# The Relationship between Strategic Performance Measurement System and Organisational Capabilities: The Role of Beliefs and Boundary Control Systems

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## ABSTRACT

This paper examines the relationship between strategic performance measurement systems (SPMS) and organisational capabilities, i.e. market orientation, organisational learning, innovation and entrepreneurship. It uses the levers of control framework suggested by Simons (1999) and examines beliefs and boundary control systems as a potential moderator in the link between SPMS and organisational capabilities. The data was collected via a mail survey of top management of Malaysian listed companies. We find that the beliefs and boundary control system partly moderates the relationship between SPMS design and use and overall organisational capabilities. Further, we also find that beliefs and boundary control system moderates the relationship between SPMS design and use, and innovation and entrepreneurship. Implications of these findings are discussed in this paper.

**Keywords:** SPMS; Levers of Control Framework; Organisational Capabilities; Private Sector
**JEL classification:** M41

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## 1. Introduction

This paper aims to investigate the influence of the strategic performance measurement system (hereafter referred to as "SPMS') in enhancing organisational internal capabilities. SPMS is defined as an information system containing financial and non-financial measures that are derived from strategy and designed to align individual actions with the organisational strategy. SPMS as an information system will help managers in feedback (diagnostic use) and feed-forward (interactive use) actions. The purpose of SPMS is to influence managerial actions by focusing attention on factors critical to the success of the organisation. The use of performance measurement is an effective way to increase organisational competitiveness and profitability through the support of organisational capabilities. This paper examines empirically the impact of SPMS in building internal capabilities with the support of beliefs and boundary control systems.

To benefit from SPMS, top management needs to communicate core values and behavioural constraints throughout the organisation (see for example Simons, 1999; 2000; Malina & Selto, 2001). This is important to inform employees about what is needed to achieve competitive advantage and provide the basis for feedback and accountability (Kaplan & Norton, 1996). This paper focuses on the design and use of SPMS. The design of SPMS consists of the choice of measures, and communication and control. In this study, communication and control refer to organisational beliefs, or values and boundary, or behavioural constraints. The choice of measures will be based on a SPMS model such as Balanced Scorecard (BSC) and the results and determinant framework, in which the term refers to the broad set of financial and non-financial measures. SPMS use refers to the way those measures are used by managers i.e., diagnostically or interactively. Simons' levers of control framework will be adopted for organisational values and boundary, and SPMS use.

The levers of control framework contains four types of control systems: a beliefs system, a boundary system, a diagnostic control system, and an interactive control system. Simons (1999) claims that there is a link between the way that organisations achieve competitive advantage and the design and use of their SPMS. The SPMS is designed to be used by managers, where the managers can use the system to maintain or alter the pattern in organisational activities (Simons, 2000).

Effective control of strategy requires the freedom to innovate, as well as the assurance that individuals are working productively towards predefined goals. The beliefs system, boundary system, diagnostic control system and interactive control system are believed to be able to manage the dilemma of the need to be innovative and at the same time to achieve the organisation's objectives (Simons, 1999).

This study examines the link between SPMS and organisational capabilities using the resource-based view (RBV) theory. The RBV theory emerged as an important new conceptualisation in the field of strategic management and is one of the most important redirections of the content of strategy research in this decade (Hoskisson, Hitt, Wan, & Yiu, 1999). The RBV theory argues that organisations can develop sustainable competitive advantage by creating value for both the customers and the organisation, and developing organisational capabilities that are rare and difficult for competitors to imitate (Grant, 1991; Barney, 2001). The issue of capabilities has attracted enormous attention from researchers because of their impact on the organisation's ability to identify sources of sustainable competitive advantage (Day, 1994; Zehir, Acar, & Tanriverdi, 2006). However, according to Henri (2006a), the RBV theory has received little attention in the area of management control systems (MCS), including SPMS. Further, Berry, Coad, Harris, Otley, and Stringe (2009) mention that there is no study linking the various MCS uses and its impact on firm strategic capabilities except for the work done by Henri (2006a).

Recently, there have been attempts to examine the relationships between SPMS and organisational capabilities (Widener, 2007; Henri, 2006a; Grafton, Lillis, & Widener, 2010). Prior literature explores the attributes of control systems that both enable and constrain the effective exploitation of strategic capabilities. However, to date, there has been no attempt to examine the influence of beliefs and boundary control systems on these relationships. Thus, the lack of empirical evidence relating to the influence of SPMS concerning capabilities motivates this paper to investigate this issue. This paper discusses the role of SPMS design and use and the moderating effect of beliefs and boundary control systems and organisational capabilities. The rest of this paper is divided into five sections. Section 2 is the literature review, section 3 details the methodology, followed by the results and discussion in section 4 and, finally section 5 provides the conclusion.

## 2. Literature Review and Hypotheses Development

### 2.1 Strategic Performance Measurement System and Organisational Capabilities

An organisation's capabilities are complex bundles of skills and accumulated knowledge, exercised through organisational processes that enable organisations to coordinate activities and make use of their assets (Day, 1994). These capabilities are deeply embedded in organisational routines and can lead to positional advantage based upon innovative offerings or superior service. Firms that possess such an advantage should enjoy superior performance. Market orientation, entrepreneurship, innovation and organisational learning are the capabilities that collectively give rise to an organisation's positional advantage (Day & Wesley, 1988; Hult & Ketchen, 2001).

The adoption of diverse performance measurements has been claimed by numerous authors such as Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991) and Kaplan and Norton (1996) as being important sources to help an organisation develop and maintain its internal capabilities. BSC, which consists of four perspectives i.e., financial, customer, internal business process, and learning and growth, provides three elements that are essential to strategic learning. First, it articulates the company's shared vision, defining in clear and operational terms, the BSC that the company as a team is trying to achieve. Secondly, the BSC supplies the essential strategic feedback system, where a business strategy can be viewed as a set of hypotheses about cause-and-effect relationships. Thirdly, the BSC facilitates the strategy review that is essential for strategic learning. This can be done through the discussions between corporate and business unit executives to evaluate the validity of the unit's strategy and the quality of its execution (Kaplan & Norton, 1996).

Fitzgerald et al. (1991) explain that SPMS consists of both financial and non-financial measures that can help organisations achieve their goals as these measures can provide feed-forward and feedback controls through budgets, standards and targets, and analysis of significant variances. Grafton et al. (2010) find that the feedback use of performance measurements significantly supports the exploitation of current capabilities, while the feed-forward use supports the search for and identification of new capabilities. Jusoh, Ibrahim, and Zainuddin (2008) claim that SPMS is important for assisting managers to develop competitive strategies and therefore, SPMS should be aligned with the

business strategy. The results from the Jusoh et al.'s (2008) study reveal that there is a relationship between the use of multiple performance measurements and business strategy.

MCS, including SPMS, play an important role in facilitating organisational learning, and, also, generative organisational learning is dependent upon both the characteristics and use of the organisation's MCS (Kloot, 1997). Further, Kloot (1997) adds that SPMS constitutes the cornerstone upon which effective management control rests, and that SPMS must include financial and non-financial information. SPMS assists managers in monitoring the implementation of business strategy by comparing actual results against strategic goals and objectives (Simons, 2000). SPMS typically comprises systematic methods setting business goals together with periodic feedback reports that indicate progress against those goals. The goals can be short-term or long-term. Normally the short-term goals focus on time frames of one year or less, while the long-term goals include the ability to innovate and adapt to changing competitive dynamics over periods of several years. Through adopting both short-term and long-term goals, a successful organisation is able to identify and create opportunities and use them to gain advantage over its competitors. Hence, SPMS can play a critical role in helping managers adapt and learn (Simons, 2000).This is supported by Franco-Santos, Lucianetti, and Bourne (2012) who indicate that the use of performance measurements influences or inhibits strategic capabilities in organisations through the routines they stimulate.

