

# THE RELATIONSHIP BETWEEN STRATEGIC PERFORMANCE MEASUREMENT SYSTEMS AND ORGANISATIONAL COMPETITIVE ADVANTAGE

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## Abstract

The main objective of this study is to examine the role of strategic performance measurement systems (SPMS) as a strategic control tool in assisting managers to enhance organisational competitive advantage. Specifically, the objective of this paper is to examine the extent to which organizations are adopting financial and non-financial measures and to determine the effect of SPMS design on organisational competitive advantage. The main research question of this study is - Does the adoption of SPMS that consists of financial and non-financial measures lead to enhanced organisation competitive advantage? This paper reports on the results of SPMS design and competitive advantage. The data was collected using a mail survey to top management of listed companies in Malaysia. The results indicate that the Malaysian companies in the sample adopted both financial and non-financial measures. The study also found that the relationship between SPMS design and competitive advantage was positive and significant. However, for the relationship of each dimension of SPMS and competitive advantage, only non-financial measures had a significant association with competitive advantage, while financial measures had an insignificant positive contribution to competitive advantage.

**Keywords:** strategic performance measurement systems; financial measures; non-financial measures; competitive advantage.

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ISSN 1675-3194

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In today's business environment, a new competitive landscape has evolved—the technological revolution and increasing globalization present major challenges to the ability of organisations to maintain their competitiveness. Faced with these severe complexities, organisations must develop new strategies and new ways that require them to use the latest technology, actively participate in global markets, structure themselves to gain advantages in these markets, and build a long-term vision that allows managers to balance short-term performance with long-term needs.

The new markets and new strategies demand new and different performance measures. The choice of performance measures is one of the most critical challenges facing organisations (Ittner and Larcker, 1998). Performance measurement systems are the heart of the control system and play a key role in developing strategic plans, evaluating the achievement of organisational objectives and promoting organisational learning (Atkinson, Waterhouse, and Wells, 1997; Ittner and Larcker, 1998). Numerous researchers claimed that strategic performance measurement systems (SPMS) play an important role in assisting organisations gain and sustain their competitive advantage (for example, see Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991); Chenhall (2005); Kaplan and Norton (1992, 1996); Simons (1999; 2000)). Although many agreed that SPMS must be designed based on financial and non-financial measures, the performance effect of these choices remains uncertain (Ittner and Larcker, 2001). The literature in this area needs more evidence concerning the effect of SPMS, particularly its ability to enhance organisational competitiveness. Based on the suggestions, limitations and gaps in the earlier literatures, this study will examine the relationship of SPMS design and organisational competitive advantage.

The main objective of this study is to examine the role of SPMS as a strategic control tool to assist managers to enhance organisational competitive advantage. Specifically, the objective of this paper is to examine the extent to which organisations have adopted financial and non-financial measures and to determine the effect of SPMS design on organisational competitive advantage. This paper reports a result based on a mailed survey of Malaysian companies listed on Bursa Malaysia. Two research questions were investigated in this study.

1. First, to what extent have organisations adopted financial and non-financial measures.
2. Second, what is the effect of SPMS design on organisational competitive advantage. 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 the conclusion and possible areas for future research.

## **Literature Review**

### *Strategic Performance Measurement System Design*

Over the last two decades, performance measurement systems have experienced many changes. In the past, organisations placed greater reliance on traditional financial measures such as return on investment, return on assets, residual income and profit. However, due to changes in the business environment such as changes in technology, customer focus and the marketplace, traditional financial measures have been criticized as being inadequate for today's competitive environment (Kaplan, 1983; Eccles and Pyburn, 1992; Nanni and Dixon, 1992). In the 1990s, a new development arose in performance measurements literature- as academicians started to discuss the need for SPMS. For example, Kaplan and Norton (1992), and Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991) recommended the idea of balanced scorecard and results and determinant model. They made two major recommendations. First, they suggested that performance measures must be derived from the strategy being followed by organisations. Second, they argued that SPMS should include both financial measures and non-financial measures to provide the necessary information that allows managers to track financial results while simultaneously monitoring progress in building the capabilities and acquiring the intangible assets required for future growth. A performance measurement system that is designed based on strategy will realign strategy, actions and measurement (Nanni and Dixon, 1992). Measurement is used to guide the execution of strategy through actions, but it is also used to evaluate strategy in terms of the results of taking the actions. Both financial and non-financial measures are employed, and the emphasis in the measurements is on enhancing value rather than minimizing costs. Performance measurement systems that combine both financial and non-financial measures are associated with increased organisational performance (Hoque and James, 2000; Ittner, Larcker, and Randall, 2003; Davis and Albright, 2004).

According to Chenhall (2005), SPMS is designed to present managers with financial and non-financial measures covering different perspectives which, in combination, provide a way to translate strategy into a coherent set of performance measures. Simmonds' (1981) viewed strategic management accounting as including SPMS which helps firms attain positions of competitive advantage by measuring and monitoring competitor's relative levels and trends in costs, prices, market share, cash flow and financial structure. Other researchers such as Dent (1996), and Cooper (1996) also supported that SPMS is capable of helping firms build organisational capability to avert competition.

Simons (1999; 2000) claimed that there is a link between the way that organisations achieve competitive advantage and the design and use of their performance

measurement system. Simons (1999; 2000) suggested that the adoption of a combination of financial and non-financial performance indicators can help organisations sustain their edge over competitors. According to Fawcett, Smith and Cooper (1997), the greatest impediment to competitive success seems to be maintaining focus and consistency among strategic goals and value-added capabilities. In addition, they mentioned that information and measurement capabilities that align and direct organisation activities are perhaps the missing link in many of today's competitive efforts. Thus, they suggested that it is very important for organisations to understand the role and influence of information and measurement practices to improve organisational competitiveness. They believe that initiatives to develop operational excellence to support strategic choices are potentially influenced by the measures used to monitor the organisation's value-added activities.

A study conducted in Canada showed that financial measures are most frequently used in manufacturing firms (Gosselin, 2005). Similar results were also found in the study of Northern Cyprus's hotel industry (Haktanir and Harris, 2005). A study by Abdel-Maksoud, Dugdale and Luther (2005) provided confirmation that UK manufacturing organisations used a comprehensive range of non-financial performance measures. In Australia, Chenhall and Langfield-Smith (1998) found that the majority of large Australian firms had adopted a range of management accounting techniques that emphasize non-financial information. The white paper on performance measurement practices among Fortune 1000 and the public sector in USA and Europe shows that their performance measurement systems are more concerned with lagging rather than leading indicators and- that there is also a tendency to rely on financial measures (KPMG, 2001).

Despite the importance of non-financial information asserted in prior literature, the results on the adoption of non-financial measures show a contrasting trend (Chenhall, and Langfield-Smith, 1998; Yau and Robani, 1999; KPMG, 2001; Abdel-Maksoud, Dugdale, and Luther, 2005; Gosselin, 2005; Haktanir and Harris, 2005). In Malaysia, Yau and Robani (1999) found no evidence to prove that financial measures are more important than non-financial measures amongst manufacturing firms. In their literature review of PMS practice, Maliah, Nik Nazli and Norhayati (2004) concluded that the use of contemporary management accounting tools including non-financial measures is lacking among Malaysian organisations. While the study done by Mohd Yusoff (2001) reported that Malaysian manufacturing firms focusing on quality in departmental objectives is a factor for management to emphasise more on non-financial measures in times of intense competition. The survey among 120 Malaysian manufacturing firms conducted by Ruzita, Daing Nasir and Yuserrie (2006) found that the majority of these firms used a greater extent of financial measures, followed by customer measures, internal business process measures, and learning and growth measures. Based on the

past literature, this study expects that organisations will adopt multi-dimensional measures consisting of financial and non-financial measures. The financial performance represents only one dimension of value and, as such, is inadequate to evaluate the strategic performance of an organisation. The financial measures need to be supported by non-financial measures. This is because non-financial measures are more closely linked to strategic initiatives and reflect the range of factors that contribute to success, for example competitive performance, quality of service, customer satisfaction and innovation. Non-financial measures are leading performance measures that drive lagging financial performance measures. Hence, the adoption of multi-dimensional performance measures can improve organization performance and competitiveness (Fitzgerald, Johnston, Brignall, Silvestro, & Voss, 1991; Kaplan and Norton, 1996; Simons, 1999). However, there is a lack of evidence concerning the impact of SPMS design on organisational competitiveness, with the exception of Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991); and Chenhall (2005). The first hypothesis is:

*Hypothesis 1: Organisations tend to use multi-dimensional performance measures comprising financial and non-financial measures.*

#### *Strategic Performance Measurement Design and Competitive Advantage*

This study examined the relationship between strategic performance measurement design and competitive advantage. The relationship is linked together in a model, as shown in Figure 1.

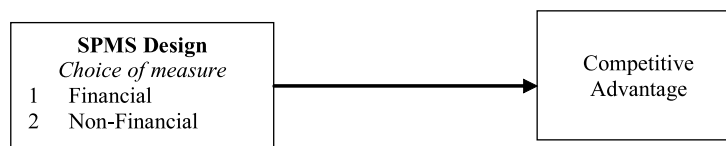


Figure 1: Strategic Performance Measurement Design and Competitive Advantage

SPMS design involves the choices of performance measure based on the strategy being followed by organisations. The choice of performance measure refers to a variety of metrics adopted by the organisation. The literature on SPMS categorised two types of performance measure; financial and non-financial (for example, see Gosselin (2005); Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991); Kaplan and Norton (1992)).

Traditional financial accounting measures of performance include return on investment (ROI), residual income (RI), book income, return on equity, cash flows, return on capital employed and return on sales. Although financial measures provide the necessary indications of performance, they do not address some of the new issues of competitive reality that are essential to business survival in a global economy. As a result, traditional performance measures have been criticised as inappropriate in the uncertain, complex and competitive environment today (Kaplan, 1983; Eccles and Pyburn, 1992; Ghalayini, Noble, and Crowe, 1997). Eccles and Pyburn (1992), for example, argued that one of the major limitations of using financial measures of performance is that they are “lagged indicators” which are “the result of management action and organisational performance and not the cause of it”. While Kaplan (1983), mentioned that the main limitation of financial performance measures is its failure to reflect the changes in the competitive circumstances and strategies of modern organisations. He suggested that companies should improve performance measures by giving more emphasis to quality, inventory performance, productivity, flexibility and innovation to replace the current emphasis on short-term financial performance measures.

Non-financial measures are more closely linked to strategic initiatives (Frigo, 2002). Frigo explained that non-financial measures can communicate strategy more clearly, and are able to fulfil the needs of shareholders and analysts. In addition, non-financial measures are often viewed as leading indicators that drive lagging financial performance measures (Frigo, 2002). The literature in this area suggests that if the organisations want to design an effective performance measurement system, they must have a multi-dimensional or balanced performance measurement system (Kaplan, 1983; Fitzgerald, Johnston, Brignall, Silvestro, and Voss, 1991; Nanni and Dixon, 1992; Moon and Fitzgerald, 1996; CIMA, 2004).

Tangen (2003) said that the use of performance measures is an effective way to increase the competitiveness and profitability of a manufacturing company through the support and encouragement of productivity improvements. He argued that appropriate performance measures can ensure that managers adopt a long-term perspective and allocate the company’s resources to the most effective improvement activities. Further, he claimed that, primarily, many manufacturing companies still rely on traditional performance measures such as ROI, profit margin and cash flow.

The reasons for this situation are that:

1. Neither industry nor academia has agreed on what new performance measures should be used or what criteria the selection of performance measures should be based on.

2. The proponents of any one particular form of measurement are keen to stress the advantages of that measure, but much more reluctant to discuss its disadvantages or highlight situations under which it may not be appropriate. Tangen (2003) suggested that it is important to select performance measures to match the situation in which they are to be used; more importantly, it is necessary to combine various types of performance measure to provide a fair, complete and balanced view of a company or the operations under evaluation.

A business must develop and sustain a competitive advantage in order to achieve superior performance (Porter, 1980). A strategy needs three characteristics to have a sustainable competitive advantage. First, it must be supported by assets and skills. Second, it should be employed in a competitive arena that contains segments that will value the strategy. Finally, it should face competitors who cannot easily match or neutralize the sustainable competitive advantage (Aaker, 1995). There are wide varieties of sustainable competitive advantage available to a business, for example perceived quality, customer service, product differentiation, low-cost production, product innovation, market share, knowledge of business, customer orientation, and financial resources (Aaker, 1995). Competitive advantage can be defined as a positional superiority, based on the provision of superior customer value or the achievement of lower relative costs, and the resulting market share and profitability performance (Day & Wesley, 1988). SPMS that has a combination of financial and non-financial measures can provide information that will help managers monitor financial performance and focus attention on factors critical to the success of the organization.

Hoque (2004) studies the link among the firm's business strategy, external environment, the use of measures for performance evaluation and organisational performance. The results provide no support for the hypothesized positive relation between environmental uncertainty and organisational performance through the use of non-financial performance measures. Ittner, Larcker and Randall (2003) found that a variation in the measurement diversity approach has the strongest association with stock market performance. In particular, they found that firms that make extensive use of a broad set of financial and non-financial measures earn higher stock return. Chenhall (2005) found evidence that supports the view that strategic performance measurement can enhance strategic competitiveness for firms emphasizing both product differentiation and low-cost strategies. The hypothesis proposed is:-

*Hypothesis 2: SPMS design that consists of financial and non-financial measures is positively related to organisation competitive advantage.*

## **Research Method**

### *Sample*

The sample for this study is Malaysian companies listed on Bursa Malaysia. Questionnaires were sent to the top management of 778 companies listed on the Main Board and Second Board of Bursa Malaysia. Top management refers to chief executive officer, managing director, chief financial officer, chief operating officer, general manager, vice president or other related executives as normally mentioned as management team in a company's annual report. The study used top management team as respondents because, according to Simons (1999) top management are the persons who are knowledgeable about the business strategy and the ones who will use SPMS, either diagnostically or interactively.

### *Data Collection*

Data was collected through a structured questionnaire sent to one member of the top management teams. A mail-out package including a cover letter, the questionnaire and a business reply envelope was sent to every contact name. The contact names were obtained from the respective company's annual reports for 2005, company's website or newspaper. The contact names were then confirmed by telephone calls to the companies.

A total of 232 questionnaires were returned, however 70 questionnaires were returned blank. In addition, 24 respondents stated several reasons why they were unable to answer the questionnaire such as busy, tight schedule, contact person left the companies, restructuring, SPMS is not in place and wrong address. From the remaining 162 usable questionnaires, 3 were excluded from the study for incomplete responses, and a further 14 companies were excluded because of the outlier concern. Therefore, 145 responses were used in the data analysis, which yielded an 18.6 % response rate. Table 1 presents the details of the respondents' profile.

### *Variable Measurement*

SPMS design refers to the choice of performance measure i.e. financial or non-financial which is based on the strategy being followed by the organisations. SPMS design is measured using the instrument developed by Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991), Kaplan and Norton (1992), and Hoque, Mia, and 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.



Table 1: Respondents Profile

Items	Frequency	Percentage
<i>Position</i>		
CEO/MD	24	16.6
CFO	33	22.8
Director/Executive 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/Controller/Finance Manager	18	12.4
Senior Manager/Manager	17	11.7
Others	3	2.1
Total	145	100.0
<i>Main Activity</i>		
Manufacturing	52	35.9
Services	59	40.7
Others	34	23.4
Total	145	100.0

The measure for competitive advantage is adapted from the dimensions used by Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991) and Day and Wesley (1988). There are five items to measure competitive advantage, including customer satisfaction, customer loyalty, market share, sales growth, and profitability. However, customer satisfaction was dropped after factor analysis. The respondents were asked to rate organisational competitive advantage using a five-point Likert scale ranging from 1= very poor to 5= excellent. According to Dess and Robinson (1984) to conceptualise organisational performance including competitive advantage is a complex and multidimensional phenomenon. Researchers frequently encounter difficulty in obtaining accurate measures because the information is viewed as confidential (Dess and Robinson, 1984). When facing this situation, Dess and Robinson (1984) suggested that researchers might use subjective measures based on managers' perception. Their research on organisational performance using top management team perception found that the performance measured was consistent with how the organisation actually performed based on return on assets and growth in sales. The findings suggested that a researcher might consider using a subjective measure if accurate objective measures are unavailable with the alternative being to remove the consideration of performance from the research design. In addition, subjective measures may be useful in attempting to operationalise broader, non-economic dimensions such as customer loyalty and customer satisfaction (Dess and Robinson, 1984).

## Results and Discussion

### *Descriptive Statistics*

Table 2 shows the overall descriptive statistics for all items in SPMS design. From Table 2 it can be seen that the first ten measures with a high mean score consist 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, survey of customer satisfaction and account receivable turnover. Overall, the results show that organisations in the study used both financial and non-financial measures. Financial dimension is viewed as important, followed by customer satisfaction, flexibility, quality, innovation and learning and resource utilisation (see Table 3).

Table 2: Descriptive Statistics – SPMS Design

Items	Mean	Std dev	Min	Max
Operating income	4.63	0.60	2	5
Sales growth	4.46	0.68	2	5
Total net cash flows	4.25	0.85	2	5
Return-on-investment (ROI)	4.19	0.83	2	5
Customer satisfaction with range of products and services	4.17	0.87	1	5
On-time delivery percentage	3.98	0.96	1	5
Number of customer complaints	3.93	0.96	1	5
Average time taken to respond to a customer's request	3.80	1.01	1	5
Survey of customer satisfaction	3.80	1.01	1	5
Account receivable turnover	3.76	0.94	1	5
Market share of main products/services	3.74	1.07	1	5
Cost reduction - quality product improvement	3.72	0.92	1	5
Number of new customers in targeted segment	3.66	0.96	1	5
Cost of quality	3.66	0.94	1	5
Number of customers lost due to failure to meet demand	3.63	1.12	1	5
Employee satisfaction ratings	3.48	0.94	1	5
Number of different products/services delivered	3.33	1.05	1	5
Hours of preventive maintenance	3.32	1.05	1	5
Number of new services/products launched	3.32	1.10	1	5
Supplier certification	3.30	0.98	1	5
Percent of sales from new products	3.30	1.10	1	5
Time-to-market for new services/products	3.28	1.13	1	5
Revenue per employee	3.24	1.21	1	5
Hours of employee training on quality	3.23	0.94	1	5
Total costs per customer	3.14	1.14	1	5
Value-added per person	3.03	1.20	1	5

Table 3: Descriptive Statistics – All Constructs of SPMS Design

Construct	N	Mean	Std dev	Min	Max
Financial	145	4.26	0.54	3	5
Customer satisfaction	145	3.82	0.72	2	5
Flexibility	145	3.73	0.86	1	5
Quality	145	3.45	0.78	2	5
Innovation & learning	145	3.34	0.90	1	5
Resource utilisation	145	3.14	1.04	1	5

Another question in the SPMS section asked respondents to rank in order of importance (1 = most important; 6 = least important) the six dimensions, i.e. financial, quality, flexibility, resource utilisation, customer satisfaction and innovation and learning. The number of respondents who responded to this question was 106 persons and 107 for financial. Table 4 shows the results. For financial, more than half the respondents (60%) agreed that it is the most important SPMS dimension compared to the others. For quality, only 4% of respondents viewed it as the most important, while the majority of the respondents (60%) ranked it as considerably important to important. Interestingly, for flexibility, and innovation and learning, most of the respondents rated these dimensions as slightly important to least important. Thirty five percent of respondents viewed resource utilisation as fairly important to important and another twenty seven percent rated it as slightly important to least important. For customer satisfaction, the majority of the respondents (60%) ranked this item as 2 to 4 indicating that they viewed it as considerably important to important. This confirmed the findings of the descriptive statistics that financial measures are adopted extensively in Malaysian companies. Overall, the results provided support for Hypothesis 1 - that organisations tend to use multi-dimensional performance measures comprising financial and non-financial measures.

### Regression Analysis

Table 5 presents the reliability statistics for all variables involved in the study. Ideally, the Cronbach's alpha coefficient of a scale should be above 0.70 (Pallant, 2001; Hair, Black, Babin, Anderson and Tatham, 2006). In this study, overall, all the constructs show that the Cronbach's alpha is above 0.70, meaning that the constructs have a good internal consistency.

In this study, to check on validity, two methods were used, which are face validity or content validity and construct validity. In the face validity, the instrument was pre-tested to managers and academicians. The purpose being to look into the degree of correspondence between the items selected to constitute a summated scale and its conceptual definition. Major changes were made on the items in the

Table 4: Rank Order of SPMS Dimension

Dimension	N	Rank Order (%)					
		1	2	3	4	5	6
Financial	107	87 (60%)	6 (4%)	7 (5%)	1 (0.7%)	1 (0.7%)	5 (4%)
Quality	106	6 (4%)	39 (27%)	29 (20%)	19 (13%)	11 (7%)	2 (1%)
Flexibility	106	2 (1%)	5 (3%)	14 (10%)	19 (13%)	31 (21%)	35 (24%)
Resource utilisation	106	2 (1%)	13 (9%)	18 (12%)	33 (23%)	18 (12%)	22 (15%)
Customer satisfaction	106	6 (4%)	39 (27%)	28 (19%)	20 (14%)	10 (7%)	3 (2%)
Innovation & learning	106	3 (2%)	5 (3%)	10 (7%)	14 (10%)	35 (24%)	39 (27%)

questionnaire after a pre-test. The questionnaire was then sent for a pilot study. Subsequently, a few interviews were conducted to make sure all the questions were clear. Construct validity is about the accuracy of measurement and it can help to provide confidence that item measures taken from the sample represent the actual true score that exists in the population (Hair, Black, Babin, Anderson and Tatham, 2006). Factor analysis was used to verify the number of dimensions conceptualised.

Table 5: Reliability Statistics-summary

Item	Cronbach's Alpha
Financial	.717
Quality	.862
Flexibility	.866
Resource utilisation	.856
Customer satisfaction	.776
Innovation & learning	.865
Organisational competitive advantage	.721

Table 6 display the result of the correlation analysis for all variables involved in the study. Overall, the table shows that all variables represented SPMS i.e. financial, quality, flexibility, resource utilisation, customer satisfaction, and innovation and learning have a positive and significant correlation at the .01 level with organisation competitive advantage. The results show that the relationship between these variables to competitive advantage is moderate except for financial and resource utilisation, which shows a small effect.

Table 6: Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Financial	1						
(2) Quality	.605**	1					
(3) Flexibility	.456**	.629**	1				
(4) Resource utilisation	.427**	.514**	.616**	1			
(5) Customer satisfaction	.496**	.616**	.789**	.618**	1		
(6) Innovation & learning	.442**	.541**	.696**	.655**	.787**	1	
(7) Competitive advantage	.236**	.317**	.276**	.226**	.398**	.328**	1

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

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

The multiple regression was used to test the relationship between SPMS design and competitive advantage. Multiple regression is based on correlation but allows a more sophisticated exploration of the interrelationship among a set of variables (Pallant, 2001). Before conducting an analysis, an effort was made to ensure that the assumptions of regression analysis such as normality, multicollinearity, outliers, linearity and homoscedasticity were not violated. Two analyses were done; (1) regression of overall (total) independent variable and dependent variable and (2) regression of each dimension of SPMS design and competitive advantage. Table 7 presents the regression results of the overall SPMS design and competitive advantage.

Table 7: The Regression Models of SPMS Design with Competitive Advantage

variable	Coeff.(B)	Std. Error	Beta	Sig.
Intercept	2.530	.301		
Design	.338	.077	.345***	.000
R <sup>2</sup>	.119			
Adj. R <sup>2</sup>	.113			
F	19.279			
df	(1,143)			

The results in Table 7 show that the overall SPMS design is positively and significantly related to competitive advantage. The results indicate that 11.9 percent ( $R^2 = .119$ ) of the organisation competitive advantage is explained by the independent variable. The  $R^2$  is statistically significant with  $F = 19.279$  and  $p < .001$ .

Table 8 shows the result of regression for each dimension of SPMS design with overall organisation competitive advantage. The results indicate that both financial and non-financial explain 13 percent ( $R^2 = .130$ ) variability of organisation competitive advantage. Non-financial had the strongest unique contribution ( $b = .330$ ) to organisation competitive advantage and is statistically significant,  $F(2,142) = 10.584$ ,  $p < .01$ . The relationship of financial and organisation competitive advantage is positive but is not significant ( $b = .049$ ,  $p > .10$ ). The results confirmed Hypothesis 2 which stated that a SPMS design which consists of financial and non-financial measure is positively related to organisational competitive advantage.

Table 8: The Regression Models of Each Dimensions of SPMS Design with Competitive Advantage

Variables	Coeff.(B)	Std. Error	Beta	Sig.
Intercept	2.753	.344		
Financial	.050	.097	.049	.609
Non-financial	.250	.072	.330***	.001
R <sup>2</sup>	.130			
Adj. R <sup>2</sup>	.117			
F	10.584			
df	(2,142)			

### Discussion

From the results of multiple regression analysis, it is clear that SPMS design comprising a combination of financial and non-financial measures has a positive and significant impact on organisation competitive advantage. The results are in line with the argument by Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991), Kaplan and Norton (1992), Simons (1999, 2000), Chenhall (2005) who found that SPMS plays an important role in enhancing organisation competitive advantage. SPMS is very crucial since an effective SPMS is an important key to ensuring the successful implementation of an organisation's strategy (Fitzgerald, Johnston, Brignall, Silvestro, & Voss, 1991), and also acting as a signalling and learning device (Simons, 1999). Competitive advantage can be achieved through building organisational capabilities that are difficult to be imitated by competitors. SPMS is designed to help organisations achieve their organisational goals and objectives. SPMS can play this role by ensuring that the core values, behavioural constraints, information flows are integrated and communicated throughout the organisation. Thus employees will understand what is important and what is to be avoided and will participate in creating organisation competitive advantage. One respondent wrote that the SPMS is a powerful tool to monitor the performance of the company and since it is cascaded down to the employee within the organization, it will help to monitor the performance as well as for computing compensation and rewards.

The results are also in line with the suggestion by Fawcett, Smith, and Cooper (1997), who suggest that it is very important for organisations to understand the role and influence of information and measurement practices to improve organisational competitiveness. They believe that initiatives to develop operational excellence to support strategic choices are potentially influenced by the measures used to monitor the organisation's value-added activities.

One of the interesting findings is that the relationship of financial measures and competitive advantage was found as not statistically significant. The findings provide support for the criticism in the earlier literature that claimed that financial measures are inappropriate, not adequate and act as lagged indicators (see for example Kaplan, 1983; Eccles & Pyburn, 1992; Ghalayini, Noble, & Crowe, 1997). However, organisations continue to use financial measures as they are the traditional measures to determine the ability of an organisation to survive. Furthermore, the shareholders always give priority to financial performance. One of the respondents commented that financial indicators are the most used by the top management to assess the performance of the company as they reflect the past and current health of the company as well as being perceived as its capability to sustain in the future. The financial indicators will also eventually reflect the efficiency of the operations, i.e. service delivery supremacy and employee productivity in delivery service or product. This might underline the reasons why financial measures remain important despite their limitations.

The results are also similar with the findings from prior studies such as by Gosselin (2005), Ruzita, Daing Nasir and Yuserrie (2006), Abdel-Maksoud, Dugbale, and Luther (2005) who reported that the use of multi-dimensional measures consists of financial and non-financial measures. The study by Gosselin (2005) and Ruzita, Daing Nasir and Yuserrie (2006) also found that financial measures are viewed as the most important measures compared to non-financial. However, unlike Gosselin (2005) and Ruzita, Daing Nasir and Yuserrie (2006), this study focussed on both the manufacturing and service industries therefore the results should be interpreted more carefully. As one of the respondents mentioned, the SPMS of each company or industry is not the same, it depends on its nature of operation, demand/supply and other behavioural issues.

## **Conclusion**

This paper sought to examine the relationship between SPMS design and competitive advantage. To test this relationship, the study conducted a mail survey of Malaysian companies listed on Bursa Malaysia.

The results of this study provide an insight into SPMS as practised by Malaysian companies. There are four conclusions that can be drawn from this study. First,

the findings showed that these companies adopted financial and non-financial measures. Second, the financial dimension is viewed as the most extensively used followed by customer satisfaction, flexibility, quality, innovation and learning and resource utilisation. Third, the study revealed that the adoption of multi-dimensional SPMS, i.e. a combination of financial and non-financial is positively and significantly associated with competitive advantage. Fourth, for the relationship of each dimension and sub-dimension of SPMS design and competitive advantage, non-financial had a positive and significant contribution on competitive advantage, while financial, is reported as not significant.

One of the major contributions of this study lies in the identification of the performance measures adopted by Malaysian companies. This study addressed those Malaysian companies that had adopted multi-dimensional SPMS consisting of financial, quality, flexibility, resource utilisation, customer satisfaction and innovation and learning. This shows that companies do not limit their performance measurement to the dimensions suggested in the performance measurement model such as balanced scorecard, but, modify their performance measurement based on their requirement. This study also contributes to the strategic management accounting by demonstrating the impact of SPMS on enhancing organisational competitive advantage. While uncertainty remains regarding the performance effects of SPMS, the results of this study could trigger more research in this area in the future. This study also contributes to the body of knowledge by identifying the variables to measure competitive advantage. The study operationalises competitive advantage based on profitability, sales growth, market share, customer loyalty and customer satisfaction as suggested by Day and Wesley (1988) and Fitzgerald, Johnston, Brignall, Silvestro, and Voss, 1991. There is not much evidence in the literature regarding the measurement of competitive advantage. Thus, future research could use the items suggested in this study to confirm whether these items can be used to operationalise competitive advantage.

The results have several implications to the SPMS literature and managerial practices. The findings provide evidence that there is inconsistency between theory and practice. While the literature makes strong recommendations concerning the importance of non-financial factors, the results found that Malaysian companies still viewed financial measures as being more important than non-financial. The results support that the adoption of multi-dimensional performance measures is necessary to keep paces with changes in the business environment and enhance organisation competitiveness. To the managerial practices, the results provide evidence regarding the role of SPMS design to help organisations improve competitive advantage. There is a need for the top management to pay more attention to the adoption of non-financial performance measures to help organisations translate strategy to action.



In addition to looking at the design, future research might consider the issue of the use of SPMS. According to Ferreira & Otley (2006), many previous studies concerning management control systems including SPMS, have focused on the issue of design but less on the inter-relationship between design and the use of SPMS. As suggested by Simons (1999), it might be interesting to look at how organisations use SPMS whether diagnostically or interactively. According to Simons (1999), there is a link between the way that organisations achieve competitive advantage and the use of their SPMS. An interactive use of SPMS can foster organisational capabilities by focusing organisational attention on strategic priorities and stimulating dialogue hereby helping to enhance organisation competitive advantage.

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