of individual participants allows the collection of relatively objective information and that appropriate individuals (i.e., top executives) have sufficient understanding of their organizational processes and their perceptions and opinions largely determine these processes. However, the possibility exists that the respondents are not reliable representatives of the company practices which provide the subject of this study. It is recommended, therefore, that more objective data be collected from actual organizational records, where possible. More detailed and focused surveys and longitudinal case studies could also provide great insights into levels and associations of the study variables.

Fourth, a limitation to the study model is the assumption of causality. It could be that some relationships are in the opposite directions demonstrated in the study model, or they might even be reciprocal. For instance, it may be that greater use of TQM has necessitated more decentralization in decision making or that the innovation capabilities of organizations may have allowed more entrepreneurial focus. Further, the assumption of linearity of relationships of the study variables might not always hold true. The modeling technique used does not reflect whether the relationship between the study variables was not linear, or if linearity in relationships is limited only to certain relevant ranges. However, case study approaches or survey approaches that utilize more complex statistical techniques can provide better evaluation of such relationships.

Fifth, although MCS measures were adopted from previous studies and were used by these studies in similar contexts, it should be noted that these measurement instruments might not pick up the strategic linkage of a real usage of these systems in tested organizations. These measures pick up firms' frequency and extent of use of these management initiatives. Therefore, it might be that the set of measures used did not represent or capture the general intention of these systems, especially when testing the alignment with strategy. For this reason, inductive case-based approach to measure the study relationships is recommended. 'How' and 'why' questions can be more appropriate in investigating such complex and dynamic correlations, as they enable deeper appreciation of deferent experiences.

6.3 Suggestions for future research

The opportunity exists for future research to develop this study model and extend these research findings.

The model developed in this study aimed to measure the strategic orientation of organizations with consideration to dimensionality of strategy types. However, this model

does not indicate the implementation extent of each strategy type in the organization. An extension is possible in future research by the development and use of a strategy measurement instrument that will be able to measure independently the implementation extent of both strategy types, with consideration to dimensionality at the same time. This will enable independent testing of the association of each strategy type with other organizational variables, and therefore, allow further investigation and interpretation of these relationships.

This research was limited to variables internal to the organization. The inclusion of external organizational variables would be a step forward towards a more complete picture. Testing relationships of the study model variables with environmental and cultural variables, for example, is another opportunity for future research.

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Appendix 1: The Study Survey Instrument

The Information Letter

31 July 2007

Dear Sir/ Madam,

We are conducting research into the use of contemporary management control systems as part of a funded project here at Edith Cowan University. The study aims to examine the alignment of strategic and contextual variables with variables of contemporary management control systems in Australian organizations. The study will explore the potential organizational performance consequences of the implementation of these management control systems. The study is expected to advance our knowledge of associations between variables across the four areas of strategy, context, management control systems and performance. As you occupy a senior position in your organization, you will have a sophisticated understanding of associated organizational processes; we are extremely interested in your opinion on these matters.

The enclosed questionnaire will enable you to share your opinion with respect to the research, while retaining your anonymity. The information supplied will be aggregated for analysis and used to identify significant variables in the strategy, context, control and performance areas. We would be extremely grateful if you would take the time to respond to the questionnaire, which should take approximately 25 minutes to complete.

We realize that you will be heavily committed to other activities, and your time is valuable, but your co-operation would be much appreciated. Please return the enclosed survey, in the reply-paid envelope, if possible, within the next two weeks.

Individual persons and organizations will not be identified in the analysis, and only aggregate responses will be reported in the discussion of the results. We would welcome the opportunity to provide you with aggregate responses summarizing the research findings. Should you wish to receive this summary, please complete and post the reply-paid postcard enclosed.

If you have any queries about the questionnaire please contact me Professor Malcolm

Smith at Edith Cowan University on (08) 6304 5263, or via email on malcolm.smith@ecu.edu.au

If you have any concerns about the research project and wish to talk to an independent person, you may contact our Research Ethics Officer, Kim Gifkins, on (08) 6304 2170, or via email on research.ethics@ecu.edu.au

We look forward to receiving your completed questionnaire.