In addition, SPMS plays an important role in helping organisation members identify the cause-and-effect relationships between process results, evaluated in terms of secondary objectives and primary objectives (Atkinson, Waterhouse, & Well, 1997). Supporting an understanding of how process performance affects organisational learning and performance is SPMS's diagnostic role (Atkinson et al., 1997). According to them, a particular element of the diagnostic role is to mesh non-financial measures with organisational goals, which are usually financial. Hence, SPMS should supply the information that employees need to evaluate and quantify the causal links, which, in turn, provide the basis for the evaluation and reengineering process (Atkinson et al., 1997). The findings from Atkinson et al. (1997) reveal that a bank benefits from SPMS, where the measures can help managers to signal and diagnose what drives current profitability performance and how the bank functions, so they can identify gaps and change strategies and tactics to improve financial performance. Through this diagnostic role,

the SPMS can provide an early warning of potential lower profits, so the bank can correct problems early on. Moreover, it also supports the bank's learning by identifying and testing models of the relationship between drivers and results.

Diagnostic systems are the same as the conventional control systems that focus on improving operational effectiveness. They include managerial techniques to measure and monitor the performance of employees and have both positive and negative effects on employees. On a positive side, MCS, such as budget control or performance measurements that set targets, can assist an employee to acquire and improve his skills and knowledge. On the negative side, MCS may discourage employee initiative, i.e. an employee may be reluctant to pursue any activity outside the targets set by management. In this sense, diagnostic MCS may contribute to operational effectiveness, but deter employee creativity with far reaching consequences for a company's competitiveness (Kimura & Mourdoukoutas, 2000).

Diagnostic controls promote organisational learning through feedback mechanisms. They provide input regarding which processes are working well and which are not (Widener, 2007). Simons (1999) explains that diagnostic control systems (concerned with financial measures) do constrain innovation and opportunity seeking to ensure the predictable goal achievement needed for intended strategies. A diagnostic control system is like a cybernetic view, where the features (1) depend solely on financial measures; (2) focus on short-term; (3) are information aggregated; (4) static; and (5) not actionable and lack timely signals. This system will encourage conservatism and promote comfort and clarity (Henri, 2004). Henri (2006a) finds that a diagnostic use of SPMS has a negative influence on the capabilities of market orientation, entrepreneurship, innovation and organisational learning. This is because diagnostics are related to the monitoring and tracking results. By creating constraints to ensure compliance with orders, it causes the negative effect of diagnostic use on organisational capabilities.

Interactive control systems are systems that top managers use to involve themselves regularly and personally in the decision activities of subordinates. The purpose of interactive control systems is to direct the attention of managers' to current strategic uncertainties (Simons, 1999; Marginson, 2002). The choice by top managers to make certain control systems interactive provides signals to individuals in an organisation about what should be monitored and where new ideas should be proposed and tested. This signal activates organisational learning,

and, through the debate and dialogue that surrounds the interactive management control process, new strategies and tactics emerge over time (Simons, 1991).

The purpose of interactive controls is to facilitate managers in anticipating and effectively managing future uncertainties. Interactive controls can be a facilitator of organisational learning. Interactive controls heavily involve top managers for the purpose of creating dialogue and sharing information, and, thus, can stimulate learning. Top managers can use interactive controls to influence and guide the learning process; indirectly this can help top managers understand that individual ideas and initiatives will emerge over time in unsystematic ways. The interactive control systems provide a signal throughout the organisation regarding the important arena for proposing, considering, and implementing new ideas. This process facilitates double loop learning, in which the search, scanning and communication processes allow new strategies to emerge (Simons, 1991; 2000; Widener, 2007).

Abernethy and Brownell (1999), in a study of 63 hospitals, find that interactive control systems facilitate organisational learning and, organisational learning is greater when the budgeting system is used interactively rather than diagnostically. However, Widener's (2007) study reports that the interactive use of the SPMS is not related to organisational learning. The results convey the importance of studying multiple control systems. Studies that only focus on interactive controls may contend that organisational learning is enhanced; however, when controlling for other control systems (i.e., beliefs and diagnostic), the interactive control system does not contain any additional explanatory power. Widener (2007) also explains that both diagnostic and interactive use of SPMS along with the beliefs system facilitate the efficient use of management attention. Organisational learning and attention are positively related with performance.

The study by Henri (2006a) indicates that an interactive use of SPMS fosters capabilities of market orientation, entrepreneurship, innovation and organisational learning. Henri (2006a) explains that SPMS can contribute to the process of knowledge generation and dissemination by focusing on strategic priorities and stimulating dialogue. Henri (2006a) also suggests that both diagnostic and interactive uses of SPMS contribute specifically and collectively to foster organisational capabilities. According to Marginson, McAulay, Roush, and van Zijl (2014), diagnostic and interactive use of performance measures support role clarity and a reduction to role ambiguity. Diagnostic control is able

to reduce role ambiguity by setting clear goals and supports learning through single loop feedback. While interactive control helps to reduce role ambiguity through face-to-face interactions.

## 2.2 SPMS Design and Use, Beliefs, Boundary Control System and Organisational Capabilities

The primary purpose of a beliefs system is to inspire and guide organisational search and discovery (Simons, 1999; 2000). Similarly, Owen, Mundy, Guild, and Guild (2001) say that the beliefs system is important to build a high performance organisation. The set of shared beliefs is represented by an organisation's vision, mission, values, and strategies. Many messages are implicit in the vision, mission, values, and strategy statements. They tell people what is important, what counts in the organisation, what gets rewarded, and what gets punished. Most importantly, they tell decision makers, from the top to the bottom of the organisation, what they are expected to produce and what is acceptable in doing so. The set of beliefs system defines the identity of an organisation and serves to guide its behaviour. This set of beliefs comes to be expressed through the routines that become normative in the organisations and are reinforced through the rewards and punishments meted out by the organisation. Kimura and Mourdoukoutas (2000) suggest that to integrate various MCS, including SPMS, organisations must begin with a system of core values, together with a mission that defines its character as well as setting its long-term direction, while proceeding with the interactive control system that filters market information, shapes performance and conducts guidelines, ending with diagnostic and boundary systems that improve efficiency, creativity and competitiveness.

The beliefs system of the organisation provides the inspiration for both emergent and intended strategies. The vision held by top management motivates employees to search for and create opportunities to accomplish the general mission of the organisation. This system appeals to the wishes of the members of the organisation they belong to and contributes to purposive organisations (Ramos & Hidalgo, 2003). The study done by Marginson (2002) finds that the beliefs control system opens the doors for new ideas, actions and initiatives. Similar results are also reported in Widener's (2007) study, who finds that organisations that rely more on a beliefs control system are more supportive of organisational learning, whereas, a boundary control

system is not associated with organisational learning. Tuomela (2005) conducts a case study concerning the implementation of SPMS and finds that in addition to diagnostic and interactive controls, the SPMS is also supported through beliefs and boundary systems. He explains that core competencies and customer relationships are visible in SPMS and, hence, respect for individuals and customers is given top priority by the organisation, while boundary systems are touched upon via strategic constraints that are reflected in selected measures.

Jaworski and Kohli (1993) argue that to develop a market orientation culture, top management plays a critical role in shaping an organisation's values and orientation. Top management reinforcement of the importance of market orientation is likely to encourage employees to track changing markets, share market intelligence with other people in the organisation and be responsive to market needs. In a similar vein, Day (1994) agrees that the commitment by top management is one of the important factors in cultivating a market orientation culture. To be a market orientated organisation, its top management must be able to demonstrate a pervasive commitment to a set of processes, beliefs and values that reflect the philosophy that all decisions start with the customer and are guided by a deep and shared understanding of the customer's needs and behaviour and competitor's capabilities and intentions, to realise superior performance by satisfying customers better than its competitors. This commitment illustrates the importance of the beliefs system, where top management emphasises market orientation culture as a part of organisational value. If employees do not get clear signals from the top management about the importance of being responsive to customer needs, they are not likely to be market oriented. Therefore the top management must ensure that organisational value and beliefs are well communicated to all levels of employees.

