

Strategic Performance Measurement Systems and Organisational Learning

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ABSTRACT

This paper reports the results of a study on strategic performance measurement systems (SPMS) and organisational learning. The main research question in this study is whether SPMS are able to facilitate organisational learning. The data was collected from a mail survey to top management of Malaysian listed companies. The results show that SPMS design makes a unique and significant contribution with organisational learning.

Keywords

SPMS; financial measures; non-financial measures; organisation learning; private sector.

1.0 INTRODUCTION

This study addresses a key aspect of one of the contemporary management accounting systems: strategic performance measurement systems (hereafter referred to as SPMS). SPMS are designed based on the strategy being followed by a particular organisation. Among the examples of SPMS are the balanced scorecard (Kaplan & Norton, 1992), results and determinant framework (Fitzgerald, Johnston, Brignall, Silvestro, & Voss, 1991), and performance pyramid system (Lynch & Cross, 1991). The main purpose of SPMS are to help organisations build organisational capabilities such as organisational learning and innovation to sustain competitiveness against their competitors. The elements of SPMS which consist of financial measures and non-financial measures i.e. quality, flexibility, customer satisfaction, innovation and organisation learning can help organisations to indicate the importance of organisational internal capabilities in sustaining organisational competitiveness.

Huber (1991) defines organisational learning as the development of new knowledge or insights that have the potential to influence behaviour. Accordingly, in this study organisational learning refers to the way an organisation views

the importance of learning orientation. The resource based view (RBV) theory argues that sustained competitive advantage is derived from the resources and capabilities a firm controls that are valuable, rare, imperfectly imitable and not substitutable (Barney, Wright, & Ketchen, 2001). These resources and capabilities can be viewed as bundles of tangible and intangible assets, including a firm's management skills, its organisational processes and routines, and the information and knowledge it controls. From the perspective of RBV theory, organisational learning is identified as one of the primary capabilities that can contribute to the creation of unique resources and to achieve competitive advantage (Hult & Ketchen, 2001; Henri, 2006).

The main objective of this paper is to examine the relationship between SPMS and organisational learning. Kloot (1997) argued that management control systems including SPMS play an important role in facilitating organisational learning, and to do so SPMS must include both financial and non-financial information. SPMS play an important role in influencing human behaviour through their use in feedback, evaluating performance and awarding reward (Wee, 2005). Hence, the issue of SPMS design is crucial for organisations as it can influence the way employees act and behave. Even though the issue of SPMS has received wide attention from practitioners, only a limited number of academic studies on the implementation and consequences of using this concept have been published. The "evidence" in books and articles is typically anecdotal and references to research are seldom made (Tuomela, 2005). An open debate remains concerning the relationship between SPMS and innovation and organisational learning (Henri, 2004). Some authors suggest that SPMS act as a trigger for these relationships while others consider them an obstacle. It remains unclear how and why SPMS could positively or negatively affect innovation and learning (Henri, 2004). Thus, this study seeks to fill the gap in SPMS literature by examining this issue by

looking at the design of SPMS to enhance organisational learning from the perspective of RBV theory. The rest of this paper is divided into five sections. Section two is the literature review, section three details the methodology, followed by the results and discussion in section four, and finally the last section provides a conclusion.

2.0 RELATIONSHIP BETWEEN SPMS AND ORGANISATIONAL LEARNING

SPMS assist managers in monitoring the implementation of business strategy by comparing actual results against strategic goals and objectives (Simons, 2000). They typically comprise 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).

The adoption of a diversity of performance measures is claimed by numerous authors such as Fitzgerald, Johnston, Brignall, Silvestro, & Voss (1991), and Kaplan & Norton (1996) as an important source to help an organisation develop and maintain its internal capabilities. For example, Fitzgerald, Johnston, Brignall, Silvestro, & Voss (1991) explained that SPMS consist of both financial and non-financial measures that can help organisations achieve their goals as these measures can provide feedforward and feedback control through budgets, standards and targets, and analysis of significant variances.

