Selection Approach to Assessing the Alignment between Business Strategy and Use of Multiple Performance Measures in Malaysian Manufacturing Firms

Ruzita Jusoh*, Daing Nasir Ibrahim, Yuserrie Zainuddin

Abstract

This paper reports the results of an empirical investigation into alignment, by way of the selection approach, combining Miles and Snow's business strategies and use of multiple performance measures. The selection approach (Drazin & Van de Ven, 1985) defines fit (or alignment in this paper) in terms of predictable correlations between Miles and Snow's business strategies and the use of multiple performance measures. Utilizing the four balanced scorecard (BSC) perspectives of performance measures, the correlational analysis provides empirical evidence that the usage of three perspectives of the BSC measures, namely, customer, internal business process, and innovation and learning, are significantly correlated with the degree to which firms emphasize prospector strategy and analyzer strategy. However, the usage of financial measures is not significantly correlated with the degree to which firms emphasize prospector strategy and analyzer strategy. No evidence is found of an alignment between the usage of all perspectives of the BSC measures and the degree to which firms emphasize defender strategy.

Keywords: Balanced Scorecard; Performance Measures; Strategy; Alignment
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1. Introduction

The shortcomings of the traditional management accounting and performance measurement systems have become painfully obvious in recent

* Corresponding author. Ruzita Jusoh is a Senior Lecturer at the Faculty of Business and Accountancy, University of Malaya, 50603 Kuala Lumpur, Malaysia, e-mail: geee@um.edu.my. Daing Nasir Ibrahim is a Professor at the School of Management, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia, e-mail: dainasir@usm.my. Yuserrie Zainuddin is an Associate Professor at the School of Management, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia, e-mail: yuserrie@usm.my.

years. Among other factors, this is due to a new manufacturing environment and increasing domestic and global competition. It is therefore a challenge for organizations to deemphasize the use of simple, aggregate, short-term financial measures and to develop indicators that are more consistent with long-term competitiveness and profitability (Kaplan, 1983). Consequently, there is considerable interest in the role of strategic performance measurement systems (SPMS), such as the balanced scorecard (BSC), in assisting managers to develop competitive strategies (Chenhall, 2005). The BSC has been developed to provide a framework consisting of multiple performance measures that supplement financial measures with those of customer, internal business process, and innovation and learning (Kaplan & Norton, 1992). Also, the issue of alignment between strategy and performance measures provides another problem with the performance measures used in many organizations. However, it seems that this problem can be overcome by the use of the BSC where it provides the articulation of linkages between performance measures and strategic objectives (Banker, Janakiraman & Konstans, 2001). According to Chenhall and Langfield-Smith (1998, p. 243) "strategic priorities should be supported by appropriate and effectively implemented manufacturing processes and information systems, including those providing management accounting information."

Despite an increasing interest from practitioners and researchers in the BSC and multiple performance measures, large scale empirical findings on these subjects are still scarce worldwide, let alone in Malaysia. Thus, in the context of Malaysia, this study serves as an exploratory research. The main objective of this study is to add to the body of knowledge in the area of multiple performance measures, BSC measures in particular, by providing empirical evidence on the alignment between Miles and Snow's (1978) business strategy and the use of multiple performance measures using the BSC framework. The alignment will be assessed using the selection approach to fit as proposed by Drazin and Van de Ven (1985). In the selection approach, fit is defined in terms of predictable correlations between pairs of organizational variables and these correlations should be strongly or significantly correlated. Performance is notably absent in the selection approach since it is assumed that only good performers survive to be observed. Correlational analysis is normally used to test the presence of fit under the selection approach.

The next section of this paper discusses literature review on the business strategy-performance measures relationship and ends with the hypotheses development. This is followed by a section on research methodology describing the sample and instruments used to measure the variables. The subsequent section focuses on the results of the correlational analysis along with their interpretation. Finally, discussion of the results is presented along with the limitations of the study together with suggestions for future research as well as the conclusion.

2. Literature Review and Hypotheses Development

The literature on management accounting and control systems has highlighted that strategy can heavily influence the choice of performance measures to be used. According to Ittner and Larker (1998), a significant determinant of the weight placed on non-financial measures includes the extent to which the firm follows an innovation-oriented strategy. In examining the related issues, Govindarajan and Gupta (1985) found that the benefits from non-financial compensation criteria are contingent on a business unit's strategy, where a greater reliance on long-run non-financial criteria (for example, sales growth, market share, new product and market development) indicating a stronger positive impact on effectiveness in units following a "build" strategy than in those following a "harvest" strategy. Following these findings, it justifies why a prospector strategy having a "build" mission uses more non-financial information or measures. Also, Ittner *et al.* (1997) provide evidence that non-financial measures play an ever increasing role in the managers' performance evaluation, where they noted that prospectors (firms with long-run focus) tend to rely more on non-financial measures than do defenders (firms with a short-run focus).