Yours Sincerely,

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The Questionnaire

SECTION A:

Please provide the following demographic data related to yourself and your organization.

1. Title of your position: ----------.

2. Years in your current position: ----------.

3. State in which your organization is located: ----------.

4. Please indicate the point on the following five-point scale that represents the current number of employees in your organization:

   1 = "under 149 employees"

   2 = "150 - 299"

   3 = "300 - 499".

   4 = "500 – 1000".

   5 = "1000 employees or greater".

5. Name of your organization (optional):----------.

6. Identify the ANZSIC code for your organization from the list below: ----------.
   21. Food, Beverage & Tobacco Manufacturing.
   22. Textile, Clothing, Footwear and Leather Manufacturing.
   23. Wood and Paper Product Manufacturing.
   24. Printing, Publishing and Recorded Media.
   25. Petroleum, Coal, Chemical and Associated Product Manufacturing.
   26. Non-Metallic Mineral Product Manufacturing.
   27. Metal Product Manufacturing.
   28. Machinery and Equipment Manufacturing.
   29. Other Manufacturing.

SECTION B:

- In each of the following three questions, please indicate the statement which best describes your firm, by ticking the appropriate box

Q1.

"Competing on the basis of price, quality, delivery or service, and operating efficiency based on a strong emphasis on maintaining existing markets".

OR

"Continually seeking opportunities and using flexibility to adapt and respond rapidly and creatively to the changing external environment".

Q2.

"Operating efficiency, product selling price, aggressive pursuit of scale economics, process innovation for cost minimization and product availability".

OR

"Product variety, volume flexibility, entering new markets, speed in innovation, fast delivery, frequent new product introductions, fast market response and unique product features".

Q3.

"Maximize profitability and cash flow in the short-to-medium term; be willing to sacrifice market share, if necessary".

OR

"Increase sales and market share; be willing to accept low return on investment in the short-to-medium term, if necessary".

SECTION C:

1- Please rate your perceptions of your organization's products by indicating your position on the 5-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree":

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
There are major differences in lot sizes between products	1	2	3	4	5
There are major differences in production volumes between products	1	2	3	4	5
Over time, there are major changes in production volumes within products	1	2	3	4	5
Costs of support departments are similar for each product	1	2	3	4	5
Product lines are diverse	1	2	3	4	5
Within product lines, products require similar processes to design, manufacture and distribute	1	2	3	4	5
There are frequent changes to your products, services and processes	1	2	3	4	5

2- Please indicate on the five-point scale which management level has the authority to make decisions in each of the following areas?

1 = chief executive or above the chief executive (e.g., board of directors, owners).
2 = divisional manager.
3 = functional manager (e.g., senior marketing manager).
4 = sub-department manager.
5 = first-level supervisor or individuals below first level supervisor

Product scheduling	1	2	3	4	5
Delivery dates to customers and priority of orders	1	2	3	4	5
Production volume	1	2	3	4	5
Selecting suppliers	1	2	3	4	5
Goods to be manufactured	1	2	3	4	5
Location of factories	1	2	3	4	5
Number of factories to operate	1	2	3	4	5
Location of field warehouses	1	2	3	4	5
Number of field warehouses to operate	1	2	3	4	5
Distribution service levels (e.g., fill rates)	1	2	3	4	5
Pricing	1	2	3	4	5
Channels of distribution	1	2	3	4	5
Advertising/promotion strategy	1	2	3	4	5
Target market selection	1	2	3	4	5

SECTION D:

This section measures the "extent" to which certain Management Control Systems (i.e., Participative Budgeting, Total Quality Management, Just in Time, Innovation, the Balanced Scorecard and Activity-Based Costing) are used in your organization. So, whether, or not, these techniques have been implemented in your organization, please indicate your perception of the techniques discussed in the following paragraphs of this section by answering the following questions.

	Not Important At all	**Not Important**	**Neutral**	**Important**	**Extremely Important**
1- How important is the manager's contribution to the setting of the budgets?	1	2	3	4	5
2- How important is it that budgets include changes that were suggested by the managers?	1	2	3	4	5
3- How important is it that a budget is not finalized until a manager is satisfied with it?	1	2	3	4	5

	Not Influential At all	**Not Influential**	**Neutral**	**Influential**	**Extremely Influential**
4- How influential do you feel that the managers are in setting the budgets?	1	2	3	4	5

	Extremely Infrequently	**Not Frequently**	**Neutral**	**Frequently**	**Extremely Frequently**
5- How frequently does central management initiate budget-related discussions with the managers?	1	2	3	4	5

6- Please indicate on the five-point scale the extent to which the following tools are used for quality improvement in your organization:

	Not at All	**Not Often**	**Neutral**	**Often**	**To a Great Extent**
Brainstorming	1	2	3	4	5
Cause and effect/Fishbone diagrams	1	2	3	4	5
Flowchart	1	2	3	4	5
Gantt chart	1	2	3	4	5
Tree diagram	1	2	3	4	5
Check sheet	1	2	3	4	5
Control charts	1	2	3	4	5
Data points	1	2	3	4	5
Histogram	1	2	3	4	5
Pareto analysis	1	2	3	4	5
Process capability	1	2	3	4	5
Scatter diagram	1	2	3	4	5
Storyboard case study	1	2	3	4	5
Starting teams	1	2	3	4	5
Maintaining teams	1	2	3	4	5
Ending teams/projects	1	2	3	4	5
Effective meetings	1	2	3	4	5

7- Please indicate on the five-point scale the extent to which your firm has implemented the following techniques:

	No Intention	Considering/ Begining	Partially	Substantially	Fully
Focused factory	1	2	3	4	5
Group technology	1	2	3	4	5
Action plan to reduce setup times	1	2	3	4	5
Total productive maintenance	1	2	3	4	5
Multi-function employees	1	2	3	4	5
Uniform work load	1	2	3	4	5
Product quality improvement	1	2	3	4	5
Process quality improvement	1	2	3	4	5
Kanban system	1	2	3	4	5
JIT purchasing	1	2	3	4	5

8- On the five-point scale, please rate the extent to which your firm focuses on the following in comparison to your major competitors:

	Much Lower	Lower	Neutral	Higher	Much Higher
Level of automation of plants and facilities	1	2	3	4	5
Using the latest technology in production	1	2	3	4	5
Capital investment in new equipment and machinery	1	2	3	4	5
The launching of new products	1	2	3	4	5
Modifications to already existing products	1	2	3	4	5
In new products, being first-to-market	1	2	3	4	5
The percentage of new products in your product portfolio	1	2	3	4	5

9- Indicate on the five-point scale the extent to which each of the following items is used in your organization to assess performance:

	Not at All	Not Often	Neutral	Often	To a Great Extent
Operating income	1	2	3	4	5
Sales growth	1	2	3	4	5
Return on investment	1	2	3	4	5
Labour efficiency variance	1	2	3	4	5
Rate of material scrap loss	1	2	3	4	5
Material efficiency variance	1	2	3	4	5
Manufacturing lead time	1	2	3	4	5
Ratio of good output to total output	1	2	3	4	5
Percent defective products shipped	1	2	3	4	5
Number of new products launched	1	2	3	4	5
Number of new patents	1	2	3	4	5
Time to market new products	1	2	3	4	5
Survey of customer satisfaction	1	2	3	4	5
Number of customer complaints	1	2	3	4	5
Market share	1	2	3	4	5
Percent shipment returned due to poor quality	1	2	3	4	5
on-time delivery	1	2	3	4	5

	Not at All	Not Often	Neutral	Often	To a Great Extent
Warranty repair cost	1	2	3	4	5
Customer response time	1	2	3	4	5
Cycle time from order to delivery	1	2	3	4	5

If your organization has implemented, or contemplated implementing Activity Based Costing, please answer the questions 10 – 13, otherwise, proceed to Section E.

10- The following functions routinely use the ABC information for decision making:

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
Design engineering	1	2	3	4	5
Manufacturing engineering	1	2	3	4	5
Production management	1	2	3	4	5
Plant manager	1	2	3	4	5
Top management	1	2	3	4	5
Marketing	1	2	3	4	5
Corporate finance	1	2	3	4	5

11- ABC is consistently used for the following purposes:

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
Product costing	1	2	3	4	5
Cost management	1	2	3	4	5
Pricing decisions	1	2	3	4	5
Product mixing decisions	1	2	3	4	5
Determine customer profitability	1	2	3	4	5
As an off-line analytic tool	1	2	3	4	5
Outsourcing decisions	1	2	3	4	5
Performance Measurement	1	2	3	4	5

12- The level of integration of ABC into the organization's strategic and performance evaluation systems is:

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
tied to the competitive strategies of the business	1	2	3	4	5
linked to evaluations of non-accounting personnel	1	2	3	4	5
linked to compensation of non-accounting personnel	1	2	3	4	5

13- How long has it been since your business began the implementation of ABC (Tick as appropriate)?

< 1 year	1 – 2 years	3 - 4 years	4 - 5 years	> 5 years

SECTION E:

On the five-point scale, rate your firm's performance during the last three years on the following performance measurements in comparison to your major competitors:

	Well Below	Below	Average	Above	Well Above
Return on investment	1	2	3	4	5
Profit	1	2	3	4	5
Cash flow from operation	1	2	3	4	5
Cost control	1	2	3	4	5
Development of new products	1	2	3	4	5
Sales volume	1	2	3	4	5
Market share	1	2	3	4	5
Market development	1	2	3	4	5
Personal development	1	2	3	4	5

On the provided five-point scale, rate the following ten performance dimensions according to the importance of these dimensions to your business:

	No Importance	**Little Importance**	**Important**	**Highly Important**	**Extremely Important**
Return on investment	1	2	3	4	5
Profit	1	2	3	4	5
Cash flow from operation	1	2	3	4	5
Cost control	1	2	3	4	5
Development of new products	1	2	3	4	5
Sales volume	1	2	3	4	5
Market share	1	2	3	4	5
Market development	1	2	3	4	5
Personal development	1	2	3	4	5

Please indicate your willingness to anonymously participate in this research by returning the completed survey to us in the attached self-addressed stamped envelope addressed to the researchers. Please return the card separately. (This will enable the researchers to send out a summary of the results to all those who responded whilst maintaining participant anonymity).

Once again, thank you very much for supporting this research effort.

The Reminder Letter

15 October 2007

Dear Sir/ Madam,

This is my second letter to you in regard to the research study I am conducting into the use of contemporary management control systems as part of a funded project here at Edith Cowan University. You may have already responded anonymously to my first request, in which case you should ignore this reminder!

If not, I urge you to respond to this second request. However, I will fully understand if company policy under/or your work commitment preclude a response. The study cannot be conducted without the collection of opinions from persons in your position, so I would be extremely grateful if you would take time to respond to the study questionnaire.

It is possible that my first letter, dated 31st July 2007, might have been misplaced or, for some other reason, failed to reach you. Accordingly, I have enclosed another copy of the study questionnaire and information letter to enable you to anonymously share your opinion with respect to the alignment of strategic and contextual variables with variables of contemporary management control systems and the potential organizational performance consequences of the implementation of these management control systems in Australian organizations.

Yours Sincerely,

Professor Malcolm Smith
School of Accounting,
Finance and Economics
Edith Cowan University
100 Joondalup Dve
Joondalup WA 6027
Tel. (08) 6304 5263
E-mail malcolm.smith@ecu.edu.au

CONFIDENTIAL

EDITH COWAN UNIVERSITY

HUMAN RESEARCH ETHICS COMMITTEE

APPLICATION TO UNDERTAKE RESEARCH INVOLVING HUMAN SUBJECTS

THIS FORM IS TO BE COMPLETED FOR ALL RESEARCH INVOLVING HUMAN SUBJECTS

December 2003 (Replacing October 2002)

APPLICATION TO UNDERTAKE RESEARCH INVOLVING HUMAN SUBJECTS
(To be completed for all research involving human subjects)

OFFICE USE ONLY

PROJECT CODE NUMBER:	DATE RECEIVED:	FOR THE MEETING OF:
COMMENTS:		

1. TITLE OF PROJECT:

The impact of the alignment of strategic priorities, context and management control systems on performance in the organization.

2. INVESTIGATOR(S)

NAME/S	DESIGNATION Staff OR Student (eg Ma/PhD)	STUDENT NUMBER	FACULTY
Nazmi Saeb JARRAR	PhD Student	2015067	Business and Law

CONTACT ADDRESS	PHONE HOME	PHONE BUSINESS
100/99 Herdsman Pde. Wembley, WA 6014	08 928 72 134	04 22 608 577

3. NAME OF SUPERVISOR(S) (students) / HEAD OF SCHOOL (staff)

Professor Malcolm SMITH

4. EXPECTED DURATION OF RESEARCH PROJECT

COMMENCEMENT DATE:	**COMPLETION DATE:**
Feb / 2006	Feb / 2009

5. FUNDING. ***Is this project the subject of a grant?***

YES: Australian Postgraduate Award	**NO:**

If 'yes', what is the Agency or Agencies?
Please provide a copy of approval.

6. REVIEW OF ETHICAL CONSIDERATIONS

Has the research proposal previously been submitted to the Human Research Ethics Committee, or to the ethics committee of any other institution?

YES:	**NO:** No

If 'yes', please provide a copy of approval.

7. AIMS OF THE PROJECT

Please give a concise description of the aims of the project using LAY TERMS.

The study aims to bridge existing gabs in the body of knowledge in regard to the nature of the relationship between MCS, strategy, context and performance. Based on these opportunities available, this study will confirm, complement and integrate relevant associations that were discussed separately in previous studies.

8. RESEARCH QUESTION

State clearly in lay terms your research question(s).

- How strategy and contextual variables interact to affect choices of MCS implementation?

- How the design and configuration of contemporary approaches to effective control models that represent the nature of MCS in strategic change might lead to enhanced performance outcomes?

9. PARTICIPANTS

Please specify any relevant details about the participants, and include the number of participants to be included. Indicate if the research will intentionally involve the following groups of participants:

- ☐ ***Children and young people***
- ☐ ***Persons with an intellectual or mental impairment***
- ☐ ***Persons highly dependent on medical care***
- ☐ ***Persons in dependent or unequal relationships***
- ☐ ***Collectivities***
- ☐ ***Aboriginal or Torres Strait Islander peoples***

Refer to the National Statement on Ethical Conduct in Research Involving Humans for considerations regarding these groups of participants, and provide further information if appropriate.

Please state from where the participants will be recruited and the method of recruitment.

A self-administrated questionnaire will be sent to general managers of 1000 Australian manufacturing organizations which will be randomly selected.

10. INFORMATION LETTER TO PARTICIPANTS AND INFORMED CONSENT DOCUMENT

a. Participants should be provided with an information letter which describes in clear, simple terms, the procedures proposed, the anticipated benefits, and any possible risks of the research project. Written consent from each participant should be obtained to protect the researcher and this institution. Please attach a copy of the information letter to participants and the informed consent document.

b. If you do not intend to obtain written consent, please justify below.

There is no intention to obtain written consent from participants of this study because participants will not be identified in the analysis or the written report of this research.

11. DETAILS OF RESEARCH PROCEDURES

Please describe briefly the research procedures which participants will be asked to participant in. Provide details of procedures with possible adverse consequences.

Note: A copy of all forms of data collection instruments (questionnaires, surveys, standardised tests, interview or focus group questions) must be attached to the application.

Indicate if the research will involve any of the following procedures:

- ☐ ***Research involving ionising radiation***
- ☐ ***Research involving assisted reproductive technology***
- ☐ ***Clinical trials***
- ☐ ***Innovative therapy or intervention***
- ☐ ***Epidemiological research***
- ☐ ***Use of human tissue samples***
- ☐ ***Human genetic research***
- ☐ ***Research involving the deception of participants, concealment or covert observation***

Refer to the National Statement on Ethical Conduct in Research Involving Humans for considerations regarding research procedures, and provide further information if appropriate.

Participants will be asked to evaluate the statements included in the research questionnaire. Based on the participants input, the study will analyse the information to measure each of the strategy, context, management control system and performance study variables. Results then will be used to test the research hypothesis concerning the correlates of these variables.

12. CONFIDENTIALITY OF RECORDS

Confidential records are those which can identify, or potentially identify a participant (or organisation).
Records are required to be preserved for a minimum of five (5) years.

a. How will the confidentiality of records be maintained <u>during</u> the study? Please indicate if records will be permanently deidentified, and how this will occur.

Records will be always kept in locked filing cabinet with both the researcher and the supervisor.

***b. How will the confidentiality of the records (primary or original <u>data</u>) be protected during the period of their preservation*?**

Records will be saved in a locked filing cabinet in the supervisor's office.

c. How will the original <u>materials</u> be destroyed after the study is completed?

Materials will be shredded after the study is completed.

d. Who else will have access to confidential materials (e.g. transcribers)? How will these people be included in the assurance of confidentiality?

13. ETHICAL ISSUES

a. Have you read the ECU Policy on the Ethical Conduct of Research Involving Humans?

YES: Yes	**NO:**

Please indicate what in your view are the ethical issues involved in this research. The following is a checklist of <u>possible</u> ethical issues.

b. Is any financial remuneration or other reward being offered to participants for participation in the study?

YES:	**NO:** No

If yes, please state how much will be offered and for what purposes, eg. to cover travelling expenses, time spent, etc.

c. Is any information to be withheld from the participants?

YES:	**NO:** No

d. Will material which identifies participants be recorded eg. photographs, video recordings or any sound recordings?

YES:	**NO:** No

e. If interviews are to be conducted will they be tape-recorded?

YES:	**NO:** No

f. Will participants be asked to commit any acts which might diminish self-respect or cause them to experience shame, embarrassment or regret?

YES:	**NO:** No

g. ***Does the research involve any stimuli, tasks, investigation or procedures which may be experienced by participants as stressful or unpleasant?***

YES:	**NO:** No

h. ***Will the research involve the use of no-treatment or placebo control conditions?***

YES:	**NO:** No

i. ***Will the conduct of the research disturb or influence in a negative way the working relationship of the participants in this research project and other groups of participants in their settings?***

YES:	**NO:**

j. ***Are there in your opinion any other ethical issues involved in the research?***

YES:	**NO:** No

If the answer to any of the questions from 'b' to 'j' is 'yes', please describe below.

14. POTENTIAL RISKS AND BENEFITS

a. ***What in your view are the possible* risks *of this research to the participants?***

No risks

Outline briefly any management plans that have been made to prevent or minimise the likelihood of the event of this risk occurring.

b. ***What are the possible*** **benefits** ***of this research.***

(i) To the partipants?

The study will benefit the participant by providing a guidance to improve their efficiency towards developing a successful management control design. The study results is expected to direct the participants' attention to management control systems that will have been confirmed to have positive correlation with their context, strategic orientation as well as performance.

(ii) To humanity generally?

The research conclusions are expected to identify and evaluate ramifications for existing theory and implications for improved practice. The findings of this research form a foundation upon which researchers and practitioners can:

- better understand how strategy and contextual variables interact to affect choices of MCS implementation.
- gain insights into how the design and configuration of contemporary approaches to effective control models that represent the nature of MCS in strategic change might lead to enhanced performance outcomes;

DECLARATION

(i) I have read and agree to abide by the conditions and constraints set out in the ECU Policy Statement on Ethical Conduct of Research Involving Humans; and

(ii) I agree to address any ethical issues which may arise from evolving change in procedures and to notify the Human Research Ethics Committee of such changes.

APPLICANT:

Name: **Nazmi Saeb JARRAR**

Signature: .....

Date: **16 March, 2007**

We the undersigned have read the proposal, and authorise the research methodology and use of nominated resources.

SUPERVISOR (*for Students)/* HEAD OF SCHOOL (*for Staff)*

Name: **Professor Malcolm SMITH**

Signature: .....

Date: .....

APPROVED BY:

(for students) **HIGHER DEGREES COMMITTEE**
(for staff) **i)** **RESEARCH & DEVELOPMENT COMMITTEE**
or **ii)** **FACULTY RESEARCH COMMITTEE/HEAD OF SCHOOL**

Name: .....

Designation: .....

Signature: .....

Date: .....