Ong (2003) examined the effects on the learning and performance of managers by adding non-financial value drivers to a summary of financial measures in a performance measurement system. Ong (2003) asserted that this type of performance measurement system affects learning from experience because of the feedback that it provides managers. Feedback is important for learning because it provides information about errors and guidance to managers to correct their responses and adjust their mental model of the task. Performance measurement systems provide information for

managers to test and modify their mental models of how their actions affect the performance of the firm (Ong, 2003)

Kalagnanam's (1997) study found that non-financial measures allow plant managers to identify problems more easily than if they only focus on financial measures, and to initiate general or more specific actions depending on the problem itself. Therefore, reporting non-financial measures to plant senior managers is likely to broaden their perspective with respect to the different competitive factors, in addition to price.

The ability to learn faster than the competitors may be the only sustainable competitive advantage (Day, 1994). In line with this, Slater & Narver (1995) agree that a superior ability to learn is critical because of the acceleration of market and technological changes, the explosion of available market data, and the importance of anticipatory action; and a competency-based source of competitive advantage because of its complexity, usefulness and also that it is difficult to imitate. In order to be a learning organisation it is important to have facilitative leaders who are frequent and effective communicators within and outside of the organisation. Facilitative leaders are constantly articulate and reinforce the organisation's vision through their speech and actions.

Organisational learning and management control systems are both concerned with the fit between the organisation and its environment and with changing the organisation to ensure the fit in a turbulent environment (Kloot, 1997). According to Kloot (1997) the relationship between organisational learning and the management control systems, including the performance measurement systems, is closely integrated, where the relationship is both recursive and two-way, with the two concepts inextricably interwoven. The constructs associated with double loop learning utilize certain processes that are known to accountants as part of a system of management control. Management control systems affect the perception of the environment and double loop learning is a response to perceived changes in the environment. In order to adapt to changes in the environment, the performance measurement should be refocused to horizontal control structures with less emphasis on vertical or hierarchical control structures, thereby moving the responsibility for control closer to the employees themselves (Kloot, 1997). The organisation can establish project teams, task forces and committees in order to obtain horizontal control structures. Furthermore, the reward system should encourage creativity and risk-taking in defined

areas of the organisation. True participative decision-making and employee empowerment assists the learning organisation and the processes should be set in place to encourage participation (Kloot, 1997). This means that the performance measurement system will be closer to the lower levels in the organisation and all employees will take responsibility for their decisions and be held accountable for the results. Another important attribute to assist the learning organisation is an emphasis on high quality throughout the organisation and the development of a shared vision (Kloot, 1997).

Wee's (2005) survey on Malaysian companies found that management accounting systems (MAS), including the SPMS, have a significant mediating effect on the relationship between organisational structure and organisational learning. The study suggests that organic organisational structure enables a greater use of sophisticated MAS, which, in turn, will facilitate organisational learning. The study also reveals that organisations seeking to enhance their competitiveness through organisational learning utilise performance measures that include a broad range of financial and non-financial measures. Based on the past literature, this study proposes that SPMS design, which consists of financial and non-financial measures, is positively related to organisational learning.

3.0 METHODOLOGY

3.1 The Sample

Data was collected through a structured questionnaire that was sent to one member of top management teams. This study used the directory of the Main Board and Second Board of Bursa Malaysia and the New Straits Times as the sampling frame, where a total of 887 companies were listed. However, the final number of samples was reduced to 778 companies for various reasons including lack of contact name for the top management team, unable to detect company address, number of employees too small, companies are under financial problems, companies undergoing mergers or consolidation and companies already included in the prior pilot test.

A total of 162 questionnaires were returned, 3 of these were excluded from the study for incomplete responses. In addition, 14 companies were excluded because of the outlier concern, therefore, 145 responses were used in the data analysis, yielding an 18.6 % response rate. Table 1 presents details of the respondents' profiles. The majority of the respondents are chief financial officers (22.8%) and chief executive officers/managing directors (16.6%).

The respondents consist of 36% manufacturing firms, 40% service firms and 24% others - meaning that they are involved in both the manufacturing and service activities. In terms of size, the majority of the respondents have employees between 200 and 1,900, which represents 65.5% of the sample.