This study contends that the BSC framework can provide a useful tool in translating strategic requirements of prospector strategy, defender strategy, and analyzer strategy into suitable and relevant performance measures. As Miles and Snow's strategic types address three dimensions of the "adaptive cycle" known as the entrepreneurial, the engineering, and the administrative, these dimensions seem to fit well with the four perspectives of the BSC measures: financial, customer, internal business process, and innovation and learning. All four perspectives of BSC measures play an important role in providing solutions to entrepreneurial, engineering, and administrative problems. This provides one of the reasons why Miles and Snow's strategic typology was chosen in this study. The entrepreneurial problem deals with how to choose a product-market domain: a narrow, broad or segmented domain. It seems that it is an attempt to satisfy the customer at large and thus requires customer and marketing orientation. Thus, in solving entrepreneurial problems, the customer perspective of the BSC provides an avenue for the solution as it makes sense to the marketplace customer. The engineering problem deals with the selection of an appropriate technology for production and distribution: cost-efficiencies, flexibility or innovation. This problem seems to focus on internal processes. Thus, internal business processes and innovation and learning perspectives of the BSC play an important role in providing solutions to the engineering problem. This is because the internal business processes perspective focuses on integrated business processes, which encompass several cross-functional activities from several organizational departments such as order fulfilment, procurement, research and development, production planning and control,

warranty and repair activities and the processing of payments, while the innovation and learning perspective focuses on a company's ability to innovate, improve, and learn that ties directly to the company's value (Kaplan & Norton, 1992). According to Miles and Snow (1978), the administrative problem deals with the selection of areas for future innovation (leading aspect) and rationalization of structure, control and processes already developed (lagging aspect). Thus, in the context of control, the financial perspective of the BSC would play a pivotal role in maintaining stability and efficiency for a narrow and stable product-market strategy.

This study conceptualized the financial perspective as having lagging indicators that are measured in financial terms, which provide bottom-line outcomes of the organization. Key measures under the financial perspective include operating income, sales growth, sales revenue, cash flows, and return-on-investment (ROI). Customer perspective is conceptualized as having leading measures that are measured in non-financial terms and that can create and deliver value for the customers so that their needs are satisfied. Measures included under customer perspective are customer satisfaction, customer response time, number of warranty claims, and number of customer complaints. Internal business process perspective focuses more on the manufacturing operations process that stresses efficiency, time, and flexibility. This perspective embraces performance measures such as materials efficiency, labour efficiency, and production output, as well as cycle time and flexibility measures. Finally, this study conceptualized innovation and learning perspective as leading measures that focus on organizational learning and innovation. Note that this study adopted a slightly different definition of innovation and learning perspective from what was proposed by Kaplan and Norton in 1996. This means that the BSC framework used was more inclined towards the earlier version of BSC framework proposed by Kaplan and Norton in 1992. The inclusion of innovation measures in the innovation and learning perspective is relevant to this study in examining the relationship between the use of performance measures and the emphasis of Miles and Snow's strategic types. Hence, performance measures under innovation and learning perspective would include training and development of employees, research and development, new product development, and employee satisfaction.

Literature seems to support the proposition stating that firms emphasizing prospector strategy use customer and innovation and learning measures extensively. Prospectors evaluate performance in terms of effectiveness, which comprises measures such as new product success, percentage of revenues derived from new products or new customers, market development, and sales or market share growth (Olson & Slater, 2002). According to Shortell and Zajac (1990), prospectors give their greatest attention to market research because they must continually scan their

external environment to locate and exploit new product-market opportunities. Prospectors, being first-movers or pioneers, have the opportunity to achieve a sustainable cost advantage from learning or experience effects (Slater & Narver, 1993). Also, the prospector's focus is on solving entrepreneurial and administrative problems by emphasizing creativity and flexibility over efficiency in order to respond quickly to changing market conditions and take advantage of new market opportunities (Miles & Snow, 1978). Firms emphasizing prospector strategy are expected to be more market-driven and thus place considerable emphasis on customer measures as well. Miles and Snow contended that "the prospector draws its top managers mostly from the ranks of marketing and product development, the two areas of primary strategic importance (p. 60)." Studies by Thomas *et al.* (1991), Hambrick (1983), Snow and Hrebiniak (1980), and Connant *et al.* (1990) seem to provide a general and common conclusion that prospector strategy tends to be associated more with R&D, new product introduction, and marketing efforts compared to analyzer strategy and defender strategy.

A study by Thomas *et al.*, (1991) shows that prospectors have a higher proportion of R&D expenditure, broader product domains and a greater number of new product introductions. On the other hand, defenders exhibit higher levels of employee productivity (as a result of high efficiency). These findings are parallel to the conclusions of Hambrick's (1983) study. Hambrick (1983) states that the significantly higher product R&D effort and marketing effort expended by prospectors is supportive of their image as firms that devote more resources than analyzers and defenders toward developing more new products. Also, he finds that the marketing expenses / sales ratio tends to be greater for prospectors than for defenders and that prospectors tend to spend more than defenders on motivating, informing, and educating its sales force and customers. These findings confirm Miles and Snow's proposition that 'the prospectors' prime capability is that of finding and exploiting new product and market opportunities' (Miles & Snow, 1978, p. 58). Earlier, Snow and Hrebiniak (1980) found that top managers in prospector organizations perceive marketing and marketing related competencies to be among their four highest-rated strengths and place these elements at a greater degree than other strategy types. Similarly, Connant *et al.* (1990) found that marketing competencies of prospectors are superior to those of analyzers, defenders and reactors.