Tuomela (2005) summarises the potential of financial and non-financial measures with regard to different levers of control. Financial measures are used to assess whether the intended strategy leads to the attainment of financial goals. In uncertain environments, financial measures are well suited for interactive use to stimulate discussion about different strategic uncertainties and how to deal with them. Financial measures can be used to enhance the momentum for shareholder value and to strengthen strategic boundaries that have been set with regard to financial risks. Non-financial performance measures make it possible to follow progress in key strategic success factors. Interactive analysis and discussion of the most critical success factors in management meetings

could be enhanced with this information. Furthermore, non-financial measures can also be used to support core values and to accentuate strategic boundaries. Further, Tuomela (2005) explains that financial measures show the importance of creating value for owners and to avoid excessive financial risks, while non-financial measures can be used to emphasise a wide range of values and to strengthen different kinds of strategic boundaries.

Kennerley and Neely (2002) identify the need for effective deployment of business objectives down through the organisation and the subsequent measurement of performance in critical areas as the key elements of sustainable competitive advantage. Waal (2004) points out that communication is important to ensure the effectiveness of performance measurement and management. The organisation needs to communicate the strategy of the organisation, the boundaries between which organisational members are allowed to operate independently, the results to be achieved, the results that have been achieved, and the lessons learned (Waal, 2004). Individuals in organisations are opportunity-seekers, that is, when presented with new information and situations, they search for ways to create value or overcome obstacles. It is impossible for managers, except maybe for small organisations, to know all the problems, solutions and opportunities faced by their subordinates. In this situation, the boundary systems will play a role since they state the acceptable domain of activity for organisational members (Simons, 1999).

The strength of entrepreneurial ideas comes from unknown actions and reactions, where it assists organisational members to create new opportunities in new situations. In other words, an opportunistic behaviour is the impetus for innovations (Schnebel & Bienert, 2004). This situation puts managers in a dilemma of deciding how to control the opportunity-seeking behaviour of employees. Although, managers must encourage employees to constantly search for new ideas and new ways of creating value, at the same time, opportunism also poses considerable risks (Simons, 2000). Thus, managers must communicate clearly the behaviours and opportunities that are off-limits, so that their employees will understand what not to do and then encourage them to innovate and seek all possible opportunities within those clearly defined boundaries (Simons, 2000).

Boundary control systems set the boundaries, the parameters within which the employees can act. In this sense, boundary control

systems are general guidelines, avenues that employees are allowed to take or not to take rather than strict management directives. As such, boundary controls empower employees to use their own judgement and discretion in making decisions, even to attempt new things. In this sense, boundary controls can contribute both to operational effectiveness and employee creativity, thereby enhancing the company's competitiveness (Kimura & Mourdoukoutas, 2000).

In order to cultivate a market orientation culture, the top management must be able to communicate to the employees a willingness to take risks, so that employees will understand how to react to the market needs. Jaworski and Kohli (1993) explain that if the top management demonstrates a willingness to take risks and to accept occasional failures as being natural, then junior managers are more likely to propose and introduce new offerings in response to changes in customer needs. On the other hand, if the top management is risk averse and intolerant of failures, employees are less likely to focus on generating or disseminating market intelligence or responding to changes in customer needs. Furthermore, Jaworski and Kohli (1993) also argue that emphasis on rules can typically make an organisation less adaptive to external changes. However, if the emphasis on rules and the nature of rules are properly designed, rules may facilitate rather than hinder a market orientation culture. This argument is in line with the suggestion by Simons (1999) that the main purpose of boundary control systems is to communicate specific risks to be avoided. Boundary systems also contain rules that can be used to constrain search behaviour to ensure that an employee's behaviour is not off-limit.

Although boundary systems are essentially negative systems, they allow managers to delegate decision making and thereby allow the organisation to achieve maximum flexibility and creativity. In many ways, boundary systems are a prerequisite for organisational freedom and entrepreneurial behaviour (Simons, 1999). Although setting financial goals is recommended by classical theories to incentivise top performance, additional mechanisms are necessary to give impetus to articulate the soft-area of management and cooperation and to avoid frictions and conflicts (Schnebel & Bienert, 2004). The mechanisms are referred to as moral communication for integrating moral values and structuring the area of emotions and behaviour. In addition, communication of values or beliefs is a communication to give innovative impulses. Communication of values increases orientation

and transparency, and improves the effectiveness of normative rules and advice (Schnebel & Bienert, 2004).

The beliefs system and boundary system may be established and reinforced through a set of communication channels, including formal mission statements, credos, statements of purpose, email and meetings. Boundary systems may also be created and communicated through mechanisms such as strategic planning systems, unwritten codes of conduct, and formal rules and procedures. Formal beliefs systems and boundary systems are relatively recent organisational developments, a trend that is explained by reference to the growing complexity and diversity of firms. This makes it increasingly difficult for participants to comprehend overall organisational purpose and values. Beliefs and boundary systems are meant to impart this purpose. They may also be used to overcome organisational inertia (Marginson, 2002).

The beliefs systems and boundary systems complement each other. The beliefs systems cultivate a positive attitude through organisational core values, while the boundary systems limit organisational members into specific constraints when trying to search and create new opportunities. A strong beliefs system and clear boundary system assure managers that the employees are not involved in activities that could jeopardise the integrity of the business and are not dissipating organisational resources through projects and actions that do not build on competitive strengths. This assurance allows managers to concentrate on positioning their organisations to meet the competitive challenges of the marketplace (Simons, 1999).

The investigation of the impact of SPMS on organisational capabilities remains as a main focus for researchers. Some studies conclude that SPMS could foster organisational capabilities (Marginson, 2002; Widener, 2007; Henri, 2006a), while other studies find that SPMS inhibit organisational capabilities (Widener, 2007; Henri, 2006a). This study extends the prior literature by adding beliefs and boundary control systems as a moderator variable. SPMS may shape leadership styles, individual routines and organisational culture (Franco-Santos, Lucianetti, & Bourne, 2012). Jazayeri and Scapens (2008) find that SPMS supports cultural change by reinforcing the desired behaviours, values and beliefs. The study by Henri (2006b) supports the idea that organisational culture moderates the effects of SPMS.

This study expects that SPMS design and use are positively related to organisational capabilities. However this relationship will

be enhanced with the existence of the beliefs and boundary control systems. The design of SPMS should begin with the specification of the beliefs and boundary control systems. In order to achieve an organisation's goals and objectives, its employees must be aware and understand the direction of the organisation. In addition, the employees also need to be aware of the business conduct of the organisation, so that the employees will not do anything against the organisation's rules. A beliefs system helps to inspire and guide the employees, while a boundary control system sets a limit to ensure employees' behaviour is not off-limits. As mentioned earlier, the levers of control framework suggests that diagnostic use must be supplemented by a boundary system and interactive use with the beliefs control system in order to get maximum benefits of SPMS. Therefore, this study expects that both beliefs and boundary control systems can enhance the influence of SPMS design and use on organisational capabilities. This leads to the following hypotheses:

**Hypothesis 1**: The communication and control of beliefs and boundary systems moderate the relationship between overall SPMS design and use, and overall organisational capabilities, i.e., market orientation, entrepreneurship, innovation and organisational learning.

**Hypothesis 1a:** The communication and control of beliefs and boundary systems moderate the relationship between overall SPMS design and use, and market orientation.

**Hypothesis 1b:** The communication and control of beliefs and boundary systems moderate the relationship between overall SPMS design and use, and entrepreneurship.

**Hypothesis 1c:** The communication and control of beliefs and boundary systems moderate the relationship between overall SPMS design and use, and innovation.