Table 1: Respondent Profile

Item	Frequency	Percentage
<i>Position</i>		
CEO/MD	24	16.6
CFO	33	22.8
Director/EDir/FinDir	16	11.0
COO/VP/EVP/SVP	11	7.6
General Manager/DGM	17	11.7
Head of Department	6	4.1
Accountant/FC/FinManager	18	12.4
Senior Manager/Manager	17	11.7
Others	3	2.1
Total	145	100.0
<i>Number of employees</i>		
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
<i>Major activity</i>		
Manufacturing	52	36.0
Services	59	40.0
Others	34	24.0
Total	145	100.0

3.2 Variable Measurement and Descriptive Findings

SPMS design refers to the choices of performance measure i.e. financial or non financial which is based on the strategy being followed by organisations. SPMS design is measured using the instrument developed by Fitzgerald, Johnston, Brignall, Silvestro, & Voss (1991), Kaplan & Norton (1992), and Hoque, Mia, & Alam (2001). There are six dimensions, covering 30 items in this section. The six dimensions are financial, quality, flexibility, resource utilisation, customer satisfaction, and innovation and learning. The use of each item was measured on a five-point Likert scale ranging from 1= not at all to 5= to a great extent. In this study, Likert scales are considered as interval data. Likert scales have been treated as being measured at the interval level in most social sciences including management accounting research (see for example Hoque, Mia & Alam, 2001; Wee, 2005; Henri, 2006).

Table 2 Descriptive statistics – SPMS Design

Items	Mean	Std dev
Operating income	4.63	0.60
Sales growth	4.46	0.68
Total net cash flows	4.25	0.85
Return-on-investment (ROI)	4.19	0.83
Customer satisfaction with range of products and services	4.17	0.87
On-time delivery percentage	3.98	0.96
Number of customer complaints	3.93	0.96
Average time taken to respond to a customer's request	3.80	1.01
Survey of customer satisfaction	3.80	1.01
Account receivable turnover	3.76	0.94
Market share of main products/services	3.74	1.07
Cost reduction - quality product improvement	3.72	0.92
Number of new customers in targeted segment	3.66	0.96
Cost of quality	3.66	0.94
Number of customers lost due to failure to meet demand	3.63	1.12
Employee satisfaction ratings	3.48	0.94
Number of different products/services delivered	3.33	1.05
Hours of preventive maintenance	3.32	1.05
Number of new services/products launched	3.32	1.10
Supplier certification	3.30	0.98
Percent of sales from new products	3.30	1.10
Time-to-market for new services/products	3.28	1.13
Revenue per employee	3.24	1.21
Hours of employee training on quality	3.23	0.94
Total costs per customer	3.14	1.14
Value-added per person	3.03	1.20

Table 2 presents the items used in the survey and descriptive findings for SPMS design. From Table 2 it shows that the first ten measures have a high mean score consisting of five items of financial and five items of non-financial measures. These measures are operating income, sales growth, total net cash flows, return on investment, customer satisfaction with range of products and services, on-time delivery percentage, number of customer complaints, average time taken to respond to a customer's request, survey of customer satisfaction, and account receivable turnover. Overall the results show that manufacturing and service organizations in the study used both financial and non-financial measures. The financial dimension is viewed as important, followed by customer satisfaction, flexibility, quality, innovation and learning and resource utilisation (see Table 3).

Table 3: Descriptive statistics – All constructs of SPMS Design

Construct	Mean	Std dev
Financial	4.26	0.54
Customer satisfaction	3.82	0.72
Flexibility	3.73	0.86
Quality	3.45	0.78
Innovation & learning	3.34	0.90
Resource utilisation	3.14	1.04

For organisational learning, the instrument adopted by Hult & Ketchen (2001) and Henri (2006) was used for this study. Table 4 lists the

items and descriptive statistics for organisational learning.

Table 4: Descriptive statistics – Organisational learning

Items	Mean	Std dev
We agree that our ability to learn is the key to improvement in our organisational processes.	4.28	0.64
The basic values of our organisational processes include learning as a key to improvement.	4.27	0.59
The sense around here is that employee learning is an investment, not an expense.	4.10	0.63

4.0 RESULTS AND DISCUSSION

4.1 Validity and Reliability Test

Table 5 presents the results of the validity and reliability. 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). Overall, the MSA is above 0.60 indicating that it is acceptable. Based on Hair, Black, Babin, Anderson, & Tatham's (2006) guidelines, these statistical analyses show that 1) the value of factor analysis for all items that represent each research variable is 0.4 and more, indicating that the items meet the acceptable standard of validity analysis, 2) all research variables have eigenvalues larger than 1, and 3) the items for each research variable exceed the factor loadings of 0.40. In addition, all the constructs have 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 good internal consistency.

Table 6 displays the Pearson correlation analysis and descriptive statistics. Means for all variables are between 3.50 and 4.26, showing that the level of SPMS design, financial, non-financial and organisational learning ranges from medium (3) to highest (5). The correlation coefficients for the relationship between independent variables (i.e., SPMS design, financial and non-financial) and the dependent variable (i.e., organisational learning) are less than 0.90 indicating that the data is not affected by any serious collinearity problem (Hair, Black, Babin, Anderson, & Tatham, 2006). The relationship between the independent variables and the dependent variable is positive and the strength of relationship is medium ranging from $r = .383$ to $r = .446$.

Table 5: The Goodness of Data

Dimensions	Factor Loadings	MS A	Eigenvalue	Variance Explained	Cronbach Alpha
Financial	.58 to .74	.726	2.357	47.147	.717
Quality	.74 to .84	.834	3.232	64.650	.862
Flexibility	.80 to .88	.816	2.880	72.011	.866
Resource utilisation	.87 to .89	.731	2.331	77.712	.856
Customer satisfaction	.65 to .81	.694	2.660	53.204	.776
Innovation & learning	.64 to .92	.793	2.855	71.366	.865
Organisational learning	.75 to .88	.624	1.968	65.589	.732

Table 6: The Correlation Analysis and Descriptive Statistics of Main Variables

		Pearson Correlation Analysis					
		Mean	Std dev	(1)	(2)	(3)	(4)
(1)	SPMS Design	3.88	.562	1			
(2)	Financial	4.26	.540	.847**	1		
(3)	Non-financial	3.50	.727	.919**	.568**	1	
(4)	Organisational learning	4.22	.502	.446**	.383**	.407*	1

** Correlation is significant at the 0.01 level (2-tailed).
 * Correlation is significant at the 0.05 level (2-tailed).

4.2 Regression Analysis

The hypothesis was tested using multiple regression. Before conducting the analysis, the data was examined to ensure that the assumptions of regression analysis such as normality, multicollinearity, and outliers were not violated. From the examination, there is no problem of normality, multicollinearity, outliers or linearity.

Table 7: The Regression Models of SPMS Design with Organisational Learning

variable	Coeff. (B)	Std. Error	Beta	t-value	sig.
Intercept	2.673	.262		10.209	.000
SPMS Design	.398	.067	.446***	5.964	.000
R ²	.199				
Adj. R ²	.194				
F	35.566***				
df	(1,143)				

***significant at the 0.001 level ;**significant at the 0.01 level
 *significant at the 0.05 level; +significant at the 0.10 level

To test the hypothesis, two analyses were done; (1) regression of overall SPMS design on the dependent variable (Table 7); and (2) regression of each dimension of SPMS design on dependent

variable (Tables 8 and 9). The multiple regression results, as displayed in Table 7, show that SPMS design is positively and significantly related to organisational learning. The results indicate that 19.9 percent (R² = .199) of the organisational capabilities are explained by the independent variable. The R² was statistically significant with F = 35.566 and p < .001.

The regression results for each dimension of SPMS design i.e. financial and non-financial against each dimension of organisational capabilities are displayed in Table 8. The results indicate that both financial (b = .224; p < .05) and non-financial (b = .279; p < .01) have a positive and significant impact on organisational learning.

Table 8: The Regression Models of each Dimension of SPMS Design with Organisational Learning

variable	Coeff. (B)	Std. Error	Beta	t-value	sig.
Intercept	2.656	.300		8.840	.000
Financial	.208	.085	.224*	2.454	.015
Non-financial	.193	.063	.279**	3.064	.003
R ²	.199				
Adj. R ²	.188				
F	17.667***				
df	(2,142)				

Table 9 shows the results of the regression for each dimension of SPMS design i.e. financial, quality, flexibility, resource utilisation, customer satisfaction and innovation and learning with organisational capabilities.