The defender's focus is on solving the engineering problem by looking at ways of how to produce and distribute goods or services as efficiently as possible through highly cost-efficient core technology and highly efficient administrative systems (Miles & Snow, 1978). This is supported by Slater and Narver's (1993) study where relative cost is found to be significantly associated with the profitability performance of defenders. Also, Walker

and Ruekert (1987) note that the defender's focus on low cost requires close attention to operational details, including the relentless pursuit of cost economies and productivity improvements through standardization of components and processes, routinization of procedures and the integration of functional activities across business units. Compared to prospectors, defenders are rarely able to offer employees opportunities for advancement based on organizational growth (Slater & Narver, 1993). From Hambrick's (1983) study, it was apparent that defenders seem to focus on measures related to cost control, price cutting, capacity utilization, and production efficiency.

Moreover, results of factor analysis from Dess and Davis's (1984) study reveal that competitive methods that are marketing oriented (e.g. brand identification and innovation in marketing techniques and methods) load highly on differentiation strategy, while those that are production oriented (e.g. operating efficiency and product quality control) predominate an overall low cost strategy. These findings support the prospector and defender strategy as being marketing oriented and production oriented respectively. Therefore, measures like price premium, perceived quality relative value, brand awareness, speed of new product introduction, rate of start-up, timeliness of product delivery, quality and customer satisfaction will be suitable for the prospector strategy, while those financial and efficiency measures that are mostly cost / accounting-based like ROI, operating income, cash flows, manufacturing costs, materials and labour efficiency will be suitable for the defender strategy. On the whole, the defender is geared toward the maximization of internal efficiency, thus, it is expected that firms emphasizing a defender strategy will use financial and internal business process measures extensively.

According to Miles and Snow, analyzers being early followers, take an imitate approach to new product development and pursue effectiveness "through the well-conceived addition of new products…" (p. 77). Also, "… marketing and applied research are the most influential members of the dominant coalition in an analyzer…" (p. 79). In another note, they point out that "successful imitation by an analyzer is accomplished through extensive marketing surveillance systems" (p. 72). Later, Snow and Hrebiniak (1980) argue that analyzers, because of their tendency to imitate successful product and market innovations of prospectors, tend to emphasize selling and have a distinctive competence in marketing / selling. Subsequently, McDaniel and Kolari (1987) found that marketing officers of prospector and analyzer banks viewed new product development, promotional, and marketing research activities as being more important to organizational strategy than do marketing officers of defender banks. Meanwhile, Slater and Narver (1993) found that market and customer orientation is also essential to the success (profitability) of both prospectors and analyzers.

Hence, in view of the above arguments, similar to firms emphasizing prospector strategy, firms emphasizing analyzer strategy are also generally expected to view customer and innovation and learning measures as being very important and in turn will use them extensively. Furthermore, the analyzer-type strategy is located between defenders and prospectors, considered as a hybrid strategy that greatly focuses both on aspects of innovation and efficiency. Therefore, information needs of analyzers will be a combination of those identified for prospectors and defenders (Miles & Snow, 1978). In fact, McDaniel and Kolari (1987) found no significant difference between prospectors' and analyzers emphasis on new product development, while Shortell and Zajac (1990) found no significant differences in the actual number of new services offered by health care organizations adopting prospector and analyzer strategy.

Furthermore, Miles and Snow (1978, p. 70) state that "the analyzer must be able to respond quickly when following the lead of key prospectors while at the same time maintaining operating efficiency in its stable product and market areas". In terms of technology, the analyzer has a dual technological core: technological stability and technological flexibility. For technological stability, "analyzer's technology bears a strong resemblance to the defender's technology" where it "exhibits high levels of routinization, formalization, and mechanization in an attempt to approach cost efficiency" (p. 73). For technological flexibility, analyzer's technology resembles the prospector's technological orientation producing new product designs. In this regard, "the analyzer's technological system is characterized by a moderate degree of technical efficiency" (p. 73). In terms of control, the analyzer must manage fundamentally different control mechanisms that satisfy both efficiency and effectiveness.

Based on the foregoing discussion it can be implied implicitly that BSC measures usage of firms emphasizing analyzer strategy will be a balance between those of firms emphasizing prospector strategy and those of defender strategy.

Hence, the following main and sub-hypotheses are put forward. These hypotheses also reflect the hypotheses of fit for selection approach where correlational analysis is used to test them:

H1 **:** *The extent to which a firm emphasizes a given business strategy is associated with the extent to which it uses appropriate performance measures.*

H1a **:** *The greater the emphasis on prospector strategy, the lower is the usage of financial measures.*

H1b **:** *The greater the emphasis on analyzer strategy, the greater is the usage of financial measures.*

H1c **:** *The greater the emphasis on defender strategy, the greater is the usage of financial measures.*

H1d : *The greater the emphasis on prospector strategy, the greater is the usage of customer measures.*

H1e : *The greater the emphasis on analyzer strategy, the greater is the usage of customer measures.*

H1f : *The greater the emphasis on defender strategy, the lower is the usage of customer measures.*

H1g: *The greater the emphasis on prospector strategy, the lower is the usage of internal business process measures.*

H1h: *The greater the emphasis on analyzer strategy, the greater is the usage of internal business process measures.*

H1i : *The greater the emphasis on defender strategy, the greater is the usage of internal business process measures.*

H1j : *The greater the emphasis on prospector strategy, the greater is the usage of innovation and learning measures.*

H1k: *The greater the emphasis on analyzer strategy, the greater is the usage of innovation and learning measures.*