**Hypothesis 1d:** The communication and control of beliefs and boundary systems moderate the relationship between overall SPMS design and use, and organisational learning.

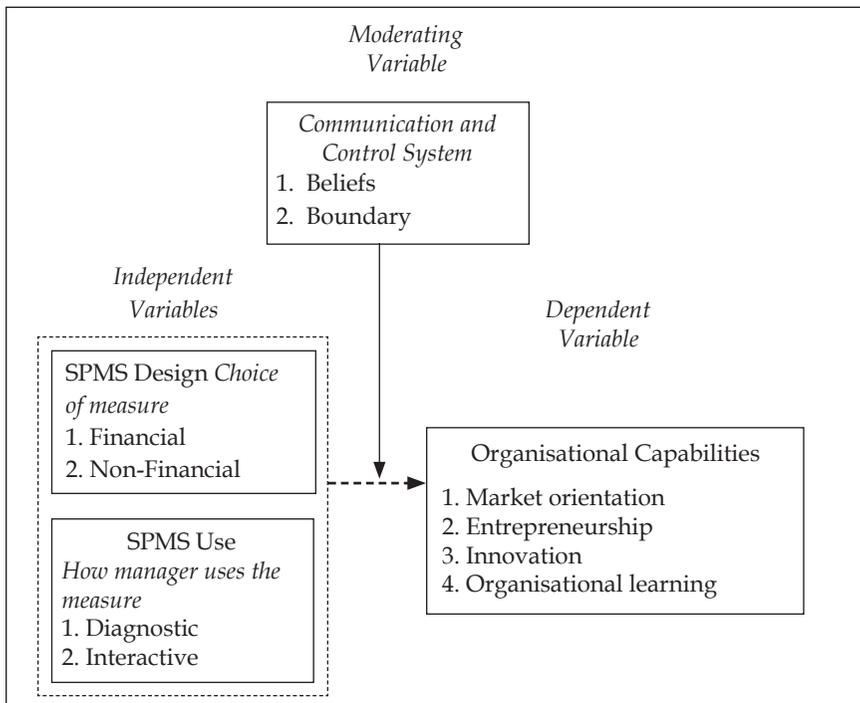Figure 1 depicts the relationships underlying the aims of the research.

Figure 1:  Research Model

## 3. Methodology

### 3.1  Variable Measurements

SPMS design refers to the choice of performance measurement i.e., financial or non- financial, which is based on the strategy being followed by the organisation. SPMS design is measured using the instrument developed by Fitzgerald et al. (1991), Kaplan and Norton (1992), and Hoque, Mia, and Alam (2001). There are six dimensions, covering 30 items in this section, namely, financial, quality, flexibility, resource utilisation, customer satisfaction, and innovation and learning. The use of each item is measured on a five-point Likert scale ranging from 1= not at all to 5= to a great extent.

The levers of control framework consists of diagnostic use, interactive use, beliefs control system and boundary control system. All items for levers of control are based on Simons (1999), Vandenbosch (1999), Widener (2007) and Henri (2003). Altogether, there are 12 items

for SPMS use, and the respondents are asked to rate the purpose of the
top management uses of SPMS on a five point Likert-scale ranging from
1= not at all to 5= to a great extent. Eight items representing beliefs and
boundary control systems, where the respondents are asked to give an
opinion regarding the statements that relate to both control systems.
Similarly, a five point Likert-scale is used ranging from 1= strongly
disagree and 5= strongly agree. In order to test the hypotheses, these
two SPMS dimensions, which are SPMS design and use, and two
dimensions of communication and control (belief and boundary) are
calculated based on the aggregates mean scores.

For market orientation, the instrument developed by Narver and
Slater (1990) is adopted. The instrument consists of three subscales
used to measure customer orientation, competitor orientation and
inter-functional coordination. Altogether, 14 items are used to measure
market orientation. For entrepreneurship, the study uses the instrument
suggested by Hult and Ketchen (2001) and Henri (2003) that was
originally developed by Naman and Slevin (1993). Entrepreneurship
covers three dimensions, namely the willingness to take business
related risks, the willingness to be proactive when competing with other
organisations, and the willingness to innovate, i.e., to favour change and
innovation in order to gain competitive advantage (Naman & Slevin,
1993). Altogether, there are nine items to measure entrepreneurship,
however, three items are excluded after factor analysis. The reason
for excluding the three items is because of the low factor loadings and
communalities value. For innovation and organisational learning, the
instrument is based on the suggestion by Hult and Ketchen (2001),
and Henri (2006a). The respondents were asked to rate organisational
capabilities using a five-point Likert scale ranging from 1= strongly
disagree to 5 = strongly agree. Appendix 1 presents the sample of
questionnaire items.

## 3.2 Sampling and Data Collection

The sample consists of 778 Malaysian companies listed on Bursa
Malaysia. This is after considering several factors such as lack of
contact name for the top management teams, inability to identify a
company's address, number of employees being too small, companies
under financial problems, companies in the midst of merging or in a
consolidation process and companies already included in the prior
pilot test. In terms of eligibility criteria, firms must be large enough, i.e.,
consist of 150 employees to ensure that a formal SPMS is in place (Henri,

2003). Therefore, the companies, selected in the current study must have at least 150 employees. Finally, only firms with the full address and with the name of at least one member of the top management team available are selected as a sample.

Data is collected through a structured questionnaire sent by mail to one member of the top management team. A total of 162 questionnaires are returned, three of these are excluded due to incomplete responses. Another 14 companies are excluded because of an outlier concern; therefore, 145 responses are used in the data analysis yielding an 18.6 per cent response rate. Table 1 outlines the respondents and sample profiles.

Table 1:   Respondent and Companies Profile (N=145)

| Item | Frequency | Percentage |
|---|---|---|
| *Position* | | |
| CEO/MD | 24 | 16.6 |
| CFO | 33 | 22.8 |
| Director/Finance Director | 16 | 11.0 |
| COO/VP/EVP/SVP | 11 | 7.6 |
| General Manager/DGM | 17 | 11.7 |
| Head of Department | 6 | 4.1 |
| Accountant/Finance Manager | 18 | 12.4 |
| Senior Manager/Manager | 17 | 11.7 |
| Others | 3 | 2.1 |
| Total | 145 | 100.0 |
| | | |
| *Number of employees* | | |
| Less than 160 | 18 | 12.4 |
| Between 200 to 500 | 41 | 28.3 |
| Between 600 to 800 | 25 | 17.2 |
| Between 900 to 1900 | 29 | 20.0 |
| Between 2000 to 7000 | 21 | 14.5 |
| Between 8000 to 20000 | 7 | 4.8 |
| Above 20000 | 4 | 2.8 |
| Total | 145 | 100.0 |
| | | |
| *Major activity* | | |
| Manufacturing | 52 | 36.0 |
| Services | 59 | 40.0 |
| Others | 34 | 24.0 |
| Total | 145 | 100.0 |

In order to test for non-response bias, early respondents are compared with late respondents (used as a proxy for non-respondent). In this study, 101 questionnaires are received before the reminder letter and the balance of 44 questionnaires are subsequently received after the reminder letter. From t-test analysis, we find that there are no statistically significant differences between early and late respondents.

### 3.3 Data Analysis

Correlation analysis is carried out to ascertain the correlation between variables. The procedures used to analyse the responses included the determination of the reliability of the instrument. From the correlation analysis, it is found that all variables representing SPMS have a positive and significant correlation with organisational capabilities. The questionnaire constructs are tested for their ability to yield a significant factor structure. The instrument can be said to have a high degree of reliability when there is a significant association between responses to each of the attributes (see Table 2).