Table 9: The Regression Models of each Dimension of SPMS Design with Organisational Learning

variable	Coeff. (B)	Std. Error	Beta	t-value	sig.
Intercept	2.403	.303		7.921	.000
Financial	.157	.087	.168+	1.810	.072
Quality	.110	.069	.170	1.596	.113
Flexibility	-.044	.074	-.075	-.593	.554
Resource	-.080	.049	-.165+	-1.624	.107
Customer	.334	.099	.479**	3.353	.001
Innovation & learning	-.027	.070	-.049	-.388	.698
R ²	.280				
Adj. R ²	.249				
F	8.941***				
df	(6,138)				

The six IVs in combination contribute 28.0 percent (R² = .280) of variance in organisational learning. Between these variables only customer satisfaction (b = .479; p < .001) financial (b = .168; p < .10), and resource utilisation (b = .165; p < .10) have a unique and significant impact on organisational learning. However, three variables - flexibility, resource utilisation and innovation and learning - show a negative association with organisational learning. Overall, the results confirmed Hypothesis 1, which stated that a SPMS design that consists of financial and non-

financial measures is positively related to organisational learning.

4.3 Discussion of the Results

The results provide ample evidence concerning the role of SPMS as a strategic control tool to ensure that organisational strategies are implemented and the ability of SPMS to enhance organisational competitiveness. The results of the descriptive statistics indicate that Malaysian companies adopt both financial and non-financial measures. From the regression analysis, it is clear that SPMS design play an important role in enhancing organisational learning. The results show that SPMS design makes a unique and significant contribution to organisational learning.

The results of the study support the assertion by Fitzgerald et al., (1991), Kaplan and Norton (1992) and Simons (1999) who claimed that organisations can use SPMS to help them build their internal capabilities of market orientation, entrepreneurship, innovation and organisation learning. SPMS contains financial and non-financial information, and using the information, diagnostically or interactively can motivate and stimulate organisational learning and the emergence of new ideas. While Martin & Martin (2005) suggested that SPMS are an important mechanism for creating and sustaining organisational capabilities such as organisational learning and market orientation.

The findings provide support for various claims in the literature that organisations need to consider both financial and non-financial measures (see for example Eccles & Pyburn, 1992; Kanji, 2002; Tangen, 2003; Henri, 2003; and CIMA, 2004). Henri (2003), for example, mentioned that traditional performance measurement systems might encourage conservatism and promote comfort and clarity. In other words, traditional financial measures may discourage senior managers from innovating as well as from searching for new ways and developing sources of competitive advantage. Further, Henri (2003) suggested that performance measurement systems should consider including both measures – financial and non-financial. Providing and measuring information for both measures can help senior managers focus organisational attention, resources and efforts towards critical success factors and, thus, can help to develop organisational competitive advantage. In addition, multi-dimensional SPMS also acts as a signalling and learning device as suggested by Kloot (1997), Simons (1999), and Henri (2003). Henri (2003) explained that SPMS are seen as fostering organisational learning, owing to their capacity to acquire, distribute, interpret and

store knowledge. While Kloot (1997, p69) said “the relationship between organisational learning and management control system is both recursive and two-way, with the two concepts inextricably interwoven”.

5.0 CONCLUSIONS

This study provides empirical evidence on the relationship between SPMS design and organisational learning. This study contributes to the limited body of knowledge concerning the impact of SPMS on organisational learning. Overall, the results of the study support the argument that SPMS design is positively related to organisational learning. The results imply that it is very important for organisation to design their SPMS in line with their organisation’s strategies and have multi-dimensional of performance measures such as financial and non-financial indicators. The use of multi-dimensional measures can influence managerial actions by focusing attention on factors critical to the success of the organisation.

From the perspective of RBV theory, management control systems including SPMS are not a direct source of competitive advantage. However, the results of the study show that SPMS play an important role in developing organisational learning, where RBV theory acknowledges organisational learning as one of the important sources to sustain competitiveness. In other words, SPMS enhance competitive advantage indirectly through their ability to facilitate organisational learning.

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