H1l : *The greater the emphasis on defender strategy, the lower is the usage of innovation and learning measures.*

3. Methodology

3.1. Sample

A mail-survey of Malaysian manufacturing firms was conducted in the second half of 2003. This method was chosen as it enables the researcher to survey a large random sample of a population at a relatively low cost. A mail survey also puts less pressure on an immediate response and provides the respondents with a feeling of anonymity (Gosselin, 1997). A sample of 975 manufacturing firms was randomly selected from the directory of Federation of Malaysian Manufacturers (FMM) year 2003. The sample was limited to manufacturers located in Peninsular Malaysia with at least 25 employees and an annual sales turnover of at least RM10 million. The reason for choosing firms with at least 25 employees was to have enough firms representing small and large firms. As the usage of performance measures is common in any organization, adoption of and knowledge on BSC is not a prerequisite for these targeted firms. This is because the term performance measure, not BSC, was used throughout the questionnaire. In addition, the use of Key Performance Indicators (KPIs) is quite common among selected firms, which may contain some elements of BSC measures. Thus, when conceptualizing multiple performance measures similar to the BSC framework, the researcher perceives that a firm often build its scorecard on the base already established by classifying its existing measurements into the four BSC perspectives. A structured-questionnaire was sent to top managers of these 975 manufacturing firms. Of these 975 manufacturers, only 133 questionnaires were returned. Of these, 12 were returned either

completely unanswered or partly answered. After data cleaning and checking for outliers, 1 response was discarded. Thus, the remaining 120 responses were used in the data analysis of this study, making a usable response rate of 12.3%. The low return rate for a mail-survey is quite common in the case of the Malaysian environment. This may be due to the sensitive and confidential nature of the information requested. In order to address the possibility of response bias, a comparison of early and late responses in terms of business strategy and BSC measures was performed. To do this, independent sample T-tests were conducted. As can be seen from Table 1, except for defender strategy, overall, there are no significant differences ($p > 0.05$) in the mean scores on the business strategies and the BSC measures between the early and late responses. Thus, there is reason to believe that non-response bias is not severe.

Table 1. Results of Test of Difference (T-Test) of Early and Late Response on Research Variables

Variables	**Early response (n = 39)**		**Late response (n = 81)**			
	Mean	**SD**	**Mean**	**SD**	**t**	**P**
Business strategy:						
• Prospector	5.28	0.81	5.38	0.86	-0.57	0.57
• Analyzer	5.72	0.53	5.76	0.63	-0.33	0.75
• Defender	4.61	0.54	4.83	0.55	-2.12	0.04
Balanced scorecard measures:						
• Financial	6.11	0.72	5.91	0.81	1.33	0.19
• Customer	5.30	1.05	5.34	1.10	-0.17	0.87
• Internal Business Processes	5.36	1.00	5.27	1.15	0.42	0.68
• Innovation and Learning	3.74	1.72	4.11	1.49	-1.22	0.22
• Overall BSC	5.18	0.81	5.23	0.86	-0.18	0.86

3.2. Variable Measurements

Miles and Snow's (1978) strategic type comprising prospector, analyzer, and defender strategy is used in this study. This strategic type is academically well accepted and internally consistent (Connant *et al*., 1990; Shortell & Zajac, 1990). Rather than the normal paragraph description approach, the measurement of business strategy was accomplished using the newly developed multi-item scale (Parnell, 1997). This approach can be referred to as a multivariate measurement of strategy containing a broad set of strategic variables (Hambrick, 1980). There are a total of 48 statements whereby each respondent was required to indicate whether they agree or disagree with

each statement concerning their organization by using a seven-point Likert scale ranging from "1= Strongly disagree", "4= Neither agree nor disagree", to "7= Strongly agree". The terms Prospector, Analyzer, Defender were omitted from the questions so there was no indication of whether the types represent a good or poor strategy. To measure the strategy, an overall evaluation of the degree to which the firm emphasizes a given strategy was derived by taking the mean score across the twelve items. The approach of taking mean or average scores to measure strategy is consistent with Segev's (1987) and Miller's (1988) studies. As shown in Table 4, a reliability check using Cronbach alpha (Cronbach, 1951) indicates that the alpha coefficients for all business strategies are within the acceptable range (prospector = 0.89, analyzer = 0.86, and defender = 0.56). According to Nunnally (1978), alpha coefficients of 0.50 to 0.60 are acceptable for exploratory research.

3.3. Multiple Performance Measures Usage

Using the BSC framework, 29 performance measures comprising the four dimensions suggested by Kaplan and Norton (1992) were used to assess multiple performance measures usage. These measures represent generic measures that are commonly used by manufacturing firms. Twenty items were taken from Hoque *et al.* (2001) which were originally adopted from Kaplan and Norton (1992) and the remaining nine items were self-constructed. Table 2 presents all the 29 items under the four dimensions. The respondents were required to indicate the extent of their firm's use of each measure using a seven-point Likert-type scale ranging from 1 (not at all), 4 (to some extent), to 7 (to a greater extent).