Table 2:   Descriptive and Reliability (N=145)

| Dimensions | Mean | Cronbach's Alpha |
|---|---|---|
| SPMS Design: | | |
| Financial | 4.26 | 0.717 |
| Quality | 3.45 | 0.862 |
| Flexibility | 3.73 | 0.866 |
| Resource Utilisation | 3.14 | 0.856 |
| Customer satisfaction | 3.82 | 0.776 |
| Innovation & learning | 3.34 | 0.865 |
| SPMS Use: | | |
| Diagnostic | 4.38 | 0.881 |
| Interactive | 3.98 | 0.897 |
| Communication & control: | | |
| Beliefs | 4.09 | 0.881 |
| Boundary | 4.02 | 0.897 |
| Organisation Capabilities: | | |
| Market Orientation: | | |
| Customer orientation | 4.12 | 0.806 |
| Competitor orientation | 4.09 | 0.771 |
| Interfunctional coordination | 3.81 | 0.747 |
| Entrepreneurship | 3.21 | 0.798 |
| Innovativeness | 3.87 | 0.808 |
| Organisational learning | 4.22 | 0.732 |

Internal consistency is established using Cronbach's alpha and factor analysis. All the constructs show a Cronbach's alpha of above 0.70, which exceeds the acceptable standard of reliability analysis of 0.70 (Pallant, 2001), meaning that the constructs have a good internal consistency. Table 2 presents the descriptive statistics for all variables. The financial dimension is viewed as important, followed by customer satisfaction, flexibility, quality, innovation and learning and resource utilisation. The results also show that diagnostic use has a higher mean score compared to interactive use. For beliefs and boundary systems, it is found that the beliefs control system has a slightly higher mean compared to the boundary control system. From Table 2, it shows that organisational learning is viewed as the most important capability, followed by market orientation, innovation and entrepreneurship.

Factor analysis is used to verify the number of dimensions conceptualised. Factor analysis is an interdependence technique, whose primary purpose is to define the underlying structure among the variables in the analysis. The analysis provides the tools for analysing the structure of the interrelationships (correlations) among a large number of variables by defining a set of variables that are highly correlated, known as factors (Hair et al., 2006). This study uses principal component analysis as a factor extraction method. In order to use factor analysis, the minimum absolute sample size should be 50 observations and preferably the sample size should be 100 or larger (Hair et al., 2006). The sample for this study is 145 respondents; therefore, it meets the sample requirement to perform factor analysis. Another requirement for factor analysis is that the variables must have sufficient correlations. One of the measures to quantify the degree of intercorrelation among the variables and the appropriateness of factor analysis is the Kaiser-Meyer-Olkin measure of sampling adequacy (MSA). The individual variable with MSA values below 0.50 should be considered as being omitted. Overall, the MSA is above 0.60 meaning that all variables have sufficient intercorrelation and meet the requirement to conduct the factor analysis (see Table 3).

Table 3 also presents factor loadings of all items that represent each research variable. The table highlights the summarised results of factor analysis for all variables. The range indicates the minimum and maximum value of factor loadings for all items that represent each variable. The value of factor analysis for all items exceeded factor loadings of 0.45, indicating that the items meet the acceptable standard of validity analysis (Hair et al., 2006).

Factor analysis for each individual dimension indicates that the items of each dimension are unidimensional as they loaded as being satisfactory on a single factor (above 0.50) except for innovation and learning, innovativeness and entrepreneurship, where two factors emerged. However, according to Ang, Davies, and Finlay (2000) the unrotated factor solution is considered adequate if the factor loadings are statistically significant. Hair et al. (2006) explain that although factor loadings of 0.30 to 0.40 are minimally acceptable, values greater than 0.50 are generally considered necessary for practical significance. Since the loadings range from 0.58 to 0.92, which can be considered significant for the sample size of this study, an unrotated factor is used.

In order to test the moderating effect of beliefs and boundary, this study uses hierarchical multiple regression. In hierarchical multiple

Table 3:   Factor Analysis

| Dimensions | Factor Loadings | MSA | Eigenvalue | Variance Explained |
|---|---|---|---|---|
| SPMS Design: | | | | |
| Financial | 0.58 to 0.74 | 0.726 | 2.357 | 47.147 |
| Quality | 0.74 to 0.84 | 0.834 | 3.232 | 64.650 |
| Flexibility | 0.80 to 0.89 | 0.816 | 2.880 | 72.011 |
| Resource Utilisation | 0.87 to 0.90 | 0.731 | 2.331 | 77.712 |
| Customer satisfaction | 0.65 to 0.81 | 0.694 | 2.660 | 53.204 |
| Innovation & learning | 0.64 to 0.92 | 0.793 | 2.855 | 71.366 |
| SPMS Use: | | | | |
| Diagnostic | 0.85 to 0.87 | 0.825 | 2.955 | 73.866 |
| Interactive | 0.72 to 0.85 | 0.888 | 4.688 | 58.606 |
| Communication & control: | | | | |
| Beliefs | 0.76 to 0.82 | 0.747 | 2.529 | 63.237 |
| Boundary | 0.83 to 0.90 | 0.689 | 2.170 | 72.330 |
| Organisation Capabilities: | | | | |
| Market Orientation: | | | | |
| Customer orientation | 0.63 to 0.79 | 0.832 | 3.128 | 52.128 |
| Competitor orientation | 0.70 to 0.85 | 0.720 | 2.384 | 59.588 |
| Interfunctional coordination | 0.71 to 0.85 | 0.672 | 2.292 | 57.293 |
| Entrepreneurship | 0.58 to 0.85 | 0.744 | 3.004 | 50.068 |
| Innovativeness | 0.80 to 0.88 | 0.690 | 2.168 | 72.266 |
| Organisational learning | 0.75 to 0.88 | 0.624 | 1.968 | 65.589 |

regression, variables will be entered in steps or blocks in a predetermined order (Pallant, 2001). The SPMS dimensions are entered first in the regression analysis, followed by beliefs and boundary in Model 1. In Model 2, similar to Model 1, the SPMS dimensions are entered first, followed by beliefs and boundary and the interaction variables of SPMS and beliefs and boundary. The moderation effect analysis is done for all variables involved in the framework. However, in this paper we only focus on overall SPMS (combination of SPMS use and design) and the overall of beliefs and boundary (combination of beliefs and boundary). The idea to combine SPMS use and design is based on the suggestion by Ferreira and Otley (2009), that future researchers should examine the effect of performance measurement in a comprehensive way.

## 4. Findings and Discussions

A moderator is a variable that affects the direction and/or strength of the relation between the independent variable and the dependent variable (Baron & Kenny, 1986). The moderating effect happens when the level of the third variable (in this case the communication and control of beliefs and boundary control systems) influences or affects the degree of the relationship between two variables (in this case the SPMS and organisational capabilities).

Table 4 shows the results of the direct and indirect relationship between SPMS and organisational capabilities. The results indicate that SPMS design and use has a positive and significant relationship with organisational capabilities (see Model 1 in Table 4). While for indirect relationship, as displayed in Table 4, the results do not support the hypothesis that communication and control of beliefs and boundary control systems moderate the relationship between SPMS design and use and overall organisational capabilities. However, the results support the hypothesis that communication and control of beliefs and boundary control systems moderate the relationship between SPMS design and use, and each dimension of organisational capabilities (see Table 5).

Table 4 shows that the $R$ square of the models changed with the interaction of moderator (from $R^2 = 0.475$ to $R^2 = 0.476$), however, the change is too small and insignificant. The interaction coefficient (standardised beta) of the communication and control of beliefs and boundary control systems (Blfbndry) is not significant ($R^2$ change = 0.001, $\beta = 0.458$; $p > 0.10$). The analysis is replicated to test the moderation

effect on the relationship of SPMS design and use and each dimension of organisational capabilities, such as market orientation, entrepreneurship, innovation and organisational learning. From the analysis, it is found that the moderation effect is significant for the SPMS design and use and entrepreneurship and SPMS design and use and innovation (refer Table 5). As shown in Table 5, the $R^2$ of the entrepreneurship and SPMS is slightly increased from 0.174 without interaction to 0.191 with the

Table 4:  Results of Hierarchical Regression Analyses for Main and Moderation Effect: Overall Capabilities

| Model | 1 | | | 2 | | |
|---|---|---|---|---|---|---|
| DV | Capabilities | | | Capabilities | | |
| Variable | Coefficient ($\beta$) | Std. Error | Beta | Coefficient ($\beta$) | Std. Error | Beta |
| Intercept | 0.957 | 0.258 | | 1.915 | 1.983 | |
| Main Effect | | | | | | |
| SPMS | 0.451 | 0.065 | 0.497*** | 0.210 | 0.497 | 0.232 |
| BlfBndry | 0.260 | 0.065 | 0.285*** | 0.024 | 0.489 | 0.260*** |
| Moderator | | | | | | |
| SPMS*BlfBndry | | | | 0.059 | 0.121 | 0.458 |
| $R^2$ | 0.475 | | | 0.476 | | |
| Adj. $R^2$ | 0.468 | | | 0.465 | | |
| Change in $R^2$ | 0.475 | | | 0.001 | | |
| F change | 64.367*** | | | 0.237 | | |

***significant at the 0.1% level; **significant at the 1% level ; *significant at the 5% level; +significant at the 10% level
Note: BlfBndry refers to belief and boundary control system.

interaction of moderator. The interaction coefficient (standardised beta) is significant ($R^2$ change = 0.017, $\beta$ = 1.986; $p$ < 0.10).

Table 5 highlights that the moderation effect of beliefs and boundary are significant ($R^2$ change = 0.016, $\beta$ = -1.960; $p$ < 0.10) in the relationship of SPMS design and use and innovation. The $R^2$ is 0.249 and adds 1.6 per cent to explanatory power to explain the variance in innovation. The results suggest that the extensive use of communication and control of beliefs and boundary have little effect in moderating

the relationship between SPMS design and use and organisational capabilities, i.e., entrepreneurship and innovation. According to Frazier, Tix, and Barron (2004), the tests of interactions often have low power.

The moderation effect of communication and control of beliefs and boundary control systems is shown in Figure 2. The communication and control is split at the median level to group the practices into two, namely, a low communication and control group and a high communication and control group. The low communication and control group is represented by standard deviation (SD) minus 1 (-1 SD from the mean), while the high communication and control group is represented by SD plus 1 (1 from the mean) (refer Frazier et al., 2004).
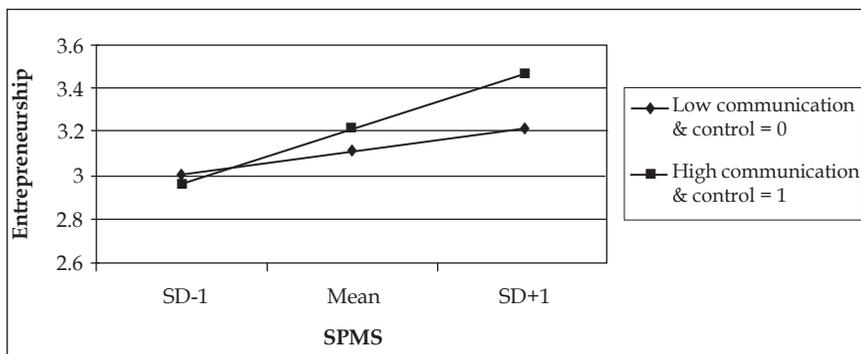


Figure 2: Graph of Moderation Effect of Communication and Control on the Relationship of Entrepreneurship and SPMS

Since the beta coefficient is positive ($\beta$ = 1.986), it suggests that in situations where organisations have a high communication and control of beliefs and boundary, the effect of SPMS on organisational capabilities of entrepreneurship is stronger.

Table 5: Results of Hierarchical Regression Analyses for Main and Moderation Effect: Each Dimension of Capabilities

**Model 1**

| DV | Market | | | Entrepreneurship | | | Innovation | | | Org Learning | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Coeff. (β) | Std. Error | Beta | Coeff. (β) | Std. Error | Beta | Coeff. (β) | Std. Error | Beta | Coeff. (β) | Std. Error | Beta |
| Intercept | 1.000 | 0.260 | | 1.113 | 0.390 | | 1.487 | 0.371 | | 1.106 | 0.318 | |
| Main effect | | | | | | | | | | | | |
| SPMS | 0.500 | 0.065 | 0.534*** | 0.333 | 0.098 | 0.305*** | 0.398 | 0.093 | 0.369*** | 0.367 | 0.080 | 0.349*** |
| BlfBndry | 0.245 | 0.066 | 0.260*** | 0.184 | 0.098 | 0.167+ | 0.188 | 0.094 | 0.173* | 0.403 | 0.080 | 0.380*** |
| R² | 0.497 | | | 0.174 | | | 0.232 | | | 0.405 | | |
| Adj. R² | 0.490 | | | 0.162 | | | 0.222 | | | 0.396 | | |
| Change in R² | 0.497 | | | 0.174 | | | 0.232 | | | 0.405 | | |
| F Change | 70.139*** | | | 14.957*** | | | 21.499*** | | | 48.253*** | | |

**Model 2**

| DV | Market | | | Entrepreneurship | | | Innovation | | | Org Learning | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Coeff. (β) | Std. Error | Beta | Coeff. (β) | Std. Error | Beta | Coeff. (β) | Std. Error | Beta | Coeff. (β) | Std. Error | Beta |
| Intercept | 0.245 | 0.066 | | 6.121 | 2.969 | | -3.391 | 2.823 | | 1.894 | 2.451 | |
| Main effect | | | | | | | | | | | | |
| SPMS | 0.355 | 0.503 | 0.379 | -.923 | 0.745 | -0.845 | 1.622 | 0.708 | 1.503* | 0.169 | 0.615 | 0.161 |
| BlfBndry | 0.102 | 0.494 | 0.109 | -1.051 | 0.732 | -0.956 | 1.390 | 0.696 | 1.281* | 0.209 | 0.604 | 0.197 |
| Moderator | | | | | | | | | | | | |
| SPMS*BlfBndry | 0.035 | 0.122 | 0.267 | 0.308 | 0.181 | 1.986+ | -0.300 | 0.172 | -1.960 | 0.048 | 0.149 | 0.325 |
| R² | 0.497 | | | 0.191 | | | 0.249 | | | 0.405 | | |
| Adj. R² | 0.487 | | | 0.173 | | | 0.233 | | | 0.392 | | |
| Change in R² | 0.000 | | | 0.017 | | | 0.016 | | | 0.000 | | |
| F Change | 0.084 | | | 2.895+ | | | 3.036+ | | | 0.105 | | |

***significant at the 0.1% level; **significant at the 1% level; *significant at the 5% level; +significant at the 10% level
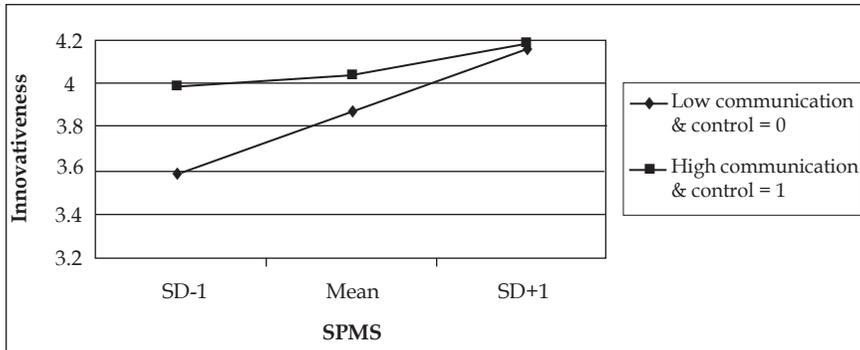Note: BlfBndry refers to belief and boundary control system.

Figure 3:  Graph of Moderation Effect of Communication and Control on
the Relationship of Innovativeness and SPMS

As shown in Figure 3, when organisations have low communication and control of beliefs and boundary systems (beta coefficient is negative, $\beta$ = -1.960), the effect of SPMS on the organisational capabilities of innovation becomes weak. Therefore, the findings support Hypotheses 1b and 1c that communication and control of beliefs and boundary systems moderate the relationship between SPMS design and SPMS use and organisational capabilities of entrepreneurship and innovation.

Although the direct relationship between the beliefs and boundary control systems and organisational capabilities is not part of the research objectives, from the results in Table 4 (see Model 1) it can be concluded that both beliefs and boundary have a positive and significant influence on capabilities. Both beliefs and boundary have elements of control and learning, which can help facilitate market orientation, entrepreneurship, innovation and organisational learning. The findings of the regression analysis suggest that beliefs and boundary control systems have the ability to enhance the relationship between SPMS and organisational capabilities, especially for entrepreneurship and innovation (see Table 5). However, in contrast with Widener's (2007) study, that suggests that organisational learning is enhanced by reliance on the beliefs system, this study finds that the beliefs and boundary systems do not moderate the relationship between SPMS and organisational learning.

The regression analysis does not fully support the proposition that beliefs and boundary control systems can moderate the relationship

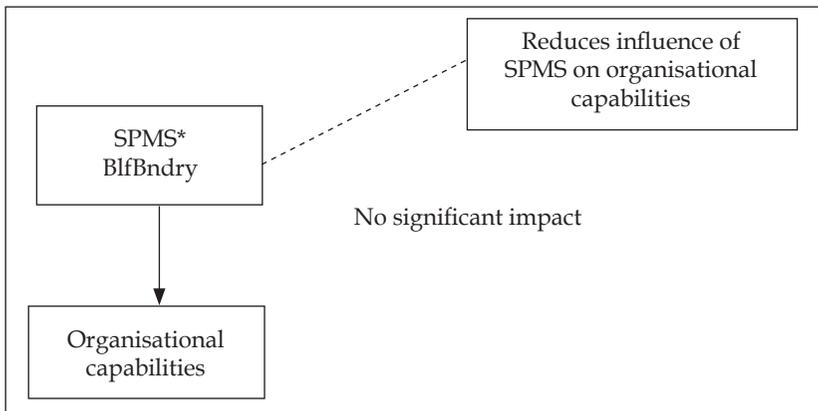between SPMS and overall organisational capabilities of market orientation, entrepreneurship, innovation and organisational learning. Figure 4 summarises the effect of interaction between SPMS (design and use) and the beliefs and boundary control systems (SPMS*BlfBndry) on overall capabilities (i.e. market orientation, entrepreneurship, innovation and organisational learning). The analysis shows that the interaction between SPMS and the beliefs and boundary control systems (SPMS*BlfBndry) has no significant effect on overall organisational capabilities. However, the interaction reduces the effect of SPMS on organisational capabilities.



Figure 4: Summary of the Effect of Interaction between Overall SPMS and the Belief and Boundary Control Systems (SPMS*BlfBndry) on Overall Capabilities

The results suggest that with or without interaction between SPMS and beliefs and boundary control systems, organisational capabilities will not change much. In other words, beliefs and boundary control systems are unable to enhance the ability of SPMS to develop organisational capabilities. As this is among the first attempts to examine the moderation effect of beliefs and boundary control systems, the results provide insight into future research to investigate this issue in more detail. Prior literature suggests that a beliefs control system can help build a high performance organisation. Simons (1999), for example,

claims that a beliefs system is able to inspire and guide organisational search and discovery.

According to Simons (2000), one of the principal reasons that managers use performance measurement and control systems is to influence the behaviour of subordinate managers and other employees. In order to succeed, managers must have a clear sense of what motivates people to work effectively towards achieving organisational goals. Beliefs and boundary control systems play an important role in influencing employees' behaviour. The beliefs system provides guidance and inspiration for an employee to be innovative and searching for new ways to create value. On the other hand, the boundary control systems are weighted heavily to control and limit. However, they also reflect learning, because past mistakes and the tactical moves of competitors dictate the adjustment of business conduct and strategic boundaries.

As mentioned earlier, the findings do not support that beliefs and boundary control systems moderate the relationship between SPMS and organisational capabilities. Having this insignificant result, this analysis is replicated for each individual element of organisational capabilities, such as market orientation, entrepreneurship, innovation and organisational learning. The results in Table 5 show that the moderation effect is significant for the relationship between SPMS, beliefs and boundary, and entrepreneurship and innovation. Figures 2 and 3 summarise the effect of the interaction between SPMS (design and use) and the beliefs and boundary control systems (SPMS*BlfBndry) on entrepreneurship and innovation respectively.

Figure 5 summarises the results showing that the interaction between SPMS and beliefs and boundary control systems (SPMS*BlfBndry) has a positively significant effect on entrepreneurship. However, this interaction changes the effect of the SPMS on entrepreneurship where it becomes negatively non-significant. This change indicates that the interaction between SPMS and beliefs and boundary control systems reduces the effect of SPMS on entrepreneurship. The negative coefficient suggests that the more an organisation uses beliefs and boundary control systems to inform SPMS, the less its effect on entrepreneurship, while the less an organisation considers beliefs and boundary control systems in its SPMS practice, the greater its effect on entrepreneurship. The interaction also changes the effects of beliefs and boundary control systems on entrepreneurship from positively significant to negatively insignificant.
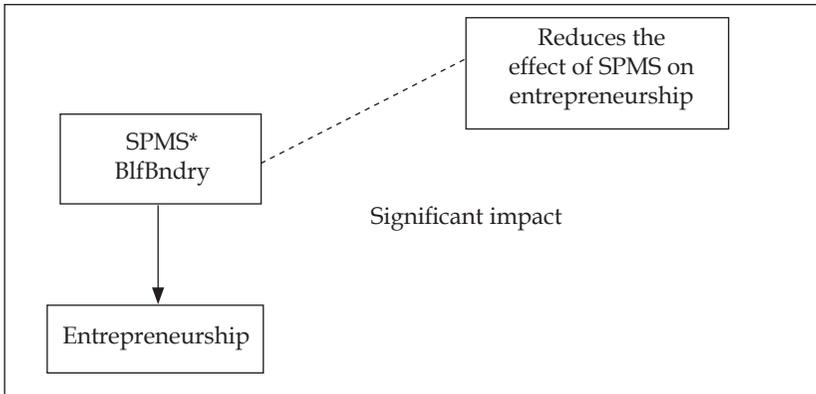
Figure 5: Summary of the Effect of Interaction between Overall SPMS and
the Beliefs and Boundary Control Systems (SPMS*BlfBndry) on
Entrepreneurship

Figure 6 summarises the results of the interaction effect of SPMS and
beliefs and boundary control systems (SPMS*BlfBndry) on innovation.
The results indicate that the interaction has a negative significant effect
on innovation. This interaction also influences the effect of SPMS on
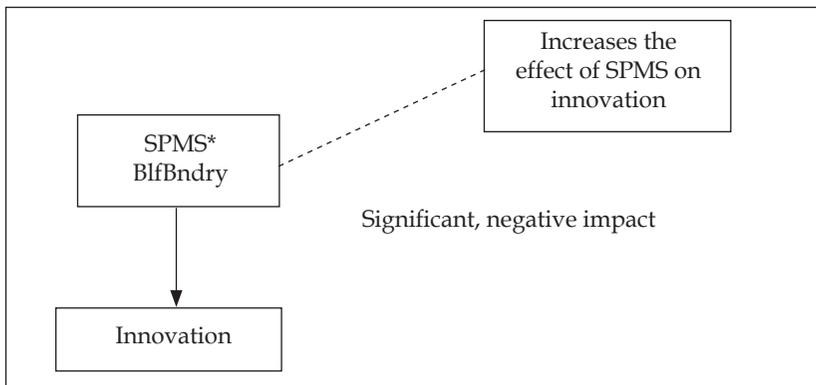innovation by increasing the explanatory power of the model.



Figure 6: Summary of the Effect of Interaction between Overall SPMS and
the Beliefs and Boundary Control Systems (SPMS*BlfBndry) on
Innovation

A negative coefficient of interaction effect of SPMS and beliefs and boundary control systems suggests that the more an organisation integrates and uses beliefs and boundary control systems in SPMS practices, the less the effect on innovation, while the less an organisation considers the beliefs and boundary control systems in its SPMS practices, the greater the effect on innovativeness. The results also show that with or without interaction, beliefs and boundary control systems have a significant effect on innovativeness.

The results suggest that SPMS design and use is able to enhance organisational capabilities of entrepreneurship and innovation and that the relationship becomes stronger if there are beliefs and boundary control systems. This may be due to the adoption of financial and non-financial measures, which is consistent with the short-term and long-term organisational objectives. Fassin (2005) posits that the emphasis on financial measures is one of the factors leading to non-ethical behaviour. This is because financial measures focus on short-term results and people who are opportunistic will misuse the information for their own benefit. Fassin (2005) also suggests other reasons for non-ethical behaviour, which are features of the internal organisations, such as rewards and evaluation systems of business and of managers that are not always in line with the long-term vision. Further, as another factor for non-ethical behaviour, Fassin (2005) mentions that there is considerable difficulty in translating the strategy set at the top into practice at the lower levels. Entrepreneurial orientation has been conceptualised as having three underlying components – risk-taking, proactiveness and innovativeness (Covin & Slevin, 1989; Morris, Coombes, & Schindehutte, 2007). Entrepreneurship is about achievement and success and some are very opportunistic. The power of game and short-term tactics are important instruments as they may be used or misused in business competition (Fassin, 2005). Therefore, beliefs systems and boundary control systems can assist to guide them to follow organisational objectives while at the same time acting as a control mechanism for opportunity-seeking behaviour.

## 5. Conclusions

The empirical aim of this study is to investigate the impact of SPMS on organisational capabilities, with beliefs and boundary control systems as a potential moderator. This study finds that the moderator variables do not enhance the association between SPMS design and use and overall

organisational capabilities. However, further analysis of the relationship of SPMS design and use and each dimension of organisational capabilities shows that beliefs and boundary control systems significantly explain 1 per cent of the variance in entrepreneurship and innovation. This means that the beliefs and boundary control systems are able to enhance the contribution of SPMS design and use, towards entrepreneurship and innovation.

The findings are subject to several limitations. First, for SPMS design, this study only included 30 items in the questionnaire. From the literature, a number of measures are suggested for use by organisations. This study only focused on the dimensions based on the BSC and the Results and Determinants Model. Second, this study is not a longitudinal study. Hence, it is unable to see the evolution of SPMS over time. Finally, this study only included four capabilities relating to the differentiation strategy. Capabilities associated with a cost leadership strategy such as purchasing are not considered. This is because the capabilities related to the differentiation strategy are more relevant to the diagnostic and interactive use. Notwithstanding the limitations, the results provide significant empirical evidence concerning the influence of SPMS.

The purpose of a beliefs control system is to inspire and direct the search for new opportunities and is related to the core values, while the purpose for the boundary control system is a way to set limits on opportunity-seeking behaviour and is related to the risks to be avoided (Simons, 1999). The results support the argument by Simons (1999) and other researchers, such as Marginson (2002), Tuomela (2005) and Widener (2007), concerning the important role of beliefs and boundary control systems on building organisational capabilities. Greater communication and control of the beliefs and boundary systems will lead to enhancing the influence of SPMS design and use over entrepreneurship and innovation. Since there is limited empirical evidence concerning the beliefs and boundary control systems and capabilities, the results provide a basis for future research to investigate this relationship.

The results of this study contributes to the literature by (a) demonstrating the importance of SPMS design and use as a source of competitive advantage regarding its ability in enhancing organisational capabilities, (b) indicating the significant role of levers of control as a control mechanism that contributes to foster organisational capabilities, and (c) highlighting the potential role of beliefs and boundary control systems as a moderator in the link between SPMS and organisational

capabilities. These results are relevant to practitioners who seek ways to improve their internal organisational capabilities. The results imply that it is very important for organisations to design their SPMS which consists of financial and non-financial measures and that top management should use information from SPMS diagnostically and interactively. This will help organisations to build and enhance their organisational capabilities. The results are also relevant to academicians who are interested in understanding the role and impact of SPMS in facilitating and sustaining organisational competitive advantage.

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## Appendix 1: Questionnaire Items

### SPMS Design

Operating income

Sales growth

Number of customer complaints

Return-on-investment (ROI)

Total net cash flows

On-time delivery percentage

Customer satisfaction with range of products and services

Survey of customer satisfaction

Account receivable turnover

Average time taken to respond to a customer request

Hours of preventive maintenance (e.g. inspection and test of equipment)

Cost reduction resulting from quality product/service improvement

Reduction in cycle time of producing/delivering main product/service

Absentee rates

Cost of quality

Market share of main products/services

Supplier certification

Hours of employee training on quality

Training hours per employee

Number of new customers in targeted segment

Number of different products/services delivered

Number of new services/products launches

Employee satisfaction ratings

Revenue per employee

Value-added per person (activity efficiency)

Time-to-market for new services/products

Number of customer lost due to failure to meet demand

Total costs per customer

Employee turnover percentage

Percent of sales from new products

## SPMS Use

Track progress towards goals

Monitor results

Compare outcomes to expectations

Review key measures

Enable discussion in meetings of superiors, sub-ordinates and peers

Enable continual challenge and debate underlying data, assumptions and action plans

Provide a common view of the organisation

Tie the organisation together

Enable the organisation to focus on common issues

Enable the organisation to focus on critical success factors e.g. cost, quality, and customer satisfaction

Develop a common vocabulary in the organisation

Make sense of the goals and strategy through dialogue

## Beliefs and Boundary Control System

Mission statement clearly communicates the firm's core values to our workforce

Top managers communicate core values to our workforce

Workforce is aware of the firm's core values

Mission statement inspires our workforce

Firm relies on a code of business conduct to define appropriate behaviour for our workforce

Firm has a system that communicates to our workforce risks that should be avoided

Workforce is aware of the  firm's code of business conduct

Code of business conduct informs our workforce about behaviours that are off-limits

## Organisational Capabilities

Market Orientation Dimension:

*Customer orientation*

Customer commitment and orientation to serving customers' needs.

Customer satisfaction objectives.

Understand of customer needs.

After-sales service.

Measure customer satisfaction systematically and frequently.

Create customer value.

*Competitor orientation*

Respond rapidly to competitive actions.

Top management team regularly discusses competitors' strengths and strategies.

Salespeople share information concerning competitors' strategies.
Target opportunities for competitive advantage.

*Interfunctional coordination*
Information shared among all business functions.
Top managers from every function visit current and prospective customers.
Functional integration in strategy.
All of business functions contribute to customer values.

Entrepreneurship Dimension
Marketed many new lines of products or services.
Changes in products or service lines have been usually quite dramatic.
Often the first business to introduce new products, administrative techniques, operating technologies, etc.
Strong tendency for high risk projects (with chances of very high return).
Initiate actions to which other organisations respond.
Adopt a very competitive, "undo-the competitors" posture.

Innovation Dimension
Technical/service innovation, based on research and development results, is readily accepted.
Innovation is readily accepted in program/project management.
Management actively seeks innovation and ideas.

Organisational Learning Dimension
Learning as a key to improvement.
Ability to learn is the key to continuous improvement.
Employee learning is an investment, not an expense.