

**EFFECTS OF STRATEGY, COMPETITION, DECENTRALIZATION
AND ORGANIZATIONAL CAPABILITIES
ON FIRM PERFORMANCE:
THE MEDIATING ROLE OF STRATEGIC MANAGEMENT
ACCOUNTING**

TAN AH LAY

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**FACULTY OF BUSINESS AND ACCOUNTANCY
UNIVERSITY OF MALAYA
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ABSTRACT

Traditional management accounting's lack of strategic orientation has mooted much debates and research interest on strategic management accounting (SMA) since the late 1980s. Even though there is no agreed framework, academics have recommended many SMA techniques which they claim to be external and long term focused, and able to assist managers in strategic decision-making process. But "SMA or SMA techniques have not been adopted widely, nor is the term widely used" (Langfield-Smith, 2008) and there seems to be a gap between SMA literature and strategic management literature (Nixon and Burns, 2012). SMA research has ignored resource-based view of the firm emphasized in strategic management. Using a survey on management accountants from 103 manufacturing strategic business units of listed companies in Malaysia, this research investigates the relationship between competitive strategies identified by Porter (1980) and SMA. The contingency model which incorporates the two dimensions of SMA, i.e. strategic role of accountant and SMA usage, also assesses the impact of intensity of competition, decentralization and four organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) on the usage of SMA. The results of partial least squares (PLS) test appear to support the significant association between differentiation strategy and the two dimensions of SMA, the significant association between the four organizational capabilities collectively and SMA usage. But there is no significant association between some contextual variables (intensity of competition, decentralization and strategic role of accountant) and SMA usage. Despite that there is a positive association between strategic role of accountant and differentiation strategy, strategic role of accountant surprisingly shows a negative association with firm performance. In addition, SMA usage is found to be positively associated with firm performance, but the relationship is not significant. Further PLS test on large size companies, however, found a positive

association between strategic role of accountant and SMA usage, and between SMA usage and firm performance. The mediating role of SMA usage on strategy-performance relationship is apparent in large size companies but not in small size companies.

The qualitative information obtained from the post-survey interviews of six corporations reflected that most large corporations in Malaysia do apply contemporary management accounting techniques in supplementing the traditional management accounting such as standard costing and variance analysis. But the term ‘SMA’ is not widely used in Malaysia. SMA techniques can be used interactively through regular meetings among managers. The companies interviewed also agree that there is a changing role of management accountants towards participation in strategic decision-making process and organizational learning, though there is a need for accountants to be more passionate and outward-looking in the manufacturing industry.

This research contributes to the limited literature in SMA and role of accountants in strategic decision-making process, and bridging the gaps between management control and strategic management. Organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) collectively help the firms to enhance competitiveness and performance as well as impact the usage of SMA. Lastly, this study re-affirms the contingency theory that there is no universally appropriate management accounting system that applies equally well to all organizations in all circumstances. In this study, strategy and company size are important factors influencing the contingent outcome of SMA.

Key words: Strategic Management Accounting, Management Control Systems, Organizational Capabilities, Management Accountants, Malaysia

ABSTRAK

Kekurangan orientasi strategik dalam perakaunan pengurusan telah membangkitkan banyak pertikaian dan minat untuk membuat kajian berkaitan perakaunan pengurusan strategik (*“strategic management accounting” (SMA)*) sejak akhir 1980an. Walaupun tiada sebarang rangka kerja dipersetujui, para akademik telah mencadangkan banyak teknik *SMA* yang mana didakwa mempunyai fokus jangka panjang dan mampu membantu seorang pengurus dalam proses membuat keputusan strategik. Namun *SMA* atau teknik *SMA* telah tidak diterima secara meluas, begitu juga dengan penggunaan termannya (Langfield-Smith, 2008) dan kelihatan terdapat jurang perbezaan di antara kesusasteraan *SMA* dan kesusasteraan pengurusan strategik (Nixon and Burns, 2012). Kajian berkaitan *SMA* telah mengabaikan pandangan kukuh berasaskan sumber yang menekankan pengurusan strategik. Penyelidikan ini meneliti hubungan di antara strategi pembezaan yang dikenalpasti oleh Porter (1980) dan *SMA* berdasarkan tinjauan yang telah dilakukan ke atas akauntan pengurusan dari 103 buah unit perniagaan strategik syarikat perkilangan yang tersenarai di Malaysia. Model luar jangka yang menggabungkan dua dimensi *SMA* iaitu peranan strategik akauntan dan penggunaan *SMA*, dan juga menilai kesan keamatan persaingan, desentralisasi dan empat keupayaan organisasi (orientasi pasaran, keusahawanan, inovatif dan pembelajaran organisasi) terhadap penggunaan *SMA*. Keputusan ujian separa kuasa dua terkecil (*“partial least squares” (PLS)*) kelihatan menyokong hubungan signifikan di antar strategi pembezaan dan kedua-dua dimensi *SMA*, dan hubungan signifikan di antara kesemua empat keupayaan organisasi secara kolektif dan penggunaan *SMA*. Sebaliknya, tiada hubungan signifikan di antara pemboleh ubah konteks (keamatan persaingan, desentralisasidan peranan strategik akauntan) dan penggunaan *SMA*. Walaupun terdapat hubungan positif di antara peranan strategik akauntan dan strategi pembezaan; agak

memeranjatkan apabila peranan strategik akauntan menunjukkan hubungan negatif dengan prestasi firma. Tambahan pula, penggunaan *SMA* didapati berhubung secara positif dengan prestasi firma, tetapi hubungan tersebut tidak signifikan. Ujian *PLS* selanjutnya ke atas syarikat bersaiz besar bagaimanapun menunjukkan hubungan positif di antara peranan strategik akauntan dan penggunaan *SMA*; dan juga di antara penggunaan *SMA* dan prestasi firma. Peranan sebagai perantara penggunaan *SMA* ke atas hubungan strategi-prestasi adalah jelas di dalam syarikat bersaiz besar tetapi keadaannya tidak pula begitu di dalam syarikat bersaiz kecil.

Maklumat kualitatif yang diperolehi daripada temuramah dengan enam buah syarikat selepas tinjauan menggambarkan kebanyakan syarikat besar di Malaysia menggunakan teknik perakaunan pengurusan kontemporari sebagai tambahan kepada perakaunan pengurusan tradisional seperti penentuan kos standard dan analisis varians. Namun, terma '*SMA*' tidak digunakan secara meluas di Malaysia. Teknik *SMA* boleh digunakan secara interaktif di perjumpaan dan mesyuarat biasa di kalangan pengurus. Syarikat yang ditemuramah juga bersetuju bahawa terdapat perubahan peranan akauntan pengurusan terhadap penglibatan dalam proses membuat keputusan dan pembelajaran organisasi, walaupun terdapat keperluan untuk lebih bersemangat dan lebih luar-cari dalam industri pembuatan.

Kajian ini memberi sumbangan kepada kesusasteraan yang terhad berkaitan *SMA* dan peranan akauntan dalam proses membuat keputusan yang strategik, dan merapatkan jurang di antara kawalan pengurusan dan pengurusan strategik. Keupayaan organisasi (orientasi pasaran, keusahawanan, inovatif dan pembelajaran organisasi) secara kolektif membantu

firma dalam meningkatkan keupayaan dan prestasi serta kesan penggunaan *SMA*. Akhirnya, kajian ini mengesahkan semula teori luar jangka bahawa tiada satu sistem perakaunan pengurusan yang sesuai secara umum yang dapat digunakan dengan baik oleh semua jenis organisasi dalam semua keadaan. Di dalam kajian ini, strategi dan saiz syarikat adalah faktor penting yang mempengaruhi hasil *SMA*.

Kata kunci: Perakaunan Pengurusan Strategik , Pengurusan Kawalan Sistem, Keupayaan Organisasi, Akauntan Pengurusan, Malaysia

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“Understanding the impact of strategic choices on the design and implementation of management accounting systems has been identified as a research imperative. The empirical research to date, however, has been, at best, equivocal” Abernethy and Guthrie (1994 p.50).

“The words of truth are always paradoxical” Lao Tzu (604BC – 531BC)

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LIST OF ABBREVIATIONS

ABC	Activity-based costing
ABCM	Activity-based cost management
ABM	Activity-based management
AMAP	Advanced management accounting practice
AMT	Advanced manufacturing technology
ASEAN	Association of South East Asia Nations
BSC	Balanced Scorecard
CFA	Competitor-focused accounting
CPA	Customer profitability analysis
DV	Dependent variable
ENT	Entrepreneurship
EPS	Earnings per share
INN	Innovativeness
IV	Independent variable
JIT	Just-in-time
MA	Management accounting
MAS	Management accounting systems
MCS	Management control systems
MIS	Management information system
MO	Market orientation
MV	Mediating variable
OL	Organizational learning
PEU	Perceived environmental uncertainty
PLS	Partial Least Squares
PMS	Performance measurement systems
RBV	Resource-based view of the firm
R&D	Research and development
RM	Malaysian ringgit
ROI	Return on investment

LIST OF ABBREVIATIONS

(Contd.)

SBU	Strategic business unit
SCM	Strategic cost management
SMA	Strategic management accounting
TMT	Top management team
TQM	Total quality management
VRIN	Value, rare, inimitability and non-substitutable

LIST OF PUBLICATIONS

International Conference Proceedings

Tan Ah Lay & Ruzita Jusoh, “Business strategy, mediating effect of strategic management accounting and their links to firm performance: An exploratory study in Malaysia”, at the 7th Academy for Global Business Advancement World Congress held at Putrajaya, Malaysia on 1-3 December, 2010.

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CHAPTER ONE

INTRODUCTION

1.1 Preamble

In response to the strong criticisms that management accounting has lost its relevance, Bromwich and Bhimani (1989) reviewed the many challenges and opportunities facing management accounting caused by rapid changes in the manufacturing environment. They claimed that “strategic management accounting” (SMA) and “non-financial accounting information” are becoming more important in the competitive environment, and suggested that management accountants have to adopt a more “outward-looking and strategic perspective” for broader decision-making. This research on SMA framework is motivated by the thoughts of Bromwich and Bhimani (1989).

SMA has evolved over the years to meet the growing strategic information needs of managers in this complex and dynamic business environment (Clarke and Tagoe, 2002). Despite the recommendation by many advocates, ‘SMA or SMA techniques have not been adopted widely, nor is the term widely understood or used’ (Langfield-Smith, 2008, p.204). Some researchers also pointed out that there is still a gap between SMA literature and strategic management literature (Nixon and Burns, 2012). The research background in this chapter highlights the failures of traditional management accounting to respond to the drastic change in the market place and the need to adopt innovative management accounting techniques. A problem statement is presented after considering the current trends of management accounting development in Malaysia and recent empirical studies on SMA, in particular Cadez and Guilding (2008a). Research questions and objectives are then

formulated according to this problem statement. The chapter presents the significance of the study, followed by research philosophy and method, and definition of variables.

1.2 Background

Traditional management accounting has been criticized by many scholars as unable to keep pace with the new development in manufacturing process and the complex market. It was perceived as lacking of strategic consideration and depends largely on redundant assumptions in dealing with manufacturing process (Bromwich and Bhimani, 1989). Management accounting systems (MAS) have failed to respond to the changing manufacturing environment and are considered no longer relevant to this new global market (Johnson and Kaplan, 1987). The historical, internal and financial information does not help the managers to explore and analyze the challenges of the competitive market and is irrelevant in the formulation and implementation of business strategies.

Further, market competition has become more intense as a result of globalization. The adoption of advanced manufacturing technology (AMT) has also changed the manufacturing process. The development of world class manufacturing concept, embracing total quality management (TQM) and just-in-time (JIT), has made significant contributions to achieving and sustaining competitive advantage (Roslender, 1995). But traditional management accounting is unable to keep pace with the evolution of technology and business during the past decades (Major, 2007). Financial measurements are not able to determine whether adverse results are caused by a failure of strategy or execution (Nanni, et al., 1992). Hence, organizations have to design and use suitable management control systems (MCS) in response to the turbulence and uncertainty in the market place and the new development of manufacturing concepts. By matching appropriate MCS with business

strategy, organizations are able to attain competitive advantage and achieve high performance (Langfield-Smith, 1997).

To call for the use of new management accounting techniques for developing and monitoring business strategy, Simmonds (1981) first introduced the term “strategic management accounting” (SMA). In line with the development of strategic thinking in business, he recommended the design of MAS to collect comparative competitors’ cost, price and volume data on a regular basis. But it was not taken seriously until the late 1980s (Otley, 2001). About the same time in USA, influential academics such as Robert Kaplan, Robin Cooper and John Shank also urged to improve the relevance of management accounting by adopting strategic cost management (SCM) (Langfield-Smith, 2008).

Since then, there has been much interests expressed on the use of SMA but the empirical studies on the effectiveness in using these techniques have been scant (Cadez and Guilding 2008a; Langfield-Smith, 2008; Woods et al., 2012). Langfield-Smith (2008) discovered that there is no compelling evidence to show the wide adoption of SMA despite the support of many advocates after more than 25 years. There is still no agreed framework of what SMA is and there is a confusion of the terminology (Guilding, et al., 2000; Roslender and Hart, 2003; Langfield-Smith, 2008; Noordin, et al., 2009). Nixon and Burns (2012) pointed out that lack of a consensus for a definition could be due to two different views. One view considers SMA links to strategy and management accounting while another view is that SMA links to strategic management. Roslender and Hart (2010) lamented that it is time SMA shall no longer be seen to be an exclusive accounting function.

Generally, the advocates have conceptualized SMA as management accounting information that portrays externality (Simmonds, 1981), marketing focused (Roslender and Hart, 2002 and 2003) and long term and future-oriented (Wilson, 1995). It also emphasizes heavily on non-financial measures (Bhimani and Langfield-Smith, 2007). However, some commentators regarded SMA as ‘a figment of academic imagination’ (Lord, 1996), while others are doubtful whether SMA can live up to its promise and whether the accountants have the capability to make SMA a success (Langfield-Smith, 2008). But the narrow view of SMA was dispelled by others, such as Ma and Tayles (2009), who stressed that SMA practices are found to have relevance to the strategic objectives of organizations.

In their study, Cadez and Guilding (2008a) specially viewed SMA in two dimensions which are considered as important mediators in the strategy-performance relationship. The first dimension of SMA is all the strategically oriented management accounting techniques. Second dimension is the strategic orientation of accountants who participate in the decision-making process. In the past, much of the research in SMA has concentrated on which accounting techniques are adopted, and under what circumstances are these techniques used (Tillmann and Goddard, 2008).

In Malaysia, management control is still dominated by the use of financial accounting and there is minimal adoption of innovative management tools even for large companies (Smith, et al., 2008). Most Malaysian corporations do not segregate the management accounting function from that of financial accounting and reporting functions (Rahman, et al., 2005). This may be due to the implementation of new international financial reporting standards (IFRS) which becomes a high priority for many Chief Financial Officers (CFOs), who are also facing increasing pressure of capital markets to

have quarterly results reporting (Langfield-Smith, 2008). It is encouraging to note that an exploratory study carried out recently on electrical and electronics companies operating in Malaysia indicates an extensive usage of SMA information elements (Noordin, et al., 2009). Competitor information, customer information and production-related information are regarded as SMA elements which are very important for organizations operating under intensified competitive market.

The increasing globalization of business over the last two decades and the speed of technological change have also profoundly affected the role of management accountants (Burns and Baldvinsdottir, 2007). As uncertainty intensifies, organizations require the interaction of accountants and managers to determine appropriate courses of action as deliberate strategies or fixed plans will eventually become harmful to organizational effectiveness (Chapman, 1998). Management accountants are the value creating management team members as they can generate information vital for enhancing operational performance; and for formulating and implementing new strategies (Kaplan and Atkinson, 1998; Rowe et al., 2008; Aver and Cadez, 2009). Furthermore, accountants' new strategic roles are expected to narrow the preparer-user perception gaps of management accounting information (Pierce and O'Dea, 2003). Lambert and Pezet (2010) also argued that management accountants' involvement in monthly performance review is proof that they are the producer of truthful knowledge. During the review meetings, peers and senior management cross-examine the accounting truth presented.

Recent contingency-based management accounting has recognized strategy as an influential contingent variable as the managers have strategic choice to position their organizations in a particular environment (Chenhall, 2003). Business-strategy typologies

proposed in the 1970s and 1980s have caused much research interest in strategy and management control. For example, some researchers question the accuracy of prediction propositions of competitive strategy (differentiation or cost leadership) developed by Porter (1980, 1985) in this era of high competition and globalization (Parnell, 1997; Campbell-Hunt, 2000; Parnell and Hershey, 2005; Pertusa-Ortega, et al., 2009). Researchers continue to debate business strategy-performance relationship, in respect of research methods, survey techniques and use of different strategy typologies (Parnell, 1997). Pertusa-Ortega et al. (2009) found a large number of organizations use different type of hybrid strategies which tend to be associated with higher levels of firm performance. But Parnell and Hershey (2005) discovered that combination strategies (hybrid) can be associated with either inferior or superior performance.

The interaction between resource-based view (RBV) theory of competitive advantage and Porter's (1980) competitive strategy has become a resurgent interest of strategic management researchers (Grant, 1991; Spanos and Lioukas, 2001; Parnell 2011). Organizations are the collection of resources and specific management accounting techniques can be applied to support the resource allocation decisions. Management accounting can be seen as dynamic managerial capabilities to develop substantive capabilities (Adner and Halfat, 2003; Collier and Knight, 2009). RBV of the firm, which focuses on the four organizational capabilities (namely market orientation, entrepreneurship, innovativeness and organizational learning), has become a very influential framework in the study of strategy, but MCS or SMA literature have devoted scant attention to it (Henri, 2006a; Nixon and Burns, 2012). Past research has stressed the importance of combining four organizational capabilities in order to attain competitive advantage (Henri 2006a; Hult and Ketchen 2001). In this contingency-based SMA study, which is drawn heavily on

strategy-MCS research (see Langfield-Smith, 1997), will also adopt RBV of the firm as one of its theory foundation.

In a recent contingency-based SMA research, Cadez and Guilding (2008a) examined the mediating effect of SMA on the relationship between prospector-type strategy (Miles and Snow, 1978) and company performance. Their quantitative findings do not support the relationship between market orientation and SMA usage and the model omitted intensity of competition as a contingent variable. However, the qualitative data obtained from post-survey interviews identified market orientation and intensity of competition as two important contextual variables which can have an impact on SMA usage.

In summary, this SMA study attempts to find out the extent of SMA usage in Malaysia and to fill the gaps identified in Cadez and Guilding (2008a) through the introduction of all four primary capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) collectively and two additional contextual variables, namely, intensity of competition and decentralization.

1.3 Problem Statement

The background information covered above indicates that there is still minimal adoption of contemporary accounting practices to provide strategic information for top management's decision making. Management accountants have become important team members in most organizations but the extent of their participation in the strategic decision-making process is still not clear. SMA literature has also devoted scant attention on RBV which has focused on the internal capabilities to enhance competitive advantage. Organizations require

strategic internal and external information to formulate strategies and attain sustainable competitive advantage. In contrast to historical financial information, SMA is external and future oriented, incorporating financial and non-financial information and it is more appropriate for senior managers' strategic decision-making. Based on prior research, SMA or SMA techniques are significantly associated with the strategic choice of the firms and organizational capabilities (Kloot, 1997; Guilding, 1999; Chenhall and Langfield-Smith, 1998a; Roslender and Hart, 2003; Dekker and Smidt, 2003; Cadez and Guilding, 2008a; Davila et al., 2009; Ciquini and Tenucci, 2010). Past research found firms using extensive performance measurement systems (financial and non-financial measures) tend to have higher performance (Hoque and James, 2000; Van der Stede et al., 2006; Cadez and Guilding, 2008a; Hoque, 2011). With the introduction of SMA, management accountants are expected to play a proactive role by participating in the strategic decision-making process. They are able to assist in collecting and analyzing external information such as competitors, customers and suppliers as well as internal data on the firms' value chain.

The development of management accounting in Malaysia has been slow and majority of the companies still make use of standard costing (Sulaiman, et al., 2005). The continued use of traditional management accounting techniques can be due to their lack of awareness of such new techniques (Rahman, et al., 2005). However, there is encouraging sign that more Malaysian companies have shown their interest and willingness to use highly sophisticated techniques for future decision-making activities which are expected to be more challenging (Zubir and Ibrahim, 2008). Senior management very often requires strategic information to support their analytical process or explore ideas proposed by other managers. As an emerging market, Malaysia aims to be a developed and high-income nation by year 2020. Hence, Malaysian companies are required to improve their

innovativeness and become more competitive by employing contemporary management techniques.

Considering the weaknesses of traditional management accounting and the important role in the strategic decision-making process to be taken by the management accountants in this competitive environment, it is imperative to conduct a study on the extent of SMA usage by the manufacturing companies in Malaysia and understand how the new concepts and techniques can be introduced to make these companies more responsive to the complex and dynamic operation environment. Hence, the problem this study attempts to address is whether Malaysian manufacturing companies make use of SMA as a strategic tool to enhance their competitiveness, and whether organizational capabilities and the changing role of management accountant have any impact on SMA usage. The study also aims to ascertain whether the two-dimensional SMA (usage of SMA techniques and accountants' participation in strategic decision-making process) mediates the relationship between Porter's (1980) competitive strategy and firm performance, as well as the mediating role of SMA usage on the organizational capabilities-performance relationship. In addition, the study also aims to examine whether internal and external contextual factors (i.e. intensity of competition and organizational structure) have any impact on the usage of SMA.

1.4 Research Questions

Based on the problem statement, the following research questions are formulated:

1. Is the strategic choice of companies associated with strategic role of accountant and SMA usage?

2. Are strategic role of accountant and SMA usage positively associated with firm performance?
3. Do strategic role of accountant and SMA usage play a mediating role on the relationship between business strategy and firm performance?
4. Do strategic role of accountant, intensity of competition and organizational structure (decentralization) have impacts on the usage of SMA?
5. Does SMA usage play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance?
6. Does company size affect the relationships among strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance?

1.5 Research Objectives

The motivation of this study is to ascertain whether Malaysian manufacturing companies can improve their competitiveness and performance by applying competitive strategy with the usage of SMA techniques and strategic role of accountant (accountants' participation in strategic decision making process) as mediators. The specific objectives are:

1. To identify which strategic choice is associated with the strategic role of accountant and SMA usage.
2. To examine the relationship between strategic role of accountant and firm performance and the relationship between SMA usage and firm performance.
3. To determine the mediating role of strategic role of accountant and SMA usage on the relationship between strategy and firm performance.

4. To assess whether strategic role of accountant, intensity of competition, and organizational structure (decentralization) can have impacts on usage of SMA.
5. To examine whether SMA usage play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance.
6. To examine whether company size affect the relationships among strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance.

1.6 Scope of the Study

Malaysian manufacturing companies play an important role in generating export earnings for the country. Due to export-oriented industrialization since the 1970s, the manufacturing sector grew from RM36.5 billion in 1987 to RM491.9 billion by 2008 (Fong, 2010). But Malaysia still lags behind its regional peers in wooing foreign investment. As part of ASEAN, Malaysia has been almost overtaken by Indonesia and Vietnam (source: The Malaysian Reserve published on 22 March 2010). Based on IMD World Competitiveness Yearbook 2011, the ranking of Malaysia in the scoreboard has dropped to 16 from 10 recorded in 2010. Among the challenges facing the country are retaining and attracting world-class talent to strengthen innovation capabilities, and intensifying R&D activities.

With the introduction of Economic Transformation Programme and New Economic Model by the government, Malaysia aims to be a progress and high-income nation by year 2020, able to compete on a regional and global stage, attract investment, drive productivity and innovation (Tenth Malaysia Plan 2011-2015). In tandem with the strategies set out in the Plan to achieve sustainable growth, it is important to understand why most Malaysian

corporations do not intensify the use of strategic tools such as strategic management accounting to improve Malaysia's competitiveness in the global market. To have breakthrough performance, organizations also have to capitalize on their capabilities and assets – both tangible and intangible – that already exist in these organizations (Kaplan and Norton, 2001). Equally important is how to improve the management accountants' strategic orientation and competency in order to participate in the decision-making process. There is limited empirical study in Malaysia on the adoption and implementation of management accounting practices by the manufacturing companies (Isa, 2006).

Hence, the current study chose manufacturing sector as the scope of study. The unit of analysis is the strategic business units (SBUs) of companies listed in the Malaysian Stock Exchange (Bursa Malaysia) that are involved in the manufacturing activities. These SBUs are targeted for several reasons. Firstly, SBUs of listed companies are believed to have more established accounts department and are usually large. Listed companies in Malaysia will have to comply with stringent Listing Requirements and generally should have adopted advanced management accounting techniques for strategic plans and prepare timely financial statements for the review of their audit committee. In practice, the audit committee of listed companies reviews the current period performance together with the management accounts of SBUs before making recommendations to the board of directors to release the consolidated quarterly results to the public. Pursuant to Best Practices XVII Quality of information in the Malaysian Code on Corporate Governance (Revised 2007, p.13), the board of directors should “receive information that is not just historical or bottom line and financial oriented, but information that goes beyond assessing the quantitative performance of the enterprise, and looks at other performance factors, such as customer

satisfaction, product and service quality, market share, market reaction, environmental performance and so on, when dealing with any item on the agenda”.

Secondly, management accounting techniques are mostly applied by large manufacturing companies. This is consistent to the survey aiming at manufacturing companies initiated by Bromwich and Bhimani (1989) who attempted to defend the relevance of management accounting practices. Company size is positively associated to accounting sophistication as larger size companies have more capabilities and resources, and diverse expertise (Guilding, 1999; Libby and Waterhouse, 1996). They are more likely to employ SMA techniques with the support of top management and accountants. The mail questionnaire will be addressed to the management accountants, finance managers or heads of accounts. They are deemed to have better knowledge of management accounting practices, corporate culture and the strategic choice of the company than other operational managers. Finally, by focusing on narrowly defined organizational units or SBUs has the advantage of reducing intra-organizational variation in contingent (structural or behavioral) variables (Waterhouse and Tiessen, 1978). It is because physical and social factors arising from internal environment may influence the uncertainty in decision making among organizational sub-units within the broader organization (Waterhouse and Tiessen, 1978). Hence, empirical research on management accounting and strategic management has focused on SBUs rather than diversified organizations (e.g. Chong and Chong, 1997; Gosselin, 1997; Govindarajan, 1988; Hult and Ketchen, 2001; Hult et al., 2003).

1.7 Significance of the Study

Traditional management accounting which stresses on profit measurement is internally focused and short term. It does not provide the required strategic information for businesses

to meet the challenging competitive environment. SMA attempts to solve the problem by offering information required for monitoring existing strategies or supporting new strategy formulation (Isa, 2006). SMA involves numerous new techniques which are long-term, future-oriented and externally focused (Simmonds, 1981; Roslender and Hart, 2002; Wilson, 1995). Omar, et al. (2004) reported that most empirical evidence on management accounting practices in Malaysia remains inconclusive.

Therefore, the current study attempts to determine whether public listed Malaysian manufacturing companies have implemented SMA techniques for strategic purpose and whether the participation of accountants in the strategic decision-making process can encourage higher usage of SMA. The findings will be able to help corporate managers and policy-makers to better understand the best fit between contingent factors and SMA and the mediating effect of SMA on strategy-performance relationship.

The current study also provides a significant contribution to the SMA literature as it attempts to address the research gap identified from Cadez and Guilding (2008a). Cadez and Guilding's (2008a) contingency study examined the effect of strategic choice, market orientation, and company size on two distinct dimensions of SMA and the mediating effect of SMA on strategy-performance relationship. They are unable to determine why market orientation is not associated with the usage of SMA. In addition, their model has omitted intensity of competition as a contingent variable. However, the qualitative data collected from interviews after the questionnaire survey has confirmed the importance of market orientation and intensity of competition. The reason could be due to the use of market orientation as one source of capability in the test. Past research of resource-based view of the firm concludes that only the collective use of all four organizational capabilities (market

orientation, entrepreneurship, innovativeness and organizational learning) can attain competitive advantage or ‘positional advantage’ which could positively affects performance (Henri, 2006a, Hult and Ketchen, 2001). Thus, in line with the RBV theory, this study attempts to fill in this gap by including all four organizational capabilities in the research model and test the impact of intensity of competition as well as decentralization on SMA usage. The four organizational capabilities are part of organizational culture that has an impact on organizational competitive advantage (Hurley and Hult, 1998; Mohamed, et al., 2011). Chenhall (2003) claimed that there is little work in the area of organizational culture and MCS design.

In order to understand how control system operates and affects others, it is important not to limit the research of management accounting to one control-system component (Shields, et al., 2000). Fisher (1995) suggested that the contingency research should be able to develop and test a comprehensive model that includes multiple control systems, multiple contingent variables, and multiple outcome variables. Thus, the contingency model for this study is in line with Fisher’s suggestion as it covers eight independent variables, two mediators (usage of SMA and the strategic role of accountant) and one dependent variable (firm performance).

It is also pointed out that despite the burgeoning growth in management accounting research, there has been scant interest shown in research by those involved in the practice of management accounting. Since the ultimate purpose of social science research is to improve life (rather than simply to describe and/or understand it), the management accounting research findings and understandings must be used to the benefit of management accounting practice (Baldvinsdottir, et al., 2010).

Furthermore, the research on non-financial management accounting system has long been limited (Fisher, 1998; Hyvonen, 2007). In his review of contingency-based MCS research, Chenhall (2003) also suggested the study of contemporary settings as little contingency work was carried out on balanced scorecard, target costing, life-cycle costing, which come under the broad array of non-financial performance indicators. Management accounting research on the possible effects of the perception of competition on the usage of contemporary management accounting practices is rare (Velayutham and Abdel-Maksoud, 2007). It is important to bridge the gap between the concepts in management control and strategic management (Nixon and Burns, 2005). There is a sharp contrast between the vibrant development in the practice and theory of strategic management in the last five decades and the corresponding development in SMA which seems to be weakening (Nixon and Burns, 2012). The purpose of this study thus includes the review of most contemporary accounting practices (i.e. SMA) and their relationship with RBV of the firm.

The current study differs from previous studies (e.g. Roslender and Hart, 2003; Cinquini and Tenucci, 2006; Cadez and Guilding, 2008a; Korravee and Pharpruke, 2010) as it is based on two underlying theories: contingency theory and RBV of the firm. This approach is in line with Greenwood and Miller (2010) who argued that the study of organization design can be approached by contingency theory and resource-based view. Past SMA research has focused on 1st era of strategic management which has reached its maturity with Porter's (1980) industrial analysis model and competitive strategies (Nixon and Burns, 2012). The new era of strategic management has emphasized internal resources and capabilities which are contributing factors to enhance a firm's competitive advantage. Cadez and Guilding (2008a) included market orientation in their model but were unable to find any support on its association with SMA. In this regard, this study includes the four

organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) in the contingency model and examines their impact collectively on firm performance and usage of SMA. Furthermore, there is no comprehensive study of SMA in Malaysia. Consistent with strategy-structure-performance paradigm (Anderson and Lanen, 1999), this study introduces important exogenous variables (four organizational capabilities, competitive strategies, strategic role of accountant, intensity of competition, decentralization and company size) which are regarded as important factors influencing the changes in management accounting practices and firm performance.

1.8 Research Philosophy and Method of Study

The development of positive theories of management accounting has been influenced by positive economics in the 1980s (Ryan et al., 2002). Positivist research uses rigorous statistical method to analyze quantitative data. Researchers formulate a statement of relationships between the observed phenomena (hypothesis) and try to disprove it (Cavana et. al., 2001). Most contingency-based MCS studies have been tested using positivist paradigm approach (see review by Langfield-Smith, 1997).

From a positivistic perspective, management research involves the generation of causal relationship or laws that will enable the management to become more scientific and better able to predict and control the environment (Johnson and Duberley, 2000). Positive theories are based on explanation and prediction (who does/will happen) in contrast to normative theories that are concerned with prescription (what ought to happen) (Ryan, et al., 2002). The main stream accounting research, a functionalist paradigm, seeks to provide rational explanations to social phenomena. Inspired by Burrell and Morgan (1979) framework, the major alternatives are interpretive paradigm and critical paradigm (Lukka,

2010). Some commentators have pointed out that accounting research has not been innovative and increasingly detached from the practice (Parker, et al., 2011). Mathematical techniques from operations research were introduced without considering their practical usefulness (Ryan et al., 2002). The increasing narrowness of accounting research which pursues only marginal contributions has become a threat to scholarly developments. To improve the scholarly qualities in the long run, Lukka (2010) suggested keeping paradigm debates alive and thinking ‘outside the current box’.

It was suggested by researchers that the only way to validate the findings of exploratory study is by a process of replication (Chenhall and Langfield-Smith, 1998a). Otley (2001) lamented that management accounting research rarely replicate previous work and findings of a single small sample study become the ‘facts’. According to him, replication is the foundation of ‘hard’ science, and any findings are not regarded as ‘facts’ unless other scientists have successfully replicated the result and investigate the limits of its applicability. To ensure coherence in the study of elements of management accounting systems and contextual variables, and in the findings of these studies, Chenhall (2003) also suggested replication studies to enhance the validity and reliability of findings. This research intends to extend the exploratory strategy-SMA model developed by Cadez and Guilding (2008a) by incorporating different contextual variables and investigate the effectiveness of SMA to the strategy-firm performance relationship, using the two-dimension SMA approach, and underpinned by contingency theory and RBV of the firm.

The study was conducted according to the following positivist viewpoints determined by Easterby-Smith, et al. (1999) and modified in Elamin (2008).

1. Independence: the researcher must be independent of what is being observed.

2. Value freedom: the choice of what to study and how to study it can be determined by objective criteria.
3. Causality: the aim of social science should be to identify causal explorations and fundamental laws that explain regularities in human social behavior.
4. Hypothetical-deductive: science proceeds through a process of hypothesizing fundamental laws and then deducing what kinds of observations will demonstrate the truth or falsify of these hypotheses.
5. Operationalization: concepts need to be operationalized in a way which enables facts to be measured quantitatively.
6. Reductionism: problems as a whole are better understood if they are reduced into the simplest possible elements.
7. Generalization: appropriate sample size is selected to generalize about regularities in human and social behavior.
8. Cross-sectional analysis: by comparisons across samples, regularities can be identified.

In line with the positivist approach, the research has been conducted according to the process suggested by Black (1999) (see Figure 1.1). Firstly, research questions were determined, and hypotheses formulated after literature review. Secondly, the design structure (mail survey) was specified considering the timeframe and cost. Thirdly, sample frame was selected based on manufacturing SBUs of listed companies. Fourthly, survey instrument was drafted and tested using established variable measures.

Fifthly, Partial Least Squares (PLS) technique was chosen to test the hypotheses. Finally, the research was then executed by collecting data through mail survey and

interviews. Data was then analyzed by PLS, conclusion was drawn from the findings and recommendations were made.

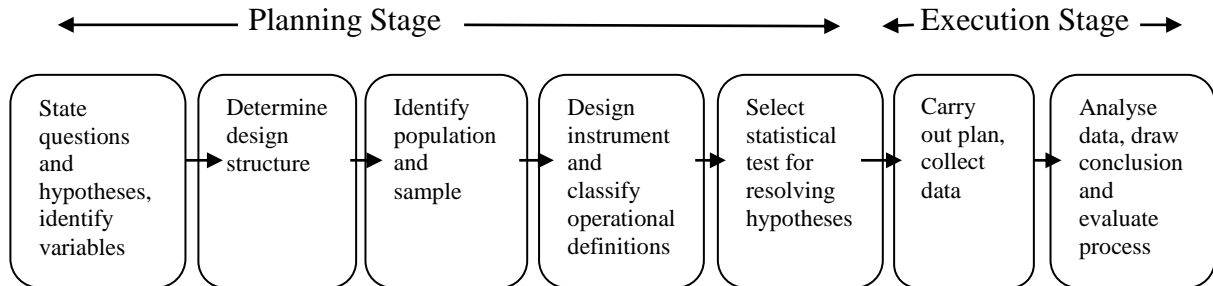


Figure 1.1: Research process (source: Black, 1999)

Consistent with most past quantitative SMA research, this study focuses on contingency relationship among strategy, MCS and other contextual variables (Langfield-Smith, 2008). Based on the ‘contingency fit’ used in the strategy-MCS research, the model developed in this study is in line with the Cartesian-contingency-mediation model determined by Gerdin and Greve (2004). In this study, firm performance is the dependent variable, and SMA usage and strategic role of accountant are the mediating variables. Business strategy (differentiation or cost leadership), intensity of competition, decentralization and organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) are the independent variables. The definitions of these variables are provided in the next section.

1.9 Definitions of Variables

This contingency-based management accounting research involves eleven variables or constructs. Before the theoretical model is established, the operational definitions of these variables are made based on the literature review in Chapter 2.

Business strategy

Strategy is “the creation of a unique and valuable position involving a different set of activities”. The essence of strategic positioning is to “choose activities that are different from rivals” (Porter, 1996 p.68). Porter’s (1980; 1985) competitive strategy is appropriate to SBUs engaged in manufacturing activities. Porter contents that a firm can attain above-average performance and sustained over a period of years if it possessed one of the two basic strategies (i.e. cost leadership or product differentiation). Organizations pursuing a *cost leadership strategy* stress internal efficiency and protection of their domain; emphasize low cost relative to competitors. They are likely to focus on minimizing unproductive organizational processes. Organizations following *differentiation strategy* emphasize on growth, innovation and learning and are interested in external expansion to achieve profitability. They will focus on value creativity and organizational learning; create a product or service recognized in industry wide as unique (Dess and Davis, 1984; Kumar and Subramanian, 1997).

SMA usage

In this study, SMA has been regarded as broad scope information, which relates to external environment, financial and non-financial factors pertaining to operations of the organization, and is future oriented and more flexible than traditional management accounting systems (Abernethy and Guthrie, 1994; Wilson, 1995; Bromwich, 1996; Roslender and Hart, 2003). Based on Cadez and Guilding (2008a), there are 16 SMA techniques which can be classified into five categories or dimensions: costing; planning, control and performance measurement; strategic decision-making; competitor accounting and customer accounting.

Strategic role of accountant

Throughout this study, accountants' participation or involvement in strategic decision-making process is referred as "strategic role of accountant". Strategic decision-making process is complex, non-routine, and often associated with different trade-offs in the organization and sets precedents for subsequent decisions (Henri, 2006b; Bonn and Fisher, 2011). This process involves "the scanning of the environment to gather data and making sense of it by developing cognitive models and building mental representations that guide managers' thinking and the direction of their decisions" (Bonn and Fisher, 2011 p.7).

Intensity of competition

Intensity of competition is the degree of external influence that threatens the success of organizational goal as planning and control will become more problematic when firms are facing uncertain events (Mia and Clarke, 1999). According to contingency researchers, competitive environment determines the form and the intensity a firm makes use of the management accounting practices (Anderson and Lanen, 1999).

Organizational structure (decentralization)

Organizational structure specifies the firm's formal reporting relationships, procedures, controls, authority and the decision-making process. It provides the stability for firms to implement the strategies and maintain competitive advantage. Organizational structure is also a formal control framework, encompasses interactions between employees, information flows and authority distributions with regard to carrying out activities within the organization (Hitt et al., 2005). Decentralization means empowering the managers to take charge of business units' planning and control (Chenhall and Morris, 1986). Organic or decentralized structure encourages communications, create greater information

processing for a better coordination and control at lower levels (Gordon and Narayanan, 1984).

Organizational capabilities

Organizational capabilities are unique resources and core competences that are value, rare, inimitability and non-substitutable (VRIN) in order to achieve competitive advantage (Barney, 1991). The primary organizational capabilities are market orientation, entrepreneurship, innovativeness and organizational learning (Henri, 2006a).

Market orientation can be explained by using a three component conceptualization (Jaworski and Kohli, 1993). The first activity is the organization-wide generation of market intelligence pertaining to current and future customer needs. This is followed by disseminating the intelligence across departments. The third activity is organization-wide responsiveness to it. The responsiveness covers response design (i.e. using market intelligence to develop plans) and response implementation (i.e. executing plans).

Entrepreneurship is “concerned with the discovery and exploitation of profitable opportunities” (Hitt et al., 2005, p.499). It is “an important mechanism used for creating change, as well as for helping firms adopt to change created by others”. Entrepreneurs are risk takers, committed to innovation, and act proactively. Their entrepreneurial mind-set allows them to identify opportunities in a dynamic and uncertain environment (Hitt et al., 2005, p.409).

Innovativeness refers to the degree of a firm’s tendency for doing innovation. Innovative firms demonstrate willingness in accommodating technological changes, generating or

accepting new ideas faster than rivals and readiness to try new products and services (Lee, et al., 2010). High levels of innovativeness are associated with cultures that emphasize learning, development, and participative decision making (Hurley and Hult, 1998).

Organizational learning is the process by which organizations acquire useful information from different sources, share information among the managers and keeping the knowledge for future use (Kloot, 1997).

Firm performance

Based on Porter (1980; 1985), firm performance may be defined as above average returns and sustained over a period of years (Campbell-Hunt, 2000). In line with Cartesian's Contingency-mediation model (Gerdin and Greve, 2004), firm performance is the dependent variable in this study.

Company size

Size is defined for the purpose of this study as the number of employees engaged by a company. Majority of contingency-based management accounting studies used the number of employees as a determinant for the size of a company (Libby and Waterhouse, 1996; Abernethy and Bouwens, 2005; Gerdin, 2005).

1.10 Organization of Thesis

This thesis is organized in the following manner. Chapter 1 relates the background and objectives of the study. Chapter 2 reviews the literature pertaining to the strategy and MCS relationship, development of SMA techniques, other contextual variables and explains the relevant theories used for the research. Chapter 3 explains how the contingency model is proposed together with the hypothesis development. Chapter 4 describes the research

methodology and justifications for the research design chosen, data collection, variable measurement and how data is analyzed.

Chapter 5 reports the descriptive statistics of the respondents and variables, PLS tests and interview results. Chapter 6 is the discussion of findings, implications, limitations and recommendation for future research, followed by conclusion. The outline of the thesis may be presented in Figure 1.2.

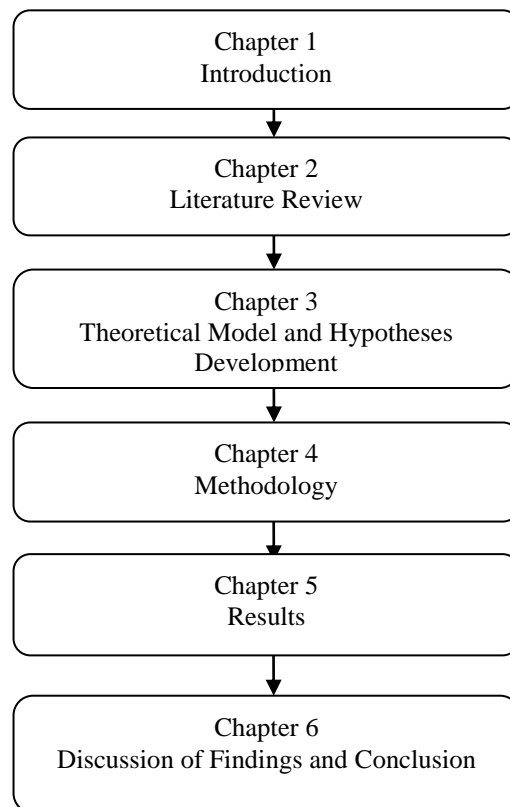


Figure 1.2: Outline of thesis

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Consistent with the six key research questions stated in Chapter One, six review questions were formulated and used when reviewing the literature covering the subject areas of the management accounting research. The review questions are: (1) What are the business strategies used in the previous research studies? (2) What are the special characteristics of MCS (including performance measurement, SMA and role of management accountants in strategic decision) that are supporting managers' decision making and firm performance? (3) What are the impact of intensity of competition and decentralization to SMA usage? (4) Can organizational capabilities (market orientation, innovativeness, entrepreneurship and organizational learning) collectively contribute to competitive advantage via SMA usage? (5) Is contingency theory appropriate in supporting strategic management accounting research? (6) How is company size affecting the design and application of management accounting practices and other variables, and how is company size being measured in past management accounting research?

Therefore, in line with the review questions stated above, this chapter covers the past literature on management control systems (MCS), strategic management accounting, changing role of accountants, generic strategies, contingency theory, resource-based view of the firm and its critiques. Section 2 covers the evolution of MCS, development of strategic management accounting and the changing role of management accountants. Section 3 outlines the generic strategies and their relationship with MCS. Section 4

describes the effect of competition on the design and usage of management accounting. Section 5 explains why organizational structure (decentralization) can have an influence on the usage of strategic management accounting. The effects of company size on contextual variables are explained in section 6. The development of contingency theory and its critiques are presented in section 7. Section 8 covers the meaning of resource-based view of the firm and its critiques and the four organizational capabilities. The concepts, framework and views expressed in the Chapter are mainly adapted from the research work of Langfield-Smith (1997), Chenhall (2003), Henri (2006a), Lin et al. (2008) and Cadez and Guilding (2008a).

2.2 Management Control Systems

The system used by management to control the activities of an organization is called management control system (MCS). Management control is “the process by which, managers influence other members of the organization to implement the organization’s strategies” (Anthony and Govindarajan, 1998, p.17). MCSs are not limited to accounting and budgeting systems. They are concerned with planning, the actions taken to implement plans as well as the monitoring of these plans and actions. Control must be looked at from a holistic and organizational perspective which also relates to the environment (Kloot, 1997). Anthony (1956, p.17) defined control as “the process of assuring that the organization does what management wants done” and management control as “the process by which managers assure resources are used effectively and efficiently in the accomplishment of the organization’s objectives”. Management control can be both financial and non-financial (Rotch, 1993; Kald, et al., 2000).

MCS is a broader term that encompasses management accounting system (MAS) and other controls such as personal or clan controls. Management accounting systems (MAS) means the systematic use of management accounting (MA). MA refers to a collection of practices. The terms MCS and MAS are sometimes used interchangeably (Chenhall, 2003). SMA is considered a sub-system of MCS (Chenhall, 2003; Cadez and Guilding, 2008a). Rotch (1993) suggested that a comprehensive framework for MCS should consist of five components: performance measurement, strategy, organizational structure, direction and motivation. These components cannot be effectively managed without considering the impact on each other.

Traditionally, MCS focus on the provision of formal, financially quantifiable information to assist managerial decision making. It is typically limited to providing financially oriented information and is no longer relevant to the changing environment and counter-productive to good management decision-making (Bromwich and Bhimani, 1989; Otley, 2001; Drury, 2004). One example is standard costing which is most appropriate for production of high volume of fairly similar product where direct costs represent a large proportion of manufacturing costs. However, standard costing may be inappropriate for production of a wide variety of products at low volume (Fry, et al., 1995). Financial measures are lag indicators as they report only the outcomes of past actions and over reliance on these indicators may promote short term profits but sacrifice long term value creation (Kaplan and Norton, 2001). The internal orientation of accounting information is too narrow for strategic decision-making and products costs in multi-product companies may be incorrect due to overhead absorption methods (Clarke, 1995).

MCS now also provide external information related to markets, customers, competitors, non-financial information related to production processes, predictive information and a broad array of decision support mechanisms, and informal personal and social controls (Chenhall, 2003). There are contradicting results on the use of MCS. While some empirical studies found that informal MCS and other managerial systems and processes encourage innovation, some expected formal MCS to block or control innovation excesses (high product initiatives) and to help translate ideas into effective production and enhanced performance (Bisbe and Otley, 2004; Merchant & Van der Stede, 2007). Miles and Snow (1978) found informal control more suitable for firms competing on the basis of rapid product innovation. But Simons (1987) discovered that such firms have tighter budgetary control. This is supported by Shih & Yong (2001) who also found pursuing Prospector-like strategy (high innovation) has a more long-term orientation for decision making. It appears that there is no firm conclusion in the management accounting research about the most appropriate controls in pursuing the competitive strategies.

Before reviewing the new contemporary management accounting practices developed by researchers, it is imperative to assess the characteristics of MCS that have been identified by the researchers.

2.2.1 Characteristics of MCS

There is a variety of control taxonomies dealing with different aspects of the management accounting. Controls can be classified as either mechanistic to organic, diagnostic or interactive, and they provide either narrow or broad scope information. Resource allocation and performance evaluation are important dimensions of MCS (Naranjo-Gil and Hartmann,

2006). Integrated performance measurement (e.g. balanced scorecard) is one of SMA techniques identified by Cadez and Guilding (2008a). This is further discussed in the later section.

2.2.1.1 Organic and Mechanistic Controls

Ouchi (1977) argued that control must be distinguished from structure. Control system is primarily a process for monitoring and evaluating performance. As individuals hold partially divergent objectives, the design of organizational control mechanisms must overcome these problems (Ouchi, 1979). In stable manufacturing industries, behaviour control or output control may fit into the requirements (Ouchi, 1979). Control mechanism such as market and bureaucratic can be designed into such organisations. Market mechanism is to evaluate each person's contribution and permits each to pursue non-organizational goals while bureaucratic mechanism is to evaluate performance as closely as possible and observes legitimate authority in hierarchies. Under conditions of uncertainty, accurate measurement is not possible. Clan form of control which emphasizes values and objectives will be a preferred control (Ouchi 1979).

Galbraith (1973) distinguished the control concepts into organic form or mechanistic form. Mechanistic controls depend on formal rules, standardized operating procedures, hierarchy and goal setting. Output controls, behaviour controls, budget control, narrow scope, diagnostic controls are examples of more mechanistic forms of controls (Chenhall, 2003). Organic controls are more flexible, responsive, involve fewer rules and standardized procedures and usually richer in data. In this manner, managers have higher discretion, power and coordination within groups, and high interdependence between work

groups. Organic controls include broad scope information, product development information, clan controls, competitor-focused accounting and strategic interactive controls (Chenhall, 2003). But purely organic or mechanistic forms of organizations are rarely found in practice (Ahrens and Chapman, 2004).

When an organization is more concerned with the short term goals, management usually monitors the activities of the business unit frequently. This type of ‘mechanistic control’ does not allow any significant deviation from the original plans. Conversely, if the management is applying ‘organic control’, the monitoring of business unit’s activities is limited. For example budget may be treated as a tool of planning and communications than as a binding commitment, and deviations from budget is not treated seriously (Kald et al., 2000).

2.2.1.2 Diagnostic and Interactive Controls

Simons (1994 p.170) defined management control systems as “the formal, information-based routines and procedures used by managers to maintain or alter patterns in organizational activities”. He outlines four control systems in his Levers of Control (LOC) (see Figure 2.1). *Beliefs system* provides basic values, purpose and directions of the organizations. Vision statements and mission statements are examples of guidance for employees to seek business opportunities. *Boundary system* shows the actions that employees should avoid. They are required to observe the standard procedures and codes of business conduct. *Diagnostic system* is to benchmark against targets as well as motivates employees to perform and align their behavior within organizational objectives. *Interactive*

system is used by managers to regularly and personally involve themselves in the decision activities of subordinates.

Simons (2000) argued that an integrated control environment effectively facilitates the quest for sustainability and strategy implementation (Widener, 2007). According to LOC theory, some formal MCS of a firm are used diagnostically while others are used interactively (Bisbe and Malaguno, 2009). A study of US health-care products industry by Simons (1991) indicated that senior managers select one of the five control systems interactively. The five control systems used in this industry are project management systems, profit planning system, brand revenue budgets, intelligence systems and human development systems (Simons, 1995). Besides the traditional measuring and monitoring functions, Simons (1994) discovered that top managers use control systems to overcome organizational inertia; communicate new strategic agendas; establish implementation timetables and targets; and ensure continuing attention to new strategic initiatives.

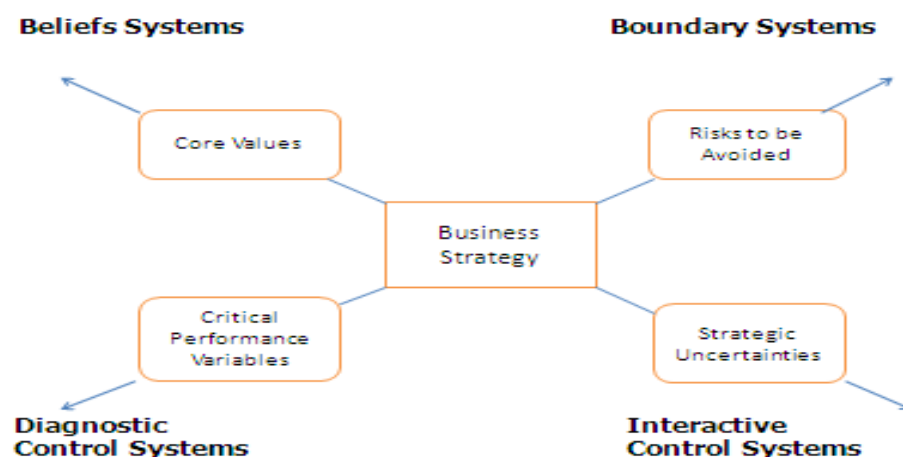


Figure 2.1: Levers of Control Framework (source: Simons, 1995)

There are more recent empirical studies drawing on Simons' (1995) diagnostic use and interactive use of MCS (e.g. Henri, 2006a; Bisbe and Otley, 2004; Widener, 2007). On the one hand, *diagnostic use* of MCS monitors and rewards achievement of specified goals through the review of critical key success factors. It is designed to inform managers when plans or actions are wrong. It facilitates single-loop (adaptive) learning. Single-loop learning is the process that enables the organization to carry on present policies (Kloot, 1997). On the other hand *interactive use* of MCS helps to stimulate organizational learning, guide and provide input to innovation and to the formation of emergent strategies (Kloot, 1997; Bisbe and Otley, 2004). Interactive use of MCS is particularly needed under build, product differentiation, prospector-like and entrepreneurial strategies (Langfield-Smith, 1997). Interactive process allows new strategies to emerge and double-loop (generative) learning to occur. Double-loop learning encompasses learning to set new priorities or restructuring norms besides detecting errors (Kloot, 1997). It can be used to monitor external environment changes and manage risks (Kloot, 1997; Sheenhan and Roberts, 2010). For a control system to be used interactively it must be able to reforecast future sales; simple to understand; used by managers at multiple levels of the organizations; trigger revised action plans and collect and generate information relate to the effects of strategic uncertainties (Simons, 1995).

2.2.1.3 Narrow and Broad Scope Information

According to Chenhall and Morris ((1986), the information characteristics of management accounting systems can be narrow scope or broad scope. Narrow scope information systems is dominated by traditional accounting based systems whereas broad scope information covers information relating to internal and external environment, either

economic or non-economic in nature, non-financial factors pertaining to the operations of the organization and future-oriented information (Chenhall and Morris, 1986). Since SMA is forward-looking, external focused and covers financial and non-financial measures (Wilson, 1995), it has similar characteristics as broad scope MAS or organic controls.

With regard to broad scope information, many companies realize that industries are being driven by factors in non-financial areas; such as quality and customer satisfaction, which eventually impacted their financial performance (Anthony and Govindarajan, 1998). Non-financial measures allow a broader spectrum of performance to be measured. Since non-financial measures are unconstrained by time considerations and in non-monetary terms, they are more beneficial as a means for communicating long-term organization goals and results (Bhimani and Langfield-Smith, 2007; Lau and Moser, 2008). However, there are companies which failed to relate non-financial measures to their strategic goals or establish a connection between activities undertaken and financial outcomes (Ittner and Larcker, 2003). Sometimes, businesses may set wrong performance targets because they focus too much on short-term financial results and they use metrics that lack strong statistical validity and reliability. Management should not rely on its own preconceptions about what was important to customers, employees, suppliers, investors, or other stakeholders. Instead, the assumptions must be verified whether they have any basic cause-and-effect link between improvement in those non-financial areas and in cash flow or operating profit (Ittner and Larcker, 2003). However, prior results on the use of financial and non-financial measures are still inconclusive, in particular how evaluators weight financial and non-financial measures when evaluating performance (Cardinals and van Veen-Dirks, 2010). Some commentators even questioned the claim that non-financial

measures have impact on performance as some constructs such as quality, flexibility and customer value cannot be reliably measured (Chenhall, 2008).

Galbraith (1973) distinguished the control concepts into organic form or mechanistic form. Simons (1995) suggested managers can use either diagnostic control system or interactive control system. Furthermore, Chenhall and Morris (1986) considered traditional management accounting as narrow scope information system while broad scope information as external and non-financial. Past research seems to agree that organic form controls, broad scope information and interactive controls are more suitable for strategic decision making.

The above review on the characteristics of MCS provided a good guidance on defining the concept of SMA. In this study, SMA can be conceptualized as a sub-system of MCS which is organic control in nature, broad scope, internal and external oriented and long term focused. It also draws heavily on financial and non-financial information and can be applied interactively.

2.2.2 Performance Measurement and Evaluation

Performance measurement system (PMS) is an important part of MCS, an area of increasing interest for both practitioners and academics (Tapinos, et al., 2005). Integrated performance measurement has been classified as one of the 16 SMA techniques by Cadez and Guilding (2008a). PMS has a critical role in translating strategy into action and a supporting role in the development of strategies. Further, PMS also has significant influence on the ability of the strategic planning process to support the achievements of

organizational goals (Tapinos, et al., 2005). Hall (2008) argued that comprehensive performance measurements provide richer and more complete feedback about operations to SBU managers, and are expected to have an indirect impact on managerial performance through role clarity and psychological empowerment. Moreover, PMS provides information that is capable of influencing organizational members to pursue collective interest and periodically assessing how these interests are achieved (Mahama, 2006). Ittner and Larcker (2003) noted that performance measurement can be used to help direct the allocation of resources; assess and communicate progress towards strategic objectives; and evaluate managerial performance. Similarly, PMS is about allocating responsibilities and decision rights, setting performance target and rewarding performance (Lee and Yang, 2011).

Many firms have been adopting strategic performance measurement that:

“(1) provide information that allows the firm to identify the strategies offering the highest potential for achieving the firm’s objectives, and (2) align management processes, such as target setting, decision-making, and performance evaluation, with the achievement of the chosen strategic objective” (Ittner, et al., 2003, p.715).

Based on Ittner et al.’s (2003) survey, value drivers that are important to long term success of businesses are customer relations, quality and operational performance. Other benefits of PMS are the feedback and feed forward controls. The feedback use of performance measures significantly support the exploitation of current capabilities, while the feed forward use of performance measures supports the search for and identification of new capabilities.

Furthermore, PMS plays an important role in influencing organizational outcomes, but the results are equivocal (Grafton et al., 2010). For example, Martinez and Kennerley

(2005) found PMS has an influence on business performance: relevant benefits came from ‘internal effects’ (organizational behavior and operational performance) and moderate benefits came from ‘external effects’ (brand reputation and customer satisfaction). Ittner, et al. (2003) found balanced scorecard (BSC) associated with measurement system satisfaction, but not with economic performance. Chenhall and Langfield-Smith (1998a) found BSC was being practiced in both high performing firms and low performing firms.

Moreover, integrated performance measurement is a process based on service-oriented approach: focus on strategic results, by combining actions across functional boundaries (Nanni, et al., 1992). The two well-known examples of integrated performance measurement are target costing and BSC. Target costing is a technique that uses market price and desired profit to determine allowable cost (Nanni, et al., 1992). Cost is no longer relevant for decisions in a competitive environment. BSC was introduced by Kaplan and Norton in the 1990s (Hansen and Mouritsen, 2005). Its framework includes both financial and non-financial elements for the practice of management based on four perspectives (financial, customer, processes, learning and growth) (Otley, 2001). There are numerous studies on the adoption of BSC, but there is lack of clear evidence on its effectiveness. It is uncertain whether BSC creates value through formal use or through interactive or informal use (De Geuser, et al., 2009). But Kaplan and Norton (2001) claimed that BSC is more than a performance measurement. It is a strategic management system to focus the entire organization on strategy.

As discussed in the foregoing sections, the traditional management accounting systems and performance measurement systems over the last few decades have led to

criticisms of their usefulness or relevance to the rapid growth of technology and globalization. As a result, a new innovation of management accounting known as SMA was proposed and has been developed. Integrated performance measurements such as BSC and target costing are key SMA techniques for the long term success of the business. They can support the exploitation of current capabilities which are emphasized in resource-based view. Next section elaborates the development of strategic management accounting.

2.2.3 Development of Strategic Management Accounting

This section covers the evolution of strategic management accounting, development of SMA techniques, past research on SMA and the usage of SMA for decision making.

2.2.3.1 The Evolution of Strategic Management Accounting

Despite the rapid progress of new manufacturing technologies, there is little development in management accounting for the measurement and reporting of operations to the management (Roslender, 1995). As manufacturing becomes less labour-intensive in some industries, using poorly selected allocation bases (e.g. labour hours or machine hours) can distort product costs (Brooks, et al., 2008). In fact, cost accounting covers the past and is more suitable for its task of supplying data for the financial statements. Management accounting is future oriented, it should forecast when will happen from what has happened. It is moving forward to better support of decision actions and learning (Nanni, et al., 1992). Despite this, standard costing is still the predominant accounting used in manufacturing companies (Fry, et al., 1995).

Simmonds (1981 p.26) first coined the term “strategic management accounting” (SMA) to address the weaknesses of traditional management accounting. He defined SMA as “the provision and analysis of management accounting data about a business and its competitors for use in developing and monitoring the business strategy”. As the conventional accounting focused on period profit, it is unable to produce strategic indicators for the business strategist to adjust his/her core actions effectively. SMA is beginning to meet the strategic needs by providing measurement of costs, sales volumes and prices against those of competitors (Simmonds, 1981). Other than Simmonds, there are other strong advocates of contemporary management accounting or SMA. They are Bromwich (1996), Roslender (1995), Shank (1989), Kaplan and Norton (2001). Most of their work is influenced by business strategies identified by Porter (1980, 1985). Porter introduced value chain analysis and the five competitive forces in formulating and implementing strategy in order to achieve above average returns in the long term via sustainable competitive advantage.

In their CIMA Reports, Bromwich and Bhimani (1989; 1994) stressed the importance of qualitative and non-financial measures in manufacturing activities and management accounting needs to become more externally focused to enable the enterprise to look outwards to the final goods market. They also recommended the development of SMA to overcome the weaknesses of traditional management accounting. In contrast to Simmonds, Bromwich (1996 p.206) focused on identifying the distinctive characteristics of market offerings for enterprise and its competitors in order to establish cost positioning relative to rivals. He defined SMA as “the provision and analysis of financial information on the firm’s product markets and competitors’ costs and cost structures and the monitoring

of the enterprise's strategies and those of its competitors in these markets over a number of periods" (Bromwich, 1996, p.206). Likewise, Hoque (2006 p.2) also defined SMA as "the process of identifying, gathering, choosing and analyzing accounting data for helping the management team to make strategic decisions and to assess organizational effectiveness".

Roslender (1995) treated SMA as a generic approach to strategic positioning which encompasses Porter's (1985) competitive advantage theory and strategic cost analysis. He disagreed with Shank and Govindarajan's strategic cost management (SCM) framework as it only focuses on the interface between strategy theory and management accounting. Strategic cost management (SCM) is to cost the functions in the value chain that brings value to customers (Roslender and Hart, 2002). Roslender and Hart (2002) proposed a framework to advance the potential of SMA by integrating management accounting with marketing within the strategic management framework, and suggested a new concept in the form of brand management accounting. If SMA is re-conceptualized as accounting for the strategic management process, 'accounting' must entail marketing. They found that attribute costing is the most compelling development in SMA literature, necessitating a high degree of cooperation between the management accounting and marketing management practitioners. Attribute costing is based on strategic cost analysis to cost the benefits of products that accrue to the customers. However, little is known about how attribute costing can be operationalized (Roslender and Hart, 2003). In their field study, Roslender and Hart (2003) found little evidence to suggest that SMA techniques such as attribute costing, strategic cost analysis or life-cycle costing were being implemented or were widely understood. Wilson (1995) argued that regardless of whether pursuing a generic strategy of cost leadership or differentiation, an enterprise has to carry out an

analysis of attribution costs, which are normally treated as products costs, on the benefits they provide to the consumer which is believed to be of strategic importance.

2.2.3.2 Prominent SMA Techniques

The prominent SMA techniques which have been developed are activity-based costing, balanced scorecard, strategic cost management, target costing, customer accounting and competitor-focused accounting.

Activity-based costing

Kaplan initiated activity-based costing (ABC) which is based on the principle that it is activities and not products that give rise to costs (Roslender, 1995). ABC is a system that “assigns overhead costs to the specific activities performed in a manufacturing or service delivery process” (Brooks, et al., 2008 p.128). As manufacturing has become less labour intensive, the traditional overhead absorption method is viewed as arbitrary as it distorts products costs (Brooks, et al., 2008). ABC allows organizations to determine a competitive pricing besides having high quality of products (Maelah and Ibrahim, 2007). ABC facilitates the marketers to make rational decisions before committing to market-oriented activities (Goebel, et al., 1998). By a mail survey of 161 SBUs located in Canada, Gosselin (1997) found decentralized structure is associated with the adoption of ABC while centralized structure is more suitable for the implementation of ABC. He argued that organizations which pursue prospector-type strategy tend to adopt innovative accounting such as ABC as these organizations have to compete through innovation and product development.

Though this approach may reduce the dangers of under-or over-costing particular products, there is no evidence that ABC improves corporate profitability (Bromwich and Bhimani, 1989). There are also limitations and uncertainties in ABC implementation such as not always possible to determine the best cost driver and inaccurate estimate affecting the allocation of costs. Hence, ABC is considered the least effective programs in the manufacturing firm report (Nanni, et al., 1992). Johnson and Kaplan later developed activity-based cost management accounting (ABCM) to manage the costs of resources consumed, and eliminate non-value added activities in order to increase profits. Eventually, they enhanced this approach to become activity-based management (ABM) which is capable of identifying and implementing opportunities for improvements in profitability, efficiency and quality within an entity, thus providing benefits at both the strategic and operational levels (Roslender, 1995).

ABC and ABM are still lowly adopted, suggesting doubts that still shared by practitioners. Indirect costs cannot be allocated in a non-arbitrary way. Further research is needed to determine whether ABC or ABM offer real benefits to the managers (Major, 2007). In Malaysia, ABC adoption also remains low and inconclusive. Rahman, et al., (2005) reported that usage is around 30% from a survey of 387 public listed and private limited companies. Maelah and Ibrahim (2007) found the adoption rate of ABC is 35% from a sample of 108 manufacturing companies. However, by a mail survey of 30 listed industrial companies located in Klang Valley, Smith et al. (2008) discovered that the adoption of ABC is only 23%.

Balanced scorecard

Since strategy and vision are of significance to all the stakeholders in the organization, Kaplan and Norton (1992) developed a new performance measurement system called *Balanced Scorecard* (BSC) which takes into consideration the necessity of customer, internal business and innovation and learning perspectives alongside a financial perspective, and the defining of future orientation. BSC is conceptualized as a tool of linking the long term strategic objectives of a business to its short term actions. It helps organization to achieve the consistency and vision necessary to continue compete successfully in the changing market and technological environment (Roslender and Hart, 2002). BSC is not merely a management reporting and monitoring system. In fact, the development of strategic management has transformed BSC from being a diagnostic system to an interactive system defined by Simons (1995) (Kaplan, 2010).

Hoque and James (2000) used a contingency approach to study the relationship between four dimensions of BSC with organizational performance. Their findings suggested that large firms and firms that have a higher proportion of new products make more use of BSC. However, Hoque and James (2000) did not investigate the ‘fit’ between the design of BSC and the strategy of the firm. Using a case study on a large international manufacturing company, Malina and Selto (2001) found BSC is an effective management control that leads to effective motivation, strategic alignment and positive outcomes. Similarly, De Geuser et al. (2009) conducted a survey of 76 business units of large European international organizations and found BSC provides greater alignment of management processes, empowerment and has a positive impact on organizational performance.

BSC involves the use of subjective measures and appropriate benchmarks for performance evaluation. There is still limited research on testing the claims or outcomes and the process used by BSC for its intended purposes (Langfield-Smith, 2005). Due to the difficulties in implementing the systems, BSC may not be effective in providing the integrative information (Chenhall, 2005a).

Strategic cost management

Shank (1989) proposed the blending of three themes: value chain analysis, strategic positioning analysis and cost driver analysis from the strategic management literature to become a framework called 'strategic cost management' (SCM). Shank (1989, p.50) defines SCM as: "The managerial use of cost information explicitly directed at one or more of the four stages of the strategic management cycle. It is explicit attention to the strategic management context that distinguishes SCM from managerial accounting". The four stages of strategic management are: formulating strategies, communicating strategies, implementing strategies and implementing controls to monitor the success. Shank (1989, p.51) found current management accounting takes a "value added" perspective which has two big problems: "it starts too late and it stops too soon". SCM framework focused on "value chain": set of value-creating activities all the way from basic raw materials sources from component suppliers to end-use consumers. This is based on Porter's (1985) value chain analysis that tracks strategically relevant activities that create value (and cost) (Goebel, et al., 1998; Hoque, 2006). SCM concepts cover value chain analysis, activity based costing, life cycle costing and cost of quality. It is considered one variation of SMA (Wilson, 1995; Langfield-Smith, 2008). However, Roslender and Hart (2002) opined that the framework of SCM is simply an alternative to the activity-based management

framework and does not transcend the conventions of hard number management accounting. Otley (2001) commented that cost management could only be effective if it is involved at the planning stage of operations (product design, production process planning, etc.), before generation of routine cost reports.

Target costing

Target costing is an important technique for managing product costs in the development process, such that a sufficient profit margin may be achieved when the product is introduced. It is the process of researching consumer markets to determine an appropriate product target price, quality and functionality. A required profit margin is deducted from the price to arrive at a maximum allowable cost. The firm then designs product to achieve target cost (Brooks, et al., 2008). Target costing can be characterized in three elements (Dekker and Smidt, 2003; Ewert and Ernst, 1999), i.e. (1) a market orientation - selling price is the starting point for determining the target cost; (2) a coordination function – the target cost coordinates the activities of product designers; (3) strategic learning – interaction with other factors, influences that long-term cost structure. The adoption of target costing is highest for firms operating in a competitive and unpredictable environment (Dekker and Smidt, 2003). Target costing is designed to encourage cost reduction and quality improvement. But the application rate in Malaysia is only about 30% (Rahman, et al., 2005).

Customer accounting

Companies that adopt the strategy of maximizing customer satisfaction are able to obtain competitive advantage (Hoque, 2006). Guilding and McManus (2002) identified five

dimensions in *customer accounting*: (1) customer profitability analysis, (2) customer segment profitability analysis, (3) lifetime customer profitability analysis, (4) valuations of customer or customer groups as assets, (5) customer accounting (i.e. the holistic notion). Customer profitability analysis (CPA) involves the evaluation, analysis and isolation of all costs from the point an order is received to ultimate delivery to a specific customer/group of customers (Hoque, 2006). CPA allows manager the alternatives to expand business with high profitable customers and re-price expensive services (Velayutham and Abdel Makoud, 2007). Customer accounting may be particularly appropriate in firms operating in highly competitive markets. Likewise, customer accounting will tend to be more developed in highly market oriented companies (Guilding and McManus, 2002).

Competitor-focused accounting

Another prominent SMA technique is called *competitor-focused accounting* (CFA). CFA has a significant relationship with competitive strategy, strategic mission and company size (Guilding, 1999). Porter (1980) stressed that competitor analysis is important for pursuing competitive advantage. Top management requires sophisticated profiles of competitors for its planning process. Similarly, Simmonds (1981) also argued that companies should design the management accounting systems to collect comparative competitors' cost, price and volume data on a regular basis. To better understand its competitive position, a company clearly needs an on-going measurement of its competitors. Moreover, Hoque (2006) stressed that the use of competitor analysis can help to identify firms' own strengths and weaknesses by industry benchmarking and understand the opportunities and threats.

‘Prospector’ firms are found to make greater use of and perceived greater usefulness in CFA practices. Firms that follow ‘build’ strategy tend to use strategic pricing and strategic costing (Guilding, 1999). Guilding et al. (2000) found competitor accounting and strategic pricing are the most popular SMA practices used by large companies in New Zealand, the United Kingdom and the United States. In Malaysia, Noordin et al. (2009) also discovered that the usage of competitor information analysis by electrical and electronics companies is generally high.

In summary, SMA techniques mentioned above are useful for managers’ strategic formulation and implementation. ABC allows organizations to determine a more accurate and competitive pricing. BSC is an interactive control system for competing in a changing market. SCM helps managers in value chain analysis in determining relevant activities that create value and cost. Target costing is a tool to manage cost in a competitive and unpredictable environment. Customer accounting allows managers to expand business with high profitable customers. Finally, Competitor-focused accounting is important for pursuing competitive advantage as planning process requires sophisticated profiles of competitors.

2.2.3.3 Past Research on SMA

Though contingency theory approach of research has contributed to better understanding of SMA, the results are sometimes conflicting. Much of prior research concentrated on which SMA techniques are used and in what circumstances. They have not shown how SMA practices are implemented and used in practice. Quite often normative SMA literature paints an idealistic picture of how SMA ought to be performed and does not take into

account the real organizational settings (Tillman and Goddard, 2008). The descriptive views are only selectively integrated in SMA literature (Bhimani and Langfield-Smith, 2007). Normative or perspective conceptions of strategic process assume a predictable environment and external strategic opportunities and threats may be proactively identified. In contrast, the descriptive conceptions view strategic process as complex, dynamic and see interactions between management, employees and environment (Bhimani and Langfield-Smith, 2007). Applying grounded theory approach and sense-making in a case study of a large multinational company in Germany, Tillman and Goddard (2008) found how SMA is perceived and used in practice. In sense-making activities, 'sets of information', management accountant's 'professional know-how' and 'a feel for the game' are the three intervening variables.

Despite that the prominent definitions of past literature are vague and overlapping, Puolamaki (2004) classified the SMA practices following four-category framework (Figure 2.2) through combination of two dimensions of information needs, planning/control and financial data/comprehensive data.

1. *Analyzing* financially the realized strategies of SBUs (e.g. activity-based costing, target costing, strategic cost management, customer profitability analysis),
2. *Monitoring* comprehensively the strategy and competitive position (e.g. balanced scorecard, competitor-focused accounting),
3. *Developing* the business portfolio strategies (e.g. profit impact of market strategy),
and
4. *Formulating* a new SBU strategy due to environmental changes or internal demands (e.g. surprise management systems).

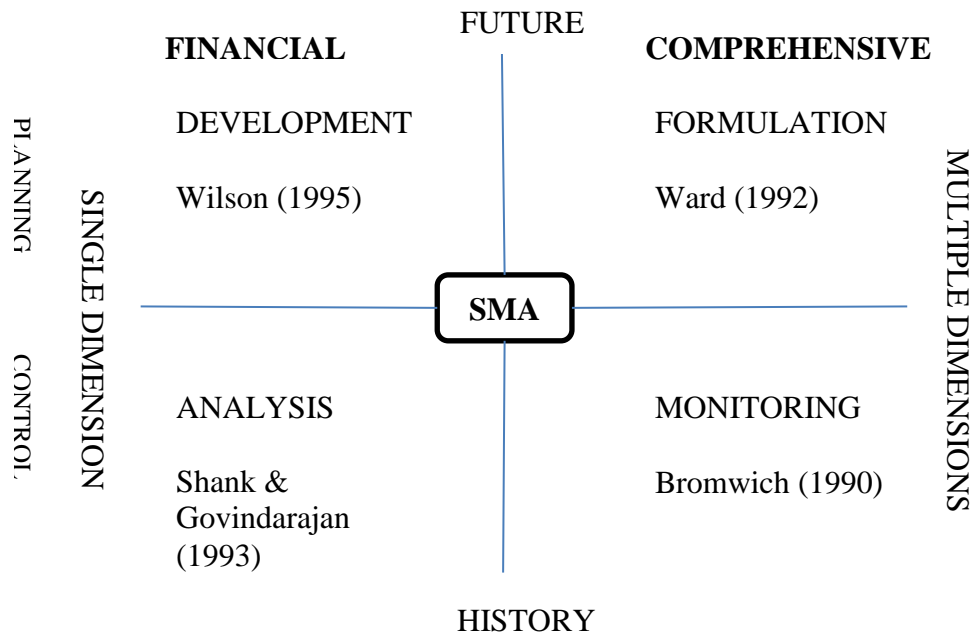


Figure 2.2: Structured literature analysis of strategic management accounting (adapted from Puolamaki, 2004)

Monitoring and formulating activities tend to make use of more non-financial and comprehensive information than analyzing and developing activities. Analyzing and monitoring activities are oriented towards historical data. The management tools which are forward looking, long term and strategic purpose can be classified as SMA practices.

The area of SMA is still ill-defined and lacks a general conceptual framework. This is probable due to lack of an agreed conceptualization of corporate strategy itself (Tomkins and Carr, 1996; Bhimani and Langfield-Smith, 2007)). Lord (1996) argued that the techniques and elements of SMA may in many cases already be found in the firms. She revealed numerous weaknesses and a highly skeptical view of SMA, concluding that SMA is but a “figment of academic imagination”. Dixon (1998) also opined that collection and

use of competitors' information for strategic purposes can be achieved without formally implementing SMA process.

In a special issue of Management Accounting Research, Tomkins and Carr (1996) felt the outline of a required framework is visible based on the contributions published in the journal. Bhimani and Langfield-Smith (2007) pointed out that most SMA techniques are prescriptive strategic frame which presumed strategic activities to be mainly formal and structure. The new concepts of strategic management which view strategy development and implementation as emergent, unstructured and in continual flux are hardly integrated in SMA literature. Langfield-Smith (2008) reviewed past empirical papers on SMA and found no compelling evidence to show that SMA or SMA techniques have been widely adopted. However, aspects of SMA have influenced the thinking and language of business. Furthermore, in the latest review of SMA literature by Management Accounting Research, Nixon and Burns (2012) claimed that past research on SMA had placed in large part on a narrow, first era view of strategic management which has reached its maturity with Michael Porter's industry analysis model and generic strategies. They found the internal, resource-based view of the firm emphasized in second era of strategic management is neglected in SMA literature.

Despite that there is no agreed framework for SMA, in this study SMA is regarded as external focused, long term and forward looking and a sub-set of MCS (Roslender and Hart 2002, 2003; Wilson 1995; Lord 2007). Based on Lord (2007), characteristics of SMA may be summed up in four different views. The first view of SMA is the emphasis of information about competitors, including cost, volumes, prices, life cycles, market share,

barriers to entry and threats. The second view is that strategic position generally has impact on management accounting emphasis. The third view is the value chain perspective on SMA, includes value chain analysis, cost driver analysis and competitive advantage analysis. The fourth view is customer-oriented, designing product desired by customers and set a price that customers are willing to pay (e.g. target costing and strategic pricing) (Lord, 2007).

Moreover, strategy theorists have developed numerous management accounting perspectives which need inter-linking of financial and non-financial information for strategic formulation and control. These perspectives cover life-cycle based strategic accounting, target and kaizen costing, interactive management control, the balanced scorecard, activity-based management systems, quality costing, inter-organizational cost management, customer and competitor focused analysis (Bhimani and Langfield-Smith, 2007).

Cadez and Guilding (2008a) introduced two dimensions of SMA (usage of SMA techniques and accountant's participation in strategic decision-making process) as mediators in the contingency model. In line with Ittner and Larcker's (2001) call to use multiple data sources or research models to develop a consistent body of evidence, they used qualitative data from 10 post-survey interviews to appraise the quantitative data collected from a mail survey of 193 Slovenian companies. Though SMA usage mediates the relationship between strategy and firm performance, they are not able to find any association between market orientation and SMA usage, and between strategic role of accountant and firm performance. They claimed that very strong direct relationship

between market orientation and performance undermines the indirect effect via SMA usage. According to the feedback of interviews, they have also omitted an important contextual factor, intensity of competition. By incorporating a new link from a separate test, they found that there is a highly positive relationship between prospector-type strategy and performance. Such relationship caused the path between SMA usage and performance became marginally insignificant. Cadez and Guilding (2008a) were also concerned that measurement of business strategy in their study was not objective as the strategic orientation was assessed according to a scale of 1 (defender) to 7 (prospector). Based on the latest literature, Cadez and Guilding (2008a) reported that there are 16 SMA techniques which can be classified into five broad categories: costing; planning, control and performance measurement; strategic decision-making; competitor accounting and customer accounting (Table 2.1).

Table 2.1: SMA techniques (source: Cadez and Guilding, 2008a)

Categories	SMA techniques
Costing	1. Attribute costing
	2. Life-cycle costing
	3. Quality costing
	4. Target costing
	5. Value-chain costing
Planning, control and performance measurement	1. Benchmarking
	2. Integrated performance measurement
Strategic decision-making	1. Strategic costing (strategic cost management)
	2. Strategic pricing
	3. Brand valuation
Competitor accounting	1. Competitor cost assessment
	2. Competitive position monitoring
	3. Competitor performance appraisal
Customer accounting	1. Customer profitability analysis
	2. Lifetime customer profitability analysis
	3. Valuation of customers as assets

However, there is an over-simplification by viewing each of these 16 techniques as independent of one another (Woods, et al., 2012). For example, in applying 'strategic cost management' approach, value chain analysis, cost driver analysis or ABC, quality costing and competitive advantage analysis have to be considered (Wilson, 1995; Bhimani and Langfield-Smith, 2007). The valuation of customers as asset is also not possible without first applying customer profitability analysis and lifetime customer profitability analysis. The list appears not exhaustive, as Bhimani and Langfield-Smith (2007) have also included interactive management control system as another strategic oriented technique.

2.2.3.4 Usage of SMA for Decision Making

In their survey on the comparison of strategic management accounting practices in UK, USA and New Zealand, Guilding et al. (2000) found that competitor accounting and strategic pricing are most widely-used among the 12 SMA practices, and the term SMA itself has limited meaning for their respondents. Although most of the SMA practices appraised are not widely used, there is potential for greater use in the future based on the perceptions of the benefits.

Twenty-five years after SMA was first introduced in the literature, Langfield-Smith (2008, p.204) discovered that 'SMA or SMA techniques have not been adopted widely, nor is the term SMA widely understood or used'. The normative papers praising the benefits of SMA and early conceptual developments have not resulted to high adoption of SMA. She, however, found SMA had influenced the thinking and language of business and the way various business processes were undertaken.

Through a literature review, Sulaiman, et al. (2004) gathered that the use of contemporary management accounting tools is still lacking in four Asian countries: Singapore, Malaysia, China and India. Usage of traditional management accounting techniques in these four countries remains strong. Chenhall and Langfield-Smith (1998c) also found the adoption rate of traditional management accounting practices by Australian manufacturing companies were higher than newly developed techniques. In Malaysia traditional standard costing and variance analysis techniques are still widely used by the manufacturing firms. Some of these firms supplement the traditional approaches with new costing approaches, such as activity-based costing (Isa and Foong, 2005; Smith, et al., 2008). The survey conducted by Rahman et al. (2005) found Malaysia corporations still consider traditional management accounting relevant to their operations.

A recent exploratory study discovered electrical and electronics companies operating in Malaysia have in fact use SMA information elements (competitor information, customer information and product-related information) extensively (Noordin et al., 2009). The study indicates that firms operate under intense competition due to the impact of market liberalization and globalization, do emphasize more externally focused and strategic information besides traditional management accounting. Similar to accounting information systems, it is expected that the adoption of SMA can add value to an organization by improving the efficiency and effectiveness of its supply chain, improving the quality and reducing the costs of product or services as well as sharing knowledge to attain competitive advantage (Romney and Steinbart, 2012).

Strong advocates of SMA believe that the weaknesses of traditional management accounting can be resolved with the introduction of SMA techniques, e.g. strategic cost management, balanced scorecard, target costing, customer accounting and competitor-focused accounting. However, since the term SMA was first coined in early 1980s, there is still no agreed theoretical framework and SMA is not adopted widely. In Malaysia, a recent study shows that companies operate under intense competition do emphasis strategic information. In conjunction with the development of strategic management accounting, the role of management accountant has also changed dramatically. Next sub-section describes the changing role of accountant in the strategic decision-making process.

2.2.4 Strategic Role of Accountant

Management accountants have not been proactive in selecting appropriate accounting systems despite the change of business environments (Chenhall and Langfield-Smith, 2008b). They are being criticized for not interested in being involved in designing more strategically driven performance measures (Chenhall and Langfield-Smith, 2008b). Management accountants have multiple roles, such as scorekeeping, attention directing and problems solving. They provide business unit managers with relevant information for decision making (Emsley, 2005). Problem solving role has become more important relatively since business unit managers are facing increasingly uncertain environment. Advancement in information technology during recent decades has also made information dissemination much easier and therefore provides more time for accountants in decision making role. Due to changes in the manufacturing concept such as innovative production systems and advanced manufacturing technology, management accountants need to adopt a more outward-looking and strategic perspective both for investment justifications and for

broader decision-making (Bromwich and Bhimani, 1989). The future role of accountant shall also include a coaching or advisory role as SMA activities move beyond the accounting function (Coad, 1996).

Participation in strategic decision-making process

Strategic decision-making process is typically carried out by upper-level management and affects the long term direction of a firm. This is complicated and difficult to define as the managers are required to make a decision based on a variety of limited and conflicting information in dynamic and fast-paced environment. Strategic decisions are more critical than tactical or operational decisions (Bonn and Fisher, 2011; Louis, 2011). They involve a high degree of uncertainty and risk, interrelated to other decisions and are difficult to assess in terms of outcomes and performance (Bonn and Fisher, 2011; Louis, 2011). As demonstrated by the following reviews, most academics appear to support that management accountants are becoming more pro-active in their role by participating in strategic decision-making process.

Mintzberg (1987) asserted that organizations can be effective if their implementers are allowed to be the formulators, and suggested that the people at lower level be in touch with the situation and have the requisite technical experience to participate in strategy formulation and implementation. He compared this to the craftsman's mind which goes constantly, in tandem with her hands. Numerous factors have significant impact on the changing role of management accountants. The increasing globalization of business and new production technologies demand faster information and focus on customer satisfaction

(Burns and Baldvinsdottir, 2007). As middle level managers, accountants have important role in strategy formulation and implementation.

Furthermore, Maskell and Baggaley (2000) stressed that change is needed in the methods, approach, and function of management accountants if they are to remain “relevant” and useful in the 21st century. Maskell and Baggaley (2000 p.1) recommended that management accountants “must support the creation of value for customers by linking measures to value-stream goals, highlighting obstacles to work flow, making waste visible, and relentlessly driving continuous improvement”. They are of the view that traditional management accounting systems hide the waste through standard costs and budgets. Therefore, management accountant must see that the strategic goals of a company link to the performance measurements used throughout the organization - at every level.

New tasks of accountants

With the increasing interest in employee empowerment, it is more common for lower-level employees to involve in activities of strategic significance. The artificial boundaries between strategic, managerial and operational controls may no longer hold (Langfield-Smith, 1997). Otley (2001) also argued that much management accounting research has become detached from real issues and problems facing managers in organizations. He suggested “putting the management back into management accounting”, and management accountant has to be released from the factory floor.

Normally, accounting focuses on internal, historic, quantitative information, but with proper training a new team of 'strategic accountants' can be developed. Strategic accountants should be able to provide: (1) much more qualitative information, (2) more future-oriented information, (3) broader range of information (4) information on a much timely basis and (5) information on the implementation process, progress toward strategic objectives and deviations from plans (Brouthers and Roozen, 1999). Accountants play an important role in costing the characteristics or attributes possessed by product in strategic planning and modeling the cost structures of competitors (Bromwich, 1996).

Further, management accountants have moved from data accumulators, financial reporters and business supporters to business partners over the last two decades. Top level management accountants have emerged as members of most important decision-making groups guiding major organizational, operational and strategic choices (Sorensen, 2009). Management accountants now engage in multiple new tasks that includes: assessing the financial implication of operational decisions, risk assessment, strategy formulation, change management, system design and implementation, and customer relationship management (Burns and Baldvinsdottir, 2007). Management accountants are being called upon to play an active role in monitoring the implementation and success of strategic plans (Ittner and Larcker, 1997). Also, management accountants are able to use non-financial and strategic information along with profitability information to facilitate coordination among the organizational units (Mia and Ahmed, 2005). Not only knowing the professional know-how, management accountants have to learn the 'feel for the game' and be multidisciplinary through a lengthy socialization process and organizational learning so that they can deal with the high-pressure environment (Tillmann and Goddard, 2008).

Cross-functional team members

Cross-functional teams facilitate information sharing; develop new ideas and solutions for existing organizational problems. They also effectively develop new products and services, and require coordination across many departments. Heterogeneous teams can be more effective than homogeneous teams because members bring diverse abilities and information to a project (Daft, 2008). Similarly, Bromwich and Bhimani (1994) also suggested accountants to play a strong and reforming role in line with the Japanese system of supplier/purchaser partnership. They recommended the breakdown of functionalized management, replace by cross-functional informal teams. Naranjo-Gil and Hartmann (2007) discovered that top management team heterogeneity is positively related to the extent of strategic change and especially towards 'prospector' positions. Prospector strategy has similar characteristics of Porter's (1980) differentiation strategy (Langfield-Smith, 1997). Likewise, with their expertise in finance and management, accountants can be team members contributing to strategic goal setting.

In addition, research identifies the knowledge, skills and abilities required by the management accountants during this changing trend (Sorensen, 2009). Their work activities have to cover long term strategic planning, financial and economic profitability, customer and product profitability, computer systems and operations, and process improvement. With their training and experience accountants are regarded as important team members of the strategic decision-making process.

Designers of management accounting systems

Kaplan (1995) also suggested that management accountants move away from being scorekeepers of the past and become designers of critical management information systems.

SMA has a major impact on the thinking of management accountants (Bhimani and Langfield-Smith 2007). When the level of uncertainty increases, pre-planning will eventually become detrimental to performance. Organizations must engage in ongoing determination of appropriate course of action. Accountants will be integrated in a densely connected web of organizational discussion across all time frames (Chapman, 1998).

Management accountants with a business unit orientation are more likely to understand whether an accounting innovation (such as introduction of new management accounting techniques) is appropriate or not than managements accountants with a functional role (Emsley, 2005). However, a case study on corporatization of public utility in Malaysia found operations managers have little trust in the accountants who try to introduce new accounting system (Scapens, 2006). The accountants also deliberately kept themselves away from the day-to-day operations of the business (Scapens, 2006). In fact, management accounting systems (MAS) is a major component of manufacturing infrastructure and management accountants must be proactive in the design, selection and implementation of MAS. In addition, they must be knowledgeable of the production process and manufacturing strategy and able to educate operations managers about the MAS that are more conducive to long term competitiveness (Fry et al., 1995).

Middle management involvement in strategy

Moreover, there are four specific types of middle management involvement in strategy, namely: championing alternatives, facilitating adaptability, synthesizing information and implementing deliberate strategy (see Figure 2.3). Empirical research has confirmed the relationship of these strategy activities and organization's strategic orientation (Floyd and

Wooldridge, 1992). Middle manager's upward influence on strategy has a positive influence on firm performance. In Prospector-type companies, the middle managers report significantly higher levels of upward and divergent forms of strategic involvement than those in Analyzer-type and Defender-type companies (Floyd and Wooldridge, 1997). Likewise, as middle managers, management accountants can have similar influence in strategic management.

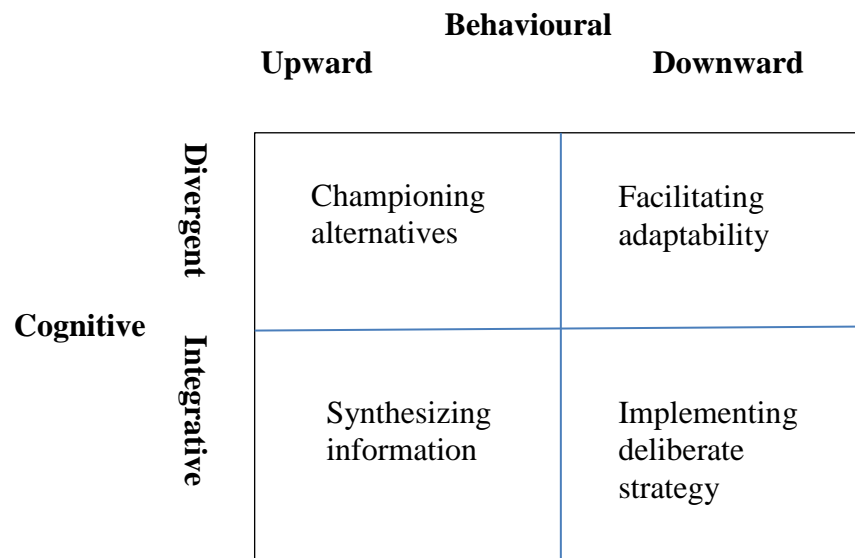


Figure 2.3: A typology of middle management involvement in strategy
(source: Floyd and Wooldridge, 1997)

Through case analysis, Chenhall and Langfield-Smith (1998b) identified five interrelated factors that may help influence the extent of management accountants' involvement:

- i) a shared view of the role of the accounting function,
- ii) the level of senior management support for the development of management accounting innovation,
- iii) the presence of management accounting champion,

- iv) the level of technical and social skills of management accountants, and
- v) the positioning of management accounting within the formal hierarchy.

Since management accountants are responsible for forward planning, they can play their part in ensuring the success of enterprise governance which covers corporate governance (accountability and assurance) and business governance (value creation and resource utilization) (Horngren, et al., 2005). But Shank (1989) cautioned that management accountants who are not aware of supply chain cost analysis concepts can be a very costly oversight. Furthermore, many accounting scandals during recent years have eroded the trust placed on the accountants as well as the information produced by them (Burns and Baldvinsdottir, 2007).

Management accounting has changed its direction to strategic thinking and helping in formulating business or corporate strategy in the age of globalization. Hence, management accountants, as transformational leaders, are also playing their roles in ensuring sustainable growth (Mia and Ahmed, 2005). Cravens and Guilding (2001) opined that accountants can take on a new role of helping marketing managers to measure performance in strongly branded companies.

2.3 Business Strategy

There has been a growing interest recently in the study of the relationship between MCS and business strategy (see Langfield-Smith, 1997) and evidence shows that high organizational performance may result from a matching of an organization's environment, strategy and internal structures and systems (Govindarajan, 1988). The most important

determinant of performance is the 'contingent fit' between the chosen strategy and its contextual variables (Jermias and Gani, 2004). The following section covers the generic business (competitive) strategies which have been widely used in the management accounting research.

Strategy is defined as “the direction and scope of an organization over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fulfilling stakeholder expectations” (Johnson et al., 2005 p.9). As a broader view, strategy can also be viewed as a dynamic plan of action that describes how organizations have to react to environmental influences, both internal and external, in the short and long term (Green et al., 1993). Meanwhile, Mintzberg (1978) used five Ps to define strategy. “Strategy is a plan (intended), a pattern (realized), a position (a strong presence in a particular market), a perspective (doing things a unique way), and ploy (a specific maneuver intended to outwit a competitor)” (Abraham, 2006 p.172). Intended strategy is a plan drawn up in a systematic way and the explanations underpinning it were well argued and documented. Intended strategies that have been realized are called deliberate strategies. Emergent strategy arose from interaction between management, employees and the environment (Johnson et al., 2005). Realized strategy is a combination of deliberate and emergent strategies (refer to Figure 2.4). The difference between the intended strategy and realized strategy may due to unpredictable environmental change, a lack of appropriate capabilities, or unrealistic expectations, resulting in the firms unable to translate its intended strategies into action (Mintzberg, 1978). Thus, intended strategies may have included the conversion of emergent strategies (Nixon and Burns, 2012).

According to Mintzberg and Waters (1985), deliberate and emergent strategies may be conceived as two ends of a continuum which real-world strategy lies. It is unlikely to find any perfectly deliberate strategies in any organization. They were of the view that highly deliberate strategy making processes will be found to drive organizations away from prospecting activities and towards cost leadership. Some writers have questioned the effectiveness of traditional MCS in an organization which tends towards emergent strategy formation (Lord, 1996).

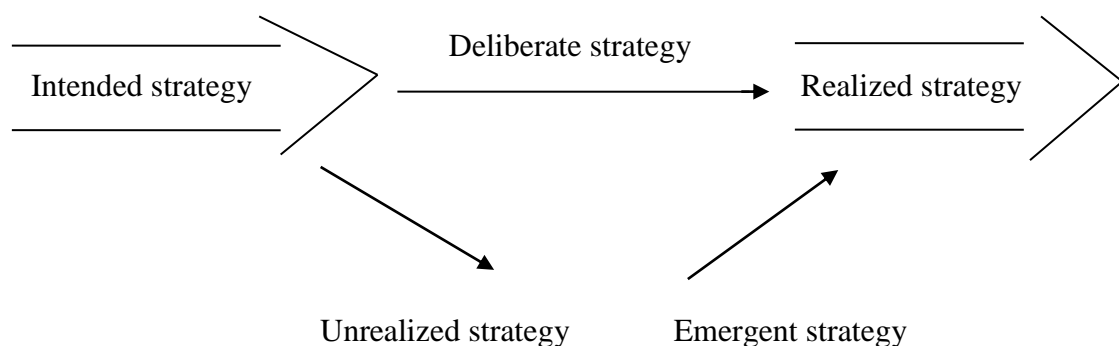


Figure 2.4: Types of strategies (source: Mintzberg and Waters, 1985)

The traditional role of MCS is limited to implementing the deliberate strategy as they are purposefully design to block innovation for purpose of efficiency. It is only relevant to emergent strategy after Simons identified the concepts of interactive and boundary systems (Davila, 2000). Strategies are usually communicated down the organization hierarchy and MCS are used to measure the progress. Corrective actions are then taken by the senior managers. In this approach, strategy formulation is separated from implementation. In contrast, strategies under emergent view can emerge from all levels of the organization. Strategy formulation and implementation are quite often inter-wined and strategy is considered a process (Simons, 1995).

Cadez and Guilding (2008a) have included deliberate strategy as an important variable in their study of SMA as they claimed that deliberate strategy implies frequent discussions about strategy requiring the involvement of all functional areas, including SMA usage and 'strategic' accountants. However, their study seems to contravene Mintzberg and Waters' (1985) argument that there are no perfectly deliberate strategies in any organization in this dynamic market environment. Hansen and Mouritsen (2005) also suggested emergent strategy is part of SMA as SMA is involved in responding to organizational problems.

Business level strategy or competitive strategy deals with the individual strategic business units (SBU) in which an organization focuses in a particular product or market segment and how to compete effectively. The critical decision of SBUs is the selection of which product or service to offer to the market (Bonn and Fisher, 2011). SBU is part of an organization in which it has a distinct market for its product or service which is different from another SBU (Johnson et al. 2005). To be successful in the worldwide competitive environment, firms or SBUs must maintain customer-focused strategy and be capable of producing goods of high quality at low cost and providing value to customers, flexibility in product characteristics and dependability of supply (Perera, et al., 1997; Velayutham and Abdel-Maksoud, 2007).

SBUs in this study are members of public listed corporations in Malaysia. They are required to meet very stringent listing requirements which require them to prepare established plans or deliberate strategies for its operations. Before announcing quarterly results to the Stock Exchange, the board of directors has to review the operations against

the plan and ascertain the business outlook. Despite that, organizations in this study are assumed to operate under uncertain market environment and may not have perfectly deliberate strategies.

Management accounting research has found that managers have ‘strategic choice’ whereby they can position their organizations in particular environment. Contingency-based research predicts that certain types of MCS are more suitable to particular strategies (Chenhall, 2003). Some researchers found no link between strategy and performance. But others found the association between strategy and performance lessened by situational variables. In order to advance the strategic theory, further research on the relationship between strategy and firm performance is needed (Allen and Helms, 2006).

2.3.1 Generic Strategies

The most prominent generic strategies developed or identified in the past and frequently applied in the strategy-MCS research are:

- Prospectors-analyzers-defenders (Miles & Snow, 1978)
- Build-hold-harvest (Gupta & Govindarajan, 1984)
- Product differentiation-cost leadership-focus (Porter, 1980; 1985)

Contemporary management accounting systems seem to be associated with differentiator, prospector or build types of strategies. But the relationship between strategy and MAS and their impact on firm performance are not strongly supported (Hyvonen, 2007). The following sections describe the characteristics of these business strategies.

Gupta and Govindarajan's (1984) Strategies

The strategic missions of a firm are related to the product life-cycles in the following manner (Gupta and Govindarajan, 1984; Wilson, 1995):

1. A *build* mission (which is relevant to the introduction and growth stages) suggests a goal of increased market share and competitive position, even at the expense of short-term profit or cash flow.
2. A *hold* mission (which is relevant to the maturity stage) emphasizes the protection of market share and competitive position, aiming for a reasonable return on investment.
3. A *harvest* mission (which is relevant to decline stage) strives to maximize profits or cash flow, even at the expense of market share.

Build managers must have managerial orientation towards competence at monitoring and analysis of external industry characteristics (such as consumer needs and competitor strategies). But *harvest* managers need to possess skills in boosting the internal efficiency of operations. *Build* managers face more uncertain task environment than those managers in charge of SBUs with *harvest* strategies. Under such conditions of greater uncertainty, build managers have greater willingness to take risk and greater tolerance for ambiguity (Gupta and Govindarajan, 1984). Strategic planning process is more critical and important in build than in harvest business units (Anthony and Govindarajan, 1998). Porter (1985) viewed build, hold or harvest stages are the results of a generic strategy and a system in the strategic planning processes.

Porter's (1980 and 1985) Strategies

Porter (1985, p.1) states that “competitive strategy is the search for a favorable competitive position in an industry. It aims to establish a profitable and sustainable position against the forces that determine industry competition”. The first determinant of a firm’s profitability is the attractiveness of the industry. The ability of a firm to earn higher rates of return on investment comes from the understanding of the rules of competition which are embodied in five competitive forces: the entry of new competitors, the threat of substitutes, the bargaining power of buyers, the bargaining power of suppliers, and the rivalry among the existing competitors (Porter, 1985). The second determinant to earn above-average performance or gain sustainable competitive advantage is a firm’s relative position within its industry. Cost leadership and differentiation are the two basic types of competitive advantage (Porter, 1985). The focus strategy means concentrating on a particular group of customers, geographic market or product line segments. The three generic strategies identified by Porter (1980) are shown in Figure 2.5.

		COMPETITIVE ADVANTAGE	
		Lower Cost	Differentiation
COMPETITIVE SCOPE	Broad Target	1. Cost Leadership	2. Differentiation
	Narrow Target	3A. Cost Focus	3B. Differentiation Focus

Figure 2.5: Three Generic Strategies of Porter (1985)

According to Porter (1980, 1985), an enterprise can be a lowest-cost producer (*cost leadership*) within its industry via mass production, mass distribution, economies of scale, capacity utilization of resources, access to favorable raw material prices and superior technology, tight cost control and cost minimization in areas such as R&D, service and advertising. Cost leadership can have cost advantages resulting from process innovations, learning curve benefits, products designs, reducing manufacturing time and re-engineering activities (Wilson, 1995; Allen and Helms, 2006). Based on this strategy, the business must be able to withstand any price war initiated by competitors (Abraham, 2006).

An enterprise may seek to offer some unique dimension in its products/service (*differentiation*) that is valued by customers and which can command a premium price (Porter, 1980; Wilson, 1995; Langfield-Smith, 1997). It involves an initial investment in market research to find out what customers value and then redesigning the product to deliver the desired benefits and then pricing a suitable premium. The business will have above-industry-average profits if the investment is recouped quickly (Abraham, 2006). Firms implementing product differentiation strategy must know how to balance the conflicting organizational demands, encourage creativity, innovativeness and risk-taking among their employees (Barney, 2001b). Similar to firms that emphasize on build and prospector-like strategies, firms that follow a differentiation strategy are going to face greater environmental uncertainty when they focus on production innovation and R&D (Anthony and Govindarajan, 1998; Langfield-Smith, 2005). The existence of product differentiation in the end is always a matter of customer perception, but firms can take a variety of actions to change these perceptions (Barney, 2001b). In applying differentiation strategy, firms can differentiate the attributes of its products, build up good relationship

between itself and its customers, and have linkage among functions (Barney and Hesterly, 2008).

Furthermore, a firm may target a specific segment of the market; either having a focused differentiation strategy (unique product) or focused cost leadership strategy. A successful focus strategy depends on an industry segment large enough to have good growth potential but not of key importance to other major competitors (Allen and Helms, 2006). But some are of the view that focus strategy (where to compete) is not an explicit strategy in itself but a choice within a strategy (Kald, et al., 2000; Pertusa-Ortega et al. 2009). Focus strategy has been excluded in this study as those companies using such strategy are either cost leadership based or differentiated based (Kumar and Subramanian, 1997; Dess and Davis, 1984).

An organization must adopt a business strategy of being better than the other organizations in the industry at managing the five competitive forces in order to gain competitive advantage and achieve an above-average return (Porter, 1980). An organization that follows cost leadership strategy must be willing to discontinue any activities in which they do not have a cost advantage and have to consider outsourcing activities to others which have a cost advantage (Allen and Helms, 2006). To ensure long term profitability and sustainable competitive advantage, Porter (1980, 1985) noted that a firm must make a choice between one of the generic strategies rather than end up being “stuck in the middle” (Allen and Helms, 2006). As these strategies are mutually exclusive, a firm is unlikely to gain benefits by optimizing its strategy in a targeted segment (focus) if it is simultaneously serving a broader segment (cost leadership or differentiation). Similarly, use of

differentiation strategy is costly; firms following cost leadership strategy have to forego some differentiation standardizing its production (Porter, 1985).

When industry conditions change, strategy must be adjusted accordingly. Strategy may be changed from differentiation to low cost, then change back to differentiation again depending on the industry conditions (Kald, et al., 2000). According to Kald et al. (2000), in the initial phase, when the product is introduced, an organization is able to charge a premium price. But when the competitors have also introduced the similar product, price may become important to the consumers. Again, when another new product is launched, once again the organization is able to charge a premium price.

Dess and Davis (1984) and Hambrick (1983) agreed with Porter's contention that firms adopt a generic strategy can outperform others that "stuck in the middle". The findings of Dess and Davis (1984) are consistent with Porter's (1980) contention that commitment to one of the three generic strategies will result in better performance than failing to develop a generic strategy. The study also found support of Porter's (1980) comment that low cost may be achieved without high market share. Despite strong empirical support, several researchers raised their concern of Porter's typology for its conceptual limitations such as (a) generic strategies are mutually exclusive; (b) generic strategies are collectively exhaustive; and (c) appropriateness of Porter's simple notion of low cost and differentiation in the competitive environment (Kotha and Vadlamani, 1995).

Moreover, some researchers claimed that a combination (cost leadership or differentiation) or hybrid strategies will give a better chance to realize competitive

advantage (White 1986; Hill 1988; Miller and Dess 1993; Kumar and Subramanian 1997; Parnell and Hershey 2005; Pertusa-Ortega et al., 2009). Pertusa-Ortega, et al. (2009) found a large number of Spanish organizations use different types of hybrid strategies, and such strategies tend to be associated with higher level of firm performance. Though Parnell's (1997) study supported the existence of viable combination strategies, he cautioned that the viability of a combination strategy may be temporal or industry-specific. Dess et al. (2005) also predicted several pitfalls in integrating overall cost leadership and differentiation strategies. Firms may end up with neither and become "stuck in the middle" if they fail to emphasize on both cost leadership and differentiation strategies, underestimate the challenges and expenses associated with the extended value chain, and miscalculating sources of revenue in the firms' industry.

Miles and Snow's (1978) Strategies

Miles and Snow's (1978) typology is based on the rate at which enterprises change their markets or market offerings as means of identifying generic strategies. A *Prospector* aims to seek new market opportunities as a means of keeping ahead of competitors and in product innovation during rapid change in market environment. When the market is relatively stable, a *Defender* will undertake little or no product or market development, emphasize on cost leadership, incremental growth, quality and service, and secure niches within its industry. An *Analyzer* is a hybrid having some strong characteristics of both defender and prospector strategies (Miles, et al., 1978; Hambrick, 1983; Wilson, 1995; Langfied-Smith, 1997).

Firms pursuing rapid product and market innovation (Prospector) are willing to forgo short-term profit to achieve market leadership in order to generate high long-term profit. However, firms focusing on production efficiency (Defender/Analyzer) tend to emphasize on the short term than on the long term goals (Barney and Hesterly, 2008). Prospectors rely on participative and decentralized decision making, shaped by the influence of marketing and product development executives, and the organizational performance is often measured against important competitors. Defenders tend to have relatively simple coordination mechanisms, rely on centralized decision making, shaped by influence of production and finance executives and the organizational performance is usually measured against previous years. Miles and Snow (1978) claimed that if the strategy is well implemented, all strategic types can perform equally well in any industry (Miles, et al., 1978; Hambrick, 1983).

Defender-like strategies are generally associated with low environmental uncertainty. It will be easier to apply objective performance measures since the firms focus on stability and internal efficiency. In contrast, prospector-type strategies are often associated with high levels of environmental uncertainty. The critical success factors for prospectors cover new product development, innovation and R&D which are long term and difficult to measure, hence, more subjective performance measures are suitable for these firms (Langfield-Smith, 2005). Prospectors need to develop broad-based information system in facilitating coordination and control of numerous and diverse operations. In contrast, defenders require cost-oriented information systems to maintain strict control and efficiency (Abernethy and Guthrie, 1994).

2.3.2 Relationship between Business Strategy and MCS

2.3.2.1 Classification of Business Strategy

Kald et al. (2000) pointed out that inconsistency findings arising from the contingency theory studies of strategy-MCS relationship could be due to the absence of a common point of reference for classifying business strategy. This has caused the problem to form an opinion on how strategy has influenced the design and use of MCS. Kald et al. (2000) integrated different strategic variables (see Figure 2.6) and show how they influence the classification of strategies as well as the design and use of MCS. Kald et al. (2000) cited some inconsistencies in the research which could be due to different classification of strategies. Simons (1987) claimed that innovative companies in fast-growing industries (so called prospectors) closely monitored financial results in the study based on classification of Miles and Snow (1987). But Govindarajan (1988) found differentiators (using Porter's (1980) strategy) did not monitor the financial results closely at innovative companies.

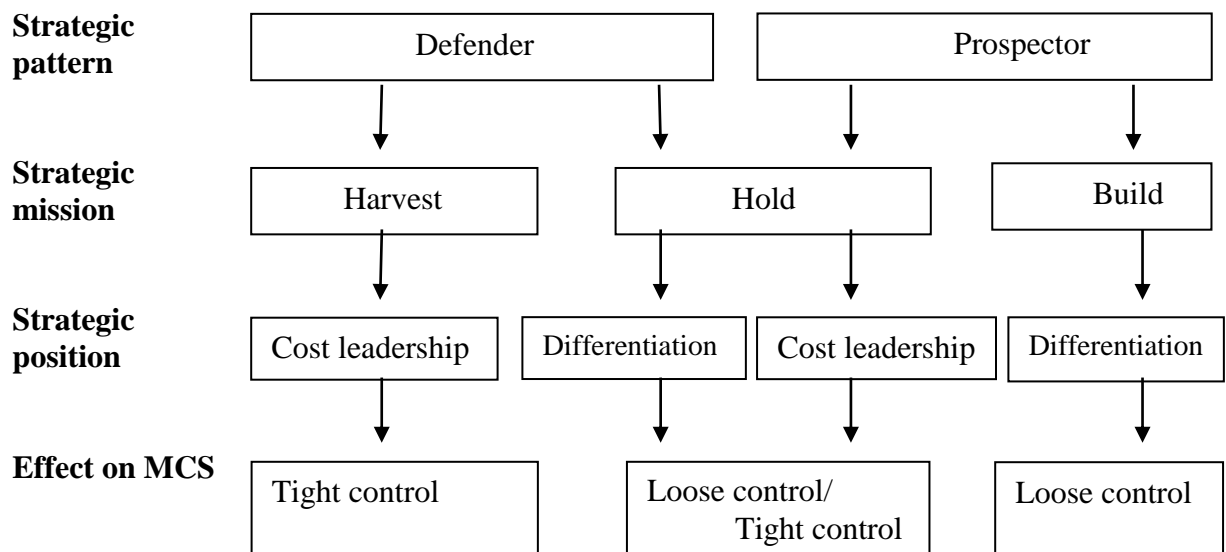


Figure 2.6: Hypothetical relationships between strategic pattern, strategic mission, strategic position and the design and use of MCS (Source: Kald et al., 2000)

According to Kald et al. (2000), strategy typologies of Miles and Snow (1978), Porter (1980) and Gupta and Govindarajan (1984) are based on many common assumptions. But they focus on “different characteristics of a business-unit strategy: strategic pattern, strategic position and strategic mission”. Since Miles and Snow consider more organizational features than either Porter (1980) and Gupta and Govindarajan (1984), it may be assumed that there are organizations having the same strategic pattern despite different strategic positions (Kald et al., 2000).

But Kald et al.’s (2000) model appears to have several limitations (Sands, 2006). The first limitation is prospector-defender strategy has been placed on the highest hierarchy have defied the natural development of strategic mission and position. The second limitation is that build, hold and harvest are the result of a generic strategy according to Porter (1980). Thirdly, the strategic (pattern) variables for Miles and Snow (1978) and strategic (position) variables for Porter (1980) are described as dichotomies and Gupta and Govindarajan’s (1984) mission as a trichotomy. None of these variables are measured as continuums. Finally, the model assumes strategic position depends on mission (differentiation is selected when SBU is under a build mission). But Govindarajan (1986) states that a build mission might be achieved through cost leadership.

Miles and Snow’s (1978) typology integrates the range of relationships between strategy, structure and processes but does not connect them to performance. However, Porter’s (1980) generic strategies are connected in relation to profitability performance (Kim and Lim, 1988). There is little consideration of the environment-strategy link in Miles and Snow and no systematic evidence has been provided on how strategy types differ in

their functional attributes. Miles and Snow's model is to develop a typology of corporate strategy, not to explore the performance consequences (Hambrick, 1983). Some researchers have suggested further empirical validation and testing of Miles and Snow's underlying assumptions (DeSarbo et al., 2005).

Despite the narrow view of Porter's (1980) competitive advantage and some researchers' disagreement on Porter's propositions that cost leadership and differentiation strategy are mutually exclusive, this study adopted strategy developed by Porter. Porter's (1980) competitive strategy is more theoretically sophisticated than others (Miller, 1988), and receives more empirical support from previous research than other constructs have and remains the most commonly supported and identified in key strategic management literature (Kim and Lim, 1988; Allen and Helms, 2006). In addition, Porter's (1980) strategy framework conceptualization is also academically well accepted and internally consistent (Hambrick, 1983; Dess and Davis, 1984; cited in Govindarajan, 1988, p.830). Moreover, Kald et al. (2000) brought an insight that Porter's (1980) strategic position is more appropriate in the study of MCS than Miles and Snow (1978). Miles and Snow (1978) has a broader corporate perspective as both prospector-like strategy or defender-like strategy can have emphasis on differentiation strategy as well as cost leadership strategy.

Cinquini and Tenucci (2006) found Porter's (1980) differentiation strategy significantly associated to the adoption of SMA techniques as compared to strategies developed by Miles and Snow (1978) and Gupta and Govindarajan (1984). A successful differentiation strategy requires a double external focus: on competitors' value creation and customers' value attribution chains (Roslender and Hart, 2002). Banker et al. (2006) found

that firms adopting differentiation strategy are better able to sustain financial performance in the future than firms following efficiency (cost leadership) strategy.

2.3.2.2 Past Studies on Business Strategy-MCS Relationship

Based on a 'static view', MCS are to support the intended strategy by providing measurement and feedback of the deliberate strategy. But on a 'dynamic view', MCS intervene in the emergence of strategies by focusing organizational attention and stimulating dialogue and communication (Henri and Journeault, 2008). With the rapid change in the environment, the realized strategies of SBUs shall be a mix of deliberate and emergent strategies.

Past studies suggest a level of consistency between organizational and control characteristics and the dimensions of strategy. Defender, harvest and cost leadership strategies usually associated to formal, traditional MCS focused on cost control. But product differentiation and competitor focused strategies are associated with broad scope MCS for planning purposes (Chenhall, 2003). Business units pursuing cost leadership strategy tend to have tighter control with strict budget targets than business units following differentiation strategy (Govindarajan, 1988; Bruggeman and Van der Stede, 1993). Miller and Friesen (1982) found a negative correlation between formal control and the rate of innovation at entrepreneurial companies with a strategy of continual product and market development (Kald et al., 2000). But Simons (1987) discovered that companies pursuing a prospector-like strategy use MCS intensively. The systems emphasized frequent reporting, use of forecast data, tight budget goals and careful output monitoring (Cunningham, 1992). Further, other researchers found strategies linked with a stable environment led to a loose

control while strategies linked to turbulent environment resulted in tight control. Since there are contradictory conclusions, it is difficult to determine whether a prospector always follows a differentiation or build strategy. In addition, it is difficult to design a MCS focusing on present strategy but also flexible to cater for the changing strategy due to new business environments (Kald et al., 2000).

A number of empirical studies on MCS-strategy relationship are highlighted in the literature. Table 2.2 shows the methods of data collection, sources of measures, key variable and findings of these 14 articles. Eight of these articles are quantitative research involving survey questionnaires (Chenhall and Langfield-Smith, 1998a; Shih and Yong, 2001; Moores and Yuen, 2001; Jermias and Gani, 2004; Hoque, 2004; Auzair and Langfield-Smith, 2005; Henri, 2006a; Bhimani and Langfield-Smith, 2007) while the balance six articles are the results of case studies (Nilsson and Rapp, 1999; Kald et al., 2000; Davila, 2000; Chenhall and Langfield-Smith, 2003; Martinez and Kennerley, 2005; Kober et al., 2007). Five of the quantitative studies and two of the case studies applied contingency approach. One of the quantitative research works applied the resource-based view of the firm approach. Quantitative-based surveys and case studies on MCS-strategy relationship provide similar findings. Though case studies were criticized for their lack of generalizability and their inability to provide a body of accumulated knowledge, these case studies provide evidence about how MCS can influence strategic formulation, implementation and change (Langfield-Smith, 1997). Following Langfield-Smith's (1997) analysis, there are more case studies carried out to examine the MCS-strategy relationship. For example, Kober et al. (2007) used a case study on a public sector firm to support that (1)

the interactive use of MCS mechanisms helps to facilitate a change in strategy and (2) MCS mechanisms change to match a change in strategy.

By combining management techniques (such as quality systems, team-based structures, integrating systems and human resource management policies) and contemporary accounting techniques, Chenhall and Langfield-Smith (1998a) found firms pursuing production differentiation strategy achieve higher performance. But the study did not examine the moderating effects of other environmental and organizational variables. They admitted that there is still no strong theory to explain the way contemporary management accounting enhances organizational performance. Davila (2000) used Galbraith's (1973) concept of uncertainty to study the impact of MCS on project development. The study provides evidence to support the alignment between the design and use of MCS and product strategy is significantly related to performance. However, the study does not provide details on how the systems are designed. Hoque (2004) claimed that there is a positive relationship between business unit strategy and performance if there is a good fit between strategic priorities and management's choice of non-financial measure performance. There is no direct relationship between business strategy and organizational performance. Though Hoque (2004) adopted Miles and Snow's (1978) strategy, he does not explain whether prospector-type or defender-type strategy is more suitable for non-financial performance indicators. From a resource-based perspective, Henri (2006a) examined how the interactive use of performance measurement system (PMS) can foster four organizational capabilities (i.e. market orientation, entrepreneurship, innovativeness and organizational learning) in supporting the materialization of strategic choices. However, Henri (2006a) used only one control system (PMS) as other systems may provide different

conclusions. She also ignores investigating the influence of environmental uncertainty and organizational culture.

According to Tucker et al.'s (2006) propositions, prior empirical studies presented in Table 2.2 may be classified into three groups:

- (1) The design of MCS is dependent upon the particular strategic orientation adopted by the organization (Shih & Yong, 2001; Moores & Yuen, 2001; Auzair & Langfield-Smith, 2005).
- (2) There is a match between particular strategic orientations and particular MCS designs which enhance performance (Chenhall & Langfield-Smith 1998a, 2003; Henri 2006a; Jermias & Gani 2004; Martinez & Kennerley, 2005).
- (3) The extent of influence that MCS have on both strategy formulation and strategy implementation varies depending on the way in which MCS are designed as well as the way in which MCS are used (Nilsson & Rapp 1999; Heide, et al., 2002; Kober, et al., 2007).

The current MCS-strategy analysis of 14 articles (see Table 2.2) reflected the following phenomena:

1. Relationship between MCS and strategy has been viewed traditionally as a passive one. MCS is the outcome of organizational strategy. It is important to realize that MCS can take a proactive role in influencing strategy.
2. Despite that strategy has become an important topic of research more than two decades; there is no precise definition for it yet. There must also be consistent classification of controls and other contingent variables.

3. Most research tend to focus on one strategic variable, either strategic positioning or strategic pattern. Not many academics focus on the impact of strategic mission (build-hold-harvest) on the MCS design.
4. There is hardly any research evaluating the integration of all three strategic variables together with the change of external environment and the two way relationship between MCS and strategy.

This section reviews the three most common generic strategies used in the management accounting studies. Build, prospector-like and differentiation strategies share similar characteristics such as emphasis on growth and production innovation. Recent studies on strategy-MCS relationship were selected for evaluation. Kald et al. (2000) have pointed out that the design and use of management control can be influenced by strategic pattern, strategic mission or strategic position. Contingency-based MCS research shows that intensity of competition and organizational structure are two important contextual variables that have an impact on the usage of MCS and management accounting systems design. The following two sections elaborate these two important variables.

2.4 Intensity of Competition and MCS

Planning and control can become more problematic when the firms are facing uncertain events, such as fierce competition from the market and competitors. The environment may be considered a product of a manager's mind-set (Kloot, 1997). But it was pointed out that managers' perception of 'competition' could be culturally influenced (Velayutham and Abdel-Maksoud, 2007). The utilization of contemporary management accounting techniques may also be influenced by the perception of different aspects of competition, e.g.

quality, innovation, customer service, price, delivery and flexibility (Velayutham and Abdel-Maksoud, 2007).

Khandwalla (1972) found a positive relationship between management accounting system sophistication and competition intensity. As competition intensifies, the expected benefits from the application of these controls tend to outweigh their costs. Hill (2000) also discovered that intensity of competition increases demand of accounting information as customers are becoming more concerned with quality products. Contingency theory suggests that environment is one of the factors influencing organization's use of MCS (Kloot 1997; Anderson and Lanen, 1999).

Companies operating under intense competitive environment generally use SMA information elements more extensively (Palmer, 1992; Guilding, 1999; Guilding et al., 2000; Cravens and Guilding, 2001; cited in Noordin, et al., 2009). SMA information elements refer to analysis of information relating to competitors, customers and products. As companies find ways to differentiate their products and services from those provided by competitors, there is a need to develop customer retention initiatives and customer profitability information (Guilding and McManus, 2002).

Furthermore, organizations have to use non-financial and broad scope MAS information to a greater extent in order to cope with external environmental uncertainty more effectively (Chenhall and Morris, 1986; Chapman, 1997). They have to develop quality cost reporting to emphasize on the quality of output in a highly competitive environment (Kloot, 1997). Perceived environmental uncertainty (PEU) and increased

competitive environment influence changes in organizational design, advanced manufacturing technology and advanced management accounting practices (Gul and Chia, 1994; Chong and Chong, 1997; Baines and Langfield-Smith, 2003). Dekker and Smidt (2003) found that the adoption of target costing is positively correlated with the intensity of competition and high level of PEU. Ambe and Sartorius (2002) also concurred that enterprises utilize management accounting as a strategic response to competition. However, Ax et al. (2008) disagreed that there is any relationship between PEU and the adoption of target costing since customer and competitor information can be unpredictable or difficult to predict.

Intensity of competition is able to influence the change of management accounting systems via the organizational structure (Wawera, 2008). Next section describes how the organizational structure (degree of decentralization) can have an impact on the broad scope management accounting such as SMA.

2.5 Organizational Structure (Decentralization)

Contingency theory predicts that the complexity of a firm's environment determines the complexity of the internal structure of the firm. To deal with the uncertain external environment, decision making has to be specialized (Kaplan and Atkinson, 1998). When organizations and departments grow and become more complex they tend to decentralize and implement a more administratively oriented control strategy (Gerdin, 2005). Product competition tends to create a rather complex organizational form as there is a need to do R&D; new products need to be market tested; continuously search for new markets. This

implies that organizations are becoming more decentralized, differentiated, and technocratic (Khandwalla, 1973).

Decentralization is important in sustaining dynamic capabilities as it brings top management closer to new technologies, the customer and the market (Teece, 2007). If organizations are highly decentralized, the decision-making process is highly autonomous; employees tend to be more motivated. Such large organizations are capable of facing higher levels of uncertainty and lines of accountability are expected to be clearly identified. Centralized organizations operate according to clearly defined rules and regulations, and most decisions are made at the top management level (Hoque, 2006). However, when the environment is rapidly changing, centralized decision making may introduce delays, e.g. transmission of decision relevant information from local to central unit, deliberation and recommendation by central unit and transmission of its decision back to local unit for implementation (Kaplan and Atkinson, 1998).

Past research supports that decentralization is an important structural mechanism to ensure effective strategy implementation (Govindarajan, 1988). Decentralization also empowers the managers to take charge of business units' planning and control, and greater access to the information (Chenhall and Morris, 1986). Moreover, it will be more effective if decentralized units' decision making is carried out at the place where relevant information is acquired, stored, accessed and processed. Through observation and experience, local managers develop specific expertise e.g. local market opportunities, production possibilities and constraints, morale and capabilities of their labor force, and quality and reliability of local supplier (Kaplan and Atkinson, 1998). Individuals granted

authority can exercise discretion in developing and implementing policies or procedures (Waterhouse and Tiessen, 1978). Abernethy and Bouwens (2005) also discovered the importance of decentralization of decision rights on the effective implementation of accounting innovations.

Moreover, managers are concerned when new systems are implemented as these systems may influence how their performance is measured and rewarded (Abernethy and Bouwens, 2005). But if they can influence the design of these systems or have greater input, the acceptance and usage of new MAS is higher. Decentralization is expected to have a positive relation with the sub-unit manager's involvement in the design and implementation of the accounting innovation, such as introduction of activity-based costing system and balanced scorecard (Abernethy and Bouwens, 2005). But Gul and Chia (1994) pointed out that combining decentralization with sophisticated MAS will only be more effective in terms of managerial performance when the level of PEU is high.

Broad scope or sophisticated information (external, non-financial and future-oriented) is needed to service the diversity of decisions faced by the decentralized managers in areas of marketing, pricing and inventory control (Chenhall and Morris, 1986). Since SMA has similar characteristics of broad scope information, it will be useful for managers' decision making when the intensity of competition is high and the organizational structure is more decentralized.

2.6 Company Size

Generally, large size companies have better ability in controlling their operating environment and they are associated with more diversified operations and formalization of procedures (Chenhall, 2003). Company growth may create communication and administrative control problems. Due to increased levels of complexity and diversity within the production processes, large size companies employ more complex information handling systems (Otley, 1995) and emphasize on accounting sophistication (Abdel-Kader and Luther, 2008). Sophistication is 'the capability of a management accounting system to provide a broad spectrum of information relevant for planning, controlling and decision-making all in the aim of creating or enhancing value' (Abdel-Kader and Luther, 2008, p.3). However, Chenhall (2003) pointed out that there are few MCS studies that have considered size as a contextual variable.

Company size is one of the elements which have the potential to influence the MAS design and adoption (Gerdin, 2005). Guilding (1999) found competitor-focused accounting is associated with company size and Hoque and James (2000) also discovered that Balanced Scorecard is correlated with size. Likewise, Cadez and Guilding (2008a) found the usage of SMA techniques for decision making is positively associated with large companies. Moreover, others in organizational literature also found size is related to greater decentralization and structuring of activities as information processing became constraints on senior managers (Hoque and James, 2000).

There are several ways of estimating company size, including sales, assets, share valuation and employees. Most contingency-based MCS studies measured size according to

the number of employees (e.g. Abernethy and Bouwens, 2005; Libby and Waterhouse, 1996; Guilding, 1999; Gerdin, 2005).

After the review of MCS, development in SMA, business strategy, intensity of competition, decentralization and company size, it is important to ascertain how contingency theory is underpinning the SMA research.

2.7 Contingency Theory

The first explicit assumption of contingency theory is that there is no one best way to organize; the second is that any way of organizing is not equally effective under all conditions (Galbraith, 1973 p.2). To achieve a given level of performance, greater information must be processed during conditions of high task uncertainty (Galbraith, 1973 p.4). Generally, complex organizations have differentiated subsystems with different goals, intergroup conflict is inevitable as it is more difficult to have unity of goals among the subsystems. But if an organization is able to balance differentiation and integration, it is able to achieve high economic performance (Lawrence and Lorch, 1967). Using interview data obtained from executives of six firms from chemical processing industry, Lawrence and Lorch (1967) discovered that firms with high differentiation and high integration seem to adapt to environmental changes and perform better than those with low differentiation and low integration.

Traditional theory of organizational structure is commonly referred as strategy-structure-performance paradigm (Anderson and Lanen, 1999). In this respect, structure covers management accounting practices. Based on a field-based research of 14 Indian

companies, Anderson and Lanen (1999) found consistent to contingency theory exogenous environment impacts the changes in management accounting practices; difference in competitive strategies is a factor explaining the changes in management accounting practices. They suggested that future research should cover integration of strategy-based and culture-based tests of contingency theory.

Past studies on MCS are carried out to a large extent on contingency theory. Their purpose is mainly to explain the effectiveness of MCS designs best suit the contextual variables such as strategy, external environment, technology, organizational structure, size and culture (Kald et al., 2000; Chenhall, 2003). Contingency theory became a feature of management accounting research when researchers started to explore budgeting, and management control in its organizational context (Ryan, et al., 2002). Before considering the development of a contingency framework of SMA, it is important to look at the benefits as well as the limitations of contingency theory.

The true measure of a theory's contribution to society depends in its ability to depict and/or predict behavior in a variety of settings (Green, et al., 1993). Contingency theory contends that the design and use of MCS is contingent upon the context of the organizational setting in which these controls function or operate (Fisher, 1998). A better "match or fit" between the control system and the contextual contingency variable is hypothesized to result in increased organizational (individual) performance (Fisher, 1995). The theory attempts to identify the most important contingent variables (such as environment, technology, size, strategy) and assess their impact upon control systems (Otley, 1995). But Fisher (1998) cautioned that there may be presence of conflicting

contingent variables and there is no universally appropriate management accounting system (MAS) that applies equally well to all organizations in all circumstances. This implies that the control system design will deviate from the demand of at least one contingency, making optimal control difficult and result in lower performance. Researchers have also suggested that the efficient design of MAS is contingent on certain characteristics of the organization and its environment (Waterhouse and Tiessen, 1978; Cadez and Guilding, 2008b).

Fisher (1995) classified the past research into four levels according to analysis complexity and suggested the use of contingency approach similar to level four to better support the findings of the research. The four levels are:

1. Research design examines how one contingent factor correlated with one control mechanism. But it does not assess any effect on firm outcomes and if the control mechanism is related with other control mechanism.
2. Research examines joint effect of a control mechanism and contingent factor on an outcome variable (results in increased effectiveness or ineffectiveness).
3. Research examines joint effect of a control factor and multiple control mechanisms on an outcome variable.
4. Research simultaneously examines the effect of multiple contingent factors and multiple control systems to determine optimal control design.

In contingency research, a ‘good fit’ of MCS and organizational variables implies enhancing performance. The outcomes of MCS can be separated into use and usefulness of MCS and behavioral and organizational outcomes (Chenhall, 2003). Contingency-based studies normally use effectiveness or firm performance as the dependent variable

(Langfield-Smith, 1997). Despite the critique that contingency-based studies should include organizational performance as the dependent variable, some studies still regard management control systems as dependent variable. If performance is the dependent variable then compelling theory is necessary to show how the combination of MCS and context enable managers to take more effective decisions that improve firm performance (Chenhall, 2003).

Meanwhile, Gerdin and Greve (2004) argued that many researchers are not aware of different conceptualization of fit. Their contradictory or supportive results have to be re-interpreted. There are two conflicting forms of fit (Cartesian approach and Configuration approach). Each approach has distinctive division between a congruence approach and a contingency approach. The former explores the nature of context-structure relationships and assume best-performing organizations survive. Contingency research must show higher degree of fit is associated with higher performance. Next, there must be a distinction between moderation and mediation (an intervening mechanism between an independent variable and a dependent variable). Cartesian approach is characterized by reductionism while configuration approach follows a holistic view. Gerdin and Greve (2004) concluded that Chong and Chong (1997) modeled MAS scope as an intervening variable between strategy and performance can be classified as a contingency research using mediating approach in the Cartesian paradigm.

Much of the empirical research for contingency theory has been carried out through questionnaire surveys and the weaknesses of such instruments affect the findings. Respondent bias and superficiality of the survey instruments are potential problems (Tosi

and Slocum, 1984). To overcome the conceptual weaknesses of contingency theory, Tosi and Slocum (1984) stressed that key concepts must be more fully developed and relationships between these clearly explicated, and the scope of contingency theory needs to be broadened. With regard to case studies, Langfield-Smith (1997) argued that case studies provide interesting propositions and theories. Contingency approaches usually address strategy implementation, but case studies often emphasize the processes of strategy formulation and change.

Contingency-based research has been criticized to rely on traditional, functionalist theories and not been able to apply more interpretive and critical views. Murray (1988) felt contingency theories too easily fall into the trap of assuming that any set of external constraints has an internally consistent structural response. Chenhall (2003) also stated that contingency-based research has not applied interpretive and critical views. Besides, most review articles have proclaimed the lack of an overall framework for the analysis of the relationship between contingent factors and accounting, leaving no explanation for an increasing body of often contradictory results (Chapman, 1997).

Schoonhoven (1981) pointed out several problems with contingency theory as follows:

1. Contingency theory is not a theory but a well-developed set of interrelated propositions. It requires greater precision than general terms such as: confirm, consistent with, congruence, fit, and alignment.
2. The interaction relationship of variables has not been acknowledged.

3. Outcomes fail to provide any clues about the specific form of interaction intended.
Contingency theory can produce precise hypotheses depending on one's interpretation of the theorists' ideas.
4. Researchers tend to use assumptions on an already imprecise conceptual framework.
They fail to check for nonlinear relations when linearity is unquestioningly assumed.
5. Because of the implied symmetry, it is clear that non-monotonic hypotheses have to be developed. A non-monotonic relationship happens when two independent variables do not have a proper match, and results in negative impact to the outcome.

Furthermore, equifinality may also pose a difficult situation to the traditional contingency research. The equifinality concept means that the final state or performance of an organization can be achieved through multiple different organizational structures even if the contingencies the organization faces are the same. Some researchers have pointed out the possibility of multiple equally effective designs to support a given strategy undermines the predictive value of the contingency approach (Gresov and Drazin, 1997).

This SMA study attempts to follow the contingency approach to simultaneously examine the effect of multiple contingent factors suggested by Fisher (1995) and the Cartesian-contingency mediation research whereby SMA is the mediator and firm performance is the dependent variable. Since organizational capabilities are to be introduced as independent variables in the contingency model, next section covers resource-based view of the firm, another theory that is underpinning this SMA research.

2.8 Resource-based View of the Firm

The SMA framework to be developed adopts the resource-based view (RBV) of the firm by incorporating organizational capabilities as independent variables. The purpose is to examine whether SMA usage mediates the relationship between the primary organizational capabilities (market orientation, innovativeness, entrepreneurship and organizational learning) and firm performance. Organizations are the collection of resources, and the allocation and utilization are determined by administrative decisions which provide opportunities for management accounting to supply decision-useful information (Collier and Knight, 2009).

RBV of the firm is the dominant theory of strategic management literature since the mid-1980s. The principal contribution of RBV is its theory of sustainable competitive advantage which can be expected to lead to sustained performance (Newbert, 2007). A firm's resources at a given time are those (tangible and intangible) assets which are tied semi-permanently to the firm. It is important to know under what circumstances a resource lead to higher returns over longer periods of time (Wernerfelt, 1984). The two fundamental assumptions of RBV are: (1) resources and capabilities are heterogeneously distributed among firms and (2) resources and capabilities are imperfectly mobile. Using Value, Rarity, Imitability, and Organization (VRIO) framework, a firm is able to evaluate its internal strengths and weaknesses (Barney, 2001a). The framework involves asking the following four questions:

1. The question of Value: Do a firm's resources and capabilities enable the firm to respond to environmental threats or opportunities?

2. The question of Rarity: Is a resource currently controlled by only a small number of competing firms?
3. The question of Imitability: Do firms without a resource face a cost disadvantage to obtaining or developing it?
4. The question of Organization: Are a firm's other policies and procedures organized to support the exploitation of its valuable, rare and costly to imitate resources?

In order to achieve sustainable competitive advantage, a firm must possess certain key firm-specific resources and capabilities that have special characteristics, such as value, rare, inimitability and non-substitutable, or VRIN (Barney, 1991). Competitive advantage is dependent on distinctive processes, shaped by a firm's (specific) asset positions and the evolution paths it has adopted or inherited. It may eventually be eroded due to the ease of replicability and imitability (Teece et al., 1997). A capability is a routine or a number of interacting routines which cover top management routines and routines for monitoring business unit performance, for capital budgeting, and for strategy formulation. Johnson et al. (2005) suggested that capabilities underpinning competitive advantage may be examined by value chain analysis and benchmarking. In this regards, SMA techniques are expected to be closely associated to RBV of the firm. In addition, an organizational capability is the ability of an organization to carry out a coordinated set of tasks, utilizing resources, for the purpose of achieving particular result (Collier and Knight, 2009).

Capabilities such as market orientation, entrepreneurship, innovativeness and organizational learning are organizational processes by which firms synthesize and acquire knowledge, resources and generate new application from those resources (Henri, 2006a).

Top management's emphasis of four organizational capabilities that deploy resources with VRIN characteristics can contribute to sustainable competitive advantage. For example, Malaysian company Top Glove Corp Bhd is the world's largest latex examination glove maker with an annual capacity of 9 billion pieces. Its own technical know-how and large customer base has created a competitive edge against other players in the industry (OSK Investment Research dated 10 September, 2004).

By using value chain analysis, a firm can better understand its overall competitive position in an industry. A firm can also realize full potential for competitive advantage if numerous components of a firm's organization such as formal reporting structure, explicit MCS and compensation policies are combined with the organizational capabilities (Barney, 2001). More studies are being carried out to explore the relationship and implication of firm's capabilities on strategy formulation (Grant 1991; Spanios and Lioukas 2001; Parnell 2011). According to Grant (1991 p.122) organizational routines are "regular and predictable patterns of activity which are made up of a sequence of coordinated actions by individuals".

RBV has drawn many criticisms such as the question of generalizability of research findings and operationalization of constructs, and its inward focus. Priem and Butler (2001) commented that RBV is tautological and the role of product market is undeveloped in the argument. They also questioned whether RBV is actually a theory. Some authors question the strong bias towards quantitative research methods as this field of research may not be fully understood until more qualitative contributions are added to the conversations (Madhani, 2009).

From the definition of organizational capabilities mentioned above, it is commonly known that market orientation, entrepreneurship, innovativeness and organizational learning are primary organizational capabilities which can forge a link between resources to reach competitive advantage, to match and create market change. These capabilities must be combined to help a firm to be uniquely competitive (Hurley and Hult, 1998; Hult and Ketchen, 2001; Henri, 2006a). To be effective, MCS must be aligned with capabilities and consistent with strategic choice (Henri, 2006a). Similarly, to achieve a breakthrough performance, organizations have to formulate new strategy and apply strategic management system to unleash the hidden capabilities hidden within the organization (Kaplan and Norton, 2001). The developments and past research of individual organizational capability are elaborated below.

In Pertusa-Ortega et al.'s (2010) study of strategy-structure relationship, strategy is found to have significant impact on structure using contingency approach. In contrast, structure has a significant impact on strategy if RBV approach is used. However, Greenwood and Miller (2010) argued that the study of organization design can be approached by contingency theory and RBV as both theories in combination can lead to better understanding and addressing the design challenges of complex organizations. Contingency theory has been instrumental in organizational design in general. By adding another perspective namely resource-based view, managers are able to identify and exploit resources that provide competitive advantage (Greenwood and Miller, 2010). It is also important to acknowledge the dual role of resource in industry conditions and organizational success (Fahy and Hooley, 2002). Both theories can be utilized to enhance the knowledge of inter and intra firm flexibility and organizational performance (Fredericks,

2005). A two theory-model can be used in this study since both approaches have a common dependent variable, i.e. firm performance.

2.8.1 Market Orientation

Market orientation is an organization culture that effectively creates sustainable superior value for its present and future target buyers (Narver and Slater, 1990). Based on the literature, market orientation consists of three behavioral components – customer orientation, competitor orientation, and inter-functional coordination, and two decision criteria – long-term focus and profitability (Narver and Slater, 1990).

Slater and Narver (1999 p.1167) stated that “market-oriented businesses are committed to understanding both the expressed and latent needs of their customers, to sharing this understanding broadly throughout the organization, and to coordinating all activities of the businesses to create superior customer value”. Market orientation covers three set of activities: (1) organization-wide generation of market intelligence pertaining to current and future customer needs, (2) dissemination of the intelligence across departments, and (3) organization-wide responsiveness to it (Jaworski and Kohli, 1993). The greater the competition the more a business must be market oriented so that it may discover customer desires and create superior customer value to satisfy them (Kohli and Jaworski, 1990). In this respect, the generation of market intelligence pertaining to current and future customers appears to complement with the customer accounting (one SMA technique) which has to anticipate the future stream of revenue from customers.

Many academics have supported the proposition that higher market orientation results in higher performance (Narver and Slater, 1990, Jaworski and Kohli, 1993; Dawes, 2000; Farrell and Oczkowski, 2002). SBUs which have strong market orientation are more likely to pursue a differentiation strategy than a low cost strategy, which is not necessarily an external emphasis (Narver and Slater, 1990). However, some argued that a market orientation may have a strong or weak effect on business performance, depending on the environmental conditions such as market turbulence and competitive intensity (Jaworski and Kohli, 1993). Further, Slater and Narver (1995) suggested that market orientation enhances performance when it is combined with a learning orientation. They also claimed that market orientation is inherently a learning orientation. But this contradicts their statement that learning orientation mediates the market orientation-performance linkage (Hurley and Hult, 1998). Some researchers proposed that innovation is a mediating variable between market orientation and performance (Jimenez-Jimenez et al., 2008).

2.8.2 Entrepreneurship

Entrepreneurship may be defined as “the process of creating something new with value by devoting the necessary time and effort assuming the accompanying financial, psychic, and social risks and uncertainties; and receiving the resulting rewards of monetary and personal satisfaction” (Hisrich and Kearney, 2012 p.11). Entrepreneurship is the ability of the firm to continually renew, innovate and taking risks in its market and operation. It is expected to perform well in dynamic environment but not in stable environment (Henri, 2006a). It may be good in many aspects but does not by itself provide sustainable competitive advantage (Hult and Ketchen, 2001, Henri, 2006a). Entrepreneurial firms are those in which the top managers have entrepreneurial management styles, indicated by the firms’ strategic

decisions and operating management philosophies (Naman and Slevin, 1993). Innovation and creativity are two important elements of entrepreneurship (Hisrich and Kearney, 2012). Entrepreneurial management is about sensing and seizing the new big opportunity and how to address it (Teece, 2007).

Successfully integrating entrepreneurial and strategic actions improves the firm's ability to grow and create wealth (Ireland, et al., 2001). For example, firms exploit opportunities others have not identified or exploited, move into new markets, seize new customers and/or combine existing resources in new ways, through entrepreneurial actions. Such strategic actions provide the context which innovations are developed and commercialized. Besides, a moderate level of entrepreneurship with a high level market orientation will have positive impact on performance (Bhuian et al., 2005).

Entrepreneurial proclivity encouraged pro-activeness, innovativeness and risk taking. The results of Matsuno et al. (2002) suggested that entrepreneurial proclivity's performance influence is positive when mediated by market orientation and negative or non-significant when not mediated by market orientation. But Zahra et al. (2006) cautioned that there is not much research to the process how younger firms with limited resources and expertise can continuously develop and exploit entrepreneurial opportunities.

2.8.3 Innovativeness

Innovativeness refers to the firm's openness to new ideas, product or process and is complement to entrepreneurship (Hurley and Hult, 1998). High levels of innovativeness are associated with the culture that emphasizes learning, development, and participative

decision making. When adequate resources are present, innovativeness facilitates the implementation of innovate capacity. A greater capacity will be more successful in responding to their environment and develop new capabilities that lead to competitive advantage and superior performance (Hurley and Hult, 1998). Firm innovativeness is the degree in which the organizational culture promotes and supports innovation. Innovation is the adoption and execution of a new idea or behavior; which may be a system, policy, program, device, process, product or service (Jimenez-Jimenez et al., 2008). The success of Apple Inc. is mainly due to its focus on innovation and a unique company culture that encouraged a leap in product innovation (Hisrich and Kearney, 2012).

Some scholars distinguish ‘innovation’ from ‘innovativeness’ while others suggest the inter-changeability of these two perspectives (Lee, et al., 2010). Many studies have identified organizational learning and market orientation as antecedents of innovation which is a source of competitive advantage (Jimenez-Jimenez et al, 2008; Lee, et al., 2010). Previous studies on the relationships of innovativeness, organizational characteristics and organizational performance yield conflicting results. Subramanian and Nikakanta (1996) found innovativeness does improve organizational performance but the complex relationships can only be detected if innovativeness is measured as a multi-dimensional construct.

Within the organizational setting, there are three independent determinants of innovativeness (Lee, et al., 2010). First, technology-related innovativeness is the willingness of firms to accommodate technological changes as business opportunities. Second, behavioral-related innovativeness refers to a firm’s dynamic behavior in accepting

new ideas faster than rivals. Third, product-related innovativeness demonstrates a firm's tendency to try new products and services. Salavou (2004) claimed that product innovativeness concept provides a better methodological approach in describing the innovativeness characteristics of a firm.

In the current dynamic environment previously acquired competences become obsolete and new competences have to be built. Product innovation functions as a tool for organizational learning and serves to contribute to firm renewal over time (Danneels, 2002). Organizations that provide excellent training facilities can foster a more innovative environment. The learning culture is an important variable to influence innovativeness (Mathew, et al., 2011). For example, Apple Inc. has created a culture of innovation but failures are tolerated and seen as a companywide learning and enrichment experience (Hisrich and Kearney, 2012).

Traditionally, MCS have been perceived as a hindrance to any innovation and strategic change. But recent empirical studies have questioned these assumptions of negative effect of MCS (Davila, 2005). Effective control systems can contribute to the achievement of efficiency, quality and responsiveness to customer needs. When the organization grows, additional rule, policies and procedures should not restrict employees to be more innovative and creative. Effective entrepreneurship control systems allow managers to balance quantitative and qualitative performance indicators and focus all activities. Besides applying financial controls (e.g. budgetary control ratio analysis) managers have to consider non-financial controls (e.g. process efficiency, leadership effectiveness, customer retention and growth, and product and service innovation) to

motivate and facilitate employees to be innovative and creative (Hisrich and Kearney, 2012).

2.8.4 Organizational Learning

Organizational learning is the process by which the organization detects problems within the organization and investigates environmental changes which will result in a lack of 'fit' between the organization and the environment (Kloot 1997). Organizations that have the capability to learn faster than the competitors and transfer knowledge quickly by effectively using their human capital can gain a source of competitive advantage (Coad, 1996; Ireland et al., 2001).

There are four major constructs associated with organizational learning: knowledge acquisition, information distribution, information interpretation and organizational memory (Kloot, 1997). Knowledge acquisition is the collection of knowledge by any units regarded as potentially useful. Information distribution is the process by which information from different sources is shared. Information interpretation is the process through which information is given meaning. Organizational memory is the means by which knowledge is kept for future use (Kloot, 1997). To perpetual organizational learning, the systems have to cover strategic planning systems, MIS, environmental scanning systems, etc. which relate to current and future time frame (Shrivastava, 1983).

MCS design may include features which fit each of the four constructs of organizational learning and that help organization to learn and survive during period of change (Kloot, 1997). Financial performance measurement and evaluation facilitate

knowledge acquisition, information distribution and interpretation. Non-financial performance measurement (e.g. balanced scorecard) is associated to knowledge acquisition. In fact, MCS and organizational learning have similar purpose: both are concerned with changing or adapting an organization to ensure its fit with its environment (Kloot, 1997). Simons (1990) argued that the use of interactive management control by top management can influence and guide the learning process. Using of SMA methods may encourage organizational learning (Coad, 1996).

Organizational learning helps to improve a firm's information processing activities at a faster rate than rivals do. Firms with strong learning orientation encourage employees to constantly question the organization norms and action. Combination of strong market orientation and a strong learning orientation are likely to lead to true source of sustainable competitive advantage, optimizing spanning processes (customer service delivery, new product development and strategy development) that directly influence the firm's performance (Baker and Sinkula, 1999a). It is organizational learning that makes the company act proactively and facilitates radical innovation (Jimenez-Jimenez et al., 2008).

Nevertheless, organizations must not be constrained by adaptive learning, focusing on issues or opportunities that are within the traditional scope of activities. It is important to question the long-held assumptions about its mission, customers, capabilities or strategy, i.e. generative learning (Slater and Narver, 1995). Figure 2.7 illustrates the organizational learning process and the boundary that constraints learning to the adaptive learning and the arrows indicate knowledge development for generative learning.

In reality, organizational learning is not an automatic and natural process. It is common to find psychological and cultural blockages to learning and obstacles related to organizational structure and leadership. Some writers suggested that centralized structures tend to reinforce past behaviors and impede learning, as long period of success can be a blockage to learning (Antal et al. 2001).

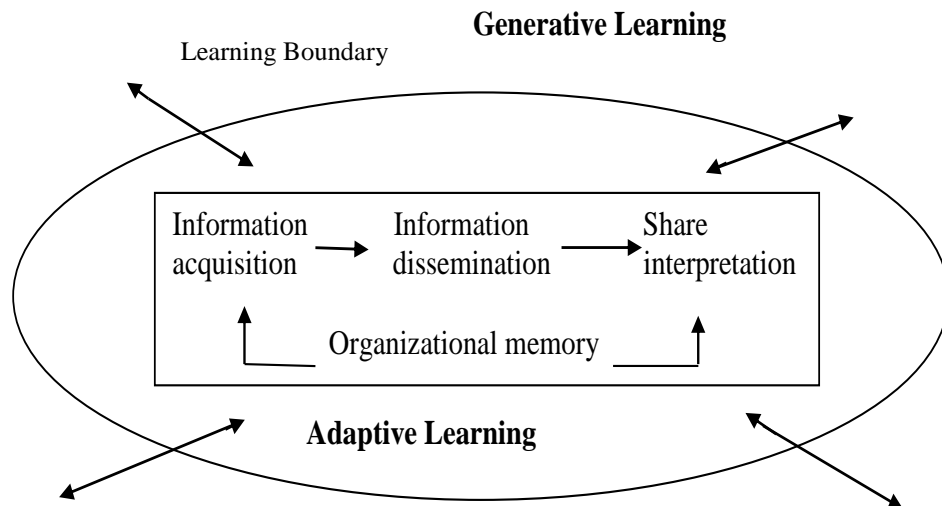


Figure 2.7: The Process of Organizational Learning (Source: Slater and Narver, 1995)

2.8.5 Relationship of Four Organizational Capabilities

Hult et al. (2003) pointed out that the four organizational capabilities collectively give rise to an organization's cultural competitiveness – a degree of ability to detect and fill the gap between what the market desires and what is currently offered. When market orientation is complemented by an entrepreneurial drive, it provides the cultural foundation for organization learning which is valuable to a firm's customers. The understanding of customers' expressed and latent needs can lead to innovativeness, such as introduction of new products and services (Slater and Narver, 1995). But past research on organizational capabilities focused only on one or two capability variables' impact on performance, e.g. Narver and Slater (1990), Jaworski and Kohli (1993), Greenley (1995), Goes and Park

(1997), Han et al. (1998), Baker and Sinkula (1999a), Slater and Narver (2000), Matsuro et al. (2002) (see Table 2.3). Recent empirical studies have expanded the test to cover more variables' impact on performance and the interactions among them, e.g. Hurley and Hult (1998), Baker and Sinkula (1999b), Hult and Ketchen (2001), Lee et al. (2001), Hult et al. (2003), Jimenez-Jimenez et al. (2008) and Lin et al. (2008) (see Table 2.3).

Drawn from a sample of 181 large multinational corporations (MNC), Hult and Ketchen (2001) found positional advantages arising from the confluence of market orientation, entrepreneurship, innovativeness and organizational learning have a positive effect on MNC performance. These four elements of capabilities are each necessary, but together they help a firm to be uniquely competitive. But the study has not addressed the potential intricacies of relationships among the four elements. Hult et al. (2003) determined 10 alternative analytical models covering the interactions of four organizational capabilities based on past strategic management literature. By examining a sample of 764 organizations using these models, Hult et al. (2003) discovered that different organization types have different focus on these four capabilities. Based on the data collected from 744 Spanish organizations, Jimenez-Jimenez et al. (2008) found the impact of market orientation and organizational learning on performance is completely mediated by innovation. Findings also support the relationship between innovation and performance. However, the study does not examine the likely causal relation between market orientation and organizational learning.

Lin et al. (2008) proposed a model that clearly indicates how the four variables are interacted with each other and how innovativeness is an important determinant of business

performance. The data was collected from 333 info-electronic companies in Taiwan. As shown in the research model (Figure 2.8) proposed by Lin et al. (2008), the four capabilities are predicted to be an element that collectively contributes to the development of sustainable competitive advantage resulting in better performance.

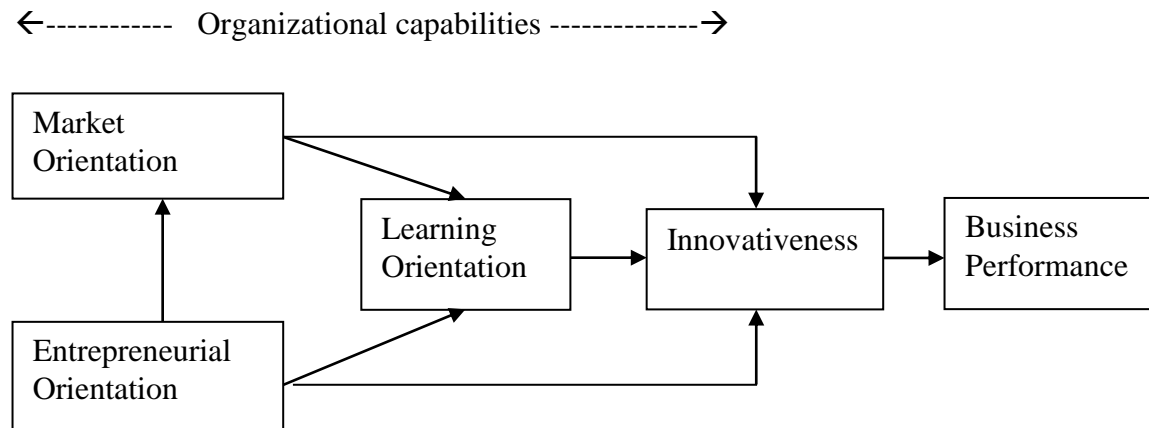


Figure 2.8: Research model of organizational capabilities (adapted from Lin et al, 2008)

Despite that their findings do not support all the hypotheses, Lin et al.'s (2008) model has clearly demonstrated how the four capabilities are interlinked as follows:

1. Entrepreneurial orientation has a positive impact on market orientation (Matsuno et al., 2002).
2. Market orientation requires extensive organizational learning. Both are highly correlated and mutually dependent (Day, 1994; Slater and Narver, 1995; Bell et al. 2002). Learning orientation is indispensable to market and entrepreneurial orientation (Hurley and Hult, 1998).
3. Learning orientation mediates the relationship between market orientation and innovativeness, and the relationship between entrepreneurial orientation and

innovativeness (Jaworshi and Kohli, 1993; Slater and Narver, 1995; Hurley and Hult, 1998; Baker and Sinkula, 2002).

4. The higher the extent of learning orientation, the stronger the influence on innovativeness (Goes and Park, 1997; Hurley and Hult, 1998; Baker and Sinkula, 1999b).
5. Innovativeness is an important determinant of business performance (Narver and Slater, 1990; Jawsorski and Kohli, 1993; Greenley, 1995).

A firm trying to enhance innovation has to develop a market orientation behavior and improve organizational learning process. This will help the firm to predict and understand better the customer needs and competitive situation and process the information faster (Jimenez-Jimenez et al., 2008). Most recent empirical studies on capabilities (Table 2.3) show the four constructs (market orientation, entrepreneurship, innovativeness and organizational learning) are complementing each other so as to attain better performance.

2.8.6 RBV in a Changing Environment: Dynamic Capabilities

Despite that the RBV theory is one of the most widely accepted theories of strategic management, it has received only modest empirical support. Newbert (2007, p.142) suggested scholars to test those models that incorporate its more contemporary theoretical extension to enhance our understanding of “how and to what degree resources, capabilities, and core competencies facilitate the attainment and sustainability of a firm’s competitive advantage and subsequent level of performance”. Others suggested management control scholars to bridge the gap between the concepts in management control and strategic management (Nixon and Burns, 2005).

According to Teece, et al. (1997, p.516), dynamic capabilities refers to “the firm’s ability to integrate, build upon and reconfigure internal and external resources and functional competences to deal with environments which are consistently evolving”. They are also considered as “the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die” (Eisenhardt and Martin 2000, p.1107). Dynamic capabilities allow the activation and redirection of the complex framework of economic and organizational factors. It can result in the creation of new products and processes, allowing the firms to respond to changing external environment (Lopez, 2005). Eisenhardt and Martin (2000) concluded that traditional RBV mis-identifies the locus of long-term competitive advantage in dynamic markets, over-emphasizes the strategic logic of leverage, and reaches a boundary condition in high-velocity markets. If an enterprise possesses resources/competences but lack dynamic capabilities it can only make competitive return for a short period (Teece, 2007).

Definitions of dynamic capabilities are inconsistent and still subject to further testing. Eisenhardt and Martin (2000) argued that dynamic capabilities are not necessary a source of sustainable competitive advantage because the firms can reach the same resource configuration via different processes or paths. This indicates a sign of equifinality.

2.8 Summary

This chapter covers an extensive review of past literature required to support the hypotheses development in next chapter. The following summarized the major review which is consistent to the six review questions raised at the beginning of the Chapter.

Porter's (1980) competitive strategy is suitable for the SMA framework research. SMA and strategic role of accountant are properly defined and there are empirical results which support their association with firm performance. Intensity of competition and organizational structure (decentralization) are contextual variables having an impact on SMA usage. Consistent with past management accounting research, contingency theory is appropriate for the study of SMA framework. There is empirical research to support that resource-based view of the firm which emphasizes the collective use of organizational capabilities is an important theory for the study of contemporary management accounting practices. Finally, company size is an important contextual variable influencing the design and adoption of sophisticated accounting.

Table 2.2: Research design of past MCS-strategy studies

Research study	Method/Sample/ Operationalization of strategy	Dependent variable (DV) / Independent variable (IV)	Source of measures	Findings
Chenhall & Langfield- Smith (1998a)	Survey 78 manufacturing firms in Australia, contingency approach. Differentiation and cost leadership	Organizational performance (DV), strategic priorities, management techniques, management accounting practices (IV)	Org. performance (Govindarajan 1988, Govindarajan & Fisher 1990), management techniques (Miller, et al.1992), accounting practices (Joye & Blayney 1990, Innes & Mitchell 1995)	Combination of management techniques and management accounting practices under particular strategic priorities can enhance performance
Nilsson & Rapp (1999)	Case study of a toolmaker group, analyze control system at management and operational levels. Differentiation		7 point Likert scale instrument by Govindarajan (1988) for Porter's business strategy	Decentralized decision-making improved flexibility, encouraged responsibility and initiative taking
Kald, Nilsson & Rapp (2000)	Case study using deductive analysis and hypotheses for strategic change. Integrate 3 variables (strategic pattern, position and mission)	MCS (tight/loose control) (DV), strategic variables (IV)	Miles and Snow (1978), Porter (1980, 1985), Gupta & Govindarajan (1985)	There will be erroneous conclusion about relationship between strategy and MCS if only one strategic variable is considered
Davila (2000)	Case study (contingency approach) based on Galbraith's concept of uncertainty	MCS, project performance (DV), project uncertainty, product strategy, org. structure (IV)	Formal systems (Merchant 1981, Simons 1995), project performance (Shenhar & Dvir 1996), product strategy (9 questionnaire items)	Project uncertainty and product strategy explain the design of MCS
Shih & Yong (2001)	Survey 49 largest firms in Singapore (contingency approach) Prospector (high innovation)	MCS (DV), strategy, financial results uncertainty and decision making orientation (IV)	19 questions testing 6 hypotheses	Firms pursuing the Prospector-like strategy (high innovation) have lower financial results uncertainty, a more long-term orientation for decision making, and more decentralized control
Moore & Yuen (2001)	Mail survey and field studies of 49 firms in clothing and footwear	Management accounting system (DV),	Organizational life- cycle variables (Miller & Friesen,	MAS formality changed to complement org.

	industry using configuration approach/contingency study Based on build, hold, harvest and divest (Gupta & Govindarajan 1984)	strategy, structure, leadership, decision-making styles and org. performance (IV).	1983, 1984)	characteristics across life cycle stages
Chenhall & Langfield-Smith (2003)	Exploratory case study of a manufacturing company over 15 year period	Organizational performance (DV), performance measurement, gain-sharing scheme and team-based structure (IV)		Gain-sharing scheme (mechanistic form of control system) contributes to the success of the firm. Team-based structure, no significant improvement
Jermias & Gani (2004)	Survey questionnaire and interview of 106 business unit managers of listed companies under consumer goods industry in Jakarta (contingency approach), Product differentiation and low cost	Business unit effectiveness (DV), contingent fit, degree of centralization, type of control, type of management accounting systems (IV)	Business unit effectiveness (9 performance dimensions), contingent fit (fitness landscape approach)	Degree of contingent fit has a positive association with business unit effectiveness
Hoque (2004)	Survey questionnaire, 52 manufacturing firms in New Zealand, Prospector and defender	Organizational performance (DV), strategy, environment and MCS (IV)	Prospector and defender (Mile & snow 1978), environmental uncertainty (Gordon & Narayanan 1984 and Govindarajan 1984), non-financial performance measures (Abernethy & Lillis 1995, etc.)	Significant and positive association between management's strategic choice and performance acting through management's high use of non-financial measures for performance evaluation.
Auzair & Langfield-Smith (2005)	Survey questionnaire for 155 financial controllers of service organizations in Australia, systems approach. Differentiation and cost leadership	Type of MCS (DV), strategic priorities, service process type and life cycle stage	MCS (prior survey instrument), service process type (Silvestro et al. 1992), org. life cycle stage (Kazanjian and Drazm 1990)	(1) mass service, mature and cost leader firms place a greater emphasis on more bureaucratic forms of MCS compared to professional service, growth and differentiator firms (2) service process type, life cycle stage and business strategies have a

				significant influence on MCS design
Kober, Ng & Paul (2007)	Case study of a public sector pathology service provider. Prospector typology	MCS/Strategy		The results show the 2 way relationship between MCS and strategy
Martinez & Kennerley (2005)	Case study (contingency approach) of a UK energy supplier, strategic change: from survival to long term	Organizational performance (DV), contingent factors (PMMS maturity, business context, business improvement initiatives, external environment) and performance measurement and management systems (IV)	Performance separated into internal effects (people management, organizational capabilities, org. behavior and operational performance) and external effects (brand reputation, customer satisfaction, profitability and market expansion)	PMMS has relevant benefits came from 'internal effects', in particular org. behavior and operational performance and moderate benefits came from 'external effects', such as brand reputation and customer satisfaction.
Henri (2006a)	Survey questionnaire of 383 Canadian manufacturing firms, internal capabilities, using a RBV perspective	Organizational performance (DV), innovativeness, org. learning, market orientation and entrepreneurship and MCS (PMS) (IV)	Interactive and diagnostic uses of PMS (Vandenbosh 1999), market orientation (Narver & Slater 1990), entrepreneurship (Naman & Slevin 1993), org .learning (Hult 1998) and innovativeness (Burke 1989)	Results suggest the influence of dynamic tension resulting from the balanced use of PMS in a diagnostic and interactive fashion on capabilities and performance
Bhimani & Langfield-Smith (2007)	Survey questionnaire and interview	Financial information (DV), strategy development and implementation (IV)		Strategy development and implementation activities tend to be structured and formal; in strategy development, both financial and non-financial information are used

Table 2.3: Past empirical studies on organizational capabilities

Research of organizational capabilities	Relationship of variables	Findings
Slater & Narver, 2000 Journal of Business Research	MO- performance ENT- performance	Support of Narver & Slater (1990) finding of a positive relationship between MO and business profitability. No relationship between entrepreneurial orientation and profitability
Lee, Lee & Pennings, 2001 Strategic Management Journal	Internal cap abilities- performance	Internal capabilities and partnership-based linkages have a statistically significant influence on performance.
Narver & Slater, 1990 Journal of Marketing	MO- performance	Substantial positive effect of MO on profitability.
Hurley & Hult, 1998 Journal of Marketing	OL-MO-INN- performance	Higher levels of innovativeness are associated with cultures that emphasize learning, development and participative decision making.
Baker & Sinkula, 1999a Journal of Marketing Science	MO- performance, OL as moderator	When OL is high, effect of MO on change of market share is significant and positive. Strong OL will weaken relationship between MO and new product success.
Baker & Sinkula, 1999b Journal of Market Focused Management	MO/OL- product innovation- performance	Both MO and OL affected organizational performance indirectly through their effect on product innovation. No direct effect of MO.
Hult & Ketchen, 2001 Strategic Management Journal	MO-ENT-INN- OL- performance	Each capability can contribute to positional advantage, confluence of all four capabilities have positive effect on MNC performance.
Hult, Snow & Kandemir, 2003 Journal of Management	ENT-MO-INN- OL- performance	ENT is the most influential means of developing a market-based culture. Role of ENT differs depending on organization type.
Matsuro et al., 2002 Journal of Marketing	ENT-MO- performance	Entrepreneurial proclivity's performance is positive when mediated by MO.
Farrell & Oczkowski, 2002 J of Market Focused Management	MO- performance OL- performance	MO is more important than OL, strong MO reflects both behavior and value.

Jaworski & Kohli, 1993 Journal of Marketing	MO- performance	MO is related to performance (except market share)
Goes & Park 1997 Academy of Management Journal	OL-INN	Inter-organizational links provide opportunities for learning and resource sharing to enhance innovative processes
Greenley, 1995 British Journal of Management	MO- performance	MO does not influence performance
Bhuian et al., 2005 Journal of Business Research	MO-ENT- performance	MO and ENT are 2 key elements in org. success. High MO and moderate ENT are best combination.
Jimenez-Jimenez et al., 2008 European J of Innovation Management	MO-OL-INN- performance	MO and OL foster INN, impact of MO and OL on performance mediated by INN
Lin et al., 2008 International Journal of Manpower	ENT-MO-OL- INN- performance	OL and INN mediate relationship of MO/ENT, and performance
Han, et al., 1998 Journal of Marketing	MO-INN- performance	INN is the mediator in MO- performance relationship

Market orientation (MO)

Entrepreneurship (ENT)

Innovativeness (INN)

Organizational learning/Learning orientation (OL)

CHAPTER THREE

THEORETICAL MODEL AND HYPOTHESES DEVELOPMENT

3.1 Introduction

Based on the problem statement, six research questions have been formulated in Section 1.4 of Chapter 1. The objective of this chapter is therefore to develop a theoretical framework according to the research questions that address the problem statement. From the research questions, the key variables that have been determined for the SMA research are competitive strategy, SMA, strategic role of accountant, intensity of competition, decentralization, organizational capabilities and firm performance. The contingency model shows how these variables are related to each other. By applying the existing theories (i.e. contingency theory, resource-based view of the firm) and evidence from prior empirical researches, hypotheses are accordingly developed.

Section 2 demonstrates how contextual variables are selected and how the contingency model is developed according to the contingency theory and resource-based view of the firm. Section 3 describes in details how each hypothesis is developed. It explains how Porter's (1980) competitive strategy is associated to the two dimensions of SMA and the mediating effect of SMA usage on the strategy-performance relationship and capabilities-performance relationship. Finally, hypotheses regarding the impact of strategic role of accountant, intensity of competition and decentralization on SMA usage are presented.

3.2 Theoretical Framework

This study is based on contingency theory and resource-based view of the firm (RBV). Contingency theory assumes that there is no one best way to organize and greater information must be processed during high uncertainty to achieve a given level of performance (Galbraith, 1973). Complex organizations have to balance differentiation and integration and adapt to environmental changes in order to perform better (Lawrence and Lorch, 1967). Consistent with strategy-structure-performance paradigm, Anderson and Lanen (1999) found exogenous environment and competitive strategies impact the changes in management accounting practices.

Contingency theory argues that the design and use of control systems is contingent upon the context of the organizational settings (Fisher, 1998). The main purpose of contingency-based MCS research is to explain the effectiveness of MCS designs that best suit the contextual variables such as strategy, external environment, organizational structure and culture (Kald et al., 2000; Chenhall, 2003). The fundamental basis of contingency theory is that there is no universally best answer to why there are inherent differences in different circumstances (Fisher, 1995). Management accounting research has attempted to identify the most important contingent variables and to assess their impact upon controls design (Otley, 1995; Ryan, et al., 2002). Gerdin (2005) suggested the use of multiple contingencies model in accounting research to help explain contradictions and unexpected patterns, and explore important contingent factors that affect MAS design. In fact, the study of SMA is seen by many commentators as the key to understanding the design and implementation of MCS (Chenhall, 2005b).

There are two common variants of contingency-based strategy-MCS research: moderation approach and mediation approach (Gerdin and Grave, 2004). The underlying theory of moderation approach is that a third variable called moderator moderates the effect the independent variable has on the dependent variable. In contrast to moderation approach, mediation approach shows that fit does exist when an impact of an independent variable on a dependent variable operates through a mediator. Gerdin and Grave (2004) argued that only mediation approach can give an accurate account of the circumstances in MAS design.

The principal contribution of RBV is its theory of sustainable competitive advantage which can be expected to lead to sustained performance (Newbert, 2007). A firm's resources such as organizational capabilities are tied semi-permanently to the firm. It is important to know under what circumstances a resource lead to higher returns over longer periods of time (Wernerfelt, 1984). Management accounting techniques are embedded in routines that aid organizations to achieve new resource configurations. However, there is scant research on the study of the relationship between management control systems and organizational capabilities (Henri, 2006a; Collier and Knight, 2009). Recent research on RBV of the firm has focused on how the four organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) collectively help a firm to be uniquely competitive (Hult et al., 2003; Henri, 2006a; Lin et al., 2008). From a review of past strategic management literature, Hult et al. (2003) determined ten alternative analytical models showing how the four organizational capabilities interlinked with each other to enhance performance. Furthermore, Jimenez-Jimenez et al. (2008) and Lin et al. (2008) stressed that innovativeness is the determinant of firm performance and it mediates the relationship of three other variables and firm performance.

Since the critical review of past research on strategy-MCS relationship by Langfield-Smith (1997), numerous research papers focusing on this relationship have appeared in academic journals (see Table 2.2 for summary of selected articles). Most of the studies adopted contingency theory research and considered organizational performance as the dependent variable. Gerdin and Greve (2004) argued that some researchers are not aware of the implications of their choice on theory building and testing. In an appropriate form of fit in contingency research, performance has to be the dependent variable. It was also pointed out that companies operating in different environments are expected to have different strategic initiatives, and hence require different management information systems or controls that are consistent with the strategy to enhance performance (Anthony and Govindarajan, 1998; Davila, 2000; Hoque, 2004).

The contingency model (see Figure 3.1) of this study was drawn on Cadez and Guilding's (2008a) framework and Fisher's (1995) view. While Cadez and Guilding make use of Miles and Snow's (1978) strategy to experiment the mediating effects of SMA (accountants' participation in strategic decision-making process and usage of SMA techniques) on company performance, the framework of this study applies Porter's (1980) competitive strategies, i.e. product differentiation and cost leadership.

Nixon and Burns (2012) has pointed out that SMA literature ignored the studies on RBV of the firm which is emphasized in the new era of strategic management. Cadez and Guilding (2008a) introduced market orientation in its SMA contingency model. Though the findings supported market orientation enhances firm performance, they failed to find any association between market orientation and SMA usage. Recent research of RBV of the firm stressed that collectively the four organizational capabilities (market orientation,

entrepreneurship, innovativeness and organizational learning) contribute to competitive advantage (Hult et al. 2003; Henri 2006a; Lin et al., 2008). In view of this, all four constructs of organizational capabilities are adopted in this contingency model. Furthermore, Cadez and Guilding (2008a) found the qualitative data collected from interviews suggested intensity of competition is one important contextual variable influencing the usage of SMA.

Based on the past research, Jermias and Gani (2004) developed a hypothetical relationship between competitive strategy, organizational design, management accounting system (MAS) and business unit performance. Product differentiation companies will benefit more from using decentralized organizational structure, put more behavioral control and use more MAS that enhance companies' ability to differentiate their products to satisfy their customers. In contrast, low cost companies will benefit from using a more centralized organizational structure, emphasizing more on output control, using more MAS that enhance companies' ability to control costs.

Porter's (1980; 1985) generic competitive strategy is among the most influential contributions in the study of the strategic behavior in organizations (Campbell-Hunt, 2000). It is more suitable for evaluation of performance than Miles and Snow's (1978) strategic types and remains the most commonly supported and identified in key strategic management literature (e.g. Hambrick, 1983; Kim and Lim, 1988; Allen and Helms, 2006). In fact, the formation of some SMA techniques is greatly influenced by Porter's (1980) value chain analysis and five competitive forces.

In building the research model for this study, intensity of competition, organizational structure (degree of decentralization) and organizational capabilities (market orientation, entrepreneurship, organizational learning and innovativeness) are also considered. These variables were chosen due to their extensive coverage in the literature, yet they receive little or no attention in SMA research. The framework makes use of four organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) collectively instead of market orientation (a single capability) used in Cadez and Guilding (2008a). Past studies have proven that each of these four capabilities is not sufficient to develop sustained competitive advantage and only collectively can they help the firm in attaining competitive advantage (Hurley and Hult, 1998; Hult and Ketchen, 2001; Henri, 2006a).

Cultural competitiveness is “the degree to which an organization is predisposed to detect and fill gaps between what the market desires and what is currently offered” and entrepreneurship is the most influential and proactive factor in the cultural competitiveness framework (Hult et al. 2003 p.402). Entrepreneurship encourages pro-activeness, innovativeness, risk taking and has a positive impact on market orientation (Matsuno et al., 2002). Organizational learning improves a firm’s information processing activities; the higher the extent of organizational learning the stronger will be a firm’s innovativeness (Hurley and Hult, 1998). The understanding of customers’ expressed and latent needs also lead to innovativeness which is an important determinant of firm performance (Narver and Slater, 1990; Slater and Narver, 1995). The inclusion of market orientation in the SMA framework by Cadez and Guilding (2008a) was influenced by Roslender and Hunt (2003) who suggested that the principal characteristics of SMA are similar to market orientation. Citing past research (e.g. Narver and Slater 1990; Jaworski and Kohli, 1993), Cadez and

Guinding (2008a) posited that market orientation is positively associated with performance. But their argument has ignored more recent research (e.g. Hult et al., 2003; Henri 2006a; Lin et al., 2008) that a single capability is no longer adequate to enhance the competitiveness of a firm.

Furthermore, contingency research suggests an important link between organizational structure and the adoption and implementation of MCS (Gordon and Narayanan, 1984; Gosselin, 1997; Chenhall, 2003; Lee and Yang, 2011). Gul and Chia (1994) also pointed out that there is a complex relationship between perceived environmental uncertainty, control sub-systems of management accounting systems, decentralization and performance. Competition is a powerful contextual factor affecting both organizational design and the particular use of MAS (Khandwalla, 1973; Libby and Waterhouse, 1996; Hill, 2000; Lee and Yang, 2011). Based on post-survey interviews, Cadez and Guinding (2008a) also found intensity of competition can be an important determinant of SMA usage.

The contingency model (Figure 3.1) intends to ascertain whether Porter's (1980; 1985) competitive strategy has an indirect impact on firm performance through the mediation of SMA (strategic role of accountant and usage of SMA techniques). Intensity of competition is assumed to be associated with higher degree of decentralization (Tiessen and Waterhouse, 1983) and both variables are expected to have a direct link to higher SMA usage.

The contingency model also shows that usage of SMA and strategic role of accountant are expected to function individually as a mediator to the extent that each of

them accounts for the relation between the predictor (strategy) and the criterion (performance) (Baron and Kenny, 1986). An intervening variable (mediator) is both a product of the independent variable and cause of the dependent variable (Cavana, et al., 2001). Gerdin and Greve's (2004) mediation model of the Cartesian-contingency approach acknowledges 'fit' may exist when the impact of independent variable (X_1 , e.g. strategy) on dependent variable (Y , e.g. performance) operates through mediating variable (X_2 , e.g. MAS). The model has also considered multiple contingencies and management control mechanisms suggested by Fisher (1995) and Gerdin (2005). But it does not consider the moderating effects of contextual factors; rather these factors are assumed to be noise within the model (Chenhall, 2005a).

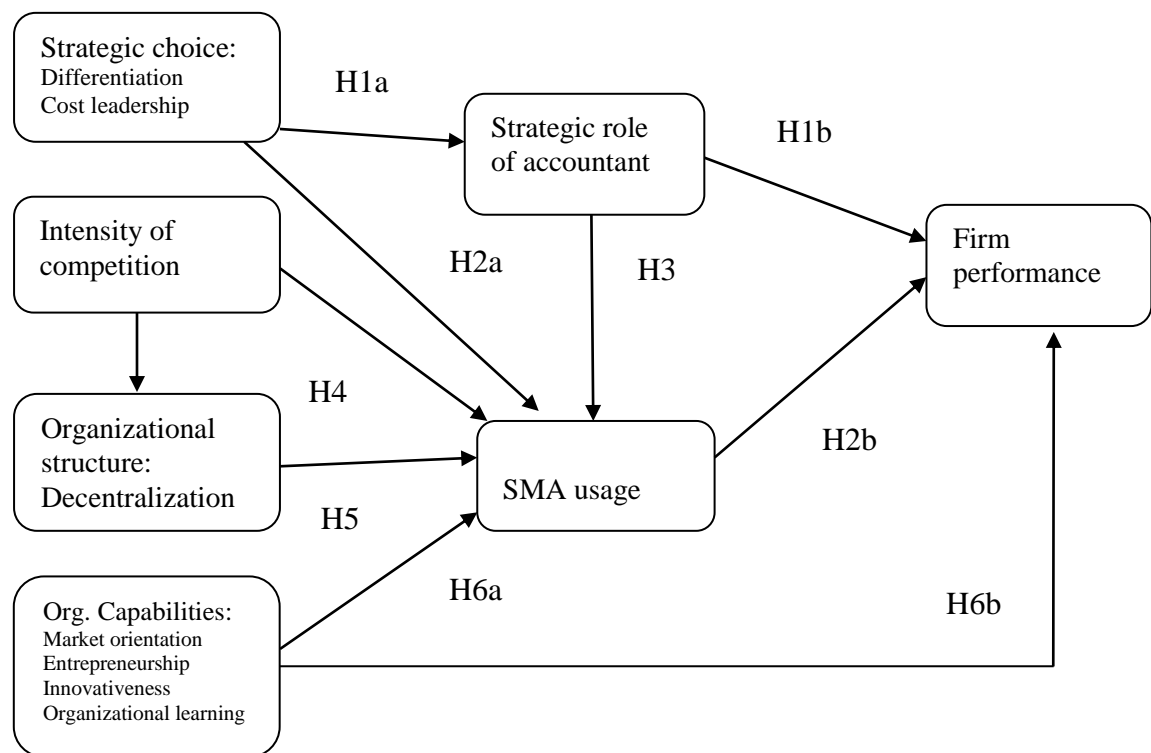


Figure 3.1: SMA Contingency Model

3.3 Hypotheses Development

This section shows how a contingency model of SMA was established according to the research questions and literature review. This section explains how the seven hypotheses are developed in line with the research questions and how the variables in the model are associated with each other.

3.3.1 Strategic Choice and the Strategic Role of Accountant

Referring to Research Question 1, a hypothesis stating the relationship between strategic choice and the strategic role of accountant was developed based on the following literature evidences.

The first dimension of SMA refers to strategic role of accountant or accountants' participation in strategic decision-making process. Strategic decision-making process requires wider participation to improve decision quality as it relies heavily on wider information sources (Louis, 2011). Management accountants' involvement in strategic decision-making process is crucial as they are capable of collecting internal and external information, whether financial or non-financial, and setting desired objectives and direction, and monitoring the implementation and success of strategic plans (Ittner and Larcker, 1997; Louis, 2011). In this new era, management accountants generally engage in multiple new tasks which include: assessing the financial implication of operational decisions, risk assessment, strategy formulation, change management system design and implementation, and customer relationship management (Burns and Baldvinsdottir, 2007). The emergence of SMA has made accountants to become integral to strategic decision-making process which leads to a new concept called "strategic accountant" (e.g. Broutthers and Roozen, 1999; Cadez and Guilding, 2008a).

In practice, management accountants have been regarded as middle managers. Middle managers are found to involve in four strategic activities in the organizations, two upward (championing alternatives and synthesizing information) and two downward (facilitating adaptability and implementing deliberate strategy) (Wooldridge and Floyd, 1990; Floyd and Wooldridge, 1992; 1997). When an innovation strategic priority is selected, it has a positive relationship with middle management involvement (Chenhall and Morris, 1995; Cabrera et al., 2003) and requires a more expansive set of information, emphasizing flexibility that allows the organization's participants to adjust planned decisions (Abernethy and Brownell, 1999).

According to Floyd and Wooldridge (1992), middle managers are motivated to synthesize a wide range of environmental events and champion a constant stream of initiatives. Using Miles and Snow (1978) strategies, Floyd and Wooldridge (1992) found that managers in 'prospectors' firms are reported to have significantly higher levels of upward and divergent forms of strategic involvement than analyzers and defenders. Veliyath and Shortell (1993) also found support that prospectors place greater emphasis on key personnel involvement in the planning process than defenders. This is supported by Cadez and Guilding (2008a) who found accountants' participation in strategic decision-making is greater in prospector-type companies than defender-type companies.

Cost leadership strategy, which shares similar attributes to defender strategy, emphasizes on critical internal efficiency information and are associated with low involvement of managers (Floyd and Wooldridge, 1992; Veliyath and Shortell, 1993; Cabrera et al., 2003). If an organization emphasizes on cost efficiency, the management tends to consider participation in decision-making as costly and disruptive to production

efficiency. Conservative organizations will find the use of standardized procedures more appropriate in achieving effective performance (Chenhall and Morris, 1995).

Furthermore, the management teams with diversity in terms of backgrounds (e.g. age, experience, and education) are broader minded and better able to recognize strategic opportunities. In this regard, Naranjo-Gil and Hartmann (2007) found that heterogeneous top management teams with different experience are positively and significantly associated in strategic change toward prospector position. In this case, with their expertise in finance and management, accountants can become valuable management team members participating in strategic decision making and analyzing broader business issues. As middle level managers are more and more viewed as important mediators across organizational boundaries in the implementation of strategic change, so are accountants. Accountants are prepared to take on the role of strategic advisors and to act as change controllers across functions and hierarchical levels (Faure and Rouleau, 2011). In this respect, the accountants may be able to play a role in firms either pursuing product differentiation strategy or cost leadership strategy.

Accounting plays a major role in helping firms to formulate differentiation strategy or cost leadership strategy (Bromwich, 1996). This argument is supported by a questionnaire survey of 280 accountants in Australia, where it was found that management accountants are strongly involved in strategic formulation and implementation (Ferreira and Moulang, 2009). For example, accountants need to perform strategic cost analysis in order to cost product characteristics or attributes which in turn contributes to Porter's (1980) differentiation strategy. Besides, accountants also involve in modeling the cost structure of competitors which contributes to Porter's (1980) cost leadership strategy (Bromwich, 1996;

Lord, 1996). In other words, accountants can contribute in strategic goal setting in the competitive market by providing strategic cost data.

However, Chenhall (2008) discovered that management accountants have not been accepted to perform their strategic role in most organizations. They have poor reputation for not being able to influence managerial thinking at strategy level which deals with innovation in product and customer development. According to Chenhall (2008), this may be due to the education system and lack of support from professional bodies.

Due to their education and training, accountants are able to provide strategic cost data for firms pursuing either differentiation or cost leadership strategy (Bromwich, 1996). However, most empirical studies found support that high involvement of middle managers, including accountants, in the strategic decision-making process is positively associated with the adoption of innovative or differentiation strategy (Floyd and Wooldridge, 1992; Veliyath and Shortell, 1993; Chenhall and Morris, 1995; Naranjo-Gil and Hartmann, 2007; Cadez and Guilding, 2008a). This is possible because firms pursuing differentiation strategy are facing greater environmental uncertainty, they require higher creativity, innovativeness, risk taking and broad inter-functional discussion (Anthony and Govindarajan, 1998; Barney, 2001b; Langfield-Smith, 2005; Cadez and Guilding, 2008a). Hence, management accountants' participation in strategic decision-making process in this new era of uncertainty is critical to organizations pursuing differentiation strategy and in a more competitive environment. Hence, the following hypothesis is developed.

H1a: Differentiation strategy is positively associated with strategic role of accountant.

3.3.2 Strategic Choice and SMA usage

Research Question 1 also requires a hypothesis concerning the relationship between strategic choice and the SMA usage be developed. The hypothesis was formulated based on the following literature evidences.

Organizations pursuing different business strategies require different designs and uses of MAS (Abernethy and Guthrie, 1994; Langfield-Smith, 1997). Cost leadership strategy requires that product lines remain rather stable and a strong emphasis on formal profit and budget controls in order to keep costs and prices at a minimum (Miller, 1988; Govindarajan, 1988; Bruggeman and Van der Stede, 1993). In order to achieve a competitive advantage based on operational efficiency, tactics used by cost leaders are large scale facilities, cost minimization, process improvement, and overhead control (Ghemawat, 1986; Porter, 2001). Cost leadership firms which are successful use formal controls as they generally do not face unpredictable environment (Miller, 1988). Traditional narrow scope MAS is adequate for firms operating in such stable environment (Chong and Chong, 1999). Cost leaders attach high importance to standard costing for performance assessment, flexible budgeting for manufacturing cost control, meeting budgets, using product cost for pricing decisions, and competitor cost analysis (Shank, 1989; Lord, 1996; Kober, et al., 2003). But some found non-financial MAS information, which is positively associated to interactive use of MAS, can also support cost strategy implementation (Naranjo-Gil and Hartmann, 2006).

Product differentiation strategy creates customer loyalty and higher margins through product innovation, brand image, advertising intensity and exclusive distribution network. Some forms of these advantages can be difficult to imitate (Ghemawat, 1986; Porter 2001).

In addition, differentiation strategy involves producing new range of products and rationalizing production in the turbulent environment, management control systems (MCS) must then be designed to deal with such uncertainty (Nilsson and Rapp, 1999). These contemporary MCS emphasize interactive process whereby new strategies and innovation may be merged by frequent dialogue and debate while reviewing and evaluating new information (Dess et al., 2005). In addition, prior research suggested that organizations apply strategies characterized by entrepreneurial orientation, prospectors, build and product differentiation are linked to decentralized control systems and results oriented, focus on problem finding and solving and encourage innovation (Govindarajan and Gupta, 1985; Guilding, 1999; Chenhall, 2003).

Organizations that shifted towards a prospector typology are more likely to use MAS interactively (Simons, 1990; 1994; Abernethy and Brownell, 1999). Abernethy and Brownell (1999) pointed out that most research has ignored the potential for MCS to be used much more actively as a tool for formulating and implementing change in strategic direction, such as interactive use of MCS highlighted by Simons (1995). Prior research in management accounting assumed budgets serve as diagnostic role, an answer machine. But budget can be a dialogue, learning and ideas creation machine. In fact, interactive use can have many advantages (Simons, 1990; Abernethy and Brownell, 1999). Interactive use of management accounting is a continual exchange between top management and lower levels of management, interactions among them, not just participation in budget setting process, but an on-going dialogue between organizational members. Therefore, similar to the interactive use of budget, SMA can be used interactively to generate the benefits from on-going dialogue.

Moreover, broad scope information systems allow managers to obtain information necessary to make successful economic decisions in the long run (Hoque, 2006). Broad scope MAS information is found to be more effective in firms employing a strategy of continuous product/market development and innovation (prospectors) than in firms which are protecting a comparatively narrow and stable product-market (defenders) (Abernethy and Guthrie, 1994). Similarly, Naranjo-Gil and Hartmann (2007) found broad scope design of MAS is associated to strategic change toward prospector positions but not associated to strategic change toward defender positions. Broad scope information is actually an important characteristic of SMA.

Amir et al. (2010) found support that differentiation strategy positively influences the use of contemporary performance measurement systems, namely: performance evaluation, benchmarking, timeliness and scope. The processes and techniques required to produce differentiated products are more diverse and complex than low cost products. Hence, firms emphasizing product differentiation would find balanced performance measures which are linked to measures of customer satisfaction and benchmarking more suitable (Chenhall and Langfield-Smith, 1998a). In formulating and implementing a product differentiation strategy to overcome competitive threats, company requires an accurate approximation of product attribute costs, and monitoring these costs overtime (Mia and Clarke, 1999). The findings of Auzair and Langfield-Smith (2005) also suggested that MCS adopted by firms pursuing differentiation strategy are less bureaucratic than firms pursuing cost leadership strategy. SMA techniques are broad scope, proactive, un-programmed and unconventional (Lord, 2007) and have the proactive, prospective and outward-looking features (Coad, 1996). They may be regarded as less bureaucratic MCS and more suitable to differentiators.

Similarly, prospectors who are considered innovative organizations tend to adopt contemporary accounting techniques, e.g. activity-based costing (Gosselin, 1997). Though SMA is considered a formal control, it is more flexible than the traditional management accounting, and suitable for interactive use which encourages ideas and creativity (Wilson, 1995; Simons, 1995). Firms implementing product differentiation strategy have broad decision-making guidelines and the control systems allow managerial freedom within guidelines and provide a policy of experimentation, rewards for risk taking, not punishable for failures (Barney and Hesterly, 2008). Moreover, Baines and Langfield-Smith (2003) found advanced management accounting practices (AMAP), including SMA techniques help managers to focus on achieving differentiation priorities, such as innovative products, quality, flexibility, delivery and customer service compared to traditional financial-based accounting practices. Changes in AMAP are also associated to higher use of non-financial-based management accounting information (Baines and Langfield-Smith, 2003).

Differentiation strategy such as new product design requires collaboration and cooperation of functional managers from different areas. It will be difficult to measure quantitatively their performance (Dess et al., 2005). However, Simons (1987) found firms that embrace a defender strategy use their accounting control systems less intensively than those adopting a prospector strategy. These prospectors would focus more on forecast data, setting tight budget goals and monitoring outputs. Chenhall et al. (2011) also discovered that product differentiation is significantly associated to formal controls.

Porter (1980; 1985) suggested that competitor analysis is fundamental to the pursuit of competitive advantage. To pursue a successful differentiation strategy, it is necessary to have a range of reliable information with double external focus: on competitors' value

creation and customers' value attribution chains (Roslender and Hart, 2002). Similarly, Guilding (1999) found evidence that, relative to other firms, prospector firms make greater use of, and perceive greater helpfulness in competitor-focused accounting practices. Anderson and Lanen (1999) also found prospectors pay more attention to competitors' performance and measures on customer satisfaction.

But SMA may be suitable for cost leaders as well. Cinquini and Tenucci (2010) found some SMA costing techniques (i.e. life cycle costing, strategic costing, activity-based costing and value chain costing) are also associated with cost leadership strategy. Likewise, Abdel-Kader and Luther (2008) are unable to confirm that firms following differentiation strategy need a sophisticated cost system for better measurement of diversified products.

To summarize, traditional accounting systems are particularly well suited in cost leadership firms with high product standardization and relatively stable production processes. Differentiation-type firms that are continually developing and shaping their product domain through innovation of products and services need to seek out and exploit new product market opportunities and continuously monitor a wide range of environmental conditions and events. Therefore, they require information which monitors the strategic uncertainties associated with factors external to the firm (Chenhall and Morris, 1986; Abernethy and Guthrie, 1994). Broad scope accounting information such as strategic cost data, external information on competitors and customers are valuable to these firms operating in a more turbulent environment. SMA which is external and future focused (Wilson, 1995) may have these abilities to deal with firms pursuing differentiation strategy during uncertain environment. Hence, the following is hypothesized.

H2a: Differentiation strategy is positively associated with SMA usage.

3.3.3 Strategic Role of Accountant and Performance

Referring to Research Question 2, “Are strategic role of accountant and SMA usage positively associated with firm performance?”, a hypothesis stating the relationship between the strategic role of accountant and firm performance was developed based on the following literature evidences.

Management accountants are becoming important team members in the formulation and implementation of new strategies in this new era of complex and dynamic market (Kaplan and Atkinson, 1998; Aver and Cadez, 2009). Past literature has shown that involvement of middle managers, including management accountants, in strategic decision-making processes may have direct impact on firm performance. For example, involvement in decision-making can lead to higher productivity (Bowen and Lawler, 1995) and participation in control system may lead to satisfaction and increased productivity (Shields et al., 2000; Hoque, 2006). Managers’ strength of involvement is correlated with the commitment, job satisfaction and organization’s effectiveness (Vandenberg, et al., 1999). However, Chenhall and Morris (1995) argued that when an organization places more attention on internal strategies such as cost efficiencies, the management of conservative organizations tends to view participation in decision-making as costly and disruptive to production efficiency.

Team-based structures or cross functional teams can build up a stronger customer focus, improve firm quality, work process, and flexibility of response, and have a positive effect on performance through the members’ information sharing (Chalos and Poon, 2000; Baines and Langfield-Smith, 2003). Ferreira and Moulang (2009) found management accountants’ involvement in strategic formulation and implementation does enhance

organizations' strategic effectiveness. If management accountants are also members in team-based structures or cross functional teams, there is no doubt that they can contribute to higher firm performance.

Further, several empirical researches confirm that there is a positive relationship between middle management involvement in strategy and organizational performance (Wooldridge and Floyd, 1990; Floyd and Wooldridge, 1992; 1997). Floyd and Wooldridge (1997) found middle managers' upward influence on strategy has a positive association with organizational performance. In this regard, upward influence of middle managers, i.e. championing alternatives and synthesizing information (see Section 2.2.4 and Figure 2.3) has important implications for policy-makers as the role of middle managers can add value to organizations (Currie, 1999). Hence, management accountants, being middle level managers, may have the capability to enhance organizational performance through upward influence.

Recent research shows that as uncertainty increases, such as the adoption of JIT productions systems and customization strategy, there will be more reliance on teamwork to achieve integration and managing functional interdependencies (Gerdin, 2005). Top management team (TMT) heterogeneity is important in the formulation and implementation of an organization strategy (Naranjo-Gil and Hartmann, 2007). Management accountants' participation in strategic decision-making process denotes their new role in TMT which can contribute to strategic change and lead to organizational effectiveness.

Literature also shows that management accountants' participation does not have impact on firm performance. Some researchers criticized that management accountants

have not been proactive enough as they simply question managers about various reports generated mainly by standard cost systems (Fry, et al., 1995). In addition, Bayo-Moriones and de Cerio (2004) found no interactive effect on firm performance if employee involvement or participation is simultaneously combined with operations management issues. Likewise, Chenhall and Langfield-Smith (2003) were not able to confirm team-based structure improves performance. Moreover, Cadez and Guilding (2008a) were also unable to determine from their contingency study that accountants' participation in strategic decision-making process can enhance performance. Similarly, based on a meta-analysis, Wagner (1994) was unable to determine that consultative participation (which usually lacks involvement in strategic decision-making process) can have any effect on performance. Wooldridge and Floyd (1990) also cautioned that correlations do not necessary reflect causation and reciprocal causation is possible. In this case, middle management's involvement in decision-making process may in fact be influenced by firm performance.

Despite mixed results from the past studies, it is expected that the changing role of accountant to strategic decision-making involvement would enhance firm performance as shown in the following hypothesis.

H1b: Strategic role of accountant is positively associated with firm performance.

3.3.4 SMA Usage and Performance

This section develops a hypothesis relating also to Research Question 2. The following literature evidences support the relationship between SMA usage and firm performance.

Contingency theory of management accounting research suggests that the use of MAS information that suits the external and internal settings can enhance organizational

performance (Mia and Clarke, 1999; Chenhall, 2003; Hoque, 2011). From a survey of 61 business unit managers, Mia and Clarke (1999) discovered that intensity of market competition is a determinant of the use of MAS information, which in turn is a determinant of business unit performance. Hoque (2011) found change to contemporary management accounting systems is positively associated with organizational performance. Broad scope MAS information is an important antecedent of SBU performance (Chong and Chong, 1997). According to traditional strategy-structure-performance paradigm, competitive strategy and structure (including management accounting practices, the formal and informal information decision-making methods) are considered profit maximizing responses to exogenous factors (Anderson and Lanen, 1999).

Further, Dunk (2011) claimed that if budgets are used predominantly as a planning mechanism, consistent with Simons' (1990) interactive MCS approach, then such planning facilitates product innovation resulting in improved performance. However, if budgets are used primarily as a control mechanism then it is unlikely that product innovation will contribute to financial performance (Dunk, 2011). The study of Abernethy and Brownell (1999) also confirmed that higher strategic change matches with interactive use of budget and results in highest performance. Their finding supported Simons' (1990) assertion that the effective implementation of strategic priorities does not necessarily influence the importance of accounting controls, but rather influences the manner in which controls are used. In this case, strategic change refers to the extent to which a firm is moving along the defender/prospector continuum. The higher usage of strategic interactive control (one form of SMA) is expected to contribute to higher performance. SMA, being external focused, forward-looking (Lord, 2007) is expected to provide many benefits similar to budget setting process if used interactively or as a planning mechanism.

The findings of Abernethy and Bouwens (2005) also supported a positive association between participation in the design of management information systems (MIS), MIS use satisfaction, with the MIS and performance. The greater the level of managerial acceptance of accounting innovation, the greater will be the level of system satisfaction which is associated to the performance improvement (Abernethy and Bouwens, 2005).

Greater use of BSC, an integrated performance measurement system that views performance from four perspectives, is associated with improved performance (Hoque and James, 2000). Malina and Selto (2001) found BSC creates strategic alignment, effective motivation and positive organizational outcomes. BSC works as an interactive system to examine, question and analyze the validity of the assumptions behind a certain strategy (Davila, et al., 2009). Chenhall (2005a) also found integrative strategic performance measurement systems, such as BSC, enhance the strategic competitiveness of organizations through the support of alignment of manufacturing with strategy and organizational learning. BSC improves the integration of the management processes, empowers people, as well as enhances organizational performance (De Geuser, et al., 2009).

However, even though many companies believe measuring non-financial areas of performance affect profitability, Ittner and Larcker (2003) warned that there must be a causal link between non-financial measures and financial outcomes in order to achieve higher returns on assets and returns on equity. Companies have to identify which performance areas and drivers make the greatest contribution as applying performance measurement system such as BSC is not universally applicable and comprehensive. Furthermore, Lipe and Salterio (2000) found managers have cognitive difficulties working with measures to evaluate performance that were specific to a situation. Perera et al. (1997)

also revealed that, though customer-focused strategy emphasized on non-financial measures, it has no link to performance. Rather, it improves satisfaction and motivation as reflected in manager-affective outcome (Perera, et al., 1997). The possible reason for such outcome may be the role of operational measurement systems improves job satisfaction of managers instead of firm performance (Langfield-Smith, 2005). Further, in a mail survey of 51 large companies in Finland, Hyvonen (2007) did not find contemporary performance measures (i.e. non-financial measures, qualitative measures, balanced scorecard and customer satisfaction measures) help to enhance performance of those firms pursuing customer-based strategy. Instead, she discovered financial performance measures are important to improve customer performance.

Formal strategic control practices can actually hinder performance in some circumstances if focus on formal and rigid action plans and targets when flexible and creative strategic response may be more suitable (Ittner and Larcker, 1997). Also, benchmarking (one form of SMA techniques) has little association with the performance of firms in computer industry but a positive effect on the performance in the automotive industry (Ittner and Larcker, 1997). Ittner and Larcker (1997) also indicated that greater use of customer/competitor comparison measures for monitoring strategic position exhibits little impact on computer industry performance and negatively associated with automotive performance. They were of the view that automakers may be providing quality information more frequently than optimal or information overload. In a similar vein, Bromwich and Bhimani (1989) disagreed to the suggestion that activity-based costing (ABC) can enhance profitability. However, Kennedy and Affleck-Graves (2001) found firms adopting ABC techniques outperformed or matched non-ABC firms.

Despite that the past empirical results may be contradictory, the use of MAS, such as integrated performance measurement and other non-financial information, is considered useful for decision making and would enhance firm performance. Therefore, the use of SMA techniques that have broad scope, interactive, external-oriented, and forward-looking characteristics, is expected to affect firm performance positively. This leads to the following hypothesis:

H2b: SMA usage is positively associated with firm performance.

3.3.5 Mediating Role of SMA on Strategy-Performance Relationship

In line with Research Question 3, this section presents the literature support for the role of SMA as a mediator on the strategy-performance relationship. Since SMA has two dimensions: strategic role of accountant and SMA usage, two hypotheses were formulated that reflect these two dimensions as mediators.

Boal and Bryson (1987) were of the view that intervening model is implicit in Porter's (1980) competitive strategy framework. If H1a which hypothesizes that strategy and strategic role of accountant are positively associated, and H1b which hypothesizes that strategic role of accountant is positively associated with firm performance, are supported, based on the propositions of Baron and Kenny (1986) and Gerdin and Greve (2004), it may be concluded that strategic role of accountant plays a mediation role on the relationship between differentiation strategy and firm performance. Figure 3.2 shows that competitive strategy (differentiation) is associated with strategic role of accountant (H1a) which in turn has an impact on firm performance (H1b). When H1a and H1b are supported, it is anticipated that strategic role of accountant mediates the strategy-performance relationship. Hence, the following hypothesis is formulated:

H1c: Strategic role of accountant mediates the relationship between differentiation strategy and firm performance.

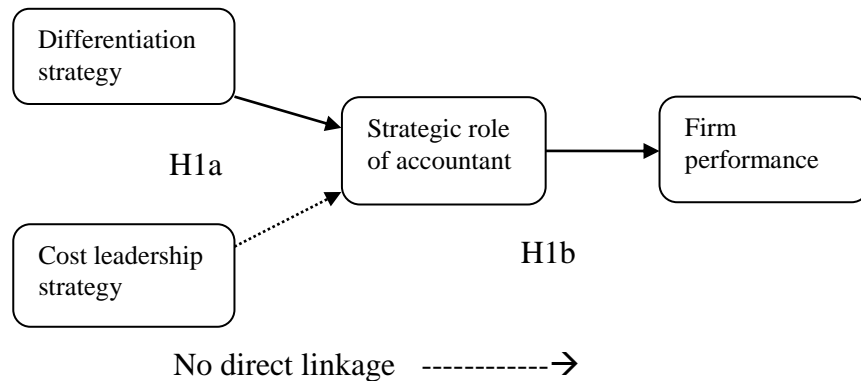


Figure 3.2: Mediating effect of strategic role of accountant on strategy-performance relationship

Abernethy and Guthrie (1994) argued that the effectiveness of business units is dependent on a match between the design of the information system and the firm's strategic posture. They found that broad scope information systems are more effective in firms employing a strategy of continuous product/market development and innovation (prospectors) than in firms which are protecting a comparatively narrow and stable product-market (defenders). Consistent with past literature, for firms pursuing differentiation strategy, the use of more non-financial based MCS has a positive effect on performance (Tsameny, et al., 2011). Likewise, from a questionnaire survey of 62 SBU managers from Australian manufacturing companies, Chong and Chong (1997) found broad scope MAS information mediates the relationship between SBU strategy and SBU performance.

Similarly, if H2a expects that differentiation strategy and SMA usage are positively associated, while H2b expects that SMA usage leads to higher firm performance, based on the propositions of Baron and Kenny (1986) and Gerdin and Greve (2004), it may be

concluded that SMA usage plays a mediation role on the relationship between differentiation strategy and firm performance. Figure 3.3 presents the relationships between differentiation strategy and SMA usage, and between SMA usage and firm performance. SMA usage plays a mediation role on strategy-performance relationship when both H2a and H2b are supported.

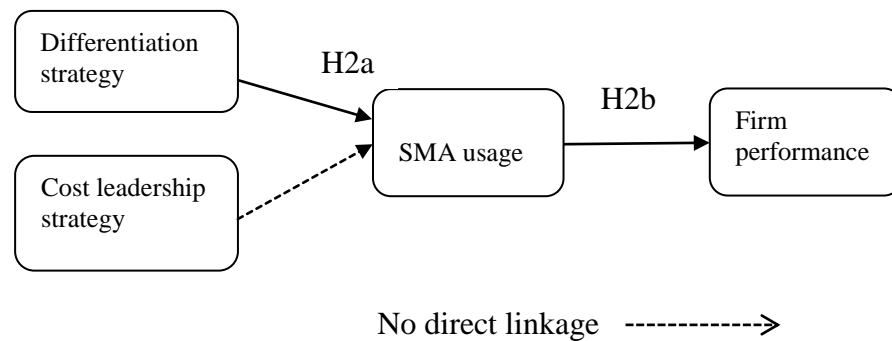


Figure 3.3: Mediation effect of SMA usage on strategy-performance relationship

Hence, the following hypothesis is posited.

H2c: SMA usage mediates the relationship between differentiation strategy and firm performance.

3.3.6 Other Antecedents of SMA Usage

Research question 4 asks whether strategic role of accountants, intensity of competition and organizational structure (decentralization) have an impact on the usage of SMA. The following three sub-sections explain why the three variables (strategic role of accountant, intensity of competition and decentralization) are important antecedents to SMA usage.

3.3.6.1 Strategic Role of Accountant and SMA Usage Relationship

Management accounting practices are gaining importance and changing in substance due to the demands of new environment. Firms do not need bookkeepers but management accountants with requisite skills and business acumen who can communicate well and can influence line changes. They are able to produce much more qualitative, future-oriented and broader scope information (Anderson and Lanen, 1999; Brouthers and Roozen, 1999). Fry, et al. (1995) also argued that management accountants must take a broader role in the management of the manufacturing plant by becoming more proactive in the design, selection, and implementation of a management accounting system that supports manufacturing strategies.

Accountants have become more pro-active in supporting strategic management. Besides getting involved in the design of management control systems, they have to provide financial and non-financial information for the multi-disciplinary teams for strategic decision-making and performance measurement. If the accountants are involved in the design and implementation of MAS together with sub-unit managers, it may encourage higher usage of the systems (Abernethy and Bouwens, 2005). Similarly, with management accountants as a business partner, the functional managers are actively involved in the design and regular update of information system (Pierce and O'Dea, 2003). Chapman (1998) argued that accounting, as a tool for organizational control, exists not as a collection of techniques, but as on-going process. Thus, accountants' interaction in such process is to shape the accounting for organizations in highly uncertain conditions.

Accountants play an important role in costing the characteristics or attribute possessed by product in strategic planning and modeling the cost structures of competitors

(Bromwich, 1996). Hence when accountants are actively involved in providing cost information for strategic decision-making it may result in higher usage of SMA. Management accountants having a business unit orientation is more innovative on accounting system design than those with a functional (accounting) orientation (Emsley, 2005). Bromwich and Bhimani (1994) also agreed that SMA demands new skills and attitudes of management accountants and requires full cooperation with other functional managers.

However, Lord (1996) disagreed with Simmonds's (1982) assertion that management accountants are the ideal people to collect and analyze external data that is relevant for strategic management. Her case study showed that the firm has successfully collected and used competitor information without any input from the management accountant. Furthermore, accountants' involvement does not necessarily lead to improved design of performance measurement system (Johnson 1992; McKinnon and Bruns, 1992; cited in Abdel-Maksoud and Abdel-Kader, 2007). Likewise, Naranjo-Gil and Hartmann (2007) did not find any significant association between top management team heterogeneity and broad scope MAS design.

But management accountants are expected to support the creation of value for customers and driving continuous improvement (Maskell and Baggaley, 2000). The strategic involvement by middle management, including accountants, suggested a mediating role on the relationship between strategy and organizational performance and therefore has an impact on the management accounting information gathering and analyzing functions (Sands, 2006). It is anticipated that appreciation and usage of SMA

techniques is greater when the accountants become more strategically oriented. Hence, the following hypothesis is developed.

H3: Strategic role of accountant is positively associated with SMA usage

3.3.6.2 Intensity of Competition and SMA Usage Relationship

Intensity of competition is much related to environment and represents one dimension of environmental uncertainty (e.g. Duncan, 1972; Miles and Snow, 1978). According to contingency researchers, competitive environment determines the form and the intensity a firm makes use of the management accounting practices (Anderson and Lanen, 1999). There is also a positive relationship between management accounting system sophistication and competition intensity (Khandwalla, 1972). Intensity of market competition also increases demand of accounting information (Hill, 2000) as customers have increased demands with respect to quality and efficiency (Anderson and Lanen, 1999).

Competition is one of the components of perceived environmental uncertainty (PEU) that causes uncertainty in decision-making. Accounting systems have to incorporate more non-financial information, more forecasts, and more frequent reporting during uncertain environment (Chapman, 1997). Organizations tend to use non-financial and broad scope MAS information to a greater extent in order to cope with external environmental uncertainty more effectively (Chenhall and Morris, 1986). In addition, Chong and Chong (1997) found strong evidence to support the proposition that PEU affects MAS design and performance. By a questionnaire survey of 64 managers in Australian manufacturing companies, they found PEU is significantly associated with the extent on the usage of broad scope accounting information. Similarly, Gul and Chia (1994) also found availability of MAS information with characteristics of broad scope and aggregation under conditions of

high PEU. Moreover, Baines and Langfield-Smith (2003) also discovered increased competitive environment influences changes in organizational design, advanced manufacturing technology and advanced management accounting practices.

Moreover, from a questionnaire survey of 54 large Saudi-Arabian companies, Al-Hazmi (2010) argued that market competition stimulates strategic movement and use of cost information for strategic considerations is important to support strategic development in meeting competitive pressures. Similarly, Hoque (2011) found a significant association between intensity of competition and changes in MAS which are more appropriate for decision making in competitive environment. Likewise, Libby and Waterhouse (1996) found intensity of competition positively correlated with MAS changes for Canadian manufacturing companies. The components of MAS are those that support decision-making and control.

Furthermore, the findings of Dekker and Smidt (2003) revealed that to better cope with the pressures from an unpredictable environment and a perceived intensive competition, firms are induced to adopt and develop management accounting practices. Target costing is particularly beneficial to ensure that only profitable products are introduced into the market under intense competitive pressure. Dekker and Smidt (2003) found that the adoption of target costing is positively correlated with the intensity of competition and high level of PEU. But Ax, et al. (2008) claimed that there is no direct relationship between PEU and the adoption of target costing since customer and competitor information can be unpredictable or difficult to predict.

Ambe and Sartorius (2002) concurred that there is a positive correlation between the level of competition and the performance of SBUs, and enterprises utilize management accounting as a strategic response to competition. The survey of 40 managers from South African beverage industry demonstrated that SMA, including benchmarking, performance monitoring, JIT manufacturing systems help to provide strategic response to increased intensity of competition (Ambe and Sartorius, 2002). Firms operate in competitive environment will be motivated to change their control systems because appropriate costing systems and proper performance monitoring are essential to survival (Kloot, 1997). In addition, with greater competition, firms also have to find ways to differentiate their products and services from those provided by competitors by developing customer retention initiatives and customer profitability information (Guilding and McManus, 2002).

However, there are also studies that discovered competition or environmental uncertainty is not positively related to management accounting systems. Williams and Seaman (2001) discovered MAS changes are associated with decreasing competition in Singaporean manufacturing companies. Likewise, Hoque's (2004) study on New Zealand manufacturing companies did not find evidence of a significant relationship between environmental uncertainty and performance through management's use of non-financial performance measures.

In the context of SMA, Noordin et al. (2009) found that Malaysian electrical and electronics companies operating under intense competitive environment generally use SMA information elements (i.e. competitor information analysis, customer information analysis and product-related information analysis) more extensively. From the foregoing empirical results, it is obvious that companies will adopt broad scope MAS, non-financial

information, target costing, and customer and competitor information analysis to support strategic development under competitive environment. Thus, it is reasonable to expect that intensity of competition is positively related to SMA usage as stated by the following hypothesis:

H4: Intensity of competition is positively associated with SMA usage.

3.3.6.3 Organizational Structure (Decentralization) and SMA Usage Relationship

Organizational structure is a formal control framework, encompasses reporting relationship and interactions between employees, information flows and authority distributions with regard to carrying out activities within the organization (Lee and Yang, 2011). Decentralization means broad decision making discretion at lower levels. It provides managers with greater responsibility over planning and control activities and greater access to information not available to the corporate body (Waterhouse and Tiessen, 1978). Chenhall and Morris (1986) posited that decentralization is associated with a preference for aggregated and integrated information. From a case study, Nilsson and Rapp (1999) also determined that decentralization creates commitment and responsibility for the running of operations and the operational level asks for more and more comprehensive information. By delegating detailed planning and all operational decisions to the flow groups, an organization becomes more flexible and is capable of adapting quickly to changing market demands. Lateral units which exhibit greater decentralization of control and authority are also found to be associated with broad scope MAS to enable subunit evaluation (Gerdin, 2005). Since more managers are involved in strategic decisions, decentralization also promotes a high information processing capability (Gul and Chia, 1994).

As high product competition will change the organizational structure to become more decentralized, differentiated and technocratic, sophisticated management controls are necessary for integration and coordination of the complex organization (Khandwalla, 1972). Abernethy and Bouwens (2005) found significant relation between MAS acceptance and decentralization of decision rights. Furthermore, decentralization is expected to have a positive relation with the sub-unit manager's involvement in the design and implementation of the accounting innovation, such as introduction of activity-based costing system and balanced scorecard (Abernethy and Bouwens, 2005). Organizations which exhibit greater decentralization of control and authority do not depend on formalized standard operating procedures and rules to govern work relations. These organizations frequently make use of detailed non-financial information or broad scope MAS (Gerdin, 2005). Furthermore, enabling use of MCS or interactive control (a form of SMA technique) aims to help the managers in decentralization structure to use their capability to deal with the emerging contingencies (Langfield-Smith, 2005). These managers of decentralized organizations are given the opportunity to deal directly with the inevitable contingencies in their work (Ahrens and Chapman, 2004).

However, Chenhall and Morris (1986) found the relationship between broad scope and timely information and decentralization is not significant. Meanwhile, Kaplan and Atkinson (1998) stressed that performance measures of decentralized units cannot rely on a single measure, particularly financial measures. It is important to develop a comprehensive balanced scorecard to incorporate value-creating and value-destroying activities (Kaplan and Atkinson, 1998). According to Gosselin (1997), activity management may be split into three basic categories: activity analysis, activity cost analysis and activity-based costing (ABC, a form of SMA technique). Organic or decentralized organizations tend to adopt

activity analysis and activity cost analysis as they are not formal accounting systems. ABC, being a formal system is more suitable to be implemented in mechanistic or centralized organizations. In this respect, usage of ABC is not suitable for decentralized organizations (Gosselin, 1997). Likewise, Lee and Yang (2011) found the relationship between the use of integrated performance measure (SMA technique) and organizational performance is positively associated in mechanistic organization than in organic ones. They are of the view that adoption of an innovative PMS requires organic (decentralized) structure, while its effective implementation and utilization depends on a mechanical structure. They suggested the need to adopt hybrid structure.

Despite the adverse results reflected in Gosselin (1997) and Lee and Yang (2011), most empirical studies found decentralized structure is positively associated with the usage of contemporary management accounting (e.g. Khandwalla, 1972; Waterhouse and Tiessen, 1978; Gul and Chia, 1994; Nilsson and Rapp, 1999; Abernethy and Bouwen, 2005). It is therefore anticipated that organizations which are highly decentralized requires more broad scope information or sophisticated accounting techniques for managers' decision making. Broad scope information and sophisticated accounting techniques are also the attributes of the SMA techniques. Hence, it is posited that the degree of decentralization is associated with the usage of SMA techniques as stated in the following hypothesis:

H5: The degree of decentralization is positively associated with SMA usage.

3.3.7 Organizational Capabilities – SMA Usage – Performance

Research Question 5 is to address whether SMA usage can play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance. It cannot be denied that

in this era of rapid and extensive transformative environmental change, only those firms which can match their capabilities to the changing needs of the market can survive (Kloot, 1997).

Porter (1985) states that unique competitive advantage is grounded in the resources and capabilities the firm uses to perform its activities better than its competitors. But a single capability may not have the ability to contribute any competitive advantage. For example, recent studies found market orientation and organizational learning foster innovativeness which is the determinant of firm performance (Baker and Sinkula, 1999b; Jimenez-Jimenez et al., 2008).

3.3.7.1 Relationship between Four Organizational Capabilities and SMA Usage

Henri (2006a) pointed out that the interactive controls (or organic controls) support the development of ideas and creativity, contributes to expanding the organization's information processing capacity. Prior research has suggested that certain SMA techniques, which have the characteristics of interactive and diagnostic controls, relate positively to the four organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) (Henri, 2006a).

Market orientation

The market-oriented firm has processes for collecting market intelligence about customers and competitors and integrating them with strategic decision-making process (Day, 1994). Market orientation concept shares similar emphases as the SMA concept, including the necessity for developing a high degree of inter-functional coordination (Roslender and Hart, 2003). The process of brand valuation, an attribute of both market orientation and SMA

techniques, encourages different departments to share information and work together (Cravens and Guilding, 1999). Since more and more firms are relying upon a market orientation to yield a competitive advantage, there must be the capability to account for the resources used in carrying out market-oriented activities. For example, activity-based costing (a SMA technique) is able to bridge the information gap between marketing and accounting (Goebel, et al., 1998).

Target costing, another SMA technique can be used to prevent unprofitable product being introduced and to realize an optimal tradeoff between cost, functionality and quality. The process in target costing is complementing the market orientation to force the designers to consider explicitly the value of product characteristics in the market and the price that customers are willing to pay (Dekker and Smidt, 2003). However, in Cadez and Guilding's (2008a) quantitative study, market orientation does not support SMA usage. In contrast, the qualitative data collected from their post-survey interviews indicated that market orientation could have a significant impact on SMA usage.

Entrepreneurship

Entrepreneurship is concerned with the pursuit of significant new value creating opportunities. Therefore, the use of traditional accounting systems does not seem appropriate in the entrepreneurial settings (Davila et al., 2009). A new paradigm has emerged highlighting the relevance of accounting and control to innovation and entrepreneurship by looking at the competitors and other actors in the environment. Control systems such as objective setting processes, performance measurement, and compensation schemes are important in creating a creativity environment (Davila et al., 2009). Kaplan and Norton (2001) suggested the balanced scorecard (a SMA technique) also has some

elements of entrepreneurship whereby it should describe how intangible assets are combined with tangible assets to create differentiating customer value propositions. SMA techniques, being more forward-looking and proactive as compared to traditional management accounting (Lord, 2007), will be more suitable for entrepreneurial organizations operating in a risk taking environment.

Innovativeness

Innovativeness capability deals with the degree in which the organizational culture promotes and support innovation (Jimenez-Jimenez et al., 2008). Within the context of MCS, some affirmed that formal MCS are seen as incompatible with innovation, deterrents for creativity, and unable to cope with the uncertainty associated with product innovation, while informal MCS, in contrast, are expected to encourage innovation (Bisbe and Otley, 2004). However, Bisbe and Otley (2004) argued that the most innovative firms are intensive users of formal MCS which may lead to increased innovativeness. For example, Simons' (1995) framework of interactive control system stimulates the discussion and exchange of knowledge in the organization and is associated with enhanced innovativeness. Also, balanced scorecard, a performance measurement system that is intimately associated with the strategic process, has been argued to work as an interactive system (Davila et al., 2009), thus should be able to stimulate innovativeness. Basically, all SMA techniques are considered as new innovation of management accounting techniques which have been developed to meet the requirements of new business environment.

Organizational learning

Organizations can gain a source of competitive advantage if they have the capability to learn and transfer knowledge quickly by effectively using their human resources (Ireland, et

al., 2001). Organizational learning involves information acquisition, interpretation, distribution and memory (Kloot, 1997). Accounting and formal information systems are important to developing organizational memory (Levitt and March, 1988; Huber, 1991).

SMA requires a learning orientation which motivates hard work and smart work. Management accountants who are heavily involved in strategy-making processes should favour a learning orientation (Coad, 1996). Customer orientation dimension of strategic performance measurement system is associated with organizational learning (Chenhall, 2005a). Also, knowledge acquisition, a major construct of organizational learning, is associated with non-financial performance measurement (e.g. balanced scorecard) (Kloot, 1997). Kaplan and Norton (1996b) also claimed that BSC provides the capability for organizational learning at the executive level. Moreover, Libby and Waterhouse (1996) found a positive relationship between organizational capacity to learn and changes in MAS.

Organizational learning helps to improve a firm's information processing activities at a faster rate than rivals (competitors) do. For example, Porter (1980; 1985) suggested that competitor analysis is fundamental to the pursuit of competitive advantage. It is imperative for firms, especially those adopting prospector's strategy, make use of competitor-focused accounting (Guilding, 1999). Kloot (1997) also argued that product costing information and benchmarking can help the firms be aware of competitors' performance and the need for change.

Generative or double loop learning requires not only current accounting information on costs and revenues, but also future estimates and information relating to the external environment (Kloot, 1997). Managers need feedback or results of targeted goals to

ascertain whether the deliberate strategy remains viable. In this manner, performance measurement systems (PMS) must include financial and non-financial information, such as balance scorecard (Kaplan and Norton, 1996b; Kloot, 1997). But some writers suggest that MCS or PMS may impede generative learning, contribute to inertia, or the maintenance of obsolete paradigms (Kloot, 1997) and result in ineffectiveness or poor performance.

Though organizational capabilities may encourage the generations of ideas, it is the potential of MAS that assist in translating of ideas into innovation and maintain a focused view of organizational direction (Chenhall and Morris, 1995). Therefore, SMA which is more flexible than the traditional management accounting will be more appropriate in companies that emphasize on culture of innovativeness. Even though empirical research on SMA is scant, it is expected that organizational capabilities (interlinking according to Lin et al.' (2008) model) are positively associated with SMA usage as stated in the following hypothesis:

H6a: Organizational capabilities (market orientation, entrepreneurship, innovativeness, and organizational learning) are positively associated with SMA usage.

3.3.7.2 Relationship between Four Organizational Capabilities and Firm Performance

The earlier section also highlighted that each of the four organizational capabilities contributes to sustainable competitive advantage. However, their links to firm performance individually are not strong enough without the mediating effect of other capabilities. Some researchers did not find market orientation significantly related to firm performance (Greenley, 1995; Baker and Sinkula, 1999b; Jimenez-Jimenez et al., 2008). They pointed out that innovativeness or organizational learning is mediating the relationship between

market orientation and firm performance. Meanwhile, Chenhall and Morris (1995) found entrepreneurial business organizations having interaction of organic processes with the use management accounting system associated with superior performance. However, Slater and Narver (2000) are unable to find any relationship between entrepreneurship and performance.

Past research suggests only having four capabilities collectively can help a firm become uniquely competitive and enhance superior performance (Hurley and Hult, 1998; Hult and Ketchen, 2001; Henri 2006a). This is supported by Lin et al. (2008) who discovered that organizational learning and innovativeness are among the two important variables that mediate the market orientation-performance relationship and entrepreneurship-performance relationship.

The proposed framework of Lin, et al. (2008) demonstrates that entrepreneurial orientation has a positive impact on market orientation (Matsuro et al., 2002) which requires extensive organizational learning. Organizational learning is indispensable as it mediates the relationship between market orientation and innovativeness, and the relationship between entrepreneurial orientation and innovativeness (Jaworshi and Kohli, 1993; Slater and Narver, 1995; Hurley and Hult, 1998; Baker and Sinkula, 2002). The extent of organizational learning is associated to innovativeness (Goes and Park, 1997; Hurley and Hult, 1998; Baker and Sinkula, 1999b). Market-oriented corporate culture facilitates organizational innovativeness which is an important determinant of superior firm performance (Narver and Slater, 1990; Jaworski and Kohli, 1993; Greenley, 1995; Han, et al., 1998). The four main constructs of organizational capabilities in this study are assumed to interlink according to Lin et al.'s (2008) framework which is elaborated in Section 2.8.5

and Figure 2.8. Organizational capabilities in combination can complement each other and help a firm achieve competitive advantage and better firm performance (see Figure 3.4). The actual interlinking among the four capabilities according to the model of Lin et al., (2008) will be demonstrated in hypothesis testing (see Section 5.6.2.5).

Hence, the following hypothesis is posited.

H6b: Organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) are positively associated with firm performance

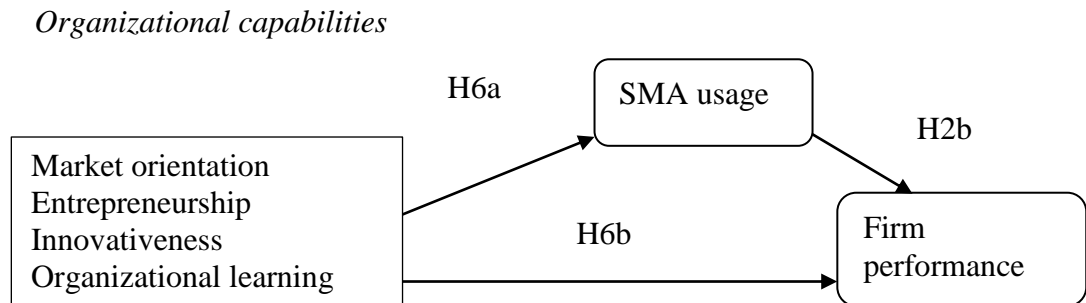


Figure 3.4: Mediation effect of SMA usage on the relationship between organizational capabilities and firm performance

3.3.7.3 Mediating Role of SMA Usage on Organizational Capabilities -Performance Relationship

Following the framework of Lin et al. (2008), four constructs of organizational capabilities are linked to each other and this combination gives rise to competitive advantage and better firm performance. Also, the interaction of organizational culture and the interactive and diagnostic use of management accounting system have a positive impact on performance (Agbejule, 2011). Organizations can also adopt appropriate management accounting techniques if they generate decision-useful information about resources and

these techniques may lead to a dynamic managerial capability and competitive advantage (Collier and Knight, 2009).

It was noted that little research has explored the mediating role of organizational learning in the relationships among market orientation, entrepreneurship, innovativeness and business performance (Lin et al., 2008). Based on the framework of Lin et al. (2008), this study determines the relationship of four organizational capabilities collectively with SMA usage, and tests the mediating role of SMA usage on the relationship between all four organizational capabilities collectively and firm performance.

As discussed earlier, drawing from the propositions of Baron and Kenny (1986) and Gerdin and Greve (2004), if SMA usage is associated with firm performance (H2b) and organizational capabilities are positively linked to SMA usage (H6a), it is posited that SMA usage can play a mediating role on organizational capabilities-performance relationship.

H6c: SMA usage mediates the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance.

3.3.8 Effect of Company Size on the Relationships among Strategy, Strategic Role of Accountant, Intensity of Competition, Decentralization, SMA Usage and Firm Performance

Smaller companies frequently do not require elaborate performance evaluation techniques. The increase in size of company generally results in company becoming more decentralized and demands more specialized and sophisticated information (Libby and Waterhouse, 1996; Hoque and James, 2000). The relative costs of accounting information processing will

become lower with the change in size (Guilding, 1999). Past research supports that the usage of SMA techniques correspond with the company size (Guilding, 1999; Hoque and James, 2000; Cadez and Guilding, 2008a). It is expected that large companies have more capabilities and resources and diverse expertise to employ SMA techniques.

Reid and Smith (2000) suggested that contingency theory is applicable to small companies as well as large companies. Using interview data from a sample of 150 micro companies, they found timing of specific contingent events such as cash flow crises, shortfall of finance and innovation is associated to introduction of small firms' management accounting system (SMA). In addition, MAS complexity of small firms is determined by sub-unit interdependence, market dynamics and work methods. As more small firms are gaining competitive advantage through innovation activity, they also need to compete with large firms by making speedy improvements to their products and services (Smith et al., 2008). In this respect, the usage of innovative management accounting such as SMA may be necessary for small companies' survival.

There are few MCS studies that have considered company size as a contextual variable (Chenhall, 2003). Past management accounting research that has adopted size as a variable (e.g. Guilding, 1999; Hoque and James, 2000; Cadez and Guilding, 2008a), examines only the association of size with the adoption of management accounting practices. Furthermore, Jayaran et al. (2010) discovered that firm size could moderate the relations of TQM on outcome whereas Rathaermel and Deeds (2004) found firm size moderates product development path. By using two alternative contingency models (large size samples, small size samples), this study attempts to test the effect of company size on the relationships among the contextual variables.

In view of the statistical constraint due to anticipated smaller size of samples, the test of company size's impact will focus on differentiation strategy, intensity of competition decentralization, strategic role of accountant, SMA usage and its association with firm performance. As such, the following hypothesis is theorized.

H7: Company size has a significant effect on the relationships among differentiation strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance.

3.4 Summary

A contingency model is developed according to the problem statement, research questions and literature review. Table 3.1 illustrates how the hypotheses are developed in accordance with the research questions and objectives. Strategic role of accountant and SMA usage are the two mediators which are hypothesized to mediate the relationship between competitive strategy and firm performance. SMA usage also mediates the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance. Four constructs of organizational capabilities are linked to each other according to the framework of Lin et al. (2008), and this combination gives rise to competitive advantage and better firm performance. Strategic role of accountant is assumed to have an impact on the usage and design of SMA. Intensity of competition and decentralization are the external and internal contextual variables that may have an impact on the usage of SMA. Finally, company size is posited to have an impact on the relationships among strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance.

Table 3.1 Comparison of hypotheses developed with the research questions/objectives

No	Research questions	No	Research Objectives	Hypotheses
1	Is the strategic choice of companies associated with the strategic role of accountant and SMA usage?	1	To identify which strategic choice is associated with the strategic role of accountant and SMA usage.	H1a: Differentiation strategy is positively associated with strategic role of accountant. H2a: Differentiation strategy is positively associated with SMA usage
2	Are strategic role of accountant and SMA usage positively associated with firm performance?	2	To examine the relationship between strategic role of accountant and firm performance and the relationship between SMA usage and firm performance.	H1b: Strategic role of accountant is positively associated with firm performance. H2b: SMA usage is positively associated with firm performance.
3	Do strategic role of accountant and SMA usage play a mediating role on the relationship between business strategy and firm performance?	3	To determine the mediating role of strategic role of accountant and SMA usage on the relationship between strategy and firm performance.	H1c: Strategic role of accountant mediates the relationship between differentiation strategy and firm performance. H2c: SMA usage mediates the relationship between differentiation strategy and firm performance
4	Do strategic role of accountant, intensity of competition and organizational structure (decentralization) having impacts on the usage of SMA?	4	To assess whether strategic role of accountant, intensity of competition, and organizational structure (decentralization) can have impacts on usage of SMA.	H3: Strategic role of accountant is positively associated with SMA usage. H4: Intensity of competition is positively associated with SMA usage. H5: The degree of decentralization is positively associated with SMA usage.

5	Does SMA usage play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance?	5	To examine whether SMA usage play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance?	<p>H6a: Organizational capabilities (market orientation, entrepreneurship and organizational learning) are positively associated with SMA usage.</p> <p>H6b: Organizational capabilities (market orientation, entrepreneurship and organizational learning) are positively associated with firm performance.</p> <p>H6c: SMA usage mediates the relationship between organizational capabilities (market orientation, entrepreneurship and organizational learning) and firm performance.</p>
6	Does company size affect the relationships among strategy, strategic role of accountant, intensity of competition decentralization, SMA usage and firm performance?	6	To examine whether company size affect the relationships among strategy, strategic role of accountant, intensity of competition decentralization, SMA usage and firm performance.	H7 Company size has a significant effect on the relationships among differentiation strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter covers the rationale in using mail survey, explains the selection of samples and appropriate variable measurements, describes steps in preparing and dispatching survey instrument as well as assessing measurement reliability and validity of samples. Past research was used as a basis in formulating the rationale for this research design. Survey instrument was prepared in order to operationalize the constructs developed in the contingency model. Sample frame covers the listed companies in Malaysia that are involved in manufacturing. Management accountants are the preferred respondents in view of their expertise and knowledge on the usage of contemporary accounting practices. Pilot test was carried out to assess the language used for the survey instrument. Finally, mail survey is administered in stages so as to improve the response rate. This chapter further describes how the data is analyzed by Partial Least Squares (PLS), followed by post-survey interviews to evaluate the findings.

4.2 Research Design

Mixed methods research involves collecting, analyzing and interpreting quantitative and qualitative data in a single study. In order to appraise quantitative data from mail survey, this study adopts a partially mixed design consisting of a mail survey and post-survey interviews with a greater emphasis on mail survey than interviews (Leech and Onwuegbuzie, 2009).

(a) Quantitative Research (Mail Survey)

In positivist research a statement of relationships between the observed phenomena (hypothesis) is first formulated and rigorous statistical method is applied to analyze quantitative data (Cavana et al., 2001). In line with the positivist approach, quantitative research was conducted according to the process suggested by Black (1999). The following steps were applied in conducting the survey:

1. Identify the population, sample frame and respondents.
2. Design survey instrument.
3. Pilot study to test the survey questionnaire.
4. Collect data by mail survey.
5. Data analysis by Partial Least Squares (PLS).
6. Hypotheses testing by PLS.

(b) Qualitative Research (Post-Survey Interviews)

Qualitative data has become an important aspect in management accounting research. Though dominated by functionalist mainstream, accounting is regarded as a multi-paradigmatic discipline (Lukka, 2010). Even though combining different methodologies may not be able to enhance validity, qualitative data can extend the scope and depth of understanding whereby the quantitative research is unable to address. Research attracts the criticism too often that its conclusion simply confirms what everyone already knows. Qualitative data such as interviews allows researchers a more critical stance towards their data (Fielding and Fielding, 2008). Qualitative research takes the researchers beyond a narrow functionalist view of management accounting phenomenon (Vaivio, 2007). In line with the qualitative study, post-survey interviews with selected senior managers of listed

corporations in Malaysia were conducted to “examine un-expected, inconclusive or oddly distributed survey results” (Vaivio, 2007, p.440).

The following sections cover the rationale for applying the research method and the selection of sampling frame, respondents, design of survey instrument, pilot study and administration of mail survey.

4.2.1 Rationale for the Research Method

The research design approach largely depends on the research objectives and research questions the study seeks to answer as there is no one best research methodology. Contingency studies are seen as a large scale, cross sectional questionnaire-based research which examines the interaction of a limited number of variables (Chapman, 1997). Survey can cover a wider geographical region and the data collected are from the real world environment. Survey findings are more likely to be used to generalize the real world situations and better able to provide a body of accumulated knowledge (Langfield-Smith, 1997). The survey method usually covers five approaches, namely face-to-face interviews, telephone interviews, personally administered questionnaires, mail questionnaires and electronic questionnaires.

A mail survey enables the gathering of information from a broad cross-section of firms at a relatively lower cost. Van der Stede et al. (2005) found 30% of all published empirical management accounting research over a 20-year period (1982-2001) has used the mail survey. Respondents of mail survey can take more time to answer the questionnaires at their convenience. However, response rates of mail questionnaires are typically low and one cannot be sure if the data is biased as the respondents of those who replied may be

different from those who do not respond. Follow-up procedures for non-response are necessary in order to improve the response rates (Sekaran, 2003). Similarly, the concern of accounting research in Malaysia is its poor response rate (Isa and Foong, 2005; Jusoh and Parnell, 2008; Smith et al., 2008). Low response rates may increase the likelihood of non-response error and therefore impact the interpretation and generalizability of results (Malhotra, 2007). Attempts have to be made to improve the response rate based on the survey strategies mentioned below.

A survey instrument was used to collect the data for the study. Questionnaire instruments documented in the academic literature were used as the basis for an initial draft. Experts in the areas of management and business were invited to comment the questionnaire. Initially, pilot study was conducted to develop and validate the questionnaire. Questionnaire design has to consider the wordings, how the variables will be categorized, scaled and coded after receipt of the responses and the general appearances of the questionnaire. The implementation strategy adopted involves the following steps (adapted from Bisbe and Otley, 2004).

1. Distribute the survey instrument (questionnaire) with cover letter, and prepaid self-addressed envelope by mail.
2. Follow-up letters with replacement questionnaire (4 weeks later).
3. Telephone calls to check data accuracy.
4. Telephone calls to solicit non-returned questionnaires (4 weeks after follow-up letters)

To support the absence of any obvious non-response bias, t-test was used to check whether there is significant difference between early replies and late replies after follow-ups (Maelah and Ibrahim, 2007). In order to appraise the quantitative findings, interviews

with top managers of responding firms had been considered as qualitative data collected can be very useful to determine the validity of the results generated by the contingency model study. In addition, partial least squares (PLS) program was used for hypotheses testing as it is more suitable for small sample and when the model consists of many latent variables.

This study attempts to follow the recommended procedures set by Van der Stede et al. (2005) in order to improve the quality of research. Van der Stede et al. (2005) were of the view that the central concern of survey in management accounting research is the reliability of data. Weakness and failure in the past were mainly due to the failure to adhere to the fundamental principles of survey design and administration. They suggested the following framework to improve the quality of research evidence:

1. Purpose and design of the survey – avoid inappropriate selection of samples of respondents and use of irrelevant questions.
2. Population definitions and sampling – determine whether valid inferences can be drawn from the characteristics of the sample.
3. Survey questions and other research method issue – focus on design (internal) validity.
4. Accuracy of data entry – determine the procedures for data entry, checks for completeness, checks for reliability and accuracy and set rules for resolving inconsistencies.
5. Disclosure and reporting – describe what research procedures were used and how data were collected and presented.

4.2.2 Sampling Frame

Empirical data was collected from the manufacturing companies in Malaysia. The use of companies in manufacturing segment is specific because this sector represents the most commonly employed management accounting systems (Smith et al., 2008). Historically, managers in service companies used management accounting information less intensively than managers in manufacturing companies (Kaplan and Atkinson, 1998). The data collected from this sector can ensure some level of comparability. Given the complexity of the variables and relationships in the contingency model, this study requires to reduce noise in measurement and analyses by focusing on manufacturing segment (Naranjo-Gil and Hartmann, 2006). Empirical studies on the adoption of management accounting practices have been focusing on manufacturing firms (e.g. Bromwich and Bhimani, 1989; Chenhall and Langfield-Smith, 1998c). The unit of analysis for the study is the strategic business units (SBUs) of Malaysian public listed companies which engaged their core business in manufacturing. The selection of listed companies in Malaysia is based on the ground that these companies are usually large as they have to meet minimum paid-up capital set by the Stock Exchange (Bursa Malaysia) and have to comply with stringent Listing Requirements in corporate reporting and maintain good management control according to the Malaysian Code on Corporate Governance. The directors of listed companies are expected to review quality information, financial and non-financial, of their operations prepared by the management. Hence, these companies should have more established management accounting departments than unlisted companies (Maelah and Ibrahim, 2007). Size is also an important factor influencing the adoption of complex administration system (Chenhall and Langfield-Smith, 1998c). Large companies usually make more use of financial and non-financial performance measures (Hoque and James, 2000).

According to the information gathered from the websites of listed companies obtained from Bursa Malaysia, there are about 430 companies engaged in manufacturing activities out of around 1,000 companies listed on Bursa Malaysia Main Board. Full business address and contact number of these companies were obtained from the respective websites. A mailing list is prepared in alphabetical order. Address labels were printed after the names of management accountants or head of accounts were obtained by phone calls.

4.2.3 Respondents

The research of management accounting involves access to internal information and practices that are not available in the published annual reports of listed companies in Malaysia. Management accountants were chosen as respondents in this survey since they are more knowledgeable about the firm's management accounting techniques, financial performance measurements and strategic choice than other operating managers (Maelah and Ibrahim, 2007). However, the survey has to consider individual respondent characteristics (e.g. time burden, attitudes towards research) and their motivation to respond may depend on whether the survey asks sensitive or otherwise non-disclosed information (Van der Stede et al., 2005). In Malaysia, all accountants are registered with the Malaysian Institute of Accountants which requires minimum tertiary education and adequate working experience to be admitted as a member. It is probable that they are more conversant in answering these organizational questions.

In order to address the questionnaires to the correct respondents, phone calls were made to 430 companies selected to find out the names of management accountants/heads of accounts. In Malaysia, it is a common practice for the management accounting functions to

be taken charge by financial controller, general manager (finance), management accountant, finance manager or head of accounts.

4.2.4 Questionnaire Design

The purpose of survey is to collect the information on the usage of strategic management accounting techniques in the Malaysian manufacturing environment. The survey instrument was designed according to the research questions and variables covered in the theoretical model.

The front cover of the instrument contains the instructions on completing the questionnaires and explains the confidentiality of views and the identity of respondents. A cover letter explains the objective of this study and the importance to get the participation from the respondents. The questionnaire is divided into five sections. Section A is to collect the company background information such as turnover, number of employees, years in operations, export sales, and the respondents' gender, position, education and experience. Section B asks the respondents to report the extent of the usage of SMA techniques and the perceived importance of these techniques to their companies. Section C is to find out the type of business strategies (product differentiation or cost leadership) applied and the involvement of accountants in the strategic decision-making process. Section D concerns the external and internal environmental factors affecting the SBUs. Respondents were asked to provide the perceived intensity of competition, the degree of authority of the head of SBUs as well as their views on organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) in these companies. In order to assist in answering the questionnaires a glossary of SMA techniques was also provided. It was pointed out that firms may use similar accounting techniques without being familiar

with the concept (Dekker and Smidt, 2003). To address possible issues of ambiguity, the draft survey instrument was sent for pilot test and reviewed by academics before mail to the respondents.

4.2.5 Pilot Study

A pilot study normally involves a small sample to test for clarity and face validity of survey instrument. Insights may also be gained on how the research can be conducted (Zikmund, 2003). The test is important since there are no interviewers to report problems to the researcher during the formal survey. Hence, pilot test can improve the quality of a survey by avoiding misunderstanding of survey questions and decreases the likelihood that the respondents will be offended by, or perhaps decline to respond due to the language used (Van der Stede et al., 2005).

The draft survey instrument was tested on 30 accountants. Brief interviews were conducted with three accountants to find out the problems encountered by them in answering the questionnaires (refer Appendix A for the questions used for pre-survey interview). After these interviews and pilot test the instrument was fine-tuned so that it is easily understood by the respondents. The modified survey instrument was then reviewed by three academics and finalized after incorporating their comments (see Appendix F). The modifications of instrument cover invitation of respondents to participate in post-survey interviews and ranking three most important SMA techniques out of the 16 SMA techniques.

4.2.6 Administering Mail Survey

Survey instruments were first sent in the second week of March 2011 with a personalized cover letter and a stamped return envelope to the management accountants/heads of

accounts of these 430 listed companies which are engaged in manufacturing. The return envelopes were pre-coded according to the mailing list. After four weeks a reminder was sent to those companies which had not completed the survey. This was followed by phone calls in early May 2011 to the management accountants/heads of accounts. A large number of them expressed that they are busy preparing accounts for quarterly corporate reports and some did not wish to fill out the questionnaires because it is contravening company policy. Certain accountants claimed that their competitors may be aware of their competitive strategies if they were to participate in this mail survey. The phenomenon suggests that in Malaysia management accounting is still dominated by financial reporting as failure to report results within two months after the close of each quarter will result in the company facing public reprimand and penalty by the Stock Exchange (Bursa Malaysia).

Valid mail questionnaires were received from 103 manufacturing companies (response rate 24%). Two survey instruments with incomplete answers had been discarded. The response rate is within the range of recent mail surveys in similar academic research (Chenhall et al., 2011; Parnell, 2011; Amir et al., 2010; Grafton et al., 2010). The survey administration took about three months from March 2011 to May 2011.

As a standard rule of thumb, the sample size for PLS test may be equal to the larger of: (1) ten times the scale with the largest number of formative indicators (scales with reflective indicators can be ignored), or (2) ten times the largest number of structural paths directed at a particular construct in the structural model (Chin, et al., 1996). Based on the contingency model, the construct SMA usage has nine exogenous variables. This works out to be a minimum sample size of 90 for this study. Recent MCS research using PLS approach also indicated an average sample size of around 80 (see Table 4.1).

Table 4.1: Sample size of recent MCS studies using PLS

<i>Authors</i>	<i>Year</i>	<i>Sample size</i>
Chenhall	2005a	80
Abernethy and Bouwens	2005	83
Mahama	2006	73
Naranjo-Gil and Hartmann	2007	103
Hall	2008	83
Hoque	2011	34
Chenhall, et al.	2011	100
Kallunki, et al.	2011	96

4.3 Variable Measurement

A concept has to be made operational before it can be measured. Operationalizing the concepts involves the reduction of abstract concepts to render them measurable in a tangible way (Sekaran, 2003). The study selected Likert scale in measuring the variables set out in the contingency model as it is simple to administer. Respondents can indicate how strong they agree or disagree to the carefully constructed activities or operations which range from very negative to very positive (Zikmund, 2003).

4.3.1 Strategic Management Accounting (SMA)

Instrument from Guilding and McManus (2002) was applied to measure the degree of SMA techniques usage. The 16 SMA techniques (Cadez and Guilding, 2008a) are listed together with a Likert-type scale ranging from “1” (not at all), to “7” (to a great extent). The respondents were asked to indicate the extent their organizations make use each of these techniques. The 16 SMA techniques are grouped into five categories: (1) *costing* (attribute costing, life-cycle costing, quality costing, target costing, value-chain/activity costing), (2) *planning, control and performance measurement* (benchmarking, integrated performance measurement), (3) *strategic decision-making* (strategic costing, strategic pricing, brand valuation), (4) *competitor accounting* (competitor cost assessment, competitive position

monitoring, competitor performance appraisal), and (5) *customer accounting* (customer profitability analysis, lifetime customer profitability analysis and valuation of customers as assets). In order to ascertain the perceived merit of SMA, a similar format employed by Guilding, et al. (2000) was used. Respondents were asked “To what extent do you consider the following techniques could be helpful to your organization?” Next to each SMA technique a Likert scale ranging from ‘1’ (‘not at all’), to ‘7’ (‘to a great extent’) is provided. A glossary of these SMA techniques is provided in the instrument to aid interpretation and ensure consistency answers.

As this study is focused on the extent of the usage of SMA techniques, the measures for each technique were calculated by taking the arithmetic average of score on each of the techniques. The mean scores of each technique are reported in descriptive statistics generated by SPSS program to enhance the face validity (Sekaran, 2003).

4.3.2 Strategic Role of Accountant

The extent of the accountants’ involvement in the strategic decision-making process is based on Wooldridge and Floyd’s (1990) instrument to assess middle management involvement in strategic decision-making using a Likert-type scale ranging from “1” (not at all involved) to “7” (fully involved). The participation covers five aspects of strategic management:

1. identifying problems and proposing objectives
2. generating options
3. evaluating options
4. developing details about options
5. taking the necessary actions to put changes into place

Arithmetic average of the scores for the set of items was used for preparing descriptive statistics by SPSS program.

4.3.3 Business Strategy

Measurement of Porter's (1980) competitive strategy is based on scales developed by Narver and Slater (1990). The respondents were asked to express the extent the organization engaged in competitive activities (product differentiation and cost leadership) using a Likert-type scale ranging from "1" (not at all) to "7" (to a large extent).

a) Differentiation-based competitive advantage

- i) Introduce new products
- ii) Differentiate products
- iii) Offer broad product line
- iv) Utilize marketing research

b) Low-cost-based competitive advantage

- i) Lower manufacturing costs
- ii) Modernize manufacturing
- iii) Improve plant layout
- iv) Increase capacity utilization
- v) Perform raw material value analyses
- vi) Improve raw material access

The study does not measure strategy on a 7 point continuum scale (defender type at one end and prospector type at the other end). Cadez and Guilding (2008a) agreed that strategy measured with the scale from 1 (defender) to 7 (prospector) is not objective and may be problematic. In actual fact, a company can pursue differentiation strategy and then

change to cost leadership strategy at a different stage of product life-cycle (Hayes and Wheelwright, 1979; Kald et al., 2000). The indicators for differentiation strategy and low cost leadership strategy are separately summed up to compute the arithmetic average scores which are reported in descriptive statistics generated by SPSS program.

4.3.4 Firm Performance

There is a need to examine some measures of effectiveness beyond financial measures which are considered objective assessments of organizational success. Using perceptual data in large scale surveys examining the development of strategy may not always equate with reality. But they are important because they are likely to be basis of behavior (Tapinos, 2005). Using a single profitability measure is no longer sufficient to determine the operating performance of a company. Combining non-financial measures with financial measures can be better indicators to judge the organizational processes and outcomes (Jusoh and Parnell, 2008). There is evidence that the use of non-financial performance measures improves the firm's non-financial performance. But one of the crucial difficulties of the non-financial measurements is the inability to quantify the degree of improvement (Kallunki, et al., 2011).

Recent study of Cadez & Guilding (2008a) adopted Hoque & James' (2000) five dimensions in measurement of firm performance, namely return of investment, margin on sales, capacity utilization, customer satisfaction, and product quality, and combine them with development of new products and market share. Widener (2007) applied the validated scale of Roth and Jackson (1995): overall organizational performance, overall organizational profitability, relative market share for primary products and overall productivity of the delivery system. But Henri (2006a) reduced the measurements to sales

volume, return on investment and profits. It appears that customer satisfaction has become an important non-financial indicator (Chenhall & Langfield-Smith 1998a). To reduce the time-lag effect between innovation implementation and its return on profitability, Han et al. (1998) also suggested the use of efficiency measure (i.e. cost savings).

Concerning with the length of questionnaire and the consequential impact on the response rate (Abernethy and Bouwens, 2005), this study selected only the following seven common financial and non-financial indicators used in Gupta & Govindarajan's (1984) and Chenhall and Langfield-Smith's (1998a) studies. These indicators have been frequently applied by researchers.

1. Return on investment (ROI)
2. Sales growth
3. Overall organizational profitability
4. New product development
5. Customer satisfaction
6. Cost reduction programs
7. Human resource development

The questionnaire asked respondents to assess their organization's performance over the past three years, across the above seven dimensions on a 7 point Likert-type scale, ranging from 1(well below average) to 7 (well above average) in comparison with the industry average. Following the contingency-based research, the firm performance will be measured according to self-assessment process given that the study analyzes firms from a number of sectors. The concern here is the validity of data collected from the respondents and the possibility of leniency bias. Quite a number of researchers defend the adequacy of

subjective measures as opposed to objective one (usually accounting of profitability and rates of return) when the study is a multi-sectorial one (Pertusa-Ortega et al., 2010). Gupta and Govindarajan (1984) believed the use of self-assessment process can still produce reliable results. The bias is less concern in this study as the ratings are needed for relative rather than absolute analysis (Perera et al., 1997). The seven firm performance indicators' scores extracted from survey instruments are combined to generate the arithmetic average score for descriptive statistics to enhance face validity.

4.3.5 Organizational Capabilities

The study considers the four primary organizational capabilities: market orientation, entrepreneurship, innovativeness and organizational learning (Henri, 2006a).

i) ***Market orientation*** is an organizational culture that contributes to the creation of superior values for its present and future consumers (Narver and Slater, 1990). It is measured using the same instrument applied by Narver and Slater (1990). Thirteen indicators cover the three components of market orientation: customer orientation, competitor orientation, and inter-functional coordination. Using a seven-point scale ranging from “1” (not at all) to “7” (to a large extend) respondents were asked to indicate the extent to which the following thirteen statements describe their companies:

1. Information about customers is freely communicated
2. Competitive strategies are based on understanding of customer needs
3. Customer satisfaction is frequently assessed
4. Integration of functions to serve the needs of markets
5. Close attention is given on after sales service
6. Sales people share information concerning competitors
7. Target customers where we have competitive advantage

8. Top management regularly discuss competitors' strengths and weaknesses
9. Business strategies are driven by creation of greater value for customers
10. Visit of current and prospective customers by top management
11. Objectives are driven by customer satisfaction
12. Rapid response to competitive market actions
13. Managers understand how employees can contribute to value for customers

ii) ***Entrepreneurship*** is the capability to continually renew, innovate and taking risks in its market and operation. It is measured using the same instrument developed by Khandwalla (1977) and applied by Naman and Slevin (1993). The earlier instrument covers three dimensions:

- i) willingness to take business related risks,
- ii) willingness to be proactive when competing with other firms, and
- iii) willingness to innovate.

By using a seven-point scale ranging from “1” (not at all) to “7” (to a large extent), respondents were asked to indicate the extent to which the following nine statements describe their companies:

- Wide-ranging acts are necessary to achieve objectives
- Initiation of actions to which other organizations respond
- Strong tendency for high risk projects
- Dramatic changes in products
- New lines of products
- First business is to introduce new products, techniques, etc.
- Cautious, “wait and see” posture (R)

- Adopt a very competitive, “undo-the-competitors” posture
- Gradually explore the environment, cautious behavior (R)

(R) denotes reversed-coded

iii) ***Innovativeness*** refers to the firm’s openness to new ideas, product or process (Hurley and Hult, 1998). It is measured by the same instrument applied by Hurley and Hult (1998). Using a seven-point scale ranging from “1” (not at all) to “7” (to a large extent) respondents were asked to indicate the extent to which the following five statements describe their companies:

- Technical innovation, based on research results, is readily accepted
- Management actively seeks innovative ideas
- Innovation is readily accepted in program/project management
- People are penalized for new ideas that don’t work (R)
- Innovation is perceived as too risky and is resisted (R)

(R) denotes reversed-coded

iv) ***Organizational learning*** helps to improve a firm’s information processing activities at a faster rate than rivals do. It is based on the measurement scale of learning orientation used by Hult (1998). Using a seven-point scale ranging from “1” (not at all) to “7” (to a large extent), respondents were asked to indicate the extent to which the following four statements describe their companies:

- Employee learning is an investment, not an expense
- Basis value include learning as a key to improvement
- Once we quit learning, we endanger our future

- Our ability to learn is the key to improvement

For each organizational capability, the arithmetic average respondents' scores (all items) is produced in descriptive statistics which are generated by SPSS program.

4.3.6 Intensity of Competition

Competition is measured using the same instrument applied by Guilding and McManus (2002), which was modified from Khandwalla (1972). Using a seven-point scale ranging from "1" (negligible intensity) to "7" (extremely intense), respondents were asked to indicate the perceived intensity of competition for the following five items.

- Selling and distribution
- Quality and variety of products
- Price
- Market share
- Customer service

For preparing descriptive statistics by SPSS program, intensity of competition was measured by taking the arithmetic average score of respondents' scores relating to all five items.

4.3.7 Organizational Structure (Decentralization)

The test of organizational structure of respondents' manufacturing firms is to determine the extent of decentralization and the instrument was adapted from Gordon and Narayanan (1984). Respondents were asked to find out the typical influence the SBU general managers have in affecting the outcome of following decisions with 7 point Likert-type scale, ranging from 1 (no delegation) to 7 (full delegation).

1. Development of new products/services

2. Hiring/firing managerial personnel
3. Budget allocations
4. Pricing decisions

The arithmetic average score of all four items (respondents' scores) was used to measure the degree of decentralization for the descriptive statistics.

4.3.8 Company Size

Similar to the approach used in Guilding (1999), Abernethy and Bouwens (2005) and Gerdin (2005), size is measured by numbers of employees. Respondents were asked to select one of the four categories (below 150 employees, between 150 to 500 employees, between 501 to 1,000 employees and above 1,000 employees) denoting the number of employees engaged by the responding company. For data analysis, companies engaging more than 500 employees have been classified as large size companies while those companies engaging up to 500 employees are deemed small size companies (based on U.S. definition of small companies in manufacturing industry, <http://www.bizjournals.com/bizjournals/on-numbers/scott-thomas/2012/07/16055>).

4.4 Methods of Data Analysis

There are three basic objectives of data analysis: getting a feel for the data, testing the goodness of data, and testing the hypotheses (Sekaran, 2003). Data obtained through mail questionnaires were edited and coded. Incoming data were checked for incompleteness and inconsistencies and then logically corrected or rectified. The data were keyed in using SPSS program. Answers to the negatively worded questions were reversed so that they are in the same direction. This was done through a TRANSFORM and RECODE statement in SPSS program. Items measuring the same construct were categorized and grouped together

(Sekaran, 2003). Data were examined for outliers that are not representative of the population, and counter to the objective of the analysis and seriously distort statistical tests. Z-score greater than +3 and less than -3 are considered to be outliers (Hair et al., 1998; Coakes and Steed, 2003). Descriptive statistics for all variables are produced. In order to carry out the testing of hypotheses by Partial Least Squares (PLS), the data file generated by SPSS was converted to Excel (csv) data file (Ghozali, 2008).

4.4.1 Factor Analysis

Factor analysis is useful for data summarization and data reduction. Researchers apply exploratory factor analysis to search the number of components among a set of variables. As a general rule, there must be a ten-to-one ratio in terms of observations and variables to minimize the chances of over fitting the data (Hair, et al., 1998). But data reduction can also rely on factor loadings. Hence, this study will use factor loadings instead of exploratory factor analysis to test data reduction since a variable (market orientation) comprised 13 items and the sample size is 103 only (Hair, et al., 1998). Furthermore, the study is focusing the main constructs relationship instead of the dimensions. The psychometric properties of all scales (measurement model) can be assessed by confirmatory factor analysis (Salleh, et al., 2010). This is discussed in Section 4.4.4.

4.4.2 Statistical Method for Hypothesis Testing

The contingency model in this study consists of numerous independent and dependent variables. Due to the limitations, multivariate techniques such as multiple regression can examine only a single relationship between the dependent and independent variables. Structural equation modeling (SEM) is able to examine a series of dependence relationships simultaneously. SEM also has the ability to incorporate latent variables into the analysis.

Latent variables or unobserved concept can only be approximated by observable or measurable variables (manifest variables) (Hair, et al., 1998). LISREL is the best-known causal modeling technique but it is not suitable for small data samples or model with formative constructs and can yield improper solutions. An alternative causal modeling approach called Partial Least Squares (PLS) has been developed to overcome these limitations (Hulland, 1999; Ghazali, 2008; Hair, et al., 2011). PLS is a powerful method of analysis, useful for theory confirmation and suggesting where relationships might or might not exist (Chin, et al., 1996). PLS path modeling can estimate very complex model with many latent and manifest variables (Henseler et al., 2009).

The application of PLS in a management research involves: (1) assessing the reliability and validity of measures; (2) determining the relationships between measures and constructs; and (3) interpreting path coefficients (Hulland, 1999). A measurement model describes relationships between a construct and its measures (items, indicators) whilst a structural model denotes relationships between different constructs. It is important to have proper specification of the measurement model before meaning can be assigned to the analysis of the structural model (Diamantopoulos, et al., 2008). Researchers have to carefully decide whether a measurement model shall be formative or reflective as model misspecification can lead to incorrect assessment of relationships (Henseler et al., 2009).

4.4.3 Construct-Measurement Relationships

There are two basic types of epistemic relationships in causal modeling: reflective indicators and formative indicators. Reflective indicators are believed to reflect the unobserved construct. The underlying construct is causing the observed indicators (measures). Changes in construct will cause changes in the indicators. These indicators

have similar content and have common theme and dropping an indicator should not change the conceptual domain of the construct. Virtually all constructs in the MCS survey-based literature are reflective models (Bisbe, et al., 2007). In contrast, formative indicators define or cause the construct, and they can have positive, negative or no correlation with one another. As the indicators are constitutive facets of a construct, dropping an indicator may alter the conceptual domain of the construct. The discussion about reliability and validity for the formative indicators are less relevant (Hulland, 1999; Bisbe et al., 2007). But Coltman et al. (2008) argued that adding or removing an indicator does not mean a change of the conceptual domain of the construct as long as the indicators conceptually represent the domain of interest.

4.4.4 Evaluation of Measurement Model

To accurately define the perceptual and attitudinal variables, it is necessary to assess the “goodness” of measures developed in the survey instrument. This involves the establishment of the measures’ reliability and validity. Reliability tests the stability and consistency a measurement instrument measures the construct. Validity is an indication that the instrument, technique or process used to measure a construct does indeed measure the intended construct (Cavana et al., 2001; Sekaran, 2003).

The measurement model is assessed by examining item reliability, internal reliability, convergent validity and discriminant validity. These criteria are applicable to reflective measures or indicators but not formative indicators (Hulland, 1999; Pertusa-Ortega et al., 2010).

Item reliability

Item reliability is assessed by checking the loadings or correlations of the measures with their respective construct. Many researchers accept items with loadings of 0.7 or more which implies that more than 50 percent of the variance in the observed variable (i.e. the square of the loading) is due to the construct. In general, items with loadings of less than 0.50 should be dropped (Hulland, 1999; Ghazali, 2008).

Internal reliability

Traditionally Cronbach's alpha is used to measure the internal consistency reliability as it provides an estimate for the reliability based on the indicator inter-correlations. Fornell and Larcker's (1981) measure of composite reliability that takes into account all indicators have different loadings can also be used. A benchmark of 0.70 is usually used for these two measures. A value below 0.60 indicates a lack of reliability (Hulland, 1999; Henseler, et al., 2009).

Convergent validity

Convergent validity is evidenced when a set of indicators represents one and the same underlying construct. It may be ascertained if AVE (average variance extracted) of each construct exceeds 0.50 (Henseler et al., 2009). There is no concern of collinearity within blocks of variables used to represent underlying constructs under a reflective mode (Chin, et al., 1996).

Discriminant validity

Adequate discriminant validity is that an indicator has a higher correlation with its respective latent variable than with other latent variables in a given model. Two variables are predicted to be uncorrelated based on theory and indeed empirically found to be so (Sekaran, 2003). It may be ascertained if the square roots of AVE calculated for each of the

constructs is higher than the correlations among the latent variables (Hulland, 1999; Henseler et al., 2009).

Concepts of reliability (i.e. internal consistency) and construct validity (i.e. convergent and discriminant validity) are not meaningful when a formative model is employed. It may be assessed by the significance of multi-collinearity. Generally, variance inflation factor (VIF) exceeds 10 indicates presence of harmful collinearity (Henseler et al., 2009).

4.4.5 Evaluation of Structural Model

PLS has the primary objective of minimization of error (or, equivalently, the maximization of variance) in all endogenous constructs. The structural model can be assessed by examining the R^2 values for the dependent (endogenous) constructs and the path coefficients for the model. Falk and Miller (1992) recommended a minimal R^2 value of 0.1 so as to ensure that at least 10 percent of the construct validity is due to the model (Cited in Camison and Lopez, 2010). PLS do not have overall goodness-of-fit measures (Hulland, 1999; Chenhall, 2005a; Henseler et al., 2009).

Path analysis is a statistical technique aimed at testing the direct or indirect effects of the contextual variables on dependent variables (e.g. Chenhall and Morris, 1986; Chong and Chong, 1997; Naranjo-Gil and Hartmann, 2006). The method is based on specifying the relationships among the model's constructs depicted by straight arrows emanating from predictor variable to the dependent construct or variable (Hair, et al., 1998). The significance of paths or PLS parameters has to be determined via resampling procedures such as bootstrapping (Chin, et al., 1996). Bootstrapping treats the observed sample as if it

represents the population. Bootstrap samples are created by randomly drawing cases with replacement from the original sample (Henseler et al., 2009). Bootstrapping using 500 samples with replacement can be used to assess the significance of the path coefficients (Chenhall, 2005a; Hall 2008). Path coefficients or the beta weights in path analysis specify how much effect each variable has (Abdel-Maksoud, 2007). The critical t values to test the significance of path coefficients are 1.65 (10%), 1.96 (5%) and 2.58 (1%) (Hair et al., 2011).

4.5 Direct Effects and Indirect Effects

Contingency theory suggests a better “match or fit” between the management control systems and the contextual contingency variables is hypothesized to result in increased organizational performance (Fisher, 1995). Testing of hypotheses to confirm the ‘fit’ between the variables will then be carried out after significance of PLS parameters are determined. The direct effect of an independent variable (e.g. intensity of competition) on a consequent variable (e.g. SMA usage) is said to be supported if the path coefficient is significant. The mediation perspective specifies the existence of a significant intervening mechanism (e.g. SMA usage) between an antecedent variable (e.g. strategy) and the consequent variable (e.g. performance). If the direct effect of strategy on firm performance is insignificant while the indirect effect of strategy on firm performance is significant, there exists a “complete mediation model”. However, if the direct effect of strategy on firm performance is significant, the situation is term “partial mediation model” (Venkatraman, 1989).

4.6 Post-Survey Interviews

Management accounting research can ‘benefit greatly from an examination of how management accounting information is used in the real world, especially in operations

applications' (Nanni et al., 1992, p.18). Tillmann and Goddard (2008) suggested that normative SMA literature often draws on idealistic picture of how SMA ought to be performed. Using a case study they investigated how SMA is perceived and used in a large multinational company in Germany. The qualitative data provides a rich insight of how SMA is performed in the real organizational settings. Bhimani and Lanfngield-Smith (2007) investigated the use of financial and non-financial information to support strategic processes by a mail survey of senior accounting officers in 51 large UK firms. Interviews were held with the accountants of five companies to clarify the issues in strategic processes. Likewise, Cadez and Guilding (2008a) also conducted post-survey interviews with accountants of 10 companies to appraise the quantitative data collected by a mail survey of 193 companies. They gathered from the qualitative data that market orientation is an important variable influencing the usage of SMA despite that there is no such support in the hypothesis testing. Intensity of competition is another important variable omitted in their contingency model.

In conjunction with the mail survey, interviews were conducted with senior managers of six public listed companies to seek their views on the applications of SMA and how the contextual variables may influence the usage of SMA or MAS design. Interviewees were encouraged to discuss broad aspect of competitive strategy formulation and implementation in their business (Bhimani and Langfield-Smith, 2007). The questions used for the post-survey interviews are provided in Appendix B. Senior finance managers were invited to take part in this post-survey interview which was estimated to take about 60 minutes. Interview questions were sent by email in advance after the appointments were fixed. The seven questions to be answered by the interviewees were briefly summarized below:

1. The importance of SMA to improve competitiveness.
2. Relationship of Porter's competitive strategies with SMA.
3. Important factors that may influence the usage of SMA.
4. Management accountants' participation in decision-making process.
5. The importance of organizational capabilities to performance and SMA.
6. Interactive use of management control systems.
7. The influence of management accounting on firm performance.

Since there is no agreed SMA framework, and SMA techniques and strategic role of accountants are fairly new in Malaysia, it will be beneficial to conduct post-survey interviews to understand the factors influencing the usage of SMA. Quantitative data obtained from interviews can be used to appraise quantitative data (Bhimani and Langfield-Smith 2007; Cadez and Guilding, 2008a). The main advantage of face-to-face interviews is that the researcher can clarify if there are doubts and ensure that responses are properly understood by rephrasing the questions (Sekaran, 2003).

4.7 Summary

This Chapter explains the design of survey instrument to be used for mail survey and the selection of established scales for variable measurements according to the proposed contingency model. It also covers how the survey is administered. The important features of PLS to be used for data analysis are briefly covered. Next Chapter will present the descriptive statistics of all variables generated by SPSS program and the test of hypotheses by PLS followed by analysis.

CHAPTER FIVE

RESULTS

5.1 Introduction

Based on the research methods discussed in Chapter 4, this Chapter presents the results of the data analyses. It specifically explains the descriptive statistics for all variables, the process taken in conducting the PLS program, and the hypotheses testing. Profile of the respondents/responding companies is generated from the data. The samples are divided into two groups to test for the possibility of non-response bias. The indicators and the respective variables are examined to ensure their internal consistency and reliability. Correlation matrix is used to assess the relationship of the variables. Cross loadings with relevant constructs produced by PLS program are used to assess the reliability and validity of the measurements. The structural model with path coefficients are used to test all the hypotheses developed in Chapter 3. Qualitative data generated from the post-survey interviews with six companies are used to complement the results obtained from the mail survey.

5.2 Profile of Respondents/Responding Companies

The statistics of responding companies in terms of size in employees and annual sales, proportion of export sales, history of responding firms and industry are presented in Table 5.1. The responding companies are fairly large with 43 (or 42%) engaging more than 500 employees and 49 (or 48%) reporting annual sales exceeding RM100 million. Most of these companies operate in both domestic and export market with 29 (or 28%) export 20% to 50% of their products and 38 (or 37%) export more than 50% of their products. Eighty

three (81%) of these companies are in operations for more than 10 years. The respondents have a fair gender representation with 61 males and 42 females (equivalent to a ratio of 6 to 4). Majority of them are holding the positions related to accounting or finance. Overall, the demographic profile shows that the questionnaires were well answered by a high diversity of businesses, making the data more representative and exploratory in understanding the phenomenon of interest (see Table 5.1).

Table 5.1 Profiles of the respondents/responding companies

<i>Size: By Employees</i>			<i>: By Annual sales (RM million)</i>		
	n	%		n	%
Below 150	24	23.2	Below 25	20	19.4
150-500	36	35.0	25 to 100	34	33.0
501-1000	24	23.3	101 to 500	33	32.0
Above 1,000	19	18.4	Above 500	16	15.6
Total	<u>103</u>	<u>100.0</u>	Total	<u>103</u>	<u>100.0</u>

<i>Export sales (%)</i>			<i>Years of establishment</i>		
	n	%		n	%
Below 20%	36	35.0	Less than 5 years	4	3.9
20% to 50%	29	28.2	5 to 10 years	16	15.5
More than 50%	38	36.8	More than 10 years	83	80.6
Total	<u>103</u>	<u>100.0</u>		<u>103</u>	<u>100.0</u>

<i>Position of Respondents</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	
	n	n	n	%
ED Finance/CFO	6	1	7	6.8
GM Finance/FC	9	7	16	15.5
Finance Manager/Accountant	33	28	61	59.2
Other	13	6	19	18.5
	<u>61</u>	<u>42</u>	<u>103</u>	<u>100.0</u>

<i>Education level of Respondents</i>	n	%
Diploma	9	8.7
Bachelor/Professional	77	74.8
Masters	17	16.5
	<u>103</u>	<u>100.0</u>

Table 5.1 Profiles of respondents/responding companies (Contd.)

<i>Industry</i>	<i>n</i>	<i>%</i>
Textiles & apparel	4	3.9
Food & beverages	14	13.6
Furniture, wood-based products	15	14.5
Electrical & electronics	12	11.7
Transport & automotive	6	5.8
Rubber-based products	4	3.9
Plastic products	7	6.8
Pharmaceutical, cosmetics	5	4.9
Chemicals	2	2.0
Iron, steel & other metal products	22	21.2
Other industry	12	11.7
Total	<u>103</u>	<u>100.0</u>

5.3 Non-Response Bias

The possible response bias from early and late responses was tested using t-test. The means on the variables between the early respondents and the late respondents are compared on the assumption that late respondents shared similar characteristics to non-respondents (Abernethy and Bouwens, 2005; Pertusa-Ortega et al., 2010). The rationale is that late respondents are similar to the population where the sample is drawn (Armstrong and Overton, 1977). The sample of 103 is split into two groups and tested by t-test. There is no significant difference found in the mean scores for all variables of these two groups except for cost leadership suggesting that non-response bias is not a serious issue (Bhimani and Langfield-Smith, 2007; Hall, 2008) (see Table 5.2).

5.4 Descriptive Statistics

The mean scores and standard deviation of eleven (11) variables used in the contingency model are shown in Table 5.3. All variables recorded a mean exceeding 4 while the standard deviations of the variables range from 0.93 to 1.35.

**Table 5.2 Independent sample t test
(Early and Late Respondents)**

	t	Sig. (2-tailed)	Mean Difference	Std. Error
SMA usage	0.10	0.92	-0.02	0.22
Differentiation	0.55	0.59	-0.14	0.26
Cost Leadership	2.11	0.04	-0.52	0.25
Role of Accountant	0.55	0.58	-0.15	0.27
Competition	0.12	0.90	0.02	0.18
Decentralization	0.87	0.39	-0.20	0.23
Market orientation	0.49	0.63	0.10	0.20
Entrepreneurship	0.82	0.42	-0.16	0.19
Innovativeness	0.34	0.74	0.08	0.22
Organizational learning	0.55	0.58	-0.13	0.23
Firm performance	0.07	0.95	0.01	0.21

The mean scores obtained in respect of four organizational capabilities are fairly high. This is in line with the mean scores of Henri (2006a) who conducted a survey on Canadian manufacturing companies. Based on a theoretical range of 1 to 7, the results show that the mean scores of market orientation, entrepreneurship, innovativeness and organizational learning are 5.02, 4.20, 5.42 and 5.45 respectively. Similarly, Lin et al. (2008) who conducted a survey on Taiwan companies in the info-electronic industry obtained high scores of 3.97, 3.79, 4.09 and 3.83 out of a range of 1 to 5. Intensity of competition in this study also registered a high mean score of 5.46 within a range of 1 to 7 compared with 4.16 obtained by Ax et al. (2008) who conducted a survey based on Swedish manufacturing firms.

The data is screened to identify for any outlying cases. The Z-scores are within the range of -3 to +3 confirming no outliers. The detailed descriptive statistics for each variable and the respective indicators (measurements) are reported separately in the

following tables, while the explanation of the results is presented in the following sections. Cronbach alpha is used to assess the degree of consistency between multiple measures of a variable. Cronbach alpha of all variables is above the recommended 0.70 level (Hair et al., 1998).

Table 5.3 Descriptive Statistics: Summary of All Variables

Latent Variables	N	Theo. Range	Actual Minimum	Actual Maximum	Mean	Std. Dev.
SMA usage	103	1.00-7.00	1.00	6.65	4.24	1.11
Differentiation	103	1.00-7.00	1.00	7.00	4.51	1.31
Cost leadership	103	1.00-7.00	1.00	7.00	4.85	1.27
Role of accountant	103	1.00-7.00	1.00	7.00	4.64	1.36
Competition	103	1.00-7.00	3.00	7.00	5.46	0.93
Decentralization	103	1.00-7.00	2.00	7.00	5.12	1.17
Market orientation	103	1.00-7.00	2.08	7.00	4.99	1.00
Entrepreneurship	103	1.00-7.00	1.22	6.11	4.38	0.98
Innovativeness	103	1.00-7.00	1.40	7.00	4.93	1.13
Organizational learning	103	1.00-7.00	1.00	7.00	5.36	1.18
Firm performance	103	1.00-7.00	1.57	6.86	4.72	1.06

5.4.1 Descriptive Statistics - SMA Usage

The 16 SMA techniques are divided into five categories based on Cadez and Guilding (2008a). As shown in Table 5.4, the first category, 'costing', appears not popular to the Malaysian manufacturing companies. Except for target costing and value chain/activity costing which have mean scores of 4.29 and 4.03 respectively, attribute costing, life cycle costing and quality costing registered a mean usage below 4. The standard deviations within a range of 1.78 to 1.99 for the five techniques are exceptional high as compared to the average standard deviation of 1.11 registered for 16 techniques, reflecting a higher dispersion among these techniques. The reason for such a low usage may be due to these costing techniques are currently under conceptual development. Roslender and Hart (2003) pointed out that in their field study there is little evidence that SMA techniques such as

attribute costing, strategic cost analysis or life-cycle costing were being implemented or widely understood. Despite strongly advocated by the academics, the survey conducted in Malaysia by Rahman et al. (2005) reflects a usage rate of around 30% for target costing and activity-based costing. They infer that the accountants and managers have a poor understanding on the concepts and objectives of such techniques.

Table 5.4 Descriptive Statistics: SMA Usage

Item	SMA techniques	Mean	Std. Dev.	Median
	SMAG1 Costing	3.66	1.44	
SMA1	Attribute costing	3.59	1.98	4.00
SMA2	Life-cycle costing	2.94	1.78	3.00
SMA3	Quality costing	3.43	1.99	3.00
SMA4	Target costing	4.29	1.92	5.00
SMA 5	Value-chain/Activity costing	4.03	1.93	4.00
	SMAG2 Planning, control and performance measurement	4.69	1.41	
SMA6	Benchmarking	4.82	1.58	5.00
	Integrated performance measurement	4.57	1.53	5.00
	SMAG3 Strategic decision-making	4.59	1.29	
SMA8	Strategic costing	4.74	1.52	5.00
SMA9	Strategic pricing	5.03	1.41	5.00
SMA10	Brand valuation	4.01	1.83	4.00
	SMAG4 Competitor accounting	4.26	1.52	
SMA11	Competitor cost assessment	4.12	1.76	4.00
SMA12	Competitor position monitoring	4.46	1.62	5.00
SMA13	Competitor performance appraisal	4.19	1.59	4.00
	SMAG5 Customer accounting	4.00	1.48	
SMA14	Customer profitability	4.35	1.68	5.00
SMA15	Lifetime customer profit analysis	3.74	1.67	4.00
SMA 16	Valuation of customers as assets	3.92	1.80	4.00
	AVERAGE	4.24	1.11	

Lifetime customer profit analysis (item 15) and valuation of customers as assets (item 16) under group 5 have shown lower mean usage of 3.74 and 3.92 respectively compared with mean usage of 4.35 scored by customer profitability. This is consistent with Guilding and McManus (2002) who also found these two techniques have lower usage in

their study. Valuation of customers as assets requires computing the present value of all future profit streams attributable to a particular customer whilst lifetime analysis of customers is “extending the time horizon for customer profitability analysis to include future years” (Guilding and McManus, 2002, p.47). These two techniques of customer accounting appear to be overlapping as they require the basic data from customer profitability analysis.

SMA involves also the provision of data on competitors (Simmonds, 1981) and businesses facing intense competition need to analyze the competitors’ unit cost, market share and unit costs. It is not surprising that all three items under competitor accounting have mean scores of above 4. Competitors position monitoring (item 12), which covers a wider scope of data analysis than the other two techniques, appears to be more important as it has a higher mean score of 4.46. Benchmarking and integrated performance measurements are also important techniques with mean score above 4. Balanced scorecard developed by Kaplan and Norton (1992) has become a key performance measurement system for senior managers to drive their performance. Strategic pricing (item 9) with the highest mean score of 5.03 is an important tool for strategic decision making. This technique requires strategic data on competitors and external environment for pricing decision process (Drury, 2004).

The respondents were also asked on the perceived usefulness of these SMA techniques and to rank three most important SMA techniques. Based on the data collected, strategic pricing, integrated performance measurement (e.g. balanced scorecard), and strategic costing are most helpful among the techniques according to 50, 35 and 33 respondents respectively. The selection of SMA techniques by Malaysian companies seem

consistent to what was pointed out by Ryan et al. (2002) that the most appropriate accounting techniques are dependent on cost and benefits of the information. Sometimes simple techniques may be optimal.

5.4.2 Descriptive Statistics – Other Variables

The following statements briefly explain the strengths of mean scores for the other 10 variables. The details of descriptive statistics for these variables (see Tables 5.5 to 5.14) are set out below.

Business strategy

Organizations pursuing differentiation strategy emphasize on growth, external expansion, innovation and learning (Kumar and Subramanian, 1997). Mean scores of differentiation strategy in this study are above the midpoint (3.5) indicating moderate adoption of this strategy by the sample companies (Table 5.5). Organizations pursuing cost leadership strategy usually stress internal efficiency and protection of their domains, emphasize low cost relative to competitors (Kumar and Subramanian, 1997). Lower manufacturing costs and increase capacity utilization appear to be the most important elements in implementing cost leadership strategy as both items (indicators) score a mean above 5 (Table 5.6). The high scores of the two indicators are quite true and in line with the remark made by the chief executive officer of the world's largest rubber glove manufacturer Top Glove Corporation Berhad. "We believe in quality, always keep our cost low and being efficient... Having the foresight to expand capacity was another important factor to success... (The Star dated 31 December 2011, Bizweek p.4).

Table 5.5 Descriptive Statistics: Differentiation Strategy

Item	Questions	Mean	Std. Dev.	Median
DIFF1	Introduce new products	4.67	1.65	5.00
DIFF2	Differentiate products	4.63	1.53	5.00
DIFF3	Offer broad product line	4.43	1.52	5.00
DIFF4	Utilize marketing research	4.32	1.53	4.00
	Cronbach alpha 0.86 mean of variable 4.5			

Table 5.6 Descriptive Statistics: Cost Leadership Strategy

Item	Questions	Mean	Std. Dev.	Median
COST1	Lower manufacturing costs	5.17	1.69	6.00
COST2	Modernize manufacturing	4.63	1.65	5.00
COST3	Improve plant layout	4.39	1.55	5.00
COST4	Increase capacity utilization	5.22	1.48	5.00
COST5	Perform raw material value analyses	4.95	1.50	5.00
COST6	Improve raw material access	4.74	1.58	5.00
	Cronbach alpha 0.89 mean of variable 4.85			

Strategic role of accountant

Management accountants' involvement in strategic decision-making process is crucial as they are able to set desired goals and monitoring the implementation of strategic plans (Ittner and Larcker, 1997; Louis, 2011). Mean score of 4.6 for the 5 items relating to the strategic role of accountant or the extent of the accountant's involvement in strategic decision-making process is moderately high (Table 5.7).

Table 5.7 Descriptive Statistics: Strategic Role of Accountant

Item	Questions	Mean	Std. Dev.	Median
ACC1	Identifying problems and proposing objectives	4.75	1.51	5.00
ACC2	Generating options	4.62	1.49	5.00
ACC3	Evaluating options	4.64	1.41	5.00
ACC4	Developing details about options	4.54	1.47	5.00
ACC5	Taking the necessary actions to put changes into place	4.64	1.39	5.00
	Cronbach alpha 0.96 mean of variable 4.64			

Intensity of competition/Decentralization

Intensity of competition is the degree of external influence that threatens the success of organizational goal (Mia and Clarke, 1999). As the majority of the sample companies are export-oriented, it is not surprising that the intensity of competition perceived by the sample companies is high. This is reflected by an average mean score of 5.46 (Table 5.8). Contingency theory predicts that the complexity of a firm's environment determines the complexity of the internal structure of the firm, including the decision-making process (Kaplan and Atkinson, 1998). If companies are facing high competition, the organizational structure is expected to become more complex and decentralized (Khandwalla, 1973). The sample companies are highly decentralized as indicated by an average mean score of 5.12 for all items in terms of delegation of power (Table 5.9).

Table 5.8 Descriptive Statistics: Intensity of Competition

Item	Questions	Mean	Std. Dev.	Median
COMP1	Selling and distribution	5.27	1.37	6.00
COMP2	Quality and variety of products	5.56	1.23	6.00
COMP3	Price	5.75	1.15	6.00
COMP4	Market share	5.22	1.27	5.00
COMP5	Customer service	5.49	1.16	6.00
	Cronbach alpha 0.80 mean of variable 5.46			

Table 5.9 Descriptive Statistics: Decentralization

Item	Questions	Mean	Std. Dev.	Median
DEL1	Development of new products/services	4.98	1.61	5.00
DEL2	Hiring/firing managerial personnel	5.03	1.37	5.00
DEL3	Budget allocations	5.32	1.24	6.00
DEL4	Pricing decisions	5.15	1.49	5.00
	Cronbach alpha 0.837 mean of variable 5.12			

Four organizational capabilities

i) *Market orientation* is the commitment to understanding both the expressed and latent needs of their customers (Slater and Narver, 1999, p.1167). The sample companies are mainly market-oriented as the average mean score of 4.99 for 13 items is fairly high (Table 5.10).

Table 5.10 Descriptive Statistics: Market Orientation

Item	Questions	Mean	Std. Dev.	Median
MKTO1	Information about customers is freely communicated	4.52	1.45	5.00
MKTO2	Competitive strategies are based on understanding of customer needs	5.20	1.16	5.00
MKTO3	Customer satisfaction is frequently assessed	5.10	1.35	5.00
MKTO4	Integration of functions to serve the needs of markets	5.08	1.05	5.00
MKTO5	Close attention is given on after sales service	5.00	1.45	5.00
MKTO6	Sales people share information concerning competitors	4.73	1.42	5.00
MKTO7	Target customers where we have competitive advantage	5.06	1.35	5.00
MKTO8	Top management regularly discuss competitors' strengths and weaknesses	4.83	1.39	5.00
MKTO9	Business strategies are driven by creation of greater value for customers	5.27	1.16	5.00
MKTO10	Visit of current and prospective customers by top management	5.02	1.31	5.00
MKTO11	Objectives are driven by customer satisfaction	5.23	1.25	5.00
MKTO12	Rapid response to competitive market actions	5.05	1.30	5.00
MKTO13	Managers understand how employees can contribute to value for customers	4.80	1.08	5.00
	Cronbach alpha 0.94 mean of variable 4.99			

ii) *Entrepreneurship* is the ability of the firm to continually renew, innovate and taking risk. It may be good in many aspects but not necessarily provide sustainable competitive advantage by itself (Hult and Ketchen, 2001). Except for indicator 4 (dramatic changes in products) which recoded a mean of 3.78, the mean scores for other 8 indicators relating to entrepreneurship range from 4.05 to 4.90 (Table 5.11).

Table 5.11 Descriptive Statistics: Entrepreneurship

Item	Questions	Mean	Std. Dev.	Median
ENT1	Wide-ranging acts are necessary to achieve objectives	4.90	1.21	5.00
ENT2	Initiation of actions to which other organizations respond	4.49	1.22	5.00
ENT3	Strong tendency for high risk projects	4.05	1.32	4.00
ENT4	Dramatic changes in products	3.78	1.37	4.00
ENT5	New lines of products	4.42	1.47	4.00
ENT6	First business is to introduce new products, techniques, etc.	4.18	1.51	4.00
ENT7	Cautious, “wait and see” posture *R	4.70	1.15	5.00
ENT8	Adopt a very competitive, “undo the competitors” posture	4.39	1.24	5.00
ENT9	Gradually explore the environment, cautious behavior *R	4.48	1.19	5.00
	Cronbach alpha 0.91 mean of variable 4.78			

iii) *Innovativeness* refers to the firm’s openness to new ideas, product or process and is complement to entrepreneurship (Hurley and Hult, 1998). The respondents appear to agree that culture of innovativeness is important in enhancing firm performance. The mean scores of five indicators range from 4.63 to 5.29 compared to the average mean score of 4.93 (Table 5.12).

Table 5.12 Descriptive Statistics: Innovativeness

Item	Questions	Mean	Std. Dev.	Median
INNO1	Technical innovation, based on research results, is readily accepted	4.63	1.48	5.00
INNO2	Management actively seeks innovative ideas	4.93	1.48	5.00
INNO3	Innovation is readily accepted in program/project management	4.75	1.38	5.00
INNO4	People are penalized for new ideas that don’t work *R	5.29	1.21	5.00
INNO5	Innovation is perceived as too risky and is resisted *R	5.06	1.14	5.00
	Cronbach alpha 0.89 mean of variable 4.93			

iv) *Organizational learning* is a source of competitive advantage if the organizations can effectively use their human capital and resources (Ireland et al., 2001). Most sample companies have considered organizational learning as an important corporate culture as the four indicators have an average mean of 5.36 (Table 5.13).

Table 5.13 Descriptive Statistics: Organizational Learning

Item	Questions	Mean	Std. Dev.	Median
LEARN1	Employee learning is an investment, not an expense	5.22	1.41	6.00
LEARN2	Basic value include learning as a key to improvement	5.29	1.32	6.00
LEARN3	Once we quit learning, we endanger our future	5.26	1.21	6.00
LEARN4	Our ability to learn is the key to improvement	5.67	1.26	6.00
	Cronbach alpha 0.93 mean of variable 5.36			

Firm performance

Firm performance is measured by financial and non-financial indicators. The respondents were asked to compare their performance with the industry average over the last three years. Mean scores of seven indicators for the measurement of firm performance all exceeded 4 as compared to the average mean of 4.72 suggesting that most companies are successful in their industry or fairly managed (Table 5.14).

Table 5.14 Descriptive Statistics: Firm Performance

Item	Questions	Mean	Std. Dev.	Median
PERF1	Return on investment (ROI)	4.80	1.29	5.00
PERF2	Sales growth	4.92	1.23	5.00
PERF3	Overall organizational profitability	4.74	1.37	5.00
PERF4	New product development	4.36	1.41	4.00
PERF5	Customer satisfaction	5.01	1.10	5.00
PERF6	Cost reduction programs	4.81	1.23	5.00
PERF7	Human resources development	4.40	1.40	5.00
	Cronbach alpha 0.92 mean of variable 4.72			

5.5 Correlation Matrix

The correlation matrix produced from SPSS shows that most of the variables are significantly related to each other (see Table 5.15). The dependent variable (firm performance) is positively and significantly related to nine independent variables, including competitive strategies, but negatively related to strategic role of accountant. Parnell (2011) found cost leadership and differentiation strategy significantly associated with performance in USA but not in Peru. In Argentina, cost leadership is positively and significantly linked to performance whereas differentiation is positively but not significantly correlated to performance.

Table 5.15 Latent Variable Correlations (n=103)

		1	2	3	4	5	6	7	8	9	10	11
1	SMA usage	0.72										
2	Differentiation	0.53**	0.84									
3	Cost leadership	0.11	0.25*	0.81								
4	Role of accountant	0.31**	0.39**	0.36**	0.93							
5	Intensity of competition	0.36**	0.41**	0.26**	0.18	0.75						
6	Decentralization	0.30**	0.21**	0.16	0.12	0.55**	0.82					
7	Market orientation	0.51**	0.35**	0.26**	0.07	0.64**	0.55**	0.78				
8	Entrepreneurship	0.51**	0.49**	0.11	0.17	0.55**	0.45**	0.65**	0.75			
9	Innovativeness	0.44**	0.52**	0.16	0.13	0.52**	0.28**	0.58**	0.66**	0.84		
10	Organizational learning	0.37**	0.27**	0.06	0.01	0.45**	0.33**	0.48**	0.34**	0.47**	0.91	
11	Firm performance	0.24*	0.20*	0.22*	0.01	0.41**	0.30**	0.47**	0.39**	0.38**	0.62**	0.83

Square roots of AVE are shown diagonally.

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

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

Similar to Henri (2006a), all four organizational capabilities (i.e. market orientation, entrepreneurship, innovativeness and organizational learning) have high coefficients (0.345 to 0.659) and are significantly correlated to each other. Other than significantly correlated with SMA usage, differentiation strategy and cost leadership strategy, strategic role of accountant is not significantly correlated with other independent variables. SMA usage is significantly related to all variables except for cost leadership strategy as evidenced by a low coefficient of 0.110. It appears that cost leadership was only significantly related to four independent variables - differentiation strategy, strategic role of accountant, intensity of competition, and market orientation.

Multicollinearity may cause the problem in assessing the relative importance of the independent variables in explaining the variation in the dependent variable (Malhotra, 2007). In other words, multicollinearity can reduce any single independent variable's predictive power by the extent of its association with other independent variables (Hair et al., 1998). There is no sign of multicollinearity in this study as all correlation coefficients in the matrix produced by SPSS (Table 5.15) are below 0.70.

5.6 PLS Analysis

In view of its ability to model linear relationship without the constraints of other structural equation model, such as large sample size and normality, that coordinates with estimated indicators (Chin, et al., 1996; Hulland, 1999), partial least squares (PLS) has been increasingly used by management accounting researchers (e.g. Chenhall et al., 2011; Hoque, 2011; Kallunki et al., 2011). Moreover, PLS path modeling can simultaneously model the structural and measurement model, and estimate very complex model with many latent and manifest variables (Henseler, et al., 2009). This section describes how the data

file of 103 samples is converted and processed by PLS program. Internal consistency and convergent validity of measurement model were tested. After the loadings of all indicators were assessed, the final measurement and structural model is developed for hypotheses testing using the parameters (paths) between the variables.

5.6.1 PLS Results

5.6.1.1 PLS Results (Overall 103 Samples)

PLS program supports the import of comma-separated-value (CSV) files (Ghozali, 2008). SPSS data file of 103 samples is converted to Microsoft Excel (CSV) file. The data is then processed by a PLS program called SmartPLS 2.0 M3 (Ringle, et al., 2005). PLS allows testing of models with multiple independent, mediating and dependent variables and is more suitable for smaller samples sizes than covariance-based techniques (Hulland, 1999; Chenhall, 2005a). In this SMA study, the sample size is 103 responses, which exceeds the minimum of 90 recommended by Chin et al. (1996) as it represents 10 times the highest number of exogenous variables to a particular construct (i.e. SMA usage).

A structural model in PLS techniques identifies the relationship among constructs while a measurement model specifies the relations between the indicators and the constructs that they represent (Chenhall, 2005a). A measurement model may have reflective indicators or formative indicators. The formative indicators help to describe the constructs while reflective indicators are determined by the constructs. Based on the nature of measures used in this study, the measurement model in this study is considered reflective as the underlying construct is reflected or manifested by a series of indicators (Bisbe et al., 2007).

A key concern in behavioral accounting research is good construct measurement which means these construct measures must meet generally accepted psychometric criteria, such as reliability and validity (Kwok and Sharp, 1998). The measurement problems are particularly acute in mail questionnaire based research as the researcher has no direct contact with the respondents. The psychometric properties of the scales were assessed through confirmatory factor analysis in terms of discriminant validity, convergent validity and internal consistency (Hair et al., 1998; Hulland, 1999; Salleh et al., 2010).

As a first step, the measurement model is estimated much like factor analysis and tests of uni-dimensionality. Figure 5.1 presents the measurement model of PLS. The measurement model estimation provides factor loadings and reliability measures from items to latent constructs (Hulland, 1999; Henseler, et al., 2009). PLS estimate the loading parameters (links between the items and constructs) and assign them standardized values between 0 and 1. Many items exceed 0.70, which indicates that these items share more variance with their respective constructs than with error variance. Initial test denotes that the cross loadings of 6 SMA techniques (item 1, 2, 3, 5, 14 and 16) are below 0.6. Accordingly, these items were dropped and re-tested (Hulland, 1999). The subsequent output from PLS test confirms the convergent validity as all loadings have exceeded 0.60 (see Appendix D.1). In addition, convergent validity exists when the t values of the outer model loadings are above 1.96. Table 5.16 shows that the t values of the outer model are much greater than 1.96 indicating high convergent validity.

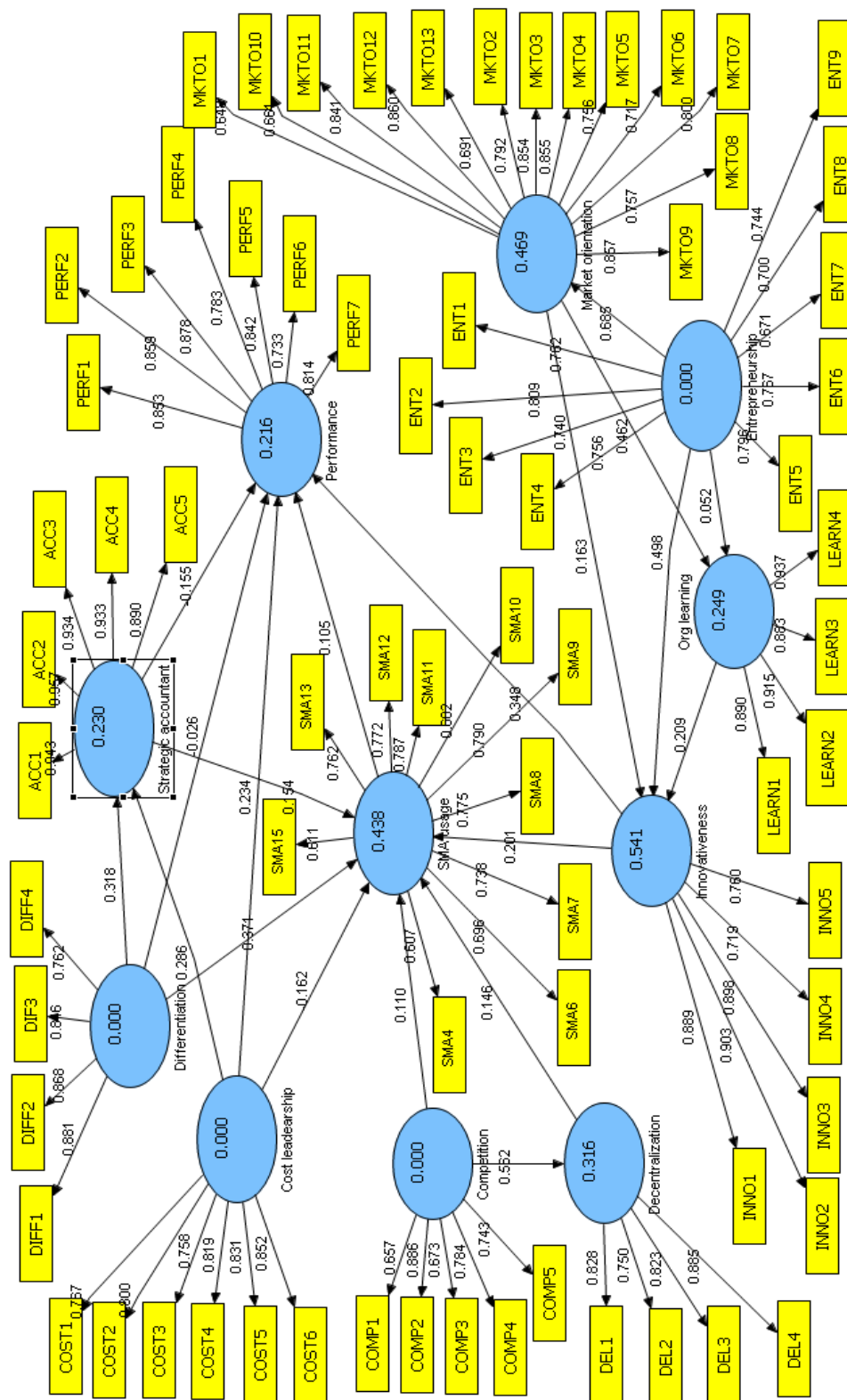


Figure 5.1 PLS measurement model (103 samples)

**Table 5.16 Outer Loadings (Mean, STDEV, T-Values) n=103
Bootstrapping 500 samples**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
ACC1 <- Strategic accountant	0.943	0.942	0.014	0.014	65.686
ACC2 <- Strategic accountant	0.957	0.956	0.012	0.012	78.280
ACC3 <- Strategic accountant	0.934	0.932	0.017	0.017	53.763
ACC4 <- Strategic accountant	0.933	0.931	0.018	0.018	52.173
ACC5 <- Strategic accountant	0.890	0.888	0.025	0.025	35.281
COMP1 <- Competition	0.657	0.663	0.081	0.081	8.108
COMP2 <- Competition	0.886	0.885	0.041	0.041	21.386
COMP3 <- Competition	0.673	0.666	0.103	0.103	6.567
COMP4 <- Competition	0.784	0.787	0.035	0.035	22.321
COMP5 <- Competition	0.743	0.741	0.074	0.074	10.069
COST1 <- Cost leadership	0.767	0.756	0.063	0.063	12.172
COST2 <- Cost leadership	0.800	0.796	0.046	0.046	17.258
COST3 <- Cost leadership	0.758	0.756	0.061	0.061	12.451
COST4 <- Cost leadership	0.819	0.811	0.077	0.077	10.696
COST5 <- Cost leadership	0.831	0.821	0.061	0.061	13.632
COST6 <- Cost leadership	0.852	0.846	0.050	0.050	17.126
DEL1 <- Decentralization	0.828	0.830	0.040	0.040	20.549
DEL2 <- Decentralization	0.750	0.746	0.077	0.077	9.748
DEL3 <- Decentralization	0.823	0.819	0.047	0.047	17.566
DEL4 <- Decentralization	0.885	0.887	0.028	0.028	31.447
DIFF3 <- Differentiation	0.846	0.844	0.032	0.032	26.216
DIFF1 <- Differentiation	0.881	0.879	0.026	0.026	33.828
DIFF2 <- Differentiation	0.868	0.863	0.032	0.032	26.889
DIFF4 <- Differentiation	0.762	0.757	0.077	0.077	9.898
ENT1 <- Entrepreneurship	0.782	0.780	0.057	0.057	13.809
ENT2 <- Entrepreneurship	0.809	0.806	0.056	0.056	14.444

**Table 5.16 Outer Loadings (Mean, STDEV, T-Values) n=103
Bootstrapping 500 samples (Contd.)**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
ENT3 <- Entrepreneurship	0.740	0.733	0.064	0.064	11.643
ENT4 <- Entrepreneurship	0.756	0.750	0.054	0.054	13.976
ENT5 <- Entrepreneurship	0.796	0.790	0.049	0.049	16.248
ENT6 <- Entrepreneurship	0.767	0.764	0.058	0.058	13.121
ENT7 <- Entrepreneurship	0.671	0.656	0.087	0.087	7.735
ENT8 <- Entrepreneurship	0.700	0.696	0.067	0.067	10.455
ENT9 <- Entrepreneurship	0.744	0.734	0.067	0.067	11.165
INNO1 <- Innovativeness	0.889	0.889	0.021	0.021	42.479
INNO2 <- Innovativeness	0.903	0.905	0.017	0.017	52.783
INNO3 <- Innovativeness	0.898	0.896	0.020	0.020	45.399
INNO4 <- Innovativeness	0.719	0.702	0.085	0.085	8.438
INNO5 <- Innovativeness	0.760	0.742	0.079	0.079	9.609
LEARN1 <- Org learning	0.890	0.884	0.035	0.035	25.644
LEARN2 <- Org learning	0.915	0.914	0.024	0.024	38.347
LEARN3 <- Org learning	0.883	0.879	0.037	0.037	24.000
LEARN4 <- Org learning	0.937	0.935	0.017	0.017	55.324
MKTO1 <- Market orientation	0.648	0.636	0.064	0.064	10.091
MKTO10 <- Market orientation	0.661	0.660	0.108	0.108	6.133
MKTO11 <- Market orientation	0.841	0.837	0.041	0.041	20.360
MKTO12 <- Market orientation	0.860	0.858	0.027	0.027	31.647
MKTO13 <- Market orientation	0.691	0.695	0.085	0.085	8.111
MKTO2 <- Market orientation	0.792	0.790	0.049	0.049	16.221
MKTO3 <- Market orientation	0.854	0.849	0.032	0.032	26.693
MKTO4 <- Market orientation	0.855	0.854	0.033	0.033	26.223
MKTO5 <- Market orientation	0.756	0.752	0.051	0.051	14.945
MKTO6 <- Market orientation	0.717	0.710	0.063	0.063	11.414

**Table 5.16 Outer Loadings (Mean, STDEV, T-Values) n=103
Bootstrapping 500 samples (Contd.)**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
MKT07 <- Market orientation	0.800	0.796	0.045	0.045	17.777
MKT08 <- Market orientation	0.757	0.755	0.042	0.042	18.030
MKT09 <- Market orientation	0.857	0.854	0.027	0.027	31.631
PERF1 <- Performance	0.853	0.852	0.037	0.037	22.782
PERF2 <- Performance	0.859	0.857	0.035	0.035	24.482
PERF3 <- Performance	0.878	0.876	0.045	0.045	19.708
PERF4 <- Performance	0.783	0.777	0.045	0.045	17.257
PERF5 <- Performance	0.842	0.838	0.036	0.036	23.138
PERF6 <- Performance	0.733	0.724	0.062	0.062	11.861
PERF7 <- Performance	0.814	0.813	0.037	0.037	21.860
SMA10 <- SMA usage	0.602	0.596	0.074	0.074	8.108
SMA11 <- SMA usage	0.787	0.784	0.047	0.047	16.887
SMA12 <- SMA usage	0.772	0.771	0.044	0.044	17.356
SMA13 <- SMA usage	0.762	0.758	0.042	0.042	18.318
SMA15 <- SMA usage	0.611	0.601	0.080	0.080	7.636
SMA4 <- SMA usage	0.607	0.598	0.074	0.074	8.177
SMA6 <- SMA usage	0.696	0.692	0.075	0.075	9.258
SMA7 <- SMA usage	0.738	0.731	0.067	0.067	10.962
SMA8 <- SMA usage	0.775	0.768	0.051	0.051	15.191
SMA9 <- SMA usage	0.790	0.787	0.051	0.051	15.426

Convergent validity can also be assured if AVE (average variance extracted) of each construct exceeds 0.50 (Henseler et al., 2009). Cronbach alpha and composite reliability are used to measure the internal consistency and reliability of the measurement model. A benchmark of 0.70 is usually used for these two measures (Hulland, 1999;

Henseler et al., 2009). Table 5.17 presents the results of composite reliability and Cronbach alpha, showing all the values have exceeded 0.8. The AVEs of all latent variables are also above 0.5.

Table 5.17 Internal consistency and validity of measurement model (n=103)

	AVE	Root AVE	Composite Reliability	R Square	Cronbach alpha
Competition	0.567	0.753	0.866		0.808
Cost leadership	0.648	0.805	0.917		0.891
Decentralization	0.677	0.823	0.893	0.316	0.841
Differentiation	0.707	0.841	0.906		0.861
Entrepreneurship	0.567	0.753	0.922		0.905
Firm performance	0.680	0.825	0.937	0.216	0.921
Innovativeness	0.701	0.838	0.921	0.541	0.895
Market Orientation	0.608	0.780	0.952	0.469	0.945
Org learning	0.822	0.906	0.948	0.249	0.927
Role of accountant	0.868	0.932	0.970	0.230	0.962
SMA usage	0.515	0.718	0.913	0.438	0.894

The cross loadings offer another check for discriminant validity. Cross loadings of indicators for a respective latent variable should be higher than the cross loadings of their correlations with other latent variables. The PLS results confirm that cross loadings of indicators for each respective construct are higher than other loadings (see Appendix D.1).

The discriminant validity can also be assessed by comparing the square roots of AVE calculated for each of the constructs and the correlations between different constructs in the model. The square roots of AVE (diagonal figures in a table) should be higher than the off-diagonal elements in the corresponding rows and columns. Table 5.15 shows that

the square roots of AVE placed diagonally are all higher than the latent variable correlations denoting discriminant validity.

In the second step, the structural model estimated the path coefficients or significant effects on the relationship between constructs. The structural (inner) model is then assessed by examining the coefficient of determination (R^2) of the endogenous (dependent) latent variables that is accounted for by the variation in exogenous variables. The R^2 value varies between 0 and 1. So when R^2 is closer to 1 it means high variance is explained for the analyzed variable. R^2 value of PLS model is presented in Table 5.17. SMA usage has a R^2 value of 0.438 indicating that exogenous variables (especially differentiation strategy and organizational capabilities) in combination explained 43.8% of its variation. R^2 value of firm performance (0.216), strategic role of accountant (0.230) and organizational learning (0.249) are considered low but they are above 0.1 recommended by Falk and Miller (1992).

Path analysis was used to test the direct and indirect effects of the contextual variables on dependent variables. Path coefficients in the model determine the strengths among the paths between exogenous latent variables and endogenous latent variables and provide support for the hypothesized relationships (Hulland, 1999; Henseler, et al., 2009). A bootstrap procedure was used to provide confidence intervals for all parameter estimates. Table 5.18 shows the path coefficients among latent variables and their t values.

Table 5.18 Path coefficients and t statistics
n=103 bootstrapping 500 samples

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics
Competition -> Decentralization	0.562	0.581	0.065	0.065	8.678
Competition -> SMA usage	0.110	0.110	0.108	0.108	1.014
Cost leadership -> Performance	0.234	0.233	0.110	0.110	2.131
Cost leadership -> SMA usage	-0.162	-0.152	0.097	0.097	1.666
Cost leadership -> Strategic accountant	0.286	0.281	0.150	0.150	1.898
Decentralization -> SMA usage	0.146	0.146	0.103	0.103	1.417
Differentiation -> Performance	-0.026	-0.017	0.123	0.123	0.215
Differentiation -> SMA usage	0.371	0.372	0.106	0.106	3.496
Differentiation -> Strategic accountant	0.318	0.324	0.120	0.120	2.647
Entrepreneurship -> Innovativeness	0.498	0.498	0.097	0.097	5.154
Entrepreneurship -> Market orientation	0.685	0.690	0.065	0.065	10.528
Entrepreneurship -> Org learning	0.052	0.056	0.145	0.145	0.359
Innovativeness -> Performance	0.348	0.345	0.115	0.115	3.034
Innovativeness -> SMA usage	0.201	0.203	0.096	0.096	2.082
Market orientation -> Innovativeness	0.163	0.155	0.110	0.110	1.487
Market orientation -> Org learning	0.462	0.470	0.108	0.108	4.278
Org learning -> Innovativeness	0.209	0.220	0.102	0.102	2.058
SMA usage -> Performance	0.105	0.106	0.119	0.119	0.885
Strategic accountant -> Performance	-0.155	-0.146	0.117	0.117	1.322
Strategic accountant -> SMA usage	0.154	0.151	0.101	0.101	1.532

Path coefficients between latent variables generated by PLS program based on 103 samples are presented in Figure 5.2. The structural model helps to assess whether the hypotheses are supported. The structural model shows that there is a strong path between organizational capabilities and firm performance. In addition, differentiation strategy appears to be significantly and positively associated with two dimensions of SMA (strategic role of accountant and SMA usage). SMA usage is also found to be significantly associated with organizational capabilities.

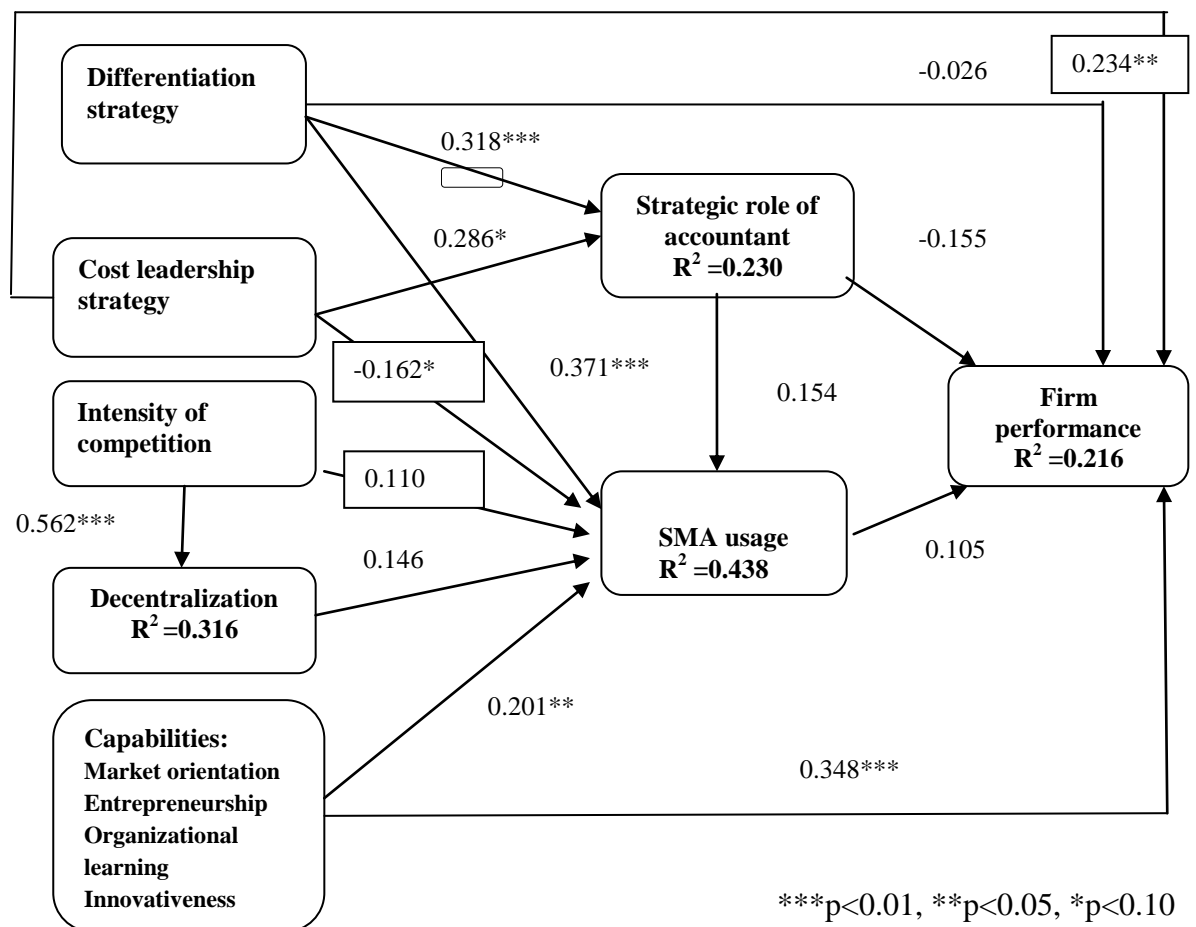


Figure 5.2: Structural model showing path coefficients and R² values (n=103)

5.6.1.2 PLS Results of Large Companies (43 Samples)

Company size is one important factor determining the accounting sophistication as larger size companies have more capabilities and resources, and diverse expertise (Guilding, 1999; Libby and Waterhouse, 1996). As such, they tend to have the support of top management and accountants in employing SMA techniques. In view of this, a further PLS test was carried out on 43 large companies which employed more than 500 employees (size based on US definition, see section 4.3.8). After deleting indicators below 0.70, the PLS output for large companies confirms the convergent validity and internal consistency of the variables and the respective indicators (Table 5.20). Composite reliability and Cronbach alpha are all above 0.70. The AVEs of latent variables are also above 0.50. Discriminant

validity is confirmed as the cross loadings of indicators for a respective variable are higher than cross loadings of their correlations with other latent variables (see appendix D.2). Further test of discriminant validity is to ascertain that the square roots of AVE shown diagonally in Table 5.19 are all higher than the latent variable correlations. This test also confirmed the discriminant validity.

All outer loadings far exceeded 1.96 indicating the indicators and relevant latent variables are closely connected (Table 5.21). Path coefficients of the structural model are presented in Table 5.22. Due to the small sample size, the structural model covers only four exogenous variables of SMA usage and firm performance (see Figure 5.3). This structural model for 43 large companies shows that there are significant relationships between differentiation strategy, strategic role of accountant and SMA usage, and between SMA usage and firm performance. SMA usage has a R^2 value of 0.409 indicating that exogenous variables in combination explained 41% of the variation. However, strategic role of accountant is negatively associated to firm performance.

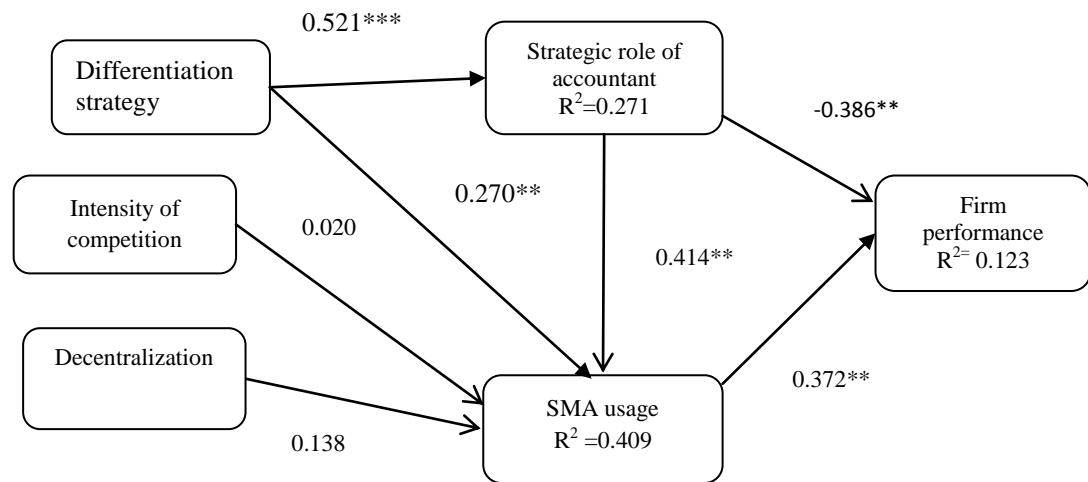
Table 5.19 Latent Variable Correlations (Large companies n=43)

	Competition	Decentralization	Differentiation	Performance	SMA usage	Role of accountant
Competition	0.764					
Decentralization	0.292	0.831				
Differentiation	0.435	0.113	0.849			
Performance	0.241	0.107	0.065	0.843		
SMA usage	0.270	0.211	0.510	0.151	0.804	
Role of accountant	0.223	0.089	0.521	-0.174	0.572	0.931

Square roots of AVE are shown diagonally

Table 5.20 Internal consistency and convergent validity of measurement model (Large companies n=43)

	AVE	Composite Reliability	R Square	Cronbach Alpha	Root AVE
Competition	0.584	0.808		0.651	0.764
Decentralization	0.691	0.869		0.810	0.831
Differentiation	0.721	0.912		0.873	0.849
Performance	0.710	0.936	0.123	0.920	0.843
SMA usage	0.646	0.901	0.409	0.862	0.804
Role of accountant	0.868	0.970	0.271	0.961	0.931



***p<0.01, **p<0.05

Figure 5.3: Structural model showing path coefficients and R² values (Large companies, n=43)

Table 5.21 Outer Loadings (Mean, STDEV, T-Values)
Large companies n=43 Bootstrapping 500 samples

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
ACC1 <- Role of accountant	0.950	0.946	0.025	0.025	37.782
ACC2 <- Role of accountant	0.969	0.967	0.014	0.014	68.191
ACC3 <- Role of accountant	0.936	0.934	0.026	0.026	36.127
ACC4 <- Role of accountant	0.938	0.935	0.029	0.029	31.928
ACC5 <- Role of accountant	0.860	0.850	0.054	0.054	16.080
COMP1 <- Competition	0.731	0.658	0.287	0.287	2.543
COMP2 <- Competition	0.813	0.718	0.233	0.233	3.494
COMP4 <- Competition	0.746	0.671	0.275	0.275	2.717
DEL1 <- Decentralization	0.767	0.700	0.280	0.280	2.738
DEL3 <- Decentralization	0.936	0.818	0.254	0.254	3.686
DEL4 <- Decentralization	0.780	0.714	0.262	0.262	2.971
DIFF3 <- Differentiation	0.854	0.860	0.037	0.037	22.824
DIFF1 <- Differentiation	0.851	0.847	0.051	0.051	16.745
DIFF2 <- Differentiation	0.821	0.801	0.075	0.075	10.938
DIFF4 <- Differentiation	0.870	0.867	0.051	0.051	17.042
PERF1 <- Performance	0.897	0.885	0.101	0.101	8.890
PERF2 <- Performance	0.861	0.841	0.100	0.100	8.589
PERF3 <- Performance	0.929	0.913	0.089	0.089	10.464
PERF4 <- Performance	0.783	0.755	0.135	0.135	5.783
PERF5 <- Performance	0.759	0.740	0.154	0.154	4.942
PERF7 <- Performance	0.814	0.790	0.118	0.118	6.892
SMA10 <- SMA usage	0.718	0.715	0.104	0.104	6.879
SMA6 <- SMA usage	0.870	0.867	0.042	0.042	20.676
SMA7 <- SMA usage	0.778	0.735	0.169	0.169	4.600
SMA8 <- SMA usage	0.882	0.869	0.054	0.054	16.422
SMA9 <- SMA usage	0.759	0.740	0.124	0.124	6.117

Table 5.22 Path Coefficients and t Statistics (Mean, STDEV, T-Values)
Large companies n=43 Bootstrapping 500 samples

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
Competition -> SMA usage	0.020	0.059	0.146	0.146	0.140
Decentralization -> SMA usage	0.138	0.160	0.203	0.203	0.679
Differentiation -> SMA usage	0.270	0.285	0.138	0.138	1.963
Differentiation -> Role of accountant	0.521	0.533	0.117	0.117	4.455
SMA usage -> Performance	0.372	0.377	0.175	0.175	2.122
Role of accountant -> Performance	-0.386	-0.399	0.179	0.179	2.159
Role of accountant -> SMA usage	0.414	0.364	0.174	0.174	2.385

5.6.1.3 PLS Results of Small Companies (60 Samples)

For small companies engaging up to 500 employees, the PLS test also confirms the convergent validity and internal consistency of the variables and the respective indicators (see Table 5.24). The AVEs of latent variable are all above 0.50. Composite reliability and Cronbach alpha are all above 0.70. Discriminate validity is confirmed by cross loadings of indicators for each variable being higher than their correlations with other latent variables (Appendix D.3). Discriminate validity is also confirmed by the square roots of AVE for each variable are all higher than the corresponding latent variable correlations (Table 5.23).

Outer loadings of indicators with the respective latent variable are all above 1.96 indicating their strong relationship (Table 5.25). The path coefficients for the structural model are shown in Table 5.26. In contrast to earlier two structural models, the small companies sample test shows intensity of competition and SMA usage are significantly

related (Figure 5.4). R^2 value of SMA usage is 0.542, indicating that exogenous variables in combination explained 54% of the variation.

Table 5.23 Latent Variable Correlations

Small companies n=60

	Competi- tion	Decentraliza- tion	Differentia- tion	Performance	Role of accountant	SMA usage
Competition	0.792					
Decentralization	0.692	0.822				
Differentiation	0.411	0.266	0.822			
Performance	0.438	0.434	0.246	0.817		
Role of accountant	0.226	0.211	0.369	0.074	0.931	
SMA usage	0.613	0.484	0.606	0.288	0.189	0.818

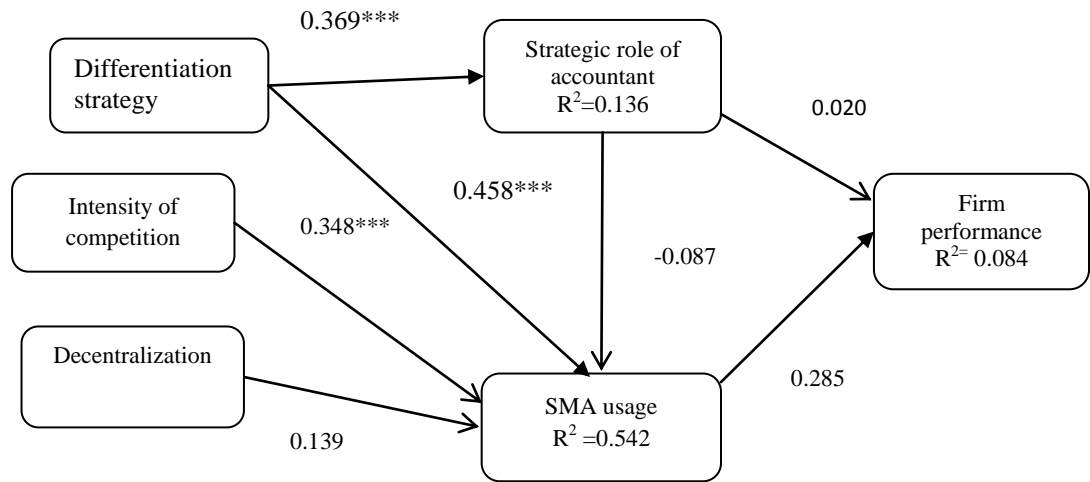
Square roots of AVE are shown diagonally

Table 5.24 Internal consistency and convergent validity of measurement model (small companies n=60)

	AVE	Composite Reliability	R Square	Cronbach Alpha	Root AVE
Competition	0.628	0.871		0.803	0.792
Decentralization	0.675	0.893		0.842	0.822
Differentiation	0.676	0.862		0.758	0.822
Performance	0.668	0.933	0.084	0.919	0.817
Role of accountant	0.867	0.970	0.136	0.962	0.931
SMA usage	0.669	0.910	0.542	0.876	0.818

Table 5.25 Outer Loadings (Mean, STDEV, T-Values)**Small companies n=60 Bootstrapping 500 samples**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
ACC1 <- Role of accountant	0.933	0.928	0.023	0.023	40.523
ACC2 <- Role of accountant	0.951	0.947	0.020	0.020	48.626
ACC3 <- Role of accountant	0.939	0.936	0.021	0.021	45.647
ACC4 <- Role of accountant	0.932	0.929	0.027	0.027	35.114
ACC5 <- Role of accountant	0.901	0.898	0.037	0.037	24.681
COMP1 <- Competition	0.743	0.744	0.098	0.098	7.545
COMP2 <- Competition	0.829	0.810	0.111	0.111	7.439
COMP4 <- Competition	0.850	0.859	0.032	0.032	26.526
COMP5 <- Competition	0.742	0.726	0.133	0.133	5.588
DEL1 <- Decentralization	0.831	0.831	0.049	0.049	16.849
DEL2 <- Decentralization	0.806	0.802	0.083	0.083	9.698
DEL3 <- Decentralization	0.812	0.800	0.081	0.081	9.988
DEL4 <- Decentralization	0.839	0.837	0.059	0.059	14.312
DIFF1 <- Differentiation	0.893	0.896	0.046	0.046	19.384
DIFF4 <- Differentiation	0.730	0.705	0.146	0.146	5.013
PERF1 <- Performance	0.868	0.835	0.123	0.123	7.031
PERF2 <- Performance	0.884	0.845	0.118	0.118	7.509
PERF3 <- Performance	0.846	0.809	0.158	0.158	5.365
PERF4 <- Performance	0.791	0.762	0.159	0.159	4.966
PERF5 <- Performance	0.865	0.831	0.110	0.110	7.885
PERF6 <- Performance	0.661	0.640	0.154	0.154	4.283
PERF7 <- Performance	0.783	0.755	0.113	0.113	6.934
SMA11 <- SMA usage	0.841	0.842	0.038	0.038	22.352
SMA12 <- SMA usage	0.898	0.895	0.033	0.033	27.403
SMA13 <- SMA usage	0.833	0.838	0.040	0.040	20.625
SMA8 <- SMA usage	0.720	0.695	0.112	0.112	6.438
SMA9 <- SMA usage	0.788	0.776	0.082	0.082	9.569



***p<0.01, **p<0.05

Figure 5.4: Structural model showing path coefficients and R² values (Small companies, n=60)

**Table 5.26 Path Coefficients and t Statistics
(Mean, STDEV, T-Values)**

Small companies n=60 Bootstrapping 500 samples

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
Competition -> SMA usage	0.348	0.362	0.133	0.133	2.620
Decentralization -> SMA usage	0.139	0.141	0.123	0.123	1.132
Differentiation -> Role of accountant	0.369	0.377	0.142	0.142	2.594
Differentiation -> SMA usage	0.458	0.454	0.111	0.111	4.117
Role of accountant -> Performance	0.020	0.036	0.173	0.173	0.117
Role of accountant -> SMA usage	-0.087	-0.089	0.108	0.108	0.808
SMA usage -> Performance	0.285	0.296	0.161	0.161	1.772

5.6.2 Test of Hypotheses

As presented in the theoretical model in Figure 3.1, the aim of this SMA study is to examine the relationship between the two dimensions of SMA (strategic role of accountant and the usage of SMA techniques) and the contextual variables. Competitive strategy (product differentiation) is hypothesized to be associated with strategic role of accountant and SMA usage (H1a and H2a). Strategic role of accountant and SMA usage are hypothesized to be associated with the firm performance (H1b and H2b). By combining the earlier hypotheses developed, it is anticipated that strategic role of accountant and SMA usage mediate the relationship between differentiation strategy and firm performance individually (H1c and H2c). Collectively, organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) are posited to have a direct effect on SMA usage (H6a) and firm performance (H6b). It is also hypothesized that SMA usage can mediate the relationship between organizational capabilities and firm performance (H6c). In addition, strategic role of accountant, intensity of competition and organizational structure (degree of decentralization) are hypothesized to have an impact on SMA usage separately (H3, H4 and H5). Finally, H7 posits that company size has a positive effect on the relationships among differentiation strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance. The following sub-sections examine whether the PLS results support the hypotheses.

5.6.2.1 H1a and H2a: Relationship between Strategy and Two Dimensions of SMA

H1a posits that strategic role of accountant is positively associated with differentiation strategy and H2a also posits that SMA usage is positively associated with differentiation strategy. PLS results from 103 samples as shown in Figure 5.2 demonstrate that differentiation strategy is positively and significantly associated with strategic role of

accountant (0.318, $p < 0.01$). Thus, H1a is supported. The results also demonstrate that differentiation strategy is positively and significantly associated with SMA usage (0.371, $p < 0.01$). Hence, H2a is supported. Further PLS analysis on large size and small size companies (Figure 5.3 and Figure 5.4) also confirms that differentiation strategy is significantly associated with the two dimensions of SMA (strategic role of accountant and SMA usage).

5.6.2.2 H1b and H2b: Relationship between Two Dimensions of SMA and Performance

H1b posits that strategic role of accountant is positively associated with firm performance. The PLS results for 103 samples (see Figure 5.2) show a negative relationship between strategic role of accountant and firm performance (-0.155, not significant). Thus, H1b is not supported. Further PLS analysis based on large companies showed that strategic role of accountant and firm performance are negatively and significantly related (-0.386, $p < 0.05$; see Figure 5.3). However, the test on small companies revealed that strategic role of accountant and firm performance are not related (0.020, ns; see Figure 5.4).

H2b posits that SMA usage is associated with firm performance. The PLS results for 103 samples reflect a positive and insignificant relationship between SMA usage and firm performance (0.105, ns). Thus, H2b is not supported. Surprisingly, further PLS analysis on 43 large companies (Figure 5.3) shows a positive and significant relationship between SMA usage and firm performance (0.372, $p < 0.01$). But the PLS analysis on 60 small companies found SMA usage and firm performance are positively but insignificantly associated (0.285, ns; see Figure 5.4).

5.6.2.3 H1c and H2c: Mediation Role of Two Dimensions of SMA on Strategy and Performance Relationship

H1c conjectures that strategic role of accountant mediates the relationship between differentiation strategy and firm performance. Based on Gerdin and Greve's (2004) arguments on mediation model, the results reveal that strategic role of accountant is not the cause of dependent variable (firm performance) as its association is not significantly related. Hence, H1c is therefore not supported. H2c also conjectures that SMA usage mediates the relationship between differentiation strategy and firm performance. Since H1a is supported and H1b (association of SMA usage with firm performance) is not supported, it is confirmed that SMA usage is not a mediator. Hence, H2c is not supported. However, when further PLS test is carried out on 43 samples of large companies, SMA is found to be mediating the relationship between differentiation strategy and firm performance as differentiation strategy is significantly associated with SMA usage (0.270, $p < 0.05$) and SMA usage and firm performance are associated (0.372, $p < 0.05$) (see Figure 5.3).

5.6.2.4 H3, H4 and H5: Relationships between SMA Usage and Strategic Role of Accountant, Intensity of Competition and Degree of Decentralization

H3 posits that strategic role of accountant may be associated with SMA usage. The path coefficient (0.154) produced by PLS indicates that there is a positive but insignificant relationship between strategic role of accountant and SMA usage (see Figure 5.2). PLS results show intensity of competition is significantly associated with the degree of decentralization (0.562, $P < 0.01$). H4 posits that intensity of competition is positively associated to SMA usage and H5 posits that decentralization is positively associated to SMA usage. However, the path coefficient indicated intensity of competition is positively but not significantly correlated to SMA usage (0.110). Likewise, the degree of

decentralization is positively but not significantly correlated to SMA usage (0.146). Despite that the correlation matrix (Table 5.5) reflect a strong relation between SMA usage and three contextual variables (strategic role of accountant, intensity of competition and decentralization), PLS results for 103 samples fail to support their relationships as hypothesized in H3, H4 and H5.

PLS test of 43 samples of large companies confirms that intensity of competition and decentralization are not associated with SMA usage (Figure 5.3). Surprisingly, there seems to be a significant and positive relationship between strategic role of accountant and SMA usage (0.414, $p < 0.05$) in this test. Further PLS test on 60 samples of small companies also provided contradicting results (Figure 5.4). SMA usage is found to be positively and significantly associated with intensity of competition (0.348, $p < 0.01$).

5.6.2.5 H6a, H6b and H6c: Relationships between Organizational Capabilities, SMA Usage and Firm Performance

As presented in Figure 5.5, the four organizational capabilities (market orientation, innovativeness, entrepreneurship and organizational learning) are collectively applied in order to examine more effectively their relationship with firm performance and SMA usage. The four elements are inter-linked with each other in enhancing competitive advantage. Entrepreneurship has a direct impact on market orientation (0.685, $P < 0.01$) and innovativeness (0.498, $P < 0.01$). Market orientation is associated with organizational learning (0.462, $P < 0.01$) which has an impact on innovativeness (0.209, $P < 0.05$). The combination of four capabilities collectively has to be in line with the framework proposed by Lin et al. (2008) which was discussed in Section 2.8.5 and Section 3.3.7. In Lin et al.'s (2008) framework innovativeness is an important determinant of performance and it acts as

a mediator for three other capabilities, i.e. market orientation, entrepreneurship and organizational learning.

H6a posits that organizational capabilities are positively associated with SMA usage and H6b posits that organizational capabilities are positively associated with firm performance. The PLS results show that there is a positive and significant association between organizational capabilities (via innovativeness) and SMA usage (0.201, $P < 0.05$). Likewise, organization capabilities (via innovativeness) have a direct impact on firm performance (0.348, $P < 0.01$). Therefore, H6a and H6b are supported.

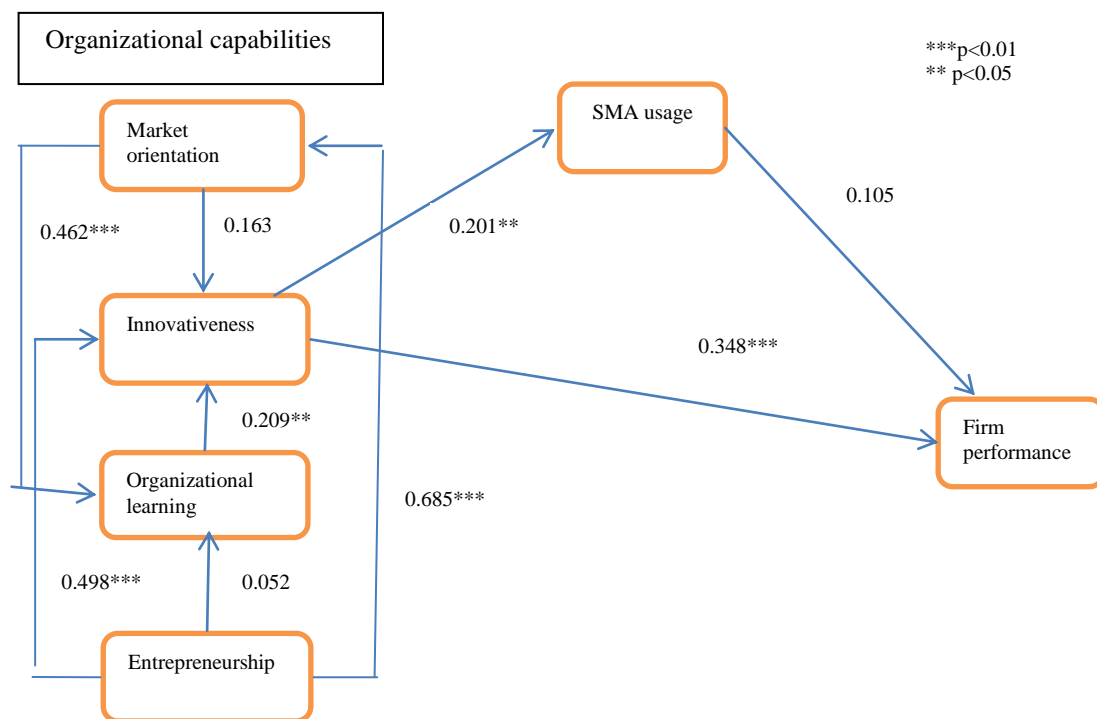


Figure 5.5 Structural model on relationship between organizational capabilities, SMA usage and firm performance (n=103 samples)

H6c posits that SMA usage mediates the relationship between organizational capabilities and firm performance. Since SMA usage is not significantly associated with firm performance (H2b not supported) and organizational capabilities already have a significant direct relationship with firm performance, there is no mediating role of SMA usage in this circumstance. Thus, H6c is not supported.

5.6.2.6 H7 Effect of Company Size on the Relationships among Strategy, Strategic Role of Accountant, Intensity of Competition, Decentralization, SMA Usage and Firm Performance

The 103 samples obtained from mail survey were divided into two groups. Large size companies (43 samples) are those that engage more than 500 employees. Small size companies (60 samples) are those that engaged up to 500 employees (based on US definition, see Section 4.3.8). The detailed results of PLS test in respect of large and small companies are provided in Section 5.6.1.2 and Section 5.6.1.3 respectively.

Referring to the structural model of large size companies presented earlier in Figure 5.3, differentiation strategy is positively and significantly associated with strategic role of accountant (0.521, $p < 0.01$) and SMA usage (0.270, $p < 0.05$). Strategic role of accountant is also positively and significantly associated to SMA usage (0.414, $p < 0.05$) which is associated with firm performance (0.372, $p < 0.05$). Intensity of competition and decentralization are not associated to SMA usage. The structural model of small size companies is shown in Figure 5.4. Similar to large size companies, differentiation strategy is positively and significantly associated to strategic role of accountant (0.369, $p < 0.01$) and SMA usage (0.458, $p < 0.01$). However, SMA usage is not significantly associated with strategic role of accountant and firm performance. Surprisingly, intensity of competition is

positively and significantly associated to SMA usage (0.348, $p < 0.01$). For better comparison of the three different structural models Table 5.27 presents the path coefficients and t values of three structural models (overall, large and small). Relationship between differentiation strategy and the two dimensions of SMA appear to be consistent in the three PLS tests.

Table 5.27 Comparison of Path Coefficients and t Values of 3 Models

	Overall (n=103)		Large (n=43)		Small (n=60)	
	Path coefficients	t values	Path coefficients	t values	Path coefficients	t values
Competition -> SMA usage	0.110	1.014	0.020	0.140	0.348	2.620
Decentralization -> SMA usage	0.146	1.417	0.138	0.679	0.139	1.132
Differentiation -> SMA usage	0.371	3.496	0.270	1.963	0.369	2.594
Differentiation -> Role of accountant	0.318	2.647	0.521	4.455	0.458	4.117
SMA usage -> Performance	0.105	0.885	0.372	2.122	0.020	0.117
Role of accountant -> Performance	-0.155	1.322	-0.386	2.159	-0.087	0.808
Role of accountant -> SMA usage	0.154	1.532	0.414	2.385	0.285	1.772

Due to increased levels of complexity and diversity, large size companies have a higher potential to adopt complex accounting systems or SMA techniques to enhance their effectiveness (Otley, 1999; Guilding, 1999; Hoque and James, 2000; Gerdin, 2005; Cadez and Guilding, 2008a). Consistent with past research, further PLS analysis of large size companies in this study found support that the usage of SMA is significantly associated firm performance (0.372, $p < 0.05$) and strategic role of accountant (0.414, $p < 0.05$).

As for PLS analysis of small size companies, the only exception is that intensity of competition is found to be significantly associated with SMA usage. This finding may be

due to small firms are gaining competitive advantage through innovation activity and they are expected to compete with large firms in the market, they need to have the ability to make speedy improvements to their products and services (Laitinen, 2001; Smith, et al., 2008). Hence, it is possible that small companies facing high intensity of competition have to adopt contemporary management accounting practices such as SMA to improve their competitiveness.

In contrast to the outcomes of small size companies and full sample, PLS analysis for large size companies shows that strategic role of accountant is negatively and significantly associated with firm performance (-0.386, $p < 0.05$). Despite that most past research found support that participation of middle managers or accountants in strategic decision-making process can lead to high effectiveness or productivity (e.g. Floyd and Wooldridge, 1992; Bowen and Lawler, 1995; Floyd and Wooldridge, 1997; Vandenberg, et al., 1999; Chalos and Poon, 2000; Shields et al., 2000; Baines and Langfield-Smith, 2003; Ferreira and Moulang, 2009; Aver and Cadez, 2009), there are other research that found management accountants' participation does not have impact on firm performance (e.g. Wagner, 1994; Fry, et al., 1995; Chenhall and Langfield-Smith, 2003; Bayo-Moriones and de Cerio, 2004; Cadez and Guilding, 2008a). Furthermore, Chenhall and Morris (1995) argued that participation in decision-making can be viewed as costly and disruptive when an organization places more attention on cost efficiency. This is supported by Cabrera et al. (2003). In this study, perception that participation is costly and disruptive could be the reason why strategic role of accountant is negatively associated with firm performance.

Accounting systems improve job satisfaction of managers instead of firm performance (Langfield-Smith, 2005). Cadez and Guilding (2008a) found SMA usage mediates the relationship between accountants' participation in strategic decision-making process and firm performance. The results of this study appear to support that relationship between strategic role of accountant and firm performance is mediated by SMA usage (see Figure 5.3).

The results support that size affects the relationship of certain latent variables. Hence, H7 is partially supported. Table 5.28 summarized the results of hypotheses testing as compared to the research questions and objectives.

Table 5.28 Results of hypotheses testing by PLS program

No.	Research questions	Research objectives	Hypotheses	Results
1	Is the strategic choice of companies associated with strategic role of accountant and SMA usage?	To identify which strategic choice is associated the strategic role of accountant and SMA usage.	H1a: Differentiation strategy is positively associated with strategic role of accountant. H2a: Differentiation strategy is positively associated with SMA usage.	Supported Supported
2	Are strategic role of accountant and SMA usage positively associated with firm performance?	To examine the relationship between strategic role of accountant and firm performance and the relationship between SMA usage and firm performance.	H1b: Strategic role of accountant is positively associated with firm performance. H2b: SMA usage is positively associated with firm performance.	Not supported Not supported
3	Do strategic role of accountant and SMA usage play a mediating role on the relationship between business strategy and firm performance?	To determine the mediating role of strategic role of accountant and SMA usage on the relationship between strategy and firm performance	H1c: Strategic role of accountant mediates the relationship between differentiation strategy and firm performance. H2c: SMA usage mediates the relationship between differentiation strategy and firm performance	Not supported Not supported
4	Do strategic role of accountant, intensity of competition and organizational structure (decentralization) have impacts on the usage of SMA?	To assess whether strategic role of accountant, intensity of competition, and organizational structure (decentralization) can have impacts on usage of SMA.	H3: Strategic role of accountant is positively associated with SMA usage. H4: Intensity of competition is positively associated with SMA usage.	Not supported Not supported

No.	Research questions	Research objectives	Hypotheses	Results
			H5: The degree of decentralization is positively associated with SMA usage	Not supported
5	Does SMA usage play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance?	To examine whether SMA usage play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance?	<p>H6a: Organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) are positively associated with SMA usage.</p> <p>H6b: Organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) are positively associated with firm performance.</p> <p>H6c: SMA usage mediates the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance.</p>	<p>Supported</p> <p>Supported</p> <p>Not supported</p>
6	Does company size affect the relationships among strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance?	To examine whether company size affect the relationships among strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance.	H7 Company size has a positive effect on the relationships among differentiation strategy, strategic role of accountant, intensity of competition, decentralization, SMA usage and firm performance.	Partially supported

5.6.3 Decomposition of Observed Correlation in SMA Model

The causal relationships in Figure 5.2 indicate that one variable can go directly from one variable to another, which is represented by a simple path. However, a variable also can go to a target variable via another variable. A decomposition of the relationship between two variables may be explained by direct effects, indirect effects, and spurious effects (Chalos and Poon, 2000; Hoque, 2011). The correlation between differentiation strategy and firm performance ($r=0.204$, $p<0.05$) may be checked by the path analysis (see Table 5.29). As shown in Figure 5.2, the path from differentiation strategy to SMA usage (0.371 , $p<0.01$), and then to firm performance (0.105) provides a combined indirect effect of 0.039 . The second path from differentiation strategy to strategic role of accountant (0.318 , $p<0.01$), to SMA usage (0.154), and then to firm performance (0.105) gives a combined indirect effect of 0.005 . There is no direct effect from differentiation strategy to firm performance. The combined net effect of two paths is 0.044 ($0.039+0.005$), with 0.160 remaining unexplained (see Table 5.29). This denotes that differentiation strategy and firm performance relationship can be due to many unexplained factors. In addition, differentiation strategy has a direct effect (0.371 , $P<0.01$) on SMA usage with a low 0.156 remaining as spurious effect which denotes a true relationship among these two variables (Hoque, 2011).

The structural model in Figure 5.2 also shows the association between organizational capabilities and firm performance. The direct and indirect effects of variables can be summarized. The correlation between organizational capabilities and firm performance ($r=0.382$, $p<0.01$) is explained by the relevant paths within the model. There is a path from organizational capabilities to SMA usage (0.201 , $p<0.01$) and then to firm performance (0.105). This provides a combined indirect effect of 0.021 . The second path

between organizational capabilities to firm performance gives a direct effect of 0.348 ($p < 0.01$). Comparing the effect of two paths ($0.021 + 0.348$) with the correlation of 0.382, the study finds the effect of 0.013 remains unexplained. With such low spurious effect it may be suggested that organizational capabilities collectively have a ‘true relationship’ with firm performance (Hoque, 2011).

Table 5.29 Computation of the decomposition of the observed correlation in Model (n=103) (source: Figure 5.2, Table 5.15 and 5.18)

Combination of variables	Observed correlation	=Direct effect	+Indirect effect	+Spurious effect	Total effects
Differentiation - role of accountant	0.385	0.318	-	0.067	0.385
Differentiation – SMA usage	0.527	0.371	-	0.156	0.527
Org capabilities – SMA usage	0.438	0.201	-	0.237	0.438
Role of accountant – SMA usage	0.312	0.154	-	0.158	0.312
SMA usage – firm performance	0.241	0.105	-	0.136	0.241
Differentiation – firm performance	0.204	-	$0.039 + 0.005$	0.160	0.204
Org capabilities – firm performance	0.382	0.348	0.021	0.013	0.382

5.7 Interview Results and Discussion

Accounting is considered a multi-paradigmatic discipline and qualitative data can help to extend the scope and depth of understanding where quantitative data is unable to address (Lukka, 2010). Moreover, qualitative data can be used in examining any inclusive survey results (Vaivio, 2007). Subsequent to the collection of 103 samples and analysis of data by SPSS and PLS, interviews were undertaken with senior managers from six public listed companies based in Klang Valley. These companies were introduced by business associates. This convenient method is used to minimize time and cost of contacting top management as initial requests for interview placed in mail survey draw poor response

from respondents. Table 5.30 provides the background of these companies. The senior managers of the six companies were invited to share their views about the benefits from the usage of SMA techniques and the strategic choice associating with these contemporary techniques. They were asked to suggest the contextual factors more likely to influence the usage of SMA and comment about the role of accountant in strategic decision-making process. These senior managers were also asked to give their view about the impact of organizational capabilities on SMA and interactive use of management accounting systems (see Appendix B for the questions used for the interview).

The interview results of each company are summarized in next Section. The results are mainly in sequence with the post-survey interview questions (see Appendix B). Transcripts of post-survey interviews of these six companies are provided in Appendix E.

Table 5.30 Background information of companies involved in interviews

Company	Industry	Sales/Output	Interviewee
A	Manufacturing of flexible plastic films	RM344 million	CEO
B	Manufacturing of automobile components	RM260 million	GM, Corporate Services
C	Distribution of vehicles, automobile component and vehicle body manufacturing	RM1.7 billion	Group Financial Controller
D	Manufacturing of ceramic products	RM37 million	Cost accountant
E	Car maker	Output 190,000 cars	Two Managers, Accounts/Costing
F	Manufacturing of animal feeds, poultry breeding and processing	RM385 million	Financial Controller

5.7.1 Company A

Company A is engaged in the manufacturing of flexible plastic films for packaging. The CEO thinks that the market is too dynamic for any specific accounting technique and

would prefer to use informal controls and past experience for decision-making. He thinks that customer profiling and competitor profiling are important for the competitive market environment. Strategic pricing is used to maintain margin and how best is the volume or product mix. The CEO stressed:

“As a trained management accountant, I ignore using those conceptual terms in management accounting. We first have to determine what we can do, what does the customer wants. This is customer profiling”.

In plastic industry, pursuing of product differentiation strategy allows the company to gain higher margin than the competitors, but it does not necessary lead to uncertain environment. The CEO explained: “Unlike other products of high complexity, the use of differentiation strategy in our industry is not leading us to uncertain environment”. However, once the output is increased and there are economies of scale, the company will consider pursuing cost leadership strategy. Company A is aware that barriers in the industry are production skills and financial resources. Strategy and competition are factors likely to influence the design and usage of SMA. The CEO agreed that management accountants are important for the operations and strategic decision-making process. Management accounting skills are necessary to evaluate new business decisions. Hence, SMA usage is higher if management accountants are involved in the strategic role.

Organizational capabilities are considered important corporate culture for the company to strive for high competitiveness. However, entrepreneurship and innovativeness can be risky without management control systems and risk management. He believed the benefits can be derived from interaction among managers with the support of management accounting report. The CEO added:

“These management accounting reports cover financial and non-financial measures can be an early sign of warning to the management, whether our strategy is being implemented as planned and the targeted results are achievable”.

5.7.2 Company B

Company B is specializing in metal-based automobile components. Besides standard costing and variance analysis, the company uses activity-based costing, balanced scorecard, kaizen costing and other Japanese management techniques. It introduces JIT and managed to reduce the inventory level from 38 days to 19 days, and ensures customers' delivery within 24 hours upon receipt of order. It also applies strategic pricing and target costing to ensure a minimum margin when introducing new products.

Company B attempts to pursue differentiation strategy to improve its revenue as it is difficult to bring down manpower cost further. The General Manager said that with the introduction of the National Automotive Policy by the Government soon will eventually allow free competition with imported cars and parts. Company B is initiating quality and competitive development, aims at cost saving and competitive pricing. Strategy and technology are important factors influencing the control systems. The General Manager stated that:

“We invest in technology to produce quality products at competitive price to sustain our business. Besides strategy, technology is another important factor influencing our control systems”.

Management accountants have to involve in operations and understand the supply chain so that they can participate in strategic decision-making. Given the opportunity,

management accountants can even educate non-financial managers to understand performance measures better. The role of accountant has changed from maintenance of traditional management accounting to participation in decision making.

Company B also focuses on market orientation and innovativeness. It sends quality management engineers to meet the customers regularly. It awards innovative suggestions and holds conference twice a year to share management and technical knowledge, and performance prospects with the managers. The emphasis of organizational capabilities is in line with the strategic growth and will definitely have an impact on usage of SMA. Company B believes the benefits from interactive use of control systems through regular meeting with operations managers.

5.7.3 Company C

Company C is in the business of motor vehicle distribution, and automobile components and vehicle body manufacturing. The Group Financial Controller said the group uses benchmarking, strategic costing, strategic pricing, competitor positioning/monitoring, and customer profitability analysis. It has to initiate cost-down exercise as the National Automotive Policy will eventually see the influx of cars and spare parts from other ASEAN countries. As the Group Financial Controller said:

“We have to understand customers’ perception of value as production cost is no longer relevant to pricing decisions. Target costing may be applied as it is a discipline for cost reduction”.

“Product differentiation strategy refers to the creation of value for customers. It enables us to fix a premium price. It is closely associated with usage of SMA”, the Group

Financial Controller remarked. Company C thinks cost leadership can be used to penetrate market but it is not for long run. Besides strategy, organizational structure has an impact on the design of accounting systems. SMA is data driven system requiring collection of information through intelligence. Management accountants possess analytical skills to participate in decision-making process and definitely influence higher usage of SMA. He gave a suggestion when recruiting new management accountants:

“One important criterion in employing new accountants by our group is to find out whether they are passionate and enthusiastic in the industry. The understanding of operations will make the accountants stand out”.

Company C is cautious about encouraging organizational capabilities. It is good to have entrepreneurship but the company has to optimize the performance of current business. Innovative business process is only applicable when the current business is in the declining stage of product life cycle. The Group Financial Controller is of the view that SMA usage may influence capabilities in either way.

Diagnostic control system creates a discipline for operations managers to focus on the current performance. Interactive use of management accounting may be useful to create a dialogue among managers. However, local companies have yet to change the management style to accept interactive control systems.

5.7.4 Company D

Company D is a ceramic products manufacturer which has a change of major shareholders three years ago. The Cost Accountant thinks it is more practical to make use of standard costing and variance analysis. Activity-based costing can be applied in evaluating the

manufacturing process besides benchmarking. He emphasized the understanding of detailed operations to detect labour and materials utilization at each stage in order to effectively make use of product costing.

“We have to understand the detailed operations, how the raw materials are used until the products are made. Every process is a valuable knowledge to the accountant. Inefficiency in labour and materials utilization may be spotted at each state using our analytical skills”, the Cost Accountant explained.

The use of competitive strategy is different among the products of its clay pipes division, tableware division and bathroom supplies. Company will only pursue differentiation strategy if there is limited production capacity in Malaysia, e.g. bigger jacking pipes. Competition and technology are important factors influencing the design of management accounting. Management accountants have the analytical and management skills to participate in strategic decision-making process. Knowing the future prospects of operations, they are fast in formulating a strategic plan to avoid the emerging risks. Organizational capabilities are important to ensure the employees are proactive, understand the taste of customers, sharing the knowledge to make better quality products at low cost. Hence, the capabilities are associated to SMA usage. The cost accountant emphasized the importance of organizational learning:

“Organizational learning is to allow the employees to share the knowledge about the state of art production in order to move ahead of competitors. The production staffs are trained to understand the cost analysis and the cost impact of each process. The production personnel should know why competitors can make better quality products at such low cost”.

Company D has weekly management meeting to discuss the production outputs and understand what external factors and internal factors that have an impact on the operations. The Cost Accountant believes it is a form of interactive use of management control systems.

5.7.5 Company E

Company E is a large car maker employing about 10,000 employees with an annual output of 190,000 cars. Management accounting system of the company is influenced by its Japanese shareholders. It applies traditional standard costing and activity-based costing.

Initially it introduced cheaper model to meet the demand of low income customers and then pursued product differentiation strategy when it launched 1.3 and 1.5 liters cars to compete and gain market share. It introduced Japanese management philosophy such as JIT and TQM to control inventory cost. On the influence in management accounting design and usage, the Managers said that:

“Besides competitive strategy, we consider technology and management techniques (e.g. JIT and TQM) as important factors influencing the design and usage of management accounting techniques.Management accountants play their role in decision-making process by providing strategic data for our product planning”.

Company E ensures that the employees possessed technical knowledge and management skills to meet the challenges in their operations. The four organizational capabilities require more management information should have an impact on the usage of

SMA techniques. Japanese management concept Hoshin Kanri (Future Direction of Management) was introduced lately. The Managers explained:

“The theme is about asking what you have learnt, how to meet the targets and what are the challenges and opportunities.....We find it is similar to Balanced Scorecard”.

The regular meetings discussed all problems faced by each department. Similar to balanced scorecard, this is an interactive control that helps to generate better communications among the managers.

5.7.6 Company F

Company F is in the business of manufacturing animal feeds, poultry breeding and processing. The company uses traditional management costing and variance analysis. Its accounts department is not involved in external data collection nor employs any SMA techniques for strategic planning or analysis. The market is too volatile so it is not using any SMA technique for its pricing decision. The Financial Controller exclaimed:

“It is difficult to understand the market behaviour as food price fluctuates daily. Despite under-utilization of machines, most industry players are reluctant to cease their business.....Food is price sensitive, so we need to pursue cost leadership strategy to move our products”.

The Financial Controller thinks that strategy and intensity of competition are likely to be factors that can influence the usage of SMA. He lamented that management accountants need to understand operations:

“.....many of them are purely financial based and are unable to make qualitative decision, possible due to their education background, they are not able to help in strategic planning nor give a sound proposal”.

The Financial Controller agrees that interactive use of management control systems such as SMA techniques is important for the competitive environment. However, there must be a change of top management's mindset to allocate the resources to strengthen the management accounting department in order to increase the use of more advanced management accounting techniques.

5.7.7 Summary of Interviews

Most companies acknowledged the use of some advanced management accounting practices in addition to standard costing and variance analysis. These new accounting techniques are perceived to be useful for their business decisions. But Company F, which is in poultry industry, does not think these new techniques are useful in volatile market. In line with Langfield-Smith's (2008) findings, the term SMA is not widely used by interviewees. These companies are also not familiar with most of the conceptual SMA techniques. Similarly, the descriptive statistics from mail surveys recorded very low mean scores for costing techniques such as attribute costing, life-cycle costing and quality costing.

These companies do not focus on pursuing one type of competitive strategy. In the initial stage of product launching, differentiation strategy is used to gain higher margin and retain customers and it is relevant to usage of SMA. Gradually it has to be changed to cost leadership strategy when there are economies of scale and competition intensifies. But

Company C opined that cost leadership may be used for market penetration but not for the long run. Four out of the six companies agreed that strategy is an important factor influencing the usage of SMA. SMA, being external and long term focused, is valuable in providing information for strategic analysis and decisions. This is consistent with the PLS results whereby competitive strategy is found to be significantly associated with SMA usage. Two companies considered technology are important in SMA design. Two companies suggested that intensity of competition while one company agreed that organizational structure is important to SMA usage.

Management accountants are becoming more strategic in their role and have influence on the design and usage of SMA, including organizational learning, but they have to acquire more knowledge in problem solving. Company F is pessimistic that the accountants are too inward looking and may not be able to contribute in business planning. Company C advised to recruit only management accountants who have passion in the business. Their reservation on the attitude of the management accountant is similar to PLS results which suggested no significant association between the strategic role of accountant and firm performance.

Organizational capabilities are important culture to enhance competitive advantage. Employees are encouraged to be more innovative and creative and in sharing of knowledge. Companies are expected to have higher usage of SMA if the top management emphasizes in organizational capabilities. But Company C cautioned that entrepreneurship may only be encouraged if the existing business has reached its mature stage of product life-cycle. The emphasis of organizational capabilities is similar to survey results which concluded that the

four elements of organizational capabilities collectively can enhance firm performance and has an impact on SMA usage.

Contemporary management accounting is an important tool for interactive use. Four companies agree that the use of performance measurements among managers encourage more dialogues and creative thinking.

5.8 Summary

The data collected was processed by SPSS program and PLS program and met the recommended level of reliability and validity. Usage of several SMA techniques is considered low. The findings from the PLS test appear to be in line with the hypothetical relationship that the two dimensions of SMA are highly associated with differentiation strategy that enhance their ability to differentiate their products to satisfy their customers. The use of organizational capabilities collectively has an advantage to enhance performance and positively and significantly associated with SMA usage. The overall structural model does not find SMA usage associated with strategic role of accountant and firm performance. A further test using 43 samples (large companies), however, found SMA usage is associated to strategic role of accountant and firm performance. The results from post-survey interviews show that traditional management accounting and contemporary management accounting are essential for the operations. In addition, strategy is an important contextual variable that can influence the usage of SMA. The interviewees also agreed the importance of interactive use of management accounting. After the data analysis and post-survey interviews, next Chapter covers the discussion of findings and conclusion.

CHAPTER SIX

DISCUSSION OF FINDINGS AND CONCLUSION

6.1 Introduction

This Chapter extends the data analysis from PLS test and discuss the findings according to the hypotheses development. The relationships among the variables are examined and compared with the past literature. While some hypotheses are consistent to past research and supported, certain hypotheses are not supported. These are discussed and compared to prior studies and qualitative data obtained from the post-survey interviews. The conceptual implications and practical implications of the research findings are then presented. In addition, suggestions are made to corporate managers and policy-makers for the use of contemporary management accounting and organizational capabilities for sustaining competitive advantage. The limitations of this study are highlighted and recommendations for future research are proposed. Finally the conclusion of the study is then presented.

6.2 Discussion of Findings

This study aims to enhance the knowledge of strategic management accounting, its relationships with competitive strategy and firm performance and the extent of SMA usage for decision making in the Malaysian manufacturing environment. Motivated by the two-dimension approach of SMA introduced by Cadez and Guilding (2008a), the causal model examines the mediation role of SMA usage and strategic role of accountant on the relationship between competitive strategy and firm performance, and the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance. The study also considers the impact of

intensity of competition and degree of decentralization on SMA usage. The results of this study which was drawn on 103 samples do not fully support the contention of Porter (1980; 1985) that if a firm adopts either differentiation strategy or cost leadership strategy, it can enhance firm performance. In this study, differentiation strategy does not have significant direct impact on firm performance. However, cost leadership strategy is found to have a significant direct impact on firm performance. While organizational capabilities are found to have an impact on SMA usage, the study does not find other three exogenous variables (i.e. strategic role of accountant, intensity of competition and decentralization) have any significant positive effect on SMA usage. In addition, strategic role of accountant and SMA usage do not have any impact on firm performance. Finally, company size was found to have a significant effect on the relationships between SMA usage and some contextual variables when the 103 samples were separated into large size and small size companies.

6.2.1 Relationship between Strategy and Two Dimensions of SMA

H1a and H2a are formulated in response to research question 1: Is the strategic choice of companies associated with strategic role of accountant and SMA usage? The PLS results shown in Figure 5.2 indicate that differentiation strategy is positively and significantly associated to both strategic role of accountant and SMA usage. Cost leadership strategy does not have significant association with SMA usage and strategic role of accountant. Thus, H1a and H2a are supported. The survey results are consistent with the quality data obtained from the post-survey interviews which confirm that strategy is an important factor associated with the usage and design of SMA.

This finding supports that differentiation strategy and SMA usage are positively associated and is therefore consistent with past research that broad scope systems are more

effective for firms applying strategy of continuous/market development and innovation (Prospectors) than firms applying strategy of protecting a comparatively narrow and stable product-market (Defenders) (Abernethy and Guthrie, 1994; Hoque, 2004; Cadez and Guilding, 2008a). In view of the uncertain external environment resulting from pursuing differentiation strategy, managers used new and advanced management accounting techniques to support their decision needs and assist them to monitor progress against their strategies (Chenhall and Morris, 1986; Abernethy and Guthrie, 1994; Baines and Langfield-Smith, 2003; Waweru, 2008;). In addition, Naranjo-Gil and Hartmann (1997) found broad scope MAS is positively associated with interactive use of MAS, and both are correlated to strategic change toward prospector positions. Korravee and Phapruek (2010) also found SMA implementation and competitive strategy are positively associated.

New role of management accountants covers participation in strategic decision-making process which involves a high degree of uncertainty and risk; requires more information to improve decision quality (Louis, 2011). Management accountants are found to be strongly involved in strategy formulation and implementation, and they are capable of collecting internal and external information, either financial or non-financial (Ittner and Larcker, 1997; Burns and Baldvinsdottir, 2007; Ferreira and Moulang, 2009). In addition, Faure and Rouka (2011) also found accountants can act as change controllers across functions and hierarchical levels. Thus the changing role of accountant in strategic orientation is important in the uncertain environment when firms are pursuing differentiation strategy. The results are also in line with the Floyd and Wooldridge's (1992; 1997) empirical studies which supported that middle level managers in prospector-type firms have higher level of strategic involvement than in defender-type firms.

6.2.2 Relationship between Two Dimensions of SMA and Firm Performance

H1b and H2b are formulated in response to research question 2: Are strategic role of accountant and SMA usage associated with firm performance? Strategic role of accountant is not positively associated with firm performance as evidenced by the significant path presented in the structural model (Figure 5.2). Thus, H1b is not supported. In addition, SMA usage is positively but not significantly associated with firm performance. H2b is also not supported. However, a further PLS analysis on large companies (43 samples) supports that SMA usage is associated with firm performance (see Figure 5.3).

The result of H1b is consistent with Cadez and Guilding (2008a) who found accountants' participation in strategic decision-making is not associated with firm performance. Perhaps, it is true in Chenhall's (2008) contention that management accountants have yet to be accepted to perform their strategic role in most organizations. Accountants may not be able to play a significant role in strategy formation since they are not educated in strategy and there is a tendency for functional areas to claim ownership of data and reluctant to share it for general business use (Coad, 1996). Without reliable information about the critical external factors relating to the business may result in accountants unable to contribute effectively in strategic decision making. Floyd and Wooldridge (1997) found managers with formal positions in boundary-spanning sub-units (units having social influence e.g. sales, marketing, R & D) report higher levels of strategic influence activity than others, thus facilitating higher organizational performance. It is possible that management accountants may not be in the boundary-spanning units which usually play a key mediating role between environmental uncertainty and internal organizational arrangement (Floyd and Wooldridge, 1997). Hall (2008) also pointed out that role clarity is positively related to managerial performance. In this regard, management

accountants may not be aware of the expectations and behaviors associated with their work role (Hall, 2008). It may also due to accountants' traditional preference for provision of financial information and their frequent participation in strategy implementation rather than strategy development (Bhimani and Langfield-Smith, 2007), which is essential in enhancing performance.

Wooldridge and Floyd (1990) claims that involvement by middle managers can improve decision-making quality, but it is expensive in terms of managerial time and energy, and may be counterproductive. Similarly Cabrera et al. (2003) also stressed that middle management involvement in information sharing or opinion solicitation would be considered a cost. Raes et al. (2011) pointed out that top management has to interface with middle managers in achieving high quality decisions. Both can interpret and filter information from the organizational surroundings (i.e. the market, customers, suppliers, political developments, etc.). In this respect, accountants, having the skills in analysing information for strategic decision, can have indirect impact on firm performance via the usage of SMA techniques. This is consistent with Cadez and Guilding (2008a) who found the relationship between accountants' participation in strategic decision-making process and firm performance is in fact mediated by SMA usage.

The main benefits of increasing the strategic role of accountants may be motivational than instrumental (Perera et al., 1997). Therefore, a match between strategy and role of accountant may be reflected in manager-affective outcomes (e.g. increased motivation and satisfaction) rather than in direct firm performance (Perera et al., 1997). In fact, strategic decision-making process involves high degree of uncertainty and risk, interrelated to other decisions and is difficult to assess its outcomes (Bonn and Fisher, 2011;

Louis, 2011). Views collected from the post-survey interviews with senior managers indicate that accountants are becoming more involved in the strategic decision-making process. However, the senior managers' suspicion on the capability and attitude of certain accountants seem to suggest that the accountants are not readily accepted by the top management to participate in strategic decision making yet.

SMA usage has a positive but insignificant impact on firm performance. These findings are not consistent with past empirical studies (Govindarajan and Gupta, 1985; Chenhall and Langfield-Smith, 1998a; Malina and Selto, 2001; Jermias and Gani, 2004). Past research supports significant correlations between PMS and performance (Hoque and James, 2000; Ittner et al., 2003). Kallunki et al. (2011) also found formal MCS significantly associated with non-financial performance which in turn improves financial performance.

Surprisingly, this finding of non-significant association between SMA usage and firm performance is consistent with the finding of Hyvonen (2007). She found contemporary performance measures (i.e. non-finance measures, qualitative measures, balanced scorecard and customer satisfaction measures) do not help to enhance performance of those firms pursuing customer-based (differentiation) strategy. Likewise, Ittner and Larcker (2003) warned that there should be a causal link between non-financial measures and financial outcomes so as to achieve higher returns on assets and equity. Lipe and Salterio (2000) also discovered that managers have cognitive difficulties handling with measures to evaluate performance that were specific to a situation.

6.2.3 Mediation Role of Two Dimensions of SMA

Research question 3 asks whether strategic role of accountant and SMA usage play a mediating role on the relationship between business strategy and firm performance. Accordingly, H1c and H2c are formulated. H1c conjectures that strategic role of accountant mediates the relationship between differentiation strategy and firm performance. H2c conjectures that SMA usage mediates the relationship between differentiation strategy and firm performance. According to the propositions of Baron and Kenny (1986) and Gerdin and Greve (2004), in order to confirm that strategic role of accountant plays a mediation role on the relationship between strategy and firm performance, H1a (strategy-strategic role of accountant relationship) and H1b (strategic role of accountant-performance relationship) must be supported. Likewise, SMA usage is a mediating variable provided H2a (strategy-SMA usage relationship) and H2b (SMA usage-performance relationship) are supported. Furthermore, to assess the degree of mediation, direct relationship of strategy and firm performance must be determined. In this study, differentiation strategy does not have a significant direct impact on firm performance. However, cost leadership strategy is found to have a significant direct impact on firm performance.

The results of this study do not fully support the contention of Porter (1980; 1985) that if a firm is expected to achieve higher than average return, it adopts either differentiation strategy or cost leadership strategy. These findings are not consistent with past research (Jusoh and Parnell, 2008; Pertusa-Ortega et al., 2009) who found competitive strategy has a direct impact on firm performance. Surprisingly, the results seem to be consistent with Parnell (2011) who discovered the link between cost leadership and performance in Argentina was positive and significant and the link between differentiation strategy and performance was positive but not significant. Hoque (2004) also found no

direct relationship between business unit strategy (Miles and Snow, 1978) and organizational performance.

In this study, there is no direct relationship between differentiation strategy and firm performance, and H1a and H2a are supported. However, H1b and H2b are not supported. Hence, the mediation effects of strategic role of accountant and SMA usage on strategy and performance relationship (H1c and H2c) are not supported. The findings are not consistent with the findings of Jermias and Gani (2004) and Chenhall and Langfield-Smith (1998a) who found strategy has to be supported by appropriate control systems and management information systems to achieve competitive advantage and ensure high organizational performance. A further PLS test on large companies seems to support that SMA usage is positively and significantly associated with firm performance (Figure 5.3). Large companies usually have better resources and diverse expertise in adopting and implementing advanced accounting techniques (Libby and Waterhouse, 1996; Guilding, 1999). Cost of implementing SMA techniques becomes optimal with higher volume of transactions in these large companies. Thus, the mediation role of SMA usage on strategy-performance relationship (H2c) may be supported if the samples are made up of large companies only.

6.2.4 Relationship between SMA Usage and Strategic Role of Accountant, Competition and Decentralization

H3, H4 and H5 are formulated in response to research question 4 which asks whether strategic role of accountant, intensity of competition and decentralization have any impact on usage of SMA. H3 posits that strategic role of accountant is positively associated with SMA usage. H4 posits that intensity of competition is positively associated with SMA

usage while H5 posits that degree of decentralization is positively associated with SMA usage. The path coefficients generated by PLS program show that SMA usage has positive association with strategic role of accountant, intensity of competition and decentralization (Figure 5.2). However, SMA usage's relationships with these three exogenous variables are not significant. Hence, H3, H4 and H5 are not supported.

Strategic role of accountant and SMA usage relationship

The non-supported H3 appears to be in contrast to prior research which claimed that accountants' participation in strategic decision-making process tend to make them more innovative on accounting system design in order to provide more qualitative and future-oriented information for decision-making (Brouthers and Roozen, 1999; Emsley, 2005; Abernethy and Bouwens, 2005). The results of this study is, however, consistent to some academics who claimed that accountants' involvement does not necessarily lead to improved design of performance measurement systems (Johnson 1992; McKinnon and Bruns, 1992; cited in Abdel-Maksoud and Abdel-Kader, 2007). Lord's (1996) case study also shows that management accountants are not the ideal people to collect and analyze data for strategic management. Likewise, Naranjo-Gil and Hartmann (2007) found top management team heterogeneity and broad scope MAS design are not associated. The insignificant association between strategic role of accountant and SMA usage could be due to Malaysian companies' preference in adopting traditional management accounting such as standard costing and variance analysis. The use of certain SMA techniques is still quite low. For example, according to the survey conducted in Malaysia, the usage rate of target costing and activity-based costing is around 30% (Rahman et al., 2005). Practicing accountants may have a poor understanding of SMA techniques as some of them are in the stages of conceptual developments, e.g. attribute costing, strategic cost analysis (Roslender

and Hart, 2003; Rahman et al., 2005). Despite the claim by academics that standard costing and variance analysis are hiding the inefficiency of operations (Maskell and Baggalay, 2000), majority of accountants confirmed during the interviews that they are still using traditional management accounting for their operations. Based on above, it is possible that despite that there is a sign of changing role of accountants in strategic decision making, the usage of SMA techniques has not improved correspondently. A further analysis on large companies seems to support that strategic role of accountant does have a positive and significant association with SMA usage (Figure 5.3).

Intensity of competition and SMA usage relationship

The results from PLS test does not support that intensity of competition is positively associated to SMA usage (H5). It appears that there is still no conclusive evidence to support the significant association between competition and MCS. For example, Lee and Yang (2011) were unable to find the effect of competition on the use of integrated PMS. They reckoned that firms facing high competition in the development of overseas market might make use of other tools to enhance their competitiveness. Balanced Scorecard (BSC) may meet the greater needs of internal communication, but Hoque and James (2000) do not find any support for the positive association between a strong market position and a greater reliance on BSC. A further PLS test on large companies produced similar results that intensity of competition and SMA usage have no significant relationship (Figure 5.3). However, the test on small size companies surprisingly revealed that intensity of competition and SMA usage are significantly associated (Figure 5.4). Companies tend to adopt broad scope MAS, such as customer and competitor information analysis to support strategic development under competitive environment. The accounting innovation of smaller size companies in this study could be directly linked to their attempt to implement

certain advanced accounting practices to improve their effectiveness (Laitinen, 2001; Smith et al., 2008). Other prior research suggests that competitive environment is a determinant of the form of the management accounting practices that the firms will take and the intensity which they are used (Otley, 1995; Anderson and Lanen, 1999). The sophistication of accounting controls, such as the integration of non-financial and financial measures provides reliable feedback for performance evaluation and allows firms to deal with external competition. But the success of information systems in meeting competitive environment depends on the aggressiveness with which the information systems function to achieve competitive advantage (Lee and Yang, 2011).

Decentralization and SMA usage relationship

The PLS results do not support that the degree of decentralization and SMA usage are associated (H5). Though past research supports that greater decentralization is likely to be associated with the use of broad and future-oriented information, the findings appear to be not consistent with the prior research.

Decentralization is in response to increased uncertain environment and past empirical research found mixed results on the association between management accounting systems (MAS) and organizational structure. For example, Gosselin (1997) discovered that activity-based costing (ABC) is implemented in organizations with more mechanistic or centralized structures. Chenhall and Morris (1986) also found the relationship between broad scope and timely information and decentralization not significant. This is supported by Libby and Waterhouse (1996). Further tests on large companies and small companies produced similar results that decentralization is not significantly associated to SMA usage (Figure 5.3 and Figure 5.4). Since there is no absolute decentralized or centralized

organizations in practice, Lee and Yang (2011) suggested that a hybrid or mixed structure seemed more feasible in catering various functions of the business. It is common for multinational firms to have centralized functions such as shared services to provide centralized accounting and treasury services to all the subsidiaries worldwide, but the sales and marketing services departments are localized and decentralized.

6.2.5 Relationship between Organizational Capabilities, SMA Usage and Firm Performance

Three hypotheses (H6a, H6b and H6c) are set out in response to research question 5 “Does SMA usage play a mediating role on the relationship between organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) and firm performance?” H6a posits that organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) are positively associated with SMA usage. H6b posits that organizational capabilities also positively associated with firm performance. The results support H6a and H6b as organizational capabilities are significantly associated to SMA usage and firm performance via innovativeness (see Figure 5.5). H6c conjectures that SMA usage mediates the relationship between organizational capabilities and firm performance. As SMA usage is only positively but not significantly associated with firm performance and organizational capabilities collectively have a significant impact on firm performance, H6c is therefore not supported.

It has been argued that key-specific resources and capabilities which are of value, rare, inimitability and non-substitutable may lead to sustained performance (Barney, 1991). The interaction of organizational culture, including capabilities, and the effective use of MAS can have a positive impact on firm performance (Agbejule, 2011). Management

accounting techniques are embedded in routines that aid organization to achieve new resource configurations (Teece, 2007; Collier and Knight, 2009). Likewise, SMA can be accepted as strategic routines to develop new configurations due to new market requirements.

Based on past research, Lin et al. (2008) claimed that the confluence of the four organizational capabilities which have a rather complex web of relationships have an impact on firm performance. Lin et al.'s (2008) framework is adopted in this study in formulating H6a and H6b. As shown in Figure 5.5, entrepreneurship has a significant direct impact on market orientation. This is consistent with Matsuno et al. (2002). In line with Hult et al. (2003) who suggested that entrepreneurship is one of the critical drivers of innovativeness, this study found entrepreneurship is also positively and significantly associated with innovativeness. The findings also support the contention of Day (1994), Slater and Narver (1995) and Bell et al. (2002) that market orientation and organizational learning are highly correlated and mutually dependent.

Similar to past research (e.g. Goes and Park, 1997; Hurley and Hult, 1998; Baker and Sinkula, 1999b) organizational learning in this study has a direct impact on innovativeness. Hence, organizational learning mediates the relationship between market orientation and innovativeness. However, entrepreneurship does not have any positive association with organizational learning instead it has a direct impact on innovativeness. The result is in contrast with past research (e.g. Jaworski and Kohli, 1993; Slater and Narver, 1995; Hurley and Hult, 1998; Baker and Sinkula, 2002) which suggested that organizational learning mediates the relationship between market orientation and innovativeness as well as the relationship between entrepreneurship and innovativeness. In

this study, organizational learning eventually facilitates innovativeness. It is commonly perceived that organizations should innovate to be effective and, in the long run, to survive. Most studies have demonstrated the positive effects of innovation on performance (Jimenez-Jimenez et al., 2008).

The study does closely support Lin et al.'s (2008) propositions on the interlinking of four capabilities and is also consistent to Jimenez-Jimenez et al., (2008) who found the impact of market orientation and organizational learning on performance is completely mediated by innovation. The findings also brought an insight on why Cadez and Guilding (2008a) found market orientation (one of the four organizational capabilities) is not associated with the usage of SMA. Past research of resource-based view of the firm requires the combination of all four organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) to attain competitive advantage which could positively affect performance (Hurley and Hult, 1998; Hult and Ketchen, 2001; Henri, 2006a). Though empirical research on the complex relationship among these four concepts (market orientation, organizational learning, innovativeness and performance) is still scarce, the findings of this study support the collective use of all four organizational capabilities which lead to higher firm performance as well as having direct impact on SMA usage. But the strong direct relationship between organizational capabilities and firm performance undermines the indirect effect via SMA usage.

6.2.6 The Effect of Company Size on the Relationships among Strategy, Intensity of Competition, Decentralization, Strategic Role of Accountant, SMA Usage and Firm Performance

Research question 6 is to find out whether company size has a significant effect on the relationships among strategy, intensity of competition, decentralization, strategic role of accountant, SMA usage and firm performance. H7 is formulated in response to this research question. Past research found larger companies are more willing to use accounting sophistication and company size does have a positive relationship with the usage of SMA for decision making (Guilding, 1999; Guilding and McManus, 2002; Cadez and Guilding, 2008a; Cinquini and Tenucci, 2010). But it was also pointed out that bureaucratization may also increase with size and may act as a deterrent to change in management accounting system (Libby and Waterhouse, 1996). According to the PLS results, company size is found to have an effect on the relationship between SMA usage and certain contextual variables.

In this study, PLS test on large company samples found support that strategic role of accountant is positively and significantly associated with SMA usage and SMA usage does have a significant direct link with firm performance (Figure 5.3). In contrast, the test results from small company samples do not find any support for the strategic role of accountant-SMA relationship and SMA usage-firm performance relationship (Figure 5.4). These findings seem to suggest that large companies have more resources and expertise to adopt contemporary accounting practices. They have the support of top management and the accountants are more likely to involve in strategic decision-making process (Libby and Waterhouse, 1996; Guilding, 1999). In other words, in large companies SMA usage can

play a mediating role on the relationship between strategy and firm performance. This is consistent to the findings of Chong and Chong (1997), Chenhall and Langfield-Smith (1998a) and Cadez and Guilding (2008a).

The relationship between intensity of competition and SMA usage is not supported by PLS test results for large company samples (Figure 5.3). Surprisingly, the test of small company samples found intensity of competition is significantly correlated to SMA usage. This may due to small companies need to compete with large firms in the market (Laitinen, 2001; Smith et al., 2008) and require more advanced accounting techniques (see Section 5.6.2.6). These findings are similar to the empirical results of past research which are inconclusive. While some research found competitive environment has an impact on the changes of advanced management accounting practices (Khandwalla, 1972; Chong and Chong, 1997; Hill 2000; Baines and Langfield-Smith, 2003), other research (Williams and Seaman, 2001; Hoque, 2004) did not find any support on the relationship between changes in management accounting systems and competition or environment uncertainty. It may be due to the nature of market competition and economic policies or structures are different among countries and the use of modified version in measuring environmental uncertainty (Hoque, 2004).

Past research (Gul and Chia, 1994; Gerdin 2005) found decentralization is associated with broad scope MAS and higher information processing capability. However, further PLS tests on both large and small company samples did not find support that decentralization is significantly associated with SMA usage (Figures 5.3 and 5.4). This outcome, which is also discussed in Section 6.2.4, seems to be consistent to the findings of Gosselin (1997) and Lee and Yang (2011). Gosselin (1997) found implementation of a

formal activity-based costing is more suitable in centralized organizations but the activity management and its initial adoption can be more appropriate to decentralized organizations. Lee and yang (2011) also found the use of integrated performance measure is positively associated in mechanistic organizations than decentralized organizations.

6.3 Implication of Research Findings

The results and discussion for SMA framework study contributes to the theoretical developments (theoretical implications) as well as how the corporate managers and policy-makers can benefit from the analysis and suggestions (practical implications).

6.3.1 Theoretical Implications

This study contributes to the development, application and implementation of SMA techniques. Despite its importance, there is still scant research on SMA or advanced management practices in Malaysia (Rahman et al., 2005; Smith et al., 2008; Noordin, et al., 2009). The development of theoretical model in this study is in response to the calls for using multiple control systems, multiple contingent variables and multiple outcome variables (Fisher, 1995) and bridging the gap between the concepts in management control and strategic management (Nixon and Burns, 2005) which has been emphasizing resource-based view of the firm. Despite Fisher's (1998) argument that the relationships and causality among contingent variables are difficult to uncover by assessing them in isolation, majority of contingency-based research still made use of limited contingent factors (e.g. Hoque and James, 2000; Naranjo-Gil and Hartmann, 2007; Hall, 2008; Hoque, 2011). The contingency SMA model in this study has incorporated eight independent variables (two competitive strategies, intensity of competition, decentralization and four organizational capabilities), two mediators (strategic role of accountant and SMA usage) and one dependent variable (firm performance). The model is more comprehensive for the

contingency-based management accounting research which needs to assess the impact of contingent variables on the adoption of SMA and is in line with Gerdin and Greve's (2004) mediation model of Cartesian-contingency approach.

In addition, the research findings support the latest framework of resource-based view of the firm whereby the four primary organizational capabilities must be collectively applied to enhance competitive advantage and influence the usage of SMA for decision making. The findings also fill the research gap from Cadez and Guilding (2008a) on why market orientation alone has failed to correlate with SMA usage.

Finally, the study found support that there is no universally appropriate SMA system that applies equally well to all organizations in all circumstances (Fisher, 1998). The design and use of SMA is contingent upon the factors such as company size, strategy and organizational capabilities. Differentiation strategy is significantly associated with the usage of SMA and strategic role of accountant. The four organizational capabilities collectively have an impact in the usage of SMA techniques and firm performance. Company size has a significant effect on SMA usage-performance relationship and strategic role of accountant-SMA relationship.

6.3.2 Practical Implications

The research findings from the survey and interviews conducted on manufacturing SBUs of Malaysian public listed companies are valuable for the corporate managers and policy-makers. The study supports that usage of SMA techniques and strategic role of accountant are closely associated to differentiation strategy. SMA has the characteristics of broad scope systems which cover information relating to external environment, financial as well

as non-financial and is future-oriented. Broad scope systems allow managers to make successful economic decisions in the long run. SMA is especially imperative for firms pursuing differentiation strategy and operating in a competitive environment. Interactive use of SMA can stimulate dialogue among managers and are believed to improve the creativity and innovativeness of the firms. In addition, management accountants are becoming more proactive and have involved themselves in the strategic decision-making process. Besides strategic formulation and implementation, accountants also take part in the design and implementation of SMA techniques and organizational learning.

The findings disclosed that large size companies in Malaysia are more prepared to apply advanced accounting practices and the accountants are more involved in strategic decision making. They are more likely to derive competitive advantage which is evidenced by the significant relationship between SMA usage and strategic role of accountant and between SMA usage and firm performance. As there are many SMA techniques, the management accounting designers and policy-makers should consider the best fit of appropriate management accounting practices and competitive strategy in order to enhance firm performance.

Consistent with the Tenth Malaysia Plan, Malaysian manufacturing companies must realize that besides the strategic tools, organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) collectively play an important role in sustaining competitive advantage. The four primary capabilities which have the characteristics of VRIN are imperative for companies operating in uncertain market environment, especially when the product life cycle is becoming shorter. Policy-makers may introduce various SMA techniques to complement the four capabilities. For

example, the process of target costing is complementing market orientation to prevent unprofitable product from being introduced. Activity-based costing is able to bridge information gap between marketing and accounting. Brand valuation is an attribute of market orientation and SMA, engaging in sharing of information among different departments. Balanced scorecard (BSC), which covers financial and non-financial information, is more suitable than traditional management accounting for entrepreneurial organizations operating in a risk taking environment. BSC is also a performance measurement system that can be used as an interactive control system to stimulate innovativeness, which is an important determinant of firm performance. Overall, the findings are helpful to corporate managers and policy-makers in Malaysia to better understand the best fit between business strategies, contingent variables and SMA as well as organizational capabilities.

6.4 Limitations and Recommendations for Future Research

The study has to consider some limitations before drawing any conclusion from the findings. Firstly, in view of the small sample size, it is unlikely to have satisfactory proof of the association of the latent variables. The samples are drawn from the manufacturing SBUs of listed companies in Malaysia, an emerging market. Some caution is required in interpreting the results. Secondly, quite a number of the 16 techniques identified in Cadez and Guilding (2008a) are overlapping, and different education background of accountants in the region could pose cognitive issues. Thirdly, the study has not considered other contextual variables such as industry, external environment and technology. Fourthly, cross-sectional research design cannot examine claims regarding the causal possibility. The single conceptual model assumes that all constructs are unidimensional. Alternative models play a critical role when a particular construct is more properly conceptualized as

multidimensional (Hulland, 1999). Using a longitudinal data or case studies may assist in addressing these issues. Fifthly, the study only makes use of the “pure” strategies and does not test the effectiveness of combination (or hybrid) strategies. Sixthly, this study’s findings are based on the respondents’ opinions on their firms’ conditions.

Finally, SMA variables based on two dimensions need further exploration as the R^2 value in respect of firm performance is rather weak. There may be potential implications on the adoption of the type of business strategy. Some accountants interviewed lament that management accountants in Malaysia are not pro-active enough to play their role in strategic decision-making process and likewise top management has yet to change their mindset to allow accountants becoming more strategic in their role in formulating and implementing business strategy. This negative perception about accountants may have adverse impact on the association between strategic role of accountant and firm performance. Future research may have to explore further the motivational factors of accountants’ involvement in strategic decision-making process, and whether adoption of combination strategies can be associated with higher usage of SMA.

Notwithstanding the limitations of the study, the PLS results helped advance the understanding in Strategy-SMA-Performance relationship. The interaction between resource-based theory of competitive advantage and Porter’s (1980) competitive strategy has become a resurgent interest of strategic management researchers (Grant 1991; Spanos and Lioukas 2001; Parnell 2011). Hence, it is important to ascertain whether strategy formulation can be influenced by organizational capabilities developed under resource-based theory of the firm.

6.5 Conclusion

This study aims to enhance the knowledge of strategic management accounting and the extent of its usage in Malaysia. There is still limited SMA or advanced management accounting study in this region and the term SMA is not widely adopted or understood. Questionnaire survey was conducted on the manufacturing SBUs of Malaysian public listed companies and 103 samples (24% response rate) were collected. Post-survey interviews were also carried out to compare the findings from survey results. SPSS program was used to prepare the descriptive statistics. Hypotheses were tested by PLS analysis. The causal model considers the mediation role of SMA usage and strategic role of accountant on the relationship between business strategy and firm performance. The results of this study do not support the contention of Porter (1980; 1985) that if a firm adopts either differentiation strategy or cost leadership strategy, it can enhance firm performance directly. Instead, business strategy must be supported by appropriate management accounting systems. This study found usage of SMA techniques and strategic role of accountant actually have a close relationship with differentiation strategy. Porter's (1980) product differentiation strategy which stresses on innovation, growth and learning complements well with SMA, a broad scope and external focused management accounting systems. It appears that there is a gap between theory and practice on the accounting techniques developed by academics. Some SMA techniques such as attribute costing and life-cycle costing are still in conceptual development and there is doubt that management accountants know how to apply them.

The study demonstrates that in the Malaysian context the management accountants are becoming more active in the strategic decision-making process. However, operational managers are still doubtful of management accountants' attitude and ability to contribute or enhance firm performance. PLS results do not find support that the strategic role of

accountant is significantly associated to firm performance. Furthermore, the PLS test does not find intensity of competition and decentralization have any impact on SMA usage. Company size is an important factor influencing the relationships of certain contextual variables, SMA usage and firm performance. In large size companies, PLS results confirm that strategic role of accountant can influence firm performance indirectly through SMA usage. The study supports the contingency theory that there is no universally acceptable SMA system that is equally applicable to organizations in all circumstances.

This study also suggests that an organization trying to enhance firm performance needs to develop its organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning). According to resource-based view of the firm, organization with such intangible resources can predict and understand better the customer needs and competitive situation. SMA, being external and long term focused, is found to be significantly associated with organizational capabilities collectively. This brings an insight of why Cadez and Guilding (2008a) were unable to support that market orientation (a single primary capability) correlates to SMA usage.

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Appendix A: Questions used for pre-survey interview

Q1: Traditional management accounting has becoming less relevant as its focus is short-term, non-strategic and unable to cater the needs of management due to intensive competition and change in manufacturing technology. Academics have recommended many SMA techniques over the last 3 decades but surveys done in USA and other advanced economies indicated a large number of firms are still reluctant to use SMA.

SMA is a sub-set of managements control system (MCS). It is external and long term focus, and the information is broad based. The 16 SMA techniques identified by academics recently comprise financial and non-financial measurements, e.g. Balanced Scorecard, Activity-Based Costing, Strategic Pricing, Target Costing, Customer Profitability Analysis and Competitor-focused Accounting. But some of these techniques appear to be overlapping.

Do you think SMA is important in Malaysia?

Q2: Michael Porter (1980) identified competitive strategies (product differentiation and low cost leadership) and stressed that firms can achieve above average returns if they apply any one of these business strategies. Generally, firms following product differentiation strategy tend to face higher uncertainty and competitive environment. As such, SMA is more appropriate for them as the techniques are broad based, covering financial and non-financial measurements. However, some researchers disagreed with his contention as research shows that firms can combine the two strategies and achieve above average returns.

Do you agree we have to select one business strategies identified by Porter?

In your opinion, which of the two business strategies is associated with the usage of SMA?

Q3: Deliberate strategy is realized from intended strategy which is a plan drawn up in a systematic way. It involves frequent discussion about strategy by functional managers. Due to unpredictable environmental change or unrealistic expectations, plan may be changed or modified over the period and the realized strategy may be **emergent strategy**. In reality, most strategies fall somewhere on a continuum between the two extremes.

Do you agree that companies must not hold on to the intended strategy (original plan) despite the change of environment?

Will deliberate strategy influence the choice of business strategy and SMA usage?

Q4: Contingency-based research is common in the study of management control systems (MCS). The researchers find the best fit of the nature of environment and contextual factors with the management accounting designs. Past research shows strategy, external environment, technology, organization structure, culture, management techniques (e.g. TQM, JIT) are factors influencing the effectiveness of management accounting. Other factors may be considered are type of industry and size.

In your opinion which are important factors that may influence the usage of SMA?

Q5: Organizations must constantly appraise their competitors in order to survive in the competitive market. More broad-based and sophisticated accounting information is required when the intensity of competition is high. When the organization grows, the departments tend to specialize and need more strategic information to compete in the market. As such, most organizations will have to delegate the power to the heads of strategic business units (SBUs) to improve their efficiency.

Do you think intensity of competition can have an impact on the usage of SMA?

Will the usage of SMA be higher if the organization is decentralized (delegation of power to heads of SBU)?

Q6: In the past, management accountants were perceived to be non-proactive and non-strategic and their work is secondary to financial reporting. Academics are of the opinion that management accountants can participate in the strategic decision making as they have access to strategic data and have special analytical skills. The ‘strategic accountant’ can play an important role and influence the design and usage of SMA.

Do you agree management accountants have the business knowledge and should participate in the strategic decision making process?

Can participation of management accountant in decision making process improve the usage or design of SMA?

Q7: To achieve sustainable competitive advantage, a firm must possess certain key firm-specific resources or capabilities that are value, rare, inimitable and non-substitutable. Recent research supports the contention that the four organizational capabilities should be used collectively to achieve competitive advantage. These are:

Market orientation: understanding of customer needs

Entrepreneurship: continue to renew and take risks

Innovativeness: openness to new ideas, product or process

Organizational learning: development of new knowledge faster than rivals

Do you agree market orientation alone has an impact on the usage of SMA?

In your opinion, is it important to combine all four organizational capabilities within a firm?

Alternatively, can SMA usage or strategic role of accountant foster the organizational capabilities?

Q8: Performance measurement system (PMS) is an important component of management control systems (MCS). Diagnostic use of PMS is to ensure meeting pre-

established goals and restrict innovation and opportunity-seeking. But interactive use of PMS encourages innovation and creativity, promoting dialogue among managers.

Do you think interactive use of management accounting has similar characteristics to SMA?

Will interactive use of management accounting influence organizational capabilities?

Q9: Some accountants find difficulty in completing the survey questionnaire in particular information relating to business strategies, external environment and organizational capabilities. Standard costing is still their preferred choice and most SMA techniques are considered new to them.

Do you think the survey instrument covers too many variables?

Please suggest which variable measurements in the survey instrument need to be modified or simplified. Which variable is not applicable in this study?

Appendix B: Questions used for post-survey interviews

Q1: SMA is external and long term focused, and the information is broad based. The 16 SMA techniques identified by academics recently comprise financial and non-financial measurements, e.g. Balanced Scorecard, Activity-Based Costing, Value-Chain Costing, Strategic Pricing, Target Costing, Customer Profitability Analysis and Competitor-focused Accounting.

But Malaysian companies still prefer to apply traditional management accounting such as standard costing and variance analysis.

Among the 16 SMA techniques, which techniques do you use most? And why?

Sine when these techniques are being used in your organization?

What are the benefits that you see so far as a result of using these techniques?

Can you share your view on the prospects of SMA usage? What are the benefits you expect from usage of SMA? Will Malaysia improve its competitiveness by using contemporary accounting techniques such as SMA?

Q2: Michael Porter (1980) identified competitive strategies (product differentiation and low cost leadership) and stressed that firms can achieve above average returns if they apply any one of these business strategies.

For your organization, which strategy type do you follow? Or do you use both types? And why?

In your opinion, which of the two business strategies is appropriate for the usage of SMA? And why?

Q3: There are several factors that may influence the design of management accounting systems. These factors may come from both internal and external environment. They include: strategy, intensity of competition, perceived uncertainty, technology, organizational structure, and management practices (e.g. TQM, JIT).

In your opinion which are the important factors that may influence the usage of SMA in your organization?

Q4: In the past, management accountants were perceived to be non-proactive and non-strategic and their work is secondary to financial reporting. Academics suggest management accountants can participate in the strategic decision-making as they have access to strategic data and have special analytical skills. The ‘strategic accountant’ can play an important role and influence the design and usage of SMA.

In your organization, do you think management accountants have the business knowledge and should participate in the strategic decision-making process?

Do you think participation of management accountant in decision-making process can improve the usage or design of SMA? In what way?

Q5: To achieve sustainable competitive advantage, a firm must possess certain key firm-specific resources or organizational capabilities that are value, rare, inimitable and non-substitutable, e.g.

Market orientation: understanding of customer needs

Entrepreneurship: continue to renew and take risks

Innovativeness: openness to new ideas, product or process

Organizational learning: development of new knowledge faster than rivals

How do you see the importance of these capabilities (market orientation, entrepreneurship, innovativeness and organizational learning) to your organization?

Do you think the four organizational capabilities can have an impact on the SMA usage? In what way?

Q6: *Diagnostic use* of performance measurement systems (PMS) is to ensure meeting pre-established goals and restrict innovation and opportunity-seeking. But *interactive use* of PMS encourages innovation and creativity, promoting dialogue among managers.

Do you think higher usage of SMA can lead to interactive use of management control systems?

Q7 Do you think the use of management accounting techniques/SMA can influence your organizational performance? Please explain?

Appendix C: Correlation matrix among five groups of SMA techniques

Correlation of SMA techniques Group 1 Costing

		SMA tech 1	SMA tech 2	SMA tech 3	SMA tech 4	SMA tech 5
SMA tech 1	Pearson	1	.547(**)	.537(**)	.241(*)	.242(*)
	Correlation					
	Sig. (2-tailed)	.	.000	.000	.014	.014
	N	103	103	103	103	103
SMA tech 2	Pearson	.547(**)	1	.670(**)	.458(**)	.386(**)
	Correlation					
	Sig. (2-tailed)	.000	.	.000	.000	.000
	N	103	103	103	103	103
SMA tech 3	Pearson	.537(**)	.670(**)	1	.490(**)	.515(**)
	Correlation					
	Sig. (2-tailed)	.000	.000	.	.000	.000
	N	103	103	103	103	103
SMA tech 4	Pearson	.241(*)	.458(**)	.490(**)	1	.438(**)
	Correlation					
	Sig. (2-tailed)	.014	.000	.000	.	.000
	N	103	103	103	103	103
SMA tech 5	Pearson	.242(*)	.386(**)	.515(**)	.438(**)	1
	Correlation					
	Sig. (2-tailed)	.014	.000	.000	.000	.
	N	103	103	103	103	103

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

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

Correlations of SMA techniques Group 2 Planning, control and performance measurement

		SMA tech 6	SMA tech 7
SMA tech 6	Pearson	1	.645(**)
	Correlation		
	Sig. (2-tailed)	.	.000
	N	103	103
SMA tech 7	Pearson	.645(**)	1
	Correlation		
	Sig. (2-tailed)	.000	.
	N	103	103

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

Correlations of SMA techniques Group 3 Strategic decision-making

		SMA tech 8	SMA tech 9	SMA tech 10
SMA tech 8	Pearson	1	.712(**)	.409(**)
	Correlation			
	Sig. (2-tailed)	.	.000	.000
	N	103	103	103
SMA tech 9	Pearson	.712(**)	1	.364(**)
	Correlation			
	Sig. (2-tailed)	.000	.	.000
	N	103	103	103
SMA tech 10	Pearson	.409(**)	.364(**)	1
	Correlation			
	Sig. (2-tailed)	.000	.000	.
	N	103	103	103

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

Correlations of SMA techniques Group 4 Competitor accounting

		SMA tech 11	SMA tech 12	SMA tech 13
SMA tech 11	Pearson	1	.733(**)	.813(**)
	Correlation			
	Sig. (2-tailed)	.	.000	.000
	N	103	103	103
SMA tech 12	Pearson	.733(**)	1	.730(**)
	Correlation			
	Sig. (2-tailed)	.000	.	.000
	N	103	103	103
SMA tech 13	Pearson	.813(**)	.730(**)	1
	Correlation			
	Sig. (2-tailed)	.000	.000	.
	N	103	103	103

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

Correlations of SMA techniques Group 5 Customer accounting

		SMA tech 14	SMA tech 15	SMA tech 16
SMA tech 14	Pearson	1	.689(**)	.516(**)
	Correlation			
	Sig. (2-tailed)	.	.000	.000
	N	103	103	103
SMA tech 15	Pearson	.689(**)	1	.622(**)
	Correlation			
	Sig. (2-tailed)	.000	.	.000
	N	103	103	103
SMA tech 16	Pearson	.516(**)	.622(**)	1
	Correlation			
	Sig. (2-tailed)	.000	.000	.
	N	103	103	103

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

Appendix D.1: Cross Loadings of all indicators (n=103)

After deleting all items below 0.60

	Competiti on	Cost leadership	Decentraliz ation	Differentiation	Entrepreneur ship	Innovative ness
ACC1	0.2166	0.3712	0.1571	0.3716	0.1977	0.1229
ACC2	0.1623	0.3321	0.1124	0.3910	0.1995	0.1073
ACC3	0.1644	0.3152	0.1489	0.3540	0.1613	0.0632
ACC4	0.1504	0.3407	0.1409	0.3293	0.1652	0.0738
ACC5	0.1305	0.3524	0.0046	0.3784	0.1330	0.1525
COMP1	0.6574	0.1108	0.4084	0.2982	0.4674	0.3483
COMP2	0.8860	0.2786	0.5498	0.3863	0.4884	0.4264
COMP3	0.6732	0.1909	0.3109	0.1614	0.1990	0.2814
COMP4	0.7840	0.2452	0.3982	0.4753	0.5348	0.5570
COMP5	0.7431	0.1835	0.4104	0.1877	0.4320	0.3291
COST1	0.2000	0.7665	0.0688	0.1992	0.0113	0.1716
COST2	0.2552	0.8005	0.0402	0.2604	0.2389	0.2282
COST3	0.2135	0.7579	0.1055	0.1358	0.1337	-0.0097
COST4	0.1766	0.8195	0.1209	0.1137	-0.0953	0.0224
COST5	0.2366	0.8310	0.2324	0.2776	0.1679	0.2477
COST6	0.2390	0.8520	0.2327	0.2816	0.1237	0.1266
DEL1	0.4928	0.1185	0.8285	0.1743	0.4169	0.2259
DEL2	0.4151	0.1666	0.7500	0.1945	0.3734	0.2447
DEL3	0.3611	0.0281	0.8226	0.1251	0.3497	0.2239
DEL4	0.5538	0.2043	0.8849	0.1768	0.3575	0.2405
DIFF3	0.3625	0.1296	0.2096	0.8462	0.5029	0.4772
DIFF1	0.4485	0.2103	0.1866	0.8811	0.4205	0.4810
DIFF2	0.4119	0.1196	0.1468	0.8682	0.4722	0.4643
DIFF4	0.2130	0.3911	0.1437	0.7621	0.2506	0.2977
ENT1	0.6412	0.1325	0.3950	0.3952	0.7822	0.6311
ENT2	0.5383	0.1696	0.4033	0.3852	0.8092	0.5828
ENT3	0.3546	0.0067	0.3740	0.2370	0.7401	0.3920
ENT4	0.3562	0.1417	0.3312	0.2764	0.7565	0.3925
ENT5	0.4914	0.0632	0.3485	0.4866	0.7960	0.5698
ENT6	0.4022	0.0387	0.3562	0.4380	0.7670	0.5755
ENT7	0.3270	-0.0012	0.2593	0.3781	0.6714	0.4203
ENT8	0.3648	0.2314	0.2862	0.2869	0.7004	0.5133
ENT9	0.3539	-0.0571	0.2846	0.3745	0.7440	0.4746
INNO1	0.5544	0.1901	0.3865	0.5146	0.6899	0.8891
INNO2	0.4639	0.2106	0.2147	0.3906	0.6053	0.9034
INNO3	0.4902	0.0921	0.2407	0.3958	0.6593	0.8978
INNO4	0.3632	0.1367	0.1413	0.4783	0.3880	0.7190
INNO5	0.3070	0.0197	0.1473	0.3994	0.4538	0.7595
LEARN1	0.2792	-0.0331	0.2539	0.2077	0.3518	0.4698
LEARN2	0.3939	0.0212	0.2787	0.2525	0.3163	0.4727

LEARN3	0.4708	0.1281	0.3359	0.2308	0.2891	0.3439
LEARN4	0.4647	0.1144	0.3216	0.2739	0.3755	0.4315
MKTO1	0.3871	0.1360	0.4490	0.2550	0.4238	0.3250
MKTO10	0.4032	0.1035	0.3920	0.1521	0.4151	0.3584
MKTO11	0.6075	0.2839	0.4275	0.2775	0.5928	0.5188
MKTO12	0.5546	0.2339	0.4431	0.2715	0.5875	0.5950
MKTO13	0.4039	0.0378	0.4573	0.2189	0.5577	0.3970
MKTO2	0.4912	0.2020	0.4556	0.2035	0.5279	0.4804
MKTO3	0.5659	0.2950	0.4302	0.2470	0.5158	0.3769
MKTO4	0.5443	0.1995	0.5032	0.3011	0.5846	0.5448
MKTO5	0.5052	0.2650	0.3819	0.2794	0.5376	0.3742
MKTO6	0.5051	0.1613	0.4381	0.3204	0.5153	0.4247
MKTO7	0.5939	0.1962	0.3666	0.3493	0.5684	0.6129
MKTO8	0.5244	0.2248	0.4598	0.3651	0.5065	0.4710
MKTO9	0.5445	0.2797	0.3369	0.2751	0.5520	0.5776
PERF1	0.2566	0.1902	0.2148	0.1597	0.2629	0.2617
PERF2	0.3274	0.1510	0.1779	0.1497	0.3273	0.2824
PERF3	0.2481	0.1451	0.1960	0.1114	0.2822	0.2789
PERF4	0.4408	0.1903	0.3279	0.3388	0.4858	0.4788
PERF5	0.3936	0.2562	0.3000	0.1497	0.3306	0.2781
PERF6	0.3836	0.3242	0.3138	0.1071	0.3050	0.3214
PERF7	0.2664	0.0798	0.1999	0.1331	0.4074	0.3589
SMA10	0.1774	-0.0826	0.1758	0.4511	0.4725	0.2956
SMA11	0.3438	0.0967	0.2103	0.4742	0.4488	0.4127
SMA12	0.4681	0.0248	0.2458	0.3938	0.4146	0.5099
SMA13	0.3460	0.1103	0.1911	0.4708	0.4453	0.4492
SMA15	0.2704	0.0501	0.3327	0.3649	0.3463	0.2095
SMA4	0.1663	0.0686	0.0727	0.2424	0.2263	0.1900
SMA6	0.3398	0.0142	0.2890	0.3598	0.3337	0.3032
SMA7	0.3156	0.0678	0.2712	0.3662	0.3511	0.3167
SMA8	0.2547	0.0713	0.2709	0.4373	0.4033	0.2274
SMA9	0.3803	0.1338	0.2678	0.4557	0.4128	0.4283

	Market orientation	Org learning	Performan ce	SMA usage	Role of accountant
ACC1	0.1282	0.0312	0.0295	0.3024	0.9426
ACC2	0.0777	0.0146	-0.0054	0.3150	0.9574
ACC3	0.0474	0.0182	-0.0109	0.2041	0.9341
ACC4	0.1142	-0.0055	-0.0682	0.2710	0.9328
ACC5	0.0487	0.0197	0.0125	0.2904	0.8898
COMP1	0.2957	0.2886	0.2952	0.3097	0.2960
COMP2	0.5585	0.4021	0.3412	0.3481	0.0785
COMP3	0.4164	0.4391	0.3379	0.1611	0.1043
COMP4	0.6471	0.2761	0.2857	0.5167	0.2104

COMP5	0.5185	0.3233	0.3211	0.2277	-0.0424
COST1	0.1503	0.0620	0.0917	0.0969	0.3238
COST2	0.2024	0.0161	0.2336	0.1441	0.2888
COST3	0.1786	0.0614	0.3169	0.0266	0.2417
COST4	0.1258	0.1150	0.1831	-0.0459	0.3397
COST5	0.3010	0.0695	0.1621	0.0664	0.3031
COST6	0.3142	-0.0175	0.1203	0.0877	0.2810
DEL1	0.4817	0.1770	0.1785	0.3335	0.1042
DEL2	0.4358	0.3097	0.2831	0.2143	0.0693
DEL3	0.4136	0.3694	0.3080	0.3000	0.0664
DEL4	0.4540	0.2590	0.2687	0.2434	0.1415
DIFF3	0.2883	0.1906	0.1980	0.4349	0.2854
DIFF1	0.2983	0.2504	0.1629	0.4887	0.4114
DIFF2	0.3449	0.2842	0.2257	0.5023	0.1837
DIFF4	0.2419	0.1743	0.1301	0.4772	0.4117
ENT1	0.6765	0.4269	0.4811	0.4665	0.1528
ENT2	0.6945	0.4347	0.4603	0.5349	0.3024
ENT3	0.3947	0.2541	0.2479	0.3308	0.1794
ENT4	0.5008	0.2197	0.3959	0.3280	0.1314
ENT5	0.4535	0.2166	0.2788	0.3632	0.0768
ENT6	0.5098	0.2337	0.3229	0.3426	-0.0138
ENT7	0.3419	0.1782	0.0757	0.4442	0.1146
ENT8	0.5518	0.2018	0.3702	0.3825	0.1380
ENT9	0.3206	0.1945	0.0714	0.4717	0.1273
INNO1	0.6085	0.3653	0.4361	0.4061	0.1204
INNO2	0.5510	0.4842	0.4835	0.4126	0.0796
INNO3	0.6025	0.4609	0.3563	0.5112	-0.0485
INNO4	0.3383	0.2744	0.1653	0.2971	0.2049
INNO5	0.3589	0.3658	0.1383	0.3498	0.2175
LEARN1	0.3391	0.8898	0.5868	0.3610	-0.0132
LEARN2	0.4436	0.9153	0.5805	0.4080	-0.0167
LEARN3	0.4857	0.8825	0.4932	0.3117	0.0476
LEARN4	0.5258	0.9370	0.5648	0.3553	0.0433
MKTO1	0.6477	0.2297	0.3064	0.2759	-0.0861
MKTO1 0	0.6608	0.4079	0.3114	0.3536	-0.0314
MKTO1 1	0.8412	0.3917	0.3893	0.4262	0.0683
MKTO1 2	0.8600	0.3807	0.3499	0.5350	0.1363
MKTO1 3	0.6914	0.5477	0.4962	0.3999	0.0946
MKTO2	0.7922	0.3335	0.3049	0.3585	0.0127
MKTO3	0.8540	0.3586	0.4144	0.3411	0.0141
MKTO4	0.8553	0.5308	0.4165	0.4565	0.1648
MKTO5	0.7556	0.4009	0.4737	0.3799	-0.0898
MKTO6	0.7172	0.2284	0.3433	0.3079	0.0490
MKTO7	0.8003	0.4410	0.2873	0.5740	0.1765

MKTO8	0.7566	0.2990	0.3819	0.4548	0.1673
MKTO9	0.8568	0.3991	0.3439	0.4748	0.1191
PERF1	0.3428	0.4929	0.8533	0.2299	0.0095
PERF2	0.3659	0.5055	0.8591	0.1683	-0.0345
PERF3	0.3584	0.5082	0.8785	0.1721	-0.0911
PERF4	0.4126	0.4502	0.7835	0.2862	0.0238
PERF5	0.4699	0.5434	0.8421	0.1413	-0.0105
PERF6	0.4093	0.4426	0.7329	0.0544	0.0841
PERF7	0.3503	0.5982	0.8137	0.2343	-0.0463
SMA10	0.2878	0.1006	0.1522	0.6016	0.1622
SMA11	0.4691	0.1908	0.1502	0.7873	0.1377
SMA12	0.4362	0.3094	0.2080	0.7718	0.1379
SMA13	0.5232	0.3224	0.1793	0.7625	0.1455
SMA15	0.4252	0.2557	0.2443	0.6107	0.1668
SMA4	0.1654	0.1651	0.0480	0.6068	0.2366
SMA6	0.3215	0.3669	0.1621	0.6959	0.4528
SMA7	0.4326	0.4731	0.2426	0.7376	0.1723
SMA8	0.3079	0.3138	0.1002	0.7746	0.2671
SMA9	0.3839	0.3003	0.1131	0.7902	0.2849

Appendix D.2: Cross Loadings of all indicators

Large companies n=43 after deleting all item below 0.70

	Competition	Decentralization	Differentiation	Performance	SMA usage	Role of accountant
ACC1	0.206	0.159	0.508	-0.071	0.559	0.950
ACC2	0.168	0.096	0.427	-0.168	0.511	0.969
ACC3	0.269	0.163	0.441	-0.144	0.503	0.936
ACC4	0.114	0.079	0.504	-0.234	0.507	0.938
ACC5	0.277	-0.065	0.527	-0.187	0.570	0.860
COMP1	0.731	0.237	0.283	0.140	0.226	0.296
COMP2	0.813	0.351	0.354	0.290	0.133	0.086
COMP4	0.746	0.126	0.359	0.160	0.225	0.090
DEL1	0.201	0.767	0.060	0.002	0.120	0.090
DEL3	0.259	0.936	0.097	0.139	0.243	0.088
DEL4	0.339	0.780	0.191	0.088	0.055	0.002
DIFF3	0.396	0.268	0.854	0.068	0.448	0.522
DIFF1	0.364	-0.051	0.851	0.042	0.366	0.518
DIFF2	0.403	-0.061	0.821	0.127	0.329	0.242
DIFF4	0.331	0.154	0.870	0.011	0.547	0.416
PERF1	0.086	0.042	0.024	0.897	0.208	-0.175
PERF2	0.268	-0.014	0.072	0.861	0.050	-0.107
PERF3	0.128	0.052	-0.057	0.929	0.088	-0.203
PERF4	0.294	0.177	0.172	0.783	0.185	-0.103
PERF5	0.337	0.251	0.057	0.759	-0.047	-0.151
PERF7	0.286	0.115	0.091	0.814	0.116	-0.118
SMA10	0.307	0.197	0.475	0.075	0.718	0.437
SMA6	0.323	0.146	0.421	0.076	0.870	0.611
SMA7	0.125	0.153	0.359	0.249	0.778	0.392
SMA8	0.127	0.222	0.439	0.143	0.882	0.496
SMA9	0.179	0.115	0.332	0.066	0.759	0.284

Appendix D.3 Cross loadings of all indicators

SMALL COMPANIES n=60 (after deleting all indicators below 0.70)

	Competition	Decentralization	Differentiation	Performance	Role of accountant	SMA usage
ACC1	0.280	0.231	0.331	0.057	0.933	0.212
ACC2	0.222	0.190	0.421	0.085	0.951	0.226
ACC3	0.177	0.157	0.362	0.070	0.939	0.147
ACC4	0.238	0.232	0.285	0.018	0.932	0.160
ACC5	0.121	0.176	0.280	0.112	0.901	0.110
COMP1	0.743	0.558	0.290	0.372	0.301	0.464
COMP2	0.829	0.644	0.332	0.320	0.054	0.418
COMP4	0.850	0.580	0.469	0.299	0.252	0.606
COMP5	0.742	0.403	0.152	0.424	0.065	0.408
DEL1	0.627	0.831	0.208	0.301	0.089	0.433
DEL2	0.574	0.806	0.301	0.407	0.250	0.465
DEL3	0.390	0.812	0.110	0.388	0.037	0.290
DEL4	0.637	0.839	0.212	0.333	0.287	0.351
DIFF3	0.369	0.162	0.836	0.250	0.104	0.475
DIFF1	0.514	0.322	0.893	0.213	0.332	0.576
DIFF4	0.112	0.146	0.730	0.152	0.426	0.427
PERF1	0.353	0.412	0.173	0.868	0.131	0.205
PERF2	0.352	0.281	0.131	0.884	0.016	0.162
PERF3	0.282	0.350	0.118	0.846	-0.047	0.213
PERF4	0.468	0.408	0.427	0.791	0.117	0.361
PERF5	0.400	0.334	0.138	0.865	0.084	0.240
PERF6	0.377	0.385	0.029	0.661	0.085	0.072
PERF7	0.202	0.296	0.111	0.783	-0.005	0.194
SMA11	0.490	0.322	0.564	0.299	0.108	0.841
SMA12	0.615	0.471	0.475	0.315	0.142	0.898
SMA13	0.476	0.387	0.548	0.267	0.160	0.833
SMA8	0.408	0.365	0.410	0.099	0.083	0.720
SMA9	0.498	0.437	0.470	0.155	0.286	0.788

Appendix E: Transcripts of post-survey interviews

Company A: producer of plastic films, annual sales of about RM344 million.

Interviewee: CEO

1. The Company does not follow strictly the contemporary techniques develop by the academics. As the market is too dynamic, it will be problematic just to stick to certain well-defined techniques. I believe most Malaysian companies rely on informal controls and past experience for decision-making.

As a trained management accountant, I ignore using those conceptual terms in management accounting. We first have to determine what we can do, what does the customer wants. This is customer profiling. We have to convince the customers about alternative products which are beneficial for both sides. For example, for the supply of stretch films to Japanese market, we ask the customers to accept 10 micron instead of 15 micron films, explain to them the benefits arising from such change with the support of our technical report. This is a win-win situation with lower materials usage, transport cost and compliance with global warning initiatives. With our production skills, we will determine the best product mix. Our marketing survey also guides us how to have a better sales mix. Strategic pricing is used to maintain margin and how best is the volume of supply. At the same time, we carry out our competitor profiling to understand the competitors' pricing strategy, promotion and their positioning.

Applying traditional management accounting is not enough. We make use of product costing methods to analyse the cost behaviour of existing and new products to enhance competitiveness.

2. Product differentiation strategy allows us to gain higher margin than our competitors. Other suppliers are not ready to install such sophisticated machinery to produce such items. Normally the volume for new products introduced is not big enough. Next we

aim at high margin and high volume as the higher utilisation of materials allows us to have a volume rebate from the suppliers and higher utilisation of machines brings reduction of start-up cost and wastage. We pursue cost leadership strategy once the output is increased and there are economies of scale. We have to apply innovative production process. Unlike other products of high complexity, the use of differentiation strategy in our industry is not leading us to uncertain environment.

We know that the competitors cannot easily move in as the state-of-art machinery is capital intensive. We do not intend to supply traditional plastic products which are too competitive. The strategy is to have a better product mix and increase the sale of value-added goods. Selling of printed films enjoys a better margin than pure films. Value-added process such as conversion of printed films to printed bags allows us to gain competitive advantage and improved margin. It is less sensitive in terms of pricing fluctuations. We will gradually move on to lamination despite that it is a direct competition with our conventional customers.

3. Product differentiation is a result of high intensity of competition. Hence, strategy and competition are important factors influencing the management controls. We understand the barriers of entrance in our industry are production skills and financial resources. Advanced technology is very important for launching our new products to meet various demands of our customers. We often attend trade shows worldwide to acquire latest technology knowledge in extrusion of films and plastic printing. Whenever necessary, we will carry out market research and upgrade our machines to improve our production efficiency and meet the increasing demand of the customers. To gain competitive advantage in flexible packaging industry is to acquire technical knowhow ahead of your competitors.

4. In my company, I would consider financial accounting as secondary to management accounting. Management accountant involves in daily operations. In our business we have to sell the best products at the right price. Product profitability statement is a good guide for our decision making.

When a company is no longer controlled by family members, professional accountants and managers are recruited to provide detailed management accounting reports to their top management and major shareholders. This is more demanding especially for listed companies which are owned by many institutional investors and require to comply with stringent listing requirements. Managers with accounting background will have a good opportunity to move up their career ladder.

In the past, accountants are trained in audit firms and they focus more on corporate reporting rather than involve themselves in operations and decision making.

Business is dynamic and we need to apply management accounting techniques in an innovative manner. We have weekly management meeting to review the operations based on a broad based measurements, either financial or non-financial.

5. CEO has to be an entrepreneur and promote entrepreneurship among the managers. However, it is risk taking if we just have creative mind-set. Fortunately I have my training in management accounting and I understand the importance of management control and risk management.

For new business ventures, we have to make thorough study all implications resulting from new investments. For example, when we are contemplating whether to invest in new lamination line, we know that our business can grow by 10 fold and the expected margin is impressive, but we are concerned about competing head on with our conventional customers. The question is how to balance the short-term goals with our

long-term objectives. Without the management accounting skills we may not be able to make a sound decision.

Every Friday, our marketing manager will report important issues such as pricing, customers' technical questions and competition. Daily production schedule, including machines due for maintenance or repairs will be reported in the meeting. Such meetings are beneficial to all managers and can be regarded as organizational learning.

As CEO, I will brief all staff the performance and the direction of the Company four times each financial year. All employees must know the purpose and direction of the Company as I believe "WHY" takes precedence of "HOW" (the ways to do it).

6. The interaction among the managers is important. We have weekly production report which covers the output of films, printing of films and bag making. It also reports the current production as well as cumulative production of past 12 months and 5 years. We understand each machine utilisation, wastage and trimming. We control wastage below 3%. Factors affecting the output are distinguished into explanatory or non-explanatory.

These management accounting reports cover financial and non-financial measures give us an early sign of warning, whether our strategy is being implemented as planned and whether targeted results are achievable. All companies are likely to face strategic uncertainties in this dynamic environment. To remain competitive, we continue to engage in customer and competitor profiling.

7. Our core value is to be able to make high quality and consistent products. It is critical to bring down our reject rates. We must be able to use management accounting tools to ascertain the best product mix and pricing.

Of course we have to prepare annual budget so that we know the direction we are heading. Sales value report indicates how far we have achieved. QC report covers defect goods return and suggestions on what preventive measures may be implemented. We

even track the price movements of plastic resin by international commodity information systems. The price of plastic resin has moved up from USD600 per tonne to about USD2,000 per tonne over the last decade. We have to take advantage of value-added production to lower the impact of resin price fluctuations.

Company B: Specialising in metal-based automobile components and has an annual sales of about RM260 million. Interviewee: General Manager-Corporate Services

1. Standard costing and variance analysis are the basic tools used in manufacturing since the Company commenced its operations in 1993. Our systems are similar to the Japanese style standard costing. Activity-based costing enables us to measure the yield and cycle time and be more competitive. We have to adopt the KPIs set by our holding company. Top management translates these indicators to our production line and other departments using the four dimensions of balanced scorecard. To remain competitive, we adopt Kaizen, 6 Sigma and other Japanese management techniques.

To reduce our holding cost and lighten inventory controls, we introduce JIT and manage to reduce our inventory level from 38 days to 19 days, and we are targeting at 15 days. At the same time, we ensure our customers' delivery within 24 hours upon receipt of order.

We carry out feasibility study whenever there are changes in the models of cars. We apply strategic pricing and target costing to ensure a minimum margin for our products. If there are no economies of scale, we limit the supply of auto parts and outsource them from our sub-contractors who are to ensure quality compliance. We constantly carry out cost-down activities. Accountants here have to be knowledgeable about costing

techniques and operations. They even have to take part in our negotiation with customers and understand marketing and inventory management.

2. We pursue product differentiation strategy for our products as it is difficult to cut down our manpower cost. But we are quite concern about the National Automotive Policy which will eventually allow free competition with imported cars and parts. We have to initiate quality and competitive development, aim at cost saving and competitive pricing.

3. In our industry, it is important to carry out marketing research to understand customers' needs. Old models have to be phased out after few years. We invest in technology to produce quality products at competitive price to secure our business. Besides strategy, technology is another important factor influencing our control systems. We compute IRR/Payback period and target a minimum utilisation rate of 88% before we decide on acquisition of new machines.

We coordinate closely with our customers before they design any new car model. To meet the complex demands of consumers, certain parts can even be customized.

4. Management accountants must be given the opportunity to participate in strategic decision-making. They must involve in the operations, understand the supply chain. They are able to plan forward, not just securing finance but participation in strategy formulation and business negotiations.

In the past, operations managers are reluctant to accept accountants as they fear their job is to cut down or limit expenditure budget. Introduction of ICT has speed up accounting information processing. The emphasis is real time posting. Accountants are able to prepare production analysis and discuss major issues with operations managers before the closing of monthly financial accounts. I believe management accountants are valuable to our organizations and will be in good demand. They can educate non-

financial managers to read performance measures and other management accounting reports.

5. We believe in market orientation. To better understand our customers' needs, we regularly send our quality management engineers to meet our customers. KPI is set for customer satisfaction level.

Entrepreneurship is not limited to managers. We give awards for innovative suggestions. It is surprising that the adoption of innovative process recommended by our employees can save us millions of ringgit.

Besides our monthly performance review with all managers, we have conference twice a year to share our management and technical knowledge and performance prospect of the organization. By organizational learning, we understand the mistakes made by us and continue to improve the lead time of our delivery. The four organizational capabilities are likely to influence the MAS designs and result in higher usage of contemporary techniques.

6. Our operations managers have financial and non-financial information and they understand their monthly performance from the budget variance highlighted to them. Interaction among the managers will be beneficial to our Company. In particular, management accountants meet up with operations managers every month to ensure that all purchases during the month are allocated correctly in the accounts in terms of revenue, project or capital. These items are further classified into semi variable or fixed cost. From the bill of materials, our management accountants analyse the purchase price against the standard cost. Explanations are required if the critical level of 10% is triggered.

We carry out net realisable value (NRV) test regularly to see whether our selling price for each part produced is maintained above the standard production cost.

7. Management accounting systems have important role to play in the performance of a business. Operations managers must also be aware that management accounting techniques are useful in risk management. Management accountant has to let the operations managers familiarise the benefits generated by management accounting and take heed of these good controls.

Company C: The Group recorded annual sales of RM1.7 billion, about RM1.6 billion derived from distribution of motor vehicles and the balance from automotive components and vehicle body manufacturing. Interviewee: Group Financial Controller

1. Our Group is fully aware of the benefits derived from the usage of SMA. We currently make use of benchmarking, strategic costing, strategic pricing, competitor positioning/monitoring, and customer profitability analysis. When we appoint dealers for distribution of cars or parts, the management team has to assess environmental factors such as potential growth at such prime areas, value concentration, units in operations, cars that are likely to come in for after sales service. We want our customers to expand their business in line with our target sales and market share. We regularly carry out feasibility studies in major towns to expand our distributorship. Implementing growth strategies is challenging. A good example is the evaluation of growth potential in Kota Kinabalu, Sabah. An airline recently terminated its service to this town but another airline expands its flights as it recognizes its strong potential in tourism.

We have to initiate our cost-down exercise as the National Automotive Policy will eventually see the influx of cars and spare parts from other ASEAN countries. In strategic pricing, we have to understand customers' perception of value as production cost is no longer relevant to pricing decisions. Target costing may be applied as it is a discipline for cost reduction.

In this competitive environment, it is beneficial to adopt advanced management accounting techniques to enable us to prepare our business plans and improve our market share. We try to have uniform management accounting systems for all our business units. But we also allow exceptions. A good example is a new subsidiary acquired lately by us. We find that the manufacturing operations have good corporate culture and excellent control systems.

2. We try to apply differentiation strategy in our business. For example, a subsidiary has long history in car dealership and recently increased its brand of cars to three from one. The price of cars and margin are fixed by the principal of imported cars. So we turn our strategic focus on branding: to have quality and reliable customer service. We can attract loyal customers who are satisfied with our service to buy other makes of cars from the same business unit.

We recently launch our alloy wheel plant which is capable of providing heat treatment on wheel manufacturing. The car makers are happy to use our quality products of higher durability and the car users need not fix another four rims. Product differentiation strategy refers to the creation of value for customers. It enables us to fix a premium price. It is closely associated with the usage of SMA techniques. We may use cost leadership strategy to penetrate market. But in the long run, it cannot capture the market just relying on cost leadership.

3. I think organizational structure has an impact on the design of management accounting systems. SMA is a data driven system requiring collection of information through intelligence. Strategy is changing or emerging most of the time during the competitive environment. Every manager plays his/her role in acquiring external data and carry out on going strategic appraisal of targeted performance.

Strategic formulation has to consider contingencies as the recent tsunami in Japan and the serious flood in Thailand have interrupted the operations of many businesses. Hence, strategy and the external, long term focused SMA techniques are strongly related.

4. Management accountants have analytical skills to participate in the decision-making process. But they must be proactive in order to contribute to the success of business. One important criterion in employing new accountants by our group is to find out whether they are passionate and enthusiastic in the industry. The understanding of operations will make the accountants stand out.

If management accountants can participate in strategic decision-making process, the usage of SME is expected to be higher as other non-financial managers will be influenced by the accountants to make use of new accounting techniques.

5. I believe in organizational learning if we need to be ahead of our rivals. To avoid a downturn, we continue to develop our products to meet the customers' needs. We encourage entrepreneurship. But our priority is to optimize and maximize the performance of the current business. Innovative business process is important for any business that is in the declining stage of product life cycle.

Understanding of supply chain analysis is important for serving internal and external customers. If top management emphasizes the four organizational capabilities, there will be higher usage of SMA, a useful control system. In my view, SMA usage may influence organizational capabilities in either way.

6. To be an effective organization, diagnostic control system creates a discipline for operations manager to focus on our current performance. All operations managers are required to meet their targeted results. Interactive use of management accounting may be useful to create a dialogue among managers, but top management of local companies

have not changed their management style yet. In future, I believe companies can adopt this interactive approach when employing the SMA techniques.

7. New management accounting techniques are useful for cost and effect analysis which detects the early sign of any business downfall. Management accountants can play their role in reviewing the performance of competitors, and advise the company in pricing of its products. The information is important for performance improvement, but employing costing techniques involves technology, network and manpower. This is expensive to apply.

Company D: a ceramic products manufacturer since 1895 with an annual sales of about RM37 million. There are three divisions: clay pipes division, tableware division and bathroom supplies. Due to intense price competition, manufacturing of bathroom supplies was stopped 3 years ago when the new management took control of the Company. This division now has to outsource the supplies from China. Interviewee: Cost Accountant

1. The Company finds it more practical to make use of standard costing in preparing manufacturing accounts. It is easier to review each quarter's results using variance analysis. Activity-based costing (ABC) is applied to find out the cost involved in each manufacturing process. The cost data generated by ABC is useful to determine the causes of monthly cost fluctuations.

Product costing is not just figures. We have to understand the detailed operations, how the raw materials are used until the products are made. Every process is a valuable knowledge to the accountant. Inefficiency in labour and materials utilisation may be spotted at each stage using our analytical skills.

Marketing department has to use benchmarking, understand competitors' pricing strategies and set a competitive selling price in order to penetrate the market. Production manager and cost accountant must work together to minimize the cost without compromising the quality.

2. The use of competitive strategies is dependent on the products of the Company. Since there are many smaller clay pipes producers, cost leadership strategy is applied in order to compete with others. But for bigger jacking pipes, the Company is able to pursue product differentiation strategy and charge a premium price as there are only few producers which can supply such quality pipes and compete with us. Since tableware is not a complex product, we have to compete in pricing to secure more business. The customers can easily place their orders with China. However, a higher margin can be earned from Malaysian government tender which gives preference to Malaysian products.

The Company has a long history of supplying branded bathroom products. It enjoys competitive advantage with a reputation of high quality, but the market share is eroded by imports from China. As a trading house now selling similar branded products made by OEM from China, the division uses cost leadership strategy for low range products and differentiation strategy for premium products.

3. Competition is becoming more intense and it affects the profit margin of the Company. Our corporate culture is market driven, using strategic pricing and have an effective internal controls to minimize the cost, use competitive advantage of our product fully. Technology also plays an important role on the MAS design. Since our production is still not fully automatic, we find standard costing a useful tool for us. But the use of financial measures and non-financial measures are also useful techniques in our production management.

4. Management accountants have the analytical and management skills in strategic decision-making. For example, they are quick to foresee the impact of cost fluctuations on the profit margin. Escalations in electricity and gas prices have an adverse effect on the profit margin of each product. Knowing the future prospects of operations, they are fast in formulating a strategic plan to avoid the emerging risks.

5. Demands from customers have been changing. In particular, the thickness for clay pipes is different for export market such as Brunei and Singapore. Compliance to ISO standard is not sufficient. Market orientation is an understanding of the requirements and taste of customers. The supply of tableware involves customization especially in projects tender.

The Company cannot afford to be stagnant. It has to be pro-active in marketing and branding of its products and constantly introduce new products. Through process innovation, the production can be more efficient, leading to lower unit costs.

Organizational learning is to allow the employees to share the knowledge on the state of art production in order to move ahead of competitors. The production staffs are trained to understand the cost analysis and the cost impact of each process. The production personnel should know why other producers can make better quality products at such low cost.

The emphasis of four organizational capabilities will result in the use of more sophisticated management information. We believe the four capabilities will have an impact on the usage of SMA.

6. We have weekly management meeting to discuss the production outputs and understand what external factors and internal factors that have an impact on the operations. We know the market trend and customer requirement, and by combining all sources and information it will clear to find out why we face such problems and how to

resolve them. The performance measurements/costing reports are used in the dialogue among the managers. The managers regularly discuss launching of new products and acquisition of new machines.

We believe this is a form of interactive use of management control systems. We find combination of traditional management accounting, such as standard costing and advanced management accounting techniques (e.g. ABC and benchmarking) are useful in our operations.

7. In the past, accounting records are just historical data and no one attempts to understand them or make them to be more strategic. Now, financial and non-financial indicators are important for strategic decisions, whether in operations or capital expenditure. Yes, management accounting now can be a very useful tool to improve the performance.

Company E: largest car maker in Malaysia, employing about 10,000 staff and has an annual output of around 190,000 cars. Recent sales are affected by new guidelines on financing issued by Central Bank of Malaysia effective from January 2012. Malaysian Government is to announce the National Automotive Policy which is expected to have more liberalisation on the sales of cars and auto parts. To remain competitive, company to address three important factors: world class quality of its cars, productivity and efficiency, and cost factor (source: Star Bizweek 12 May 2012). Interviewee: 2 Managers from Finance & Accounting Department.

1. The management accounting systems of the Company are greatly influenced by its Japanese shareholders. We prepare our monthly and quarterly income statements, using traditional standard costing methods. Activity-based costing is used for allocation of fixed overhead. We report variance analysis together with non-financial measures (e.g.

quality and defect reports) generated by production departments. Mixed sophisticated accounting techniques are used for new product costing.

2. We initially launched cheaper range of cars to meet the demand of low income customers. These are introductory models when the factory started its operations. We do not consider pursuing cost leadership strategy. We pursue product differentiation strategy when we design our 1.3 or 1.5 litre cars to compete with other car makers and gain our market share.

3. As a car maker, we have to upgrade our technology which is provided by the Japanese shareholders. The fuel efficient engines used for our car production are imported from our Japanese partners. We introduce Japanese management philosophy such as JIT to lower our inventory control cost. Local suppliers for auto parts will coordinate with us closely. They have the ability to delivery our orders in time. Besides competitive strategy, we consider technology and management techniques (e.g. JIT and TQM) as important factors influencing the design and usage of management accounting techniques.

4. We believe management accountants play their role in the decision making process by providing strategic data for our product planning. Management accounting information is also vital for us to forecast our future performance.

5. Our company has built a learning centre for our employees. We ensure that the employees possessed technical knowledge and management skills to meet the challenges in our operations. Research and development is necessary for our technology upgrade and designs of new products. We have to train our front line managers to have confidence to answer all questions raised by our customers and understand their expectations. We think the four organizational capabilities which require more management information should have an impact on the usage of SMA techniques.

6. We have introduced Japanese management concept called Hoshin Kanri (Future Direction of Management) for our operations. The theme is asking what you have learnt, how to meet the targets and what are the challenges and opportunities. In these meetings all detailed problems of each department will be raised and discussed. We find this is similar to Balanced Scorecard. The interactive use of management control systems, in particular the SMA techniques, is helpful to generate better communications among the managers.

7. We do not focus on one particular management accounting technique. Automotive business is not static, we usually replace a model within 5 years. Product life cycle is shorter. We have to be sensitive to our customers' needs. It is important to use the relevant management accounting techniques to analyse all contingencies. To remain competitive and profitable in our business is to understand the perceived value of our customers.

Company F: main business consists of manufacturing and wholesale of animal feeds, poultry breeding, hatchery operations, contract farming and poultry processing. The annual sales is around RM385 million. Interviewee: Financial Controller

1. Many accountants are not trained to apply advanced management accounting techniques. Most Malaysian companies give the priority to financial reporting which only requires basic cost accounting for valuation of stock. Senior management make use of financial accounts and variance analysis to review the performance. Evaluation of new business or investment is also based on financial measures such as ROI and IRR.

The poultry industry is very competitive as there is excess capacity and limited range of products. But companies are still acquiring new machines and compete in the market. The collection of external data on customers and competitors is mainly covered by

marketing staff. Due to limited resources, management accounting department does not employ SMA techniques or use external data for the strategic planning or analysis.

It is very difficult to understand the market behaviour as food price fluctuates daily. Despite under-utilisation of machines, most industry players are reluctant to cease their business. It is difficult to make use of SMA techniques for our pricing decision. For example, when the surplus is serious, we have to take drastic steps to immediately clear our stock at a loss. Sometimes, we have to please our customers with incentives when launching our food products.

2. We are using both competitive strategies in our business. Normally, food is price sensitive, so we need to pursue cost leadership strategy to move our products. We try to differentiate our produce such as antibiotic free chicken. Branding is not so effective in our industry. The customers want quality goods at a reasonable price. Quite often the hypermarkets are promoting the produce at a loss.

3. Financial analysts have highlighted certain segments of this industry are no longer feasible, yet industrial players do not cease production. Probably our businessmen are reluctant to accept the impairment of assets resulting from idle usage of machines. It is a miracle to turnaround some non-performing business.

I think strategy and intensity of competition are likely to be important factors influencing the usage of SMA.

4. Management accountants have to understand operations. But many of them are purely financial based and are unable to make qualitative decision. Hence, most decision making are done in the absence of accountants. If accountants fail to understand operations, it is unlikely that they can generate strategic data for sound decision.

Possible due to their education background, management accountants are unable to help in strategic planning or give a sound proposal. If accountants are given an opportunity in strategic decision-making, the usage of SMA will definitely be higher.

5. Market orientation is important in our industry. Besides market department personnel, others need to be trained to acquire such knowledge. We have standard operating procedures and ISO audit guidelines as a food processing company. We have regular meetings to share our knowledge. Our technicians are encouraged to acquire new knowledge on food processing.

I think entrepreneurship will be more applicable to top management. The four organizational capabilities are likely to influence the usage of SMA.

6. I think interactive use of management control systems is important for the competitive environment. Application of more SMA techniques can encourage more frequent dialogues among managers.

Due to our corporate culture, top management has yet to allocate the resources to strengthen the management accounting department and employ more advanced management techniques.

7. I think by supplementing the contemporary accounting techniques with traditional cost accounting, we should be able to have better strategic planning and control. Performance will definitely be improved.

Appendix F: Survey Instrument

10 pages



SURVEY OF STRATEGIC MANAGEMENT ACCOUNTING (SMA) USAGE IN MANUFACTURING ENVIRONMENT

Tan Ah Lay (PhD candidate)
C/O Graduate School of Business
Faculty of Business and Accountancy
University of Malaya, City Campus
Level 4, Block C, Jalan Tun Ismail
50480 Kuala Lumpur

Confidentiality

The views expressed in the completed questionnaire will be treated with strictest confidence. Any information identifying the respondents will not be disclosed.

Instructions

Most questions can be answered by circling the appropriate answers. If you do not find an exact answer that fits your case, tick the one that comes closest to it, and add a comment if you wish to clarify it. A glossary on SMA techniques is attached to help you in answering the questionnaire. There is no right or wrong answer; it is your opinion that is important.

9 March 2011

Dear Respondents:

(Management Accountant/Head of Accounts/Finance Manager)

**SURVEY OF STRATEGIC MANAGEMENT ACCOUNTING (SMA)
USAGE IN MANUFACTURING ENVIRONMENT**

Traditional management accounting (e.g. standard costing, variance analysis) has been criticized as irrelevant in this new era of globalization and rapid change of production process. Many strategic management accounting (SMA) techniques have been developed or proposed since late 1980s to assist the top management in strategic decision-making.

The purpose of this study is to gain a better understanding of the usage of SMA in Malaysia, its relationship with business strategies, strategic role of accountants and how these variables can impact firm performance. Your participation in completing the questionnaire is paramount to the success of this research project. The result will only be used in aggregate terms and confidentiality of your response is assured.

The survey questionnaire is to be completed by the Head of Accounts/Management Accountant of your strategic business units (SBUs) or subsidiary/associated companies. If you have more than one core activities, we hope you can complete two sets of questionnaire in respect of the two most active manufacturing divisions. Please photocopy a set of survey questionnaire for the second division. If you are not in the position to complete this survey, I would appreciate if you could forward it to the relevant manager in your organization.

Please return the completed questionnaire to me within 3 weeks upon receipt of this letter, using the prepaid self-addressed envelope provided. If you have any query in completing the questionnaire, please contact me at Tel: 012-2603628 or e-mail: ahlaytan@yahoo.com or my supervisor Associate Professor Dr Ruzita Jusoh (e-mail: geee@um.edu.my).

I sincerely thank you for taking time from your busy day to help contribute to the success of this study.

Tan Ah Lay

SECTION A: COMPANY BACKGROUND INFORMATION

1. Which of the following best describes the industry in which your company operates?

Please tick (✓) an appropriate box

<input type="checkbox"/> Textiles and apparel	<input type="checkbox"/> Food and beverages
<input type="checkbox"/> Furniture, wood-based products	<input type="checkbox"/> Electrical and electronics
<input type="checkbox"/> Transport and automotive	<input type="checkbox"/> Rubber-based products
<input type="checkbox"/> Plastic products	<input type="checkbox"/> Pharmaceutical, cosmetics and toiletries
<input type="checkbox"/> Chemicals	<input type="checkbox"/> Iron, steel and other metal products
<input type="checkbox"/> Other industry, please specify: _____	

2. Please indicate how long your company has been in business.

<input type="checkbox"/> Less than 5 years	<input type="checkbox"/> 5-10 years	<input type="checkbox"/> more than 10 years
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3. Please indicate the approximate proportion of your sales made to the domestic market and to the export market.

Domestic: % Export:%

4. What is your company's approximate annual turnover (sales revenue in millions)?

Below RM25 m	<input type="checkbox"/>	Between RM25 m to RM100 m	<input type="checkbox"/>
Between RM101 m to RM500 m	<input type="checkbox"/>	Above RM500 m	<input type="checkbox"/>

5. What is the number of employees in your company?

Below 150	<input type="checkbox"/>	Between 150 to 500	<input type="checkbox"/>
Between 501 to 1,000	<input type="checkbox"/>	Above 1,000	<input type="checkbox"/>

6. Please state your current position, gender and how long you are in this position.

Job designation:	Gender:	Years in this position
_____	Male <input type="checkbox"/> Female <input type="checkbox"/>	<input type="checkbox"/>

7. Please state your education level:

Diploma	<input type="checkbox"/>	Bachelor degree/Professional	<input type="checkbox"/>
Masters' degree	<input type="checkbox"/>	PhD	<input type="checkbox"/>

SECTION B: STRATEGIC MANAGEMENT ACCOUNTING (SMA) TECHNIQUES

8. To what extent does your company actually USE the following SMA techniques for various strategic decisions? Please circle only one of the numbers ranging from 1 (not at all) to 7 (to a great extent).

	<i>Categories</i>	<i>SMA techniques</i>	<i>Not at all</i> <i>To a great extent</i>						
1	Costing	Attribute costing	1	2	3	4	5	6	7
2		Life-cycle costing	1	2	3	4	5	6	7
3		Quality costing	1	2	3	4	5	6	7
4		Target costing	1	2	3	4	5	6	7
5		Value-chain/Activity-based costing	1	2	3	4	5	6	7
6	Planning, control and performance measurement	Benchmarking	1	2	3	4	5	6	7
7		Integrated performance measurement	1	2	3	4	5	6	7
8	Strategic decision-making	Strategic costing	1	2	3	4	5	6	7
9		Strategic pricing	1	2	3	4	5	6	7
10		Brand valuation	1	2	3	4	5	6	7
11	Competitor accounting	Competitor cost assessment	1	2	3	4	5	6	7
12		Competitive position monitoring	1	2	3	4	5	6	7
13		Competitor performance appraisal	1	2	3	4	5	6	7
14	Customer accounting	Customer profitability analysis	1	2	3	4	5	6	7
15		Lifetime customer profitability analysis	1	2	3	4	5	6	7
16		Valuation of customers as assets	1	2	3	4	5	6	7

Note: A glossary of 16 SMA techniques is shown at the end of the questionnaire.

9. To what extent do you consider the SMA techniques could be HELPFUL to your company?
Please circle only one of the numbers ranging from 1 (not at all) to 7 (to a great extent).

In your opinion, please RANK* *THREE* most important SMA techniques (inserting 1, 2 and 3 in the relevant boxes of last column).

	<i>Categories</i>	<i>SMA techniques</i>	<i>Not at all</i>			<i>To a great extent</i>			<i>RANK*</i>
1	Costing	Attribute costing	1	2	3	4	5	6	7
2		Life-cycle costing	1	2	3	4	5	6	7
3		Quality costing	1	2	3	4	5	6	7
4		Target costing	1	2	3	4	5	6	7
5		Value-chain/Activity-based costing	1	2	3	4	5	6	7
6	Planning, control and performance measurement	Benchmarking	1	2	3	4	5	6	7
7		Integrated performance measurement	1	2	3	4	5	6	7
8	Strategic decision-making	Strategic costing	1	2	3	4	5	6	7
9		Strategic pricing	1	2	3	4	5	6	7
10		Brand valuation	1	2	3	4	5	6	7
11	Competitor accounting	Competitor cost assessment	1	2	3	4	5	6	7
12		Competitive position monitoring	1	2	3	4	5	6	7
13		Competitor performance appraisal	1	2	3	4	5	6	7
14	Customer accounting	Customer profitability analysis	1	2	3	4	5	6	7
15		Lifetime customer profitability analysis	1	2	3	4	5	6	7
16		Valuation of customers as assets	1	2	3	4	5	6	7

SECTION C: BUSINESS STRATEGIES AND STRATEGIC ROLE OF ACCOUNTANTS

10. What is the extent of your usage of the following business strategies? Please circle only one of the numbers ranging from 1 (not at all) to 7 (to a great extent).

a) Differentiation-based competitive advantage

		<i>Not at all</i>				<i>To a large extent</i>			
1	Introduce new products	1	2	3	4	5	6	7	
2	Differentiate products	1	2	3	4	5	6	7	
3	Offer broad product line	1	2	3	4	5	6	7	
4	Utilize marketing research	1	2	3	4	5	6	7	

b) Low-cost-based competitive advantage

		<i>Not at all</i>				<i>To a large extent</i>			
1	Lower manufacturing costs	1	2	3	4	5	6	7	
2	Modernize manufacturing	1	2	3	4	5	6	7	
3	Improve plant layout	1	2	3	4	5	6	7	
4	Increase capacity utilization	1	2	3	4	5	6	7	
5	Perform raw material value analyses	1	2	3	4	5	6	7	
6	Improve raw material access	1	2	3	4	5	6	7	

11. To what extent does the accountant (as middle management) involves in the strategic decision making?
Please circle only one of the numbers ranging from 1 (not at all involved) to 7 (fully involved).

		<i>Not at all involved</i>				<i>Fully involved</i>			
1	Identifying problems and proposing objectives	1	2	3	4	5	6	7	
2	Generating options	1	2	3	4	5	6	7	
3	Evaluating options	1	2	3	4	5	6	7	
4	Developing details about options	1	2	3	4	5	6	7	
5	Taking the necessary actions to put changes into place	1	2	3	4	5	6	7	

SECTION D: INTENSITY OF COMPETITION, ORGANIZATION STRUCTURE AND ORGANIZATIONAL CAPABILITIES

12. What is the perceived intensity of competition for the business activities of your company? Please circle only one of the numbers ranging from 1 (not at all) to 7 (to a great extent) for each type of competition.

		<i>Not at all</i>				<i>To a large extent</i>			
1	Selling and distribution	1	2	3	4	5	6	7	
2	Quality and variety of products	1	2	3	4	5	6	7	
3	Price	1	2	3	4	5	6	7	
4	Market share	1	2	3	4	5	6	7	
5	Customer service	1	2	3	4	5	6	7	

13. What is the extent of authority that is delegated to the General Manager/Head of the Business Unit in your company? Please circle only one of the numbers ranging from 1 (no delegation) to 7 (complete delegation).

		<i>No delegation</i>				<i>Complete delegation</i>			
1	Development of new products/services	1	2	3	4	5	6	7	
2	Hiring/firing managerial personnel	1	2	3	4	5	6	7	
3	Budget allocations	1	2	3	4	5	6	7	
4	Pricing decisions	1	2	3	4	5	6	7	

14. How would you describe your company's organizational capabilities (market orientation, entrepreneurship, innovativeness and organizational learning)? Please circle only one of the numbers ranging from 1 (not at all) to 7 (to a great extent).

a) Market orientation

		<i>Not at all</i>			<i>To a large extent</i>			
1	Information about customers is freely communicated	1	2	3	4	5	6	7
2	Competitive strategies are based on understanding of customer needs	1	2	3	4	5	6	7
3	Customer satisfaction is frequently assessed	1	2	3	4	5	6	7
4	Integration of functions to serve the needs of markets	1	2	3	4	5	6	7
5	Close attention is given on after sales service	1	2	3	4	5	6	7
6	Sales people share information concerning competitors	1	2	3	4	5	6	7
7	Target customers where we have competitive advantage	1	2	3	4	5	6	7
8	Top management regularly discuss competitors' strengths and weaknesses	1	2	3	4	5	6	7
9	Business strategies are driven by creation of greater value for customers	1	2	3	4	5	6	7
10	Visit of current and prospective customers by top management	1	2	3	4	5	6	7
11	Objectives are driven by customer satisfaction	1	2	3	4	5	6	7
12	Rapid response to competitive market actions	1	2	3	4	5	6	7
13	Managers understand how employees can contribute to value for customers	1	2	3	4	5	6	7

b) Entrepreneurship

		<i>Not at all</i>			<i>To a large extent</i>			
1	Wide-ranging acts are necessary to achieve objectives	1	2	3	4	5	6	7
2	Initiation of actions to which other organizations respond	1	2	3	4	5	6	7
3	Strong tendency for high risk projects	1	2	3	4	5	6	7
4	Dramatic changes in products	1	2	3	4	5	6	7
5	New lines of products	1	2	3	4	5	6	7
6	First business is to introduce new products, techniques, etc.	1	2	3	4	5	6	7
7	Cautious, "wait and see" posture	1	2	3	4	5	6	7
8	Adopt a very competitive, "undo the competitors" posture	1	2	3	4	5	6	7
9	Gradually explore the environment, cautious behavior	1	2	3	4	5	6	7

c) Innovativeness

		<i>Not at all</i>			<i>To a large extent</i>			
1	Technical innovation, based on research results, is readily accepted	1	2	3	4	5	6	7
2	Management actively seeks innovative ideas	1	2	3	4	5	6	7
3	Innovation is readily accepted in program/project management	1	2	3	4	5	6	7
4	People are penalized for new ideas that don't work	1	2	3	4	5	6	7
5	Innovation is perceived as too risky and is resisted	1	2	3	4	5	6	7

d) Organizational learning

		<i>Not at all</i>			<i>To a large extent</i>			
1	Employee learning is an investment, not an expense	1	2	3	4	5	6	7
2	Basic value include learning as a key to improvement	1	2	3	4	5	6	7
3	Once we quit learning, we endanger our future	1	2	3	4	5	6	7
4	Our ability to learn is the key to improvement	1	2	3	4	5	6	7

SECTION E: FIRM PERFORMANCE

15. We need you to do a self-assessment of your company's performance. Compare your company's performance over the past 3 years with the industry average, how would you rate your company? Please circle only one of the numbers ranging from 1 (well below average) to 7 (well above average).

		<i>Well below average</i>			<i>Well above average</i>			
1	Return on investment (ROI)	1	2	3	4	5	6	7
2	Sales growth	1	2	3	4	5	6	7
3	Overall organizational profitability	1	2	3	4	5	6	7
4	New product development	1	2	3	4	5	6	7
5	Customer satisfaction	1	2	3	4	5	6	7
6	Cost reduction programs	1	2	3	4	5	6	7
7	Human resources development	1	2	3	4	5	6	7

Thank you very much for your time and participation.

Please attach your business card here if you like to participate in the post-survey interview.

GLOSSARY OF STRATEGIC MANAGEMENT ACCOUNTING TECHNIQUES

1. Attribute costing: The costing of specific product attributes that appeal to customers. Attributes may include: operating performance variables; reliability, warranty arrangements; the degree of finish and trim; assurance of supply; and after sales service.
2. Life-cycle costing: The appraisal of costs based on the length of stages of a product or service's life. These stages may include design, introduction, growth, maturity, decline and eventually abandonment.
3. Quality costing: Quality costs are those associated with the creation, identification, repair and prevention of defects. These can be classified into three categories: prevention, appraisal, and internal and external failure costs. Quality cost reports are produced for the purpose of directing management attention to prioritize quality problems.
4. Target costing: A method used during product and process design that involves estimating a cost calculated by subtracting a desired profit margin from an estimated (market-based) price to arrive at a desired production, engineering, or marketing cost. The product is then designed to meet that cost.
5. Value-chain/Activity-based costing: An activity-based approach where costs are allocated to activities required to design, procure, produce, market, distribute, and service a product or service.
6. Benchmarking: The comparison of internal processes to an ideal standard.
7. Integrated performance measurement: A measurement system which focuses typically on acquiring performance knowledge based on customer requirements and may encompass non-financial measures, e.g. balanced scorecard. This measure involves departments monitoring those factors which are critical to securing customer satisfaction.
8. Strategic costing (strategic cost management): The use of cost data based on strategic and marketing information to develop and identify superior strategies that will produce a sustainable competitive advantage.
9. Strategic pricing: The analysis of strategic factors in the pricing decision process. These factors may include: competitor price reaction, elasticity, market growth, economies of scale, and experience.
10. Brand valuation: The financial valuation of a brand through the assessment of brand strength factors such as: leadership, stability, market, internationality, trend, support, and protection combined with historical brand profits.
11. Competitor cost assessment: The provision of regularly scheduled updated estimates of a competitor's unit cost.
12. Competitive position monitoring: The analysis of competitor positions within the industry by assessing and monitoring trends in competitor sales, market share, volume, unit costs, and return on sales. This information can provide a basis for the assessment of a competitor's market strategy.

GLOSSARY OF STRATEGIC MANAGEMENT ACCOUNTING TECHNIQUES

13. Competitor performance appraisal: The numerical analysis of a competitor's published statements as a part of an assessment of a competitor's key sources of competitive advantage.
14. Customer profitability analysis: This involves calculating profit earned from a specific customer. The profit calculation is based on costs and sales that can be traced to a particular customer. This technique is sometimes referred to as "customer account profitability".
15. Lifetime customer profitability analysis: This involves extending the time horizon for customer profitability analysis to include future years. The practice focuses on all anticipated future revenue streams and costs involved in servicing a particular customer.
16. Valuation of customers as assets: The technique refers to the calculation of the value of customers to the company. For example, this could be undertaken by computing the present value of all future profit streams attributable to a particular customer.