All 29 items were factorized using principal components analysis (PCA) and with varimax rotation to determine whether they could be grouped according to the BSC framework. To assess the factorability of the data, the Bartlett Test of Sphericity (Bartlett, 1954) and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were performed. Results reveal that the Bartlett Test of Sphericity reached statistical significance (Chi-Square = 929.65, $p < .01$) and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.76, exceeding the recommended value of 0.60 (Kaiser, 1974). The criteria used to identify and interpret factors were similar to that used by Igbaria *et al.* (1995) where each item should load 0.50 or greater on one factor and 0.35 or lower on the other factor in order to avoid a situation of cross-loading. The cut-off point of 0.50 or greater for factor loading is consistent with the guidelines for identifying significant factor loadings based on sample size as proposed by Hair *et al.* (1998). After several runs of factor analysis, a total of 12 items were deleted from the analysis. These items were: customer loyalty, rate of material scrap loss, EVA, ROI, cash flows, manufacturing costs, employee training, employee satisfaction, materials efficiency, setup and changeover time, defect rate, and market

share. Five component factors with eigenvalues exceeding 1 that explain a total of 71.9% of the total variance in the data, were extracted (see Table 3)

Four items from component 1 (percentage of shipments returned, number of overdue deliveries, number of warranty claims, and number of customer complaints) and three items from component 5 (on-time delivery, customer response time, and survey of customer satisfaction) essentially capture the customer dimension. Therefore, these two components are combined together to represent customer. This action is consistent with the *a priori* expectation of the four perspectives identified by Kaplan and Norton (1996) and Hoque and James (2000). A single average score was then calculated for these two components. Four items capturing the internal business process dimension from component 2 (manufacturing lead time,

Table 2. BSC Measures Usage

Dimensions	**Items**
Financial	Sales Revenue* Operating income Sales growth Manufacturing costs* Cash flows* Return on investment (ROI) Economic value added (EVA)*
Customer	On-time delivery Customer response time Number of customer complaints Survey of customer satisfaction Market share Customer loyalty* Number of overdue deliveries % of shipments returned Number of warranty claims
Internal Business Processes	Manufacturing lead time/cycle time Defect rate* Ratio of good output to total output Materials efficiency variance Labour efficiency variance Rate of material scrap loss Setup and changeover time* Flexibility (e.g. material flexibility, changeover flexibility)*
Innovation and Learning	Number of new product launches Time-to-market new products Number of new patents Employee satisfaction Employee training*

* Self-constructed

Table 3. Results of Factor Analysis for the BSC Measures

	Component				
	1	2	3	4	5
	Customer	Internal Business Processes	Innovation and Learning	Financial	Customer
Eigenvalues	**5.58**	2.24	1.84	1.42	1.15
Percent of Variance Explained (71.9)	**17.95**	14.53	14.44	12.77	12.20
Item Loading					
% of shipments returned	**0.840**	0.210	0.041	0.125	0.067
Number of overdue deliveries	**0.839**	0.110	0.066	0.154	0.183
Number of warranty claims	**0.817**	0.059	0.241	-0.100	0.086
Number of customer complaints	**0.777**	0.278	-0.043	0.167	0.219
Manufacturing lead time/cycle time	0.171	**0.836**	0.101	0.118	0.146
Ratio of good output to total output	0.042	**0.830**	0.083	0.096	0.202
Labour efficiency variance	0.314	**0.659**	0.164	0.198	0.176
Flexibility	0.244	**0.540**	0.324	-0.042	0.176
Time-to-market new products	0.012	0.186	**0.875**	-0.097	0.064
Number of new product launches	0.187	0.063	**0.849**	0.112	0.082
Number of new patents	0.038	0.158	**0.815**	0.019	0.107
Sales Revenue	0.031	0.139	-0.003	**0.910**	0.021
Sales growth	0.005	0.039	0.169	**0.840**	0.183
Operating income	0.269	0.112	-0.156	**0.640**	0.096
On-time delivery	0.192	0.232	0.014	0.102	**0.840**
Customer response time	0.110	0.094	0.151	0.234	**0.811**
Survey of customer satisfaction	0.150	0.245	0.114	-0.008	**0.654**

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 4. Cronbach Alpha Values of Variables

Variables	Cronbach Alpha
Business Strategy:	
Prospector	0.89
Defender	0.56
Analyzer	0.86
Overall BSC	0.86
Financial Measures	0.75
Customer Measures	0.84
Internal Business Processes Measures	0.80
Innovation and Learning Measures	0.85

ratio of good output to total output, labour efficiency variance, and flexibility) were named as internal business process. Three items associated with the innovation and learning dimension from component 3 (time-to-market new products, number of new product launches, and number of new patents) were named as innovation and learning. Finally, three items from component 4 (sales revenue, sales growth, and operating income) were named as financial. As shown in Table 4, a reliability check for the four dimensions produced Cronbach alpha values are all above the lower limits of normal acceptability (financial = 0.75, customer = 0.84, internal business process = 0.80, and innovation and learning = 0.85). To facilitate the analysis, the mean score for each dimension and the overall four dimensions was calculated to represent the extent of BSC measures usage.

4. Results

4.1. Sample Profiles

Table 5 provides the profile of the responding firms that constitute a broad spectrum of business activities. The majority of the firms are from electrical and electronics product manufacturing (25); followed by iron, steel, and metal product manufacturing (18); food and beverage manufacturing (13); and rubber and plastic product manufacturing (11). Respondents in the paper, printing, packaging, and labelling product manufacturing; chemicals and chemical products manufacturing; and pharmaceutical, medical equipment, cosmetics, toiletries, and household products manufacturing were seven each. Furniture and wood related product manufacturing had five respondents, while textile, clothing, footwear, and leather manufacturing and machinery and equipment manufacturing had four respondents each. The firms with an annual sales turnover greater than RM21 million was 82.3%.

Table 5. Profile of Responding Firms (N=120)

Variables	Frequency	Valid Percent
Primary business activity:		
Food and beverage manufacturing	13	10.9
Textile, clothing, footwear, and leather manufacturing	4	3.4
Furniture and wood related product manufacturing	5	4.2
Paper, printing, packaging, and labelling product manufacturing	7	5.9
Rubber and plastic product manufacturing	11	9.2
Chemicals and chemical product manufacturing	7	5.9
Iron, steel, and metal product manufacturing	18	15.1
Machinery and equipment manufacturing	4	3.4
Electrical and electronics product manufacturing	25	21.0
Pharmaceutical, medical equipment, cosmetics, toiletries, and household products	7	5.9
Other manufacturing	18	15.1
Total	119	
Annual sales turnover:		
Less than RM10 mil	4	3.4
RM10 - RM20 mil	17	14.3
RM21 - RM50 mil	33	27.7
RM51 - RM100	30	25.2
Above RM100 mil	35	29.4
Total	119	
Total gross assets:		
Less than RM50 mil	54	47.4
RM50 – RM70 mil	20	17.5
RM71 – RM100 mil	14	12.3
RM101 – RM150 mil	5	4.4
Above RM150 mil	21	18.4
Total	114	
Total number of employees:		
Less than 100	13	10.8
100 – 200	30	25.0
201 – 400	40	33.3
401 – 600	16	13.3
Above 600	21	17.5
Total	120	
Years in operation:		
Less than 5 years	3	2.5
Between 5 to 10 years	16	13.4
More than 10 years	100	84.0
	119	

Note: In some cases, the total does not add to 120 due to non-response

Table 6. Profile of Respondents (N=120)

Variables	Frequency	Valid Percent
Job designation:		
CEO	2	1.8
Managing Director	11	9.7
General Manager	29	25.7
Director	11	9.7
Marketing Manager	4	3.5
Human Resource / personnel Manager	10	8.8
Senior Manager	8	7.1
Financial controller / accountant	11	9.7
Others	27	23.9
	113	
Years in the position:		
Less than 5 years	46	39.3
Between 5 to 10 years	37	31.6
More than 10 years	34	29.1
	117	
Gender:		
Male	105	87.5
Female	15	12.5
	120	

Note: In some cases, the total does not add to 120 due to non-response.

About 30.4% of the responding firms have adopted BSC as a performance measurement system either wholly (8.7%) or partially (21.7%), while the remaining 69.6% have not. The majority of the firms have total gross assets of less than RM50 million (52.6%), while those with total gross assets above RM150 million is 18.4%. The bulk of firms have a total number of employees of 400 or less (69.1%) and those with greater than 200 employees make up about 64.1% of the firms. About 84% of the firms have been in operation for more than 10 years. As can be seen from Table 6, approximately, 47% of the respondents hold a position in upper management (CEO, managing director, general manager, and director), with the remaining 53% divided between marketing manager, resource / personnel manager, senior manager, financial controller / accountant and others. Those in the "others" category are at least managers. The majority of the respondents were general managers (25.7%). The information also shows that the respondents were quite experienced with 60.7% of them being in the position for at least five years and most of them were males (87.5%).

4.2. Descriptive Statistics

Table 7 presents the descriptive statistics for all variables. It appears that the respondents placed the majority weight on usage of financial measures (mean = 5.98), followed by customer measures (mean = 5.33), internal business process measures (mean = 5.30), and innovation and learning measures (mean = 3.99). These results are consistent with the survey by the consulting firm Towers Perrin in the U.S, where the highest emphasis is given to financial measures, followed by customer measures, internal business process measures and learning and growth measures (Lingle & Schiemann, 1996). Similar findings were also reported by Anand *et al.* (2005) among Indian companies. This implies that financial measures are used to a greater extent while learning and growth measures (or innovation and learning in this study) are used to a lower extent among the firms surveyed. The highest usage of financial measures among manufacturing firms is also consistent with an experimental study conducted by Lipe and Salterio (2000) where they found that managers had cognitive difficulties working with measures to evaluate performance that were specific to a situation (unique measures), and, therefore, preferred measures that were the same for different situations (common measures). Unique measures are essentially non-financial measures while common measures are essentially financial measures. Among the business strategies, prospector received the highest variation in scores although its mean is slightly lower than analyzer strategy, while defender strategy is the lowest among them. This phenomenon can be linked to the nature of the manufacturing industry. The manufacturing industry seems to be the most affected by the globalization processes. As such, it seems inevitable for firms within this industry to focus on product-market and innovation in order to compete domestically and globally. Hence, there is greater emphasis of prospector strategy and analyzer strategy than that of defender strategy.

Table 7. Descriptive Statistics (N = 120)

	Minimum	Maximum	Mean	Std. Deviation	Theoretical Range
BSC measures:					
Financial measures	3.67	7.00	5.98	0.78	1.00 – 7.00
Customer measures	2.57	7.00	5.33	1.08	1.00 – 7.00
Internal business process measures	2.00	7.00	5.30	1.10	1.00 – 7.00
Innovation and learning measures	1.00	7.00	3.99	1.57	1.00 – 7.00
Overall BSC measures	3.17	7.00	5.20	.82	1.00 – 7.00
Business Strategy:					
Prospector	3.25	6.83	5.35	.85	1.00 – 7.00
Analyzer	4.00	6.92	5.75	.60	1.00 – 7.00
Defender	3.50	6.25	4.76	.55	1.00 – 7.00

4.3. Test of Hypotheses using Correlational Analysis

Hypothesis 1 and its sub-hypotheses were developed in parallel to the selection approach to fit as proposed by Drazin and Van de Ven (1985). They defined fit in terms of predictable correlations between pairs of organizational variables. The hypotheses were tested by using correlational analysis and the results are shown in Table 8. The basic hypothesis in the selection approach to fit in this study is that the extent to which a firm emphasizes a given business strategy should be correlated with all the perspectives of the BSC measures. The significant correlations between these variables generally support the basic fit hypotheses.

As can be seen from Table 8, the results show that usage of customer, internal business process and innovation and learning measures increases as level of emphasis on prospector strategy increases, while usage of financial measures does not. Even though it was expected that financial measures usage have a negative correlation with increase emphasis on prospector strategy, no such relationship appears from the result. Similarly, even though it was expected that there should be a negative correlation between the level of emphasis on prospector strategy and the extent of internal business process measures usage, the result indicates the opposite direction, that is, emphasizing on prospector strategy increases the usage of internal business process measures.

Table 8. Correlations among Business Strategy and the BSC Measures Using the Selection Approach (N = 120)

	1	**2**	**3**	**4**	**5**	**6**	**7**
Strategy:							
1. Prospector	-						
2. Analyzer	0.76*	-					
3. Defender	0.25*	0.32*	-				
BSC Measures:							
4. Financial	0.07	0.08	-0.09	-			
5. Customer	0.26*	0.27*	-0.06	0.30*	-		
6. Internal Business Process	0.29*	0.31*	-0.00	0.28*	0.54*	-	
7. Innovation and Learning	0.42*	0.27*	0.18	0.05	0.26*	0.38*	-

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

Similar results appear with analyzer strategy where there are positive significant correlations between emphasizing analyzer strategy and the usage of customer, internal business process, and innovation and learning

measures. Surprisingly, emphasizing defender strategy is not correlated with any perspective of the BSC measures. For firms emphasizing defender strategy, a high usage of financial and internal business process measures and low customer, and innovation and learning measures was expected, however, there are no such relationships.

Overall, the results indicate some support for the selection view of fit with regards to prospector strategy-performance measures alignment and analyzer strategy-performance measures alignment but not with regards to defender strategy-performance measures alignment. Hence, only hypotheses relating prospector strategy and analyzer strategy to the usage of customer measures (1d and 1e), relating analyzer strategy to the usage of internal business process measures (1h), and relating prospector strategy and

Table 9. Summary of Hypotheses Testing

Hypotheses		**Results**
H1:	The extent to which a firm emphasizes a given business strategy is associated with the extent to which it uses appropriate performance measures.	Partially supported
H1a:	The greater the emphasis on prospector strategy, the lower is the usage of financial measures.	Not supported
H1b:	The greater the emphasis on analyzer strategy, the greater is the usage of financial measures.	Not supported
H1c:	The greater the emphasis on defender strategy, the greater is the usage of financial measures.	Not supported
H1d:	The greater the emphasis on prospector strategy, the greater is the usage of customer measures.	Supported
H1e:	The greater the emphasis on analyzer strategy, the greater is the usage of customer measures.	Supported
H1f:	The greater the emphasis on defender strategy, the lower is the usage of customer measures.	Not supported
H1g:	The greater the emphasis on prospector strategy, the lower is the usage of internal business process measures.	Not supported
H1h:	The greater the emphasis on analyzer strategy, the greater is the usage of internal business process measures.	Supported
H1i:	The greater the emphasis on defender strategy, the greater is the usage of internal business process measures.	Not supported
H1j:	The greater the emphasis on prospector strategy, the greater is the usage of innovation and learning measures.	Supported
H1k:	The greater the emphasis on analyzer strategy, the greater is the usage of innovation and learning measures.	Supported
H1l:	The greater the emphasis on defender strategy, the lower is the usage of innovation and learning measures.	Not supported

analyzer strategy to the usage of innovation and learning measures (1j and 1k) are supported, while the remaining sub-hypotheses 1 are not supported.

5. Discussion and Conclusion

Using the selection approach, the evidence of fit is reflected by the significance of correlation between business strategy and the multiple performance measures usage. This study has posited that the degree to which a firm emphasizes a given business strategy is associated with the extent to which it uses the appropriate dimension of performance measures. The results reported in this study provide partial support for this central proposition (see Table 9). As a result of correlational analyses, six out of twelve correlations are positive and significant. Five of the six significant correlations are evidence of fit due to its correct sign, while one of them is considered as a misfit due to its incorrect sign. The presence of fit in this study supports the argument that the performance measures used should be congruent and appropriate with strategy for the strategy to be effective in the long-run (Richardson & Gordon, 1980; Paladino, 2000).

The presence of fit between business strategy and the use of performance measures is noticeable when positive correlations between prospector strategy and the use of customer and innovation and learning measures exist. Hence, these findings conform to the contention of Miles and Snow (1978, p. 60) in that "the prospector draws its top managers mostly from the ranks of marketing and product development, the two areas of primary strategic importance." Also, high usage of customer measures among firms emphasizing the prospector strategy is somewhat parallel to findings of Hambrick (1983), Snow and Hrebiniak (1980), and Connant *et al.* (1990) in that marketing efforts and competencies of firms with a prospector strategy are greater compared to firms with an analyzer or defender strategy. Further, the argument for the significant relationships being, that as innovation and differentiation are of paramount importance for firms emphasizing a prospector strategy, and, together with their assumed huge resource capabilities, they are likely to embed innovation elements into every aspect of their operation activities – from procurement, production processes as well as distribution and marketing to customer service. At the same time, these firms need to have a stream of innovative product features and technological improvements in order to sustain a long-term competitive advantage.

The findings suggest that firms that compete through innovation and product market development tend to be more open to new performance measures like innovation and learning measures that enable their managers to improve knowledge, skills, processes and information. As the prospector strategy is more flexible, firms emphasizing this strategy prefer to use a much broader range of information. These findings also lend support

to a study by Thomas *et al*. (1991) who discovered that prospectors were found to have a higher proportion of R&D expenditure, broader product domains and a greater number of new product introductions. Therefore, from the results of this study, measures like speed of new product introduction, number of new product launches, timeliness of product delivery, quality and customer satisfaction are suitable for firms emphasizing the prospector strategy.

Further, this study expects high levels of emphasis of the prospector strategy to coexist with low extent of usage of internal business process measures and thus a negative correlation (H1g). However, the observed significant positive correlation indicates a misfit as it is not as hypothesized. An inference to this outcome is that a high usage of internal business process measures is required to go hand in hand with the innovation in business process and operations. This is because firms emphasizing the prospector strategy might rely on efficiency measures such as internal business process measures in order to constrain excessive innovation and risk taking by managers within acceptable limits. The same explanation was offered by Dent (1990) in explaining Simon's (1987) findings on why prospectors use their financial control systems more intensively than defenders. When great emphasis is given to internal business process measures, it could mean that firms attempt to be efficient so that products could be produced at low cost. According to Shank and Govindarajan (1993), effective implementation of contemporary strategies is required so that technologies deliver innovative product characteristics to customers in cost-effective ways. Thus, firms that emphasize strategies of product features and differentiation such as delivering on time, providing warrantees, and having a broad product domain must be competing on the basis of low price as well. The positive correlations of innovation and learning and internal business process measures usage with emphasis on prospector strategy imply that firms seeking to be first in the market and provide innovative products do not preclude efficiency.

Furthermore, the results reveal that the analyzer strategy is significantly positively correlated with the usage of customer, internal business process, and innovation and learning measures, but no significant correlation is achieved with the usage of financial measures. Since the analyzer is essentially a hybrid strategy, balance is the common characteristic of this strategy. Consequently, it requires a balanced set of information systems emphasizing efficiency and effectiveness. Therefore, production and cost efficiencies are emphasized in established businesses, while innovations are selectively adopted in newer markets. As proposed, overall results report evidence of fit between the analyzer strategy and the usage of customer, internal business process, and innovation and learning measures. It implies that a greater emphasis of the analyzer strategy requires a higher extent of usage of these particular measures. This, in part, is consistent with McDaniel

and Kolari's (1987) study where they reveal that analyzers perceive marketing research and computerized customer information systems to be a more important component of organizational strategy than do defenders. However, no evidence of fit appears between the analyzer strategy and financial measures. The results suggest that the analyzer strategy is not as extreme as the defender strategy when compared to the prospector strategy because both analyzer and prospector strategies show rather similar results as compared to the defender strategy. This is consistent with previous studies where in some situations the analyzer strategy was inclined more toward the prospector strategy rather than the defender strategy (e.g. McDaniel & Kolari', 1987; Shortell & Zajac, 1990). More recently, Olson and Slater (2002) found that the prospector and analyzer strategies emphasize the innovation and growth perspective more than the defender strategy. Therefore, this could be the reason that the findings for the analyzer strategy are similar to the findings for the prospector strategy.

With respect to the defender strategy, surprisingly, this study reports no evidence of fit. This is because all correlations between the defender strategy and each perspective of the BSC measures are not significant. Although the defender strategy is thought to possess efficiency and effectiveness as its distinctive competencies, contrary to *a priori expectation*, this study found no significant correlation between the defender strategy and financial as well as internal business process measures usage. Also, the defender strategy does not show significant negative correlations with customer and innovation and learning measures usage. An inference to this outcome is that a greater usage of financial and internal business process measures may not be the necessary requirements of the defender strategy as hypothesized. Instead, the requirement of the defender strategy may be centred more on the greater usage of customer and innovation and learning measures. The results imply that emphasizing the defender strategy does not necessarily affect the high usage of cost control and efficiency measures as efficiency in internal operations may be better promoted through other ways such as through direct investment in physical and the monitoring of quality and inventory levels (Dent, 1990). Thus, claims that the defender strategy is a production oriented strategy emphasizing financial and efficiency measures like ROI, operating income, cash flows, manufacturing costs, materials and labour efficiency are not confirmed by this study. Similarly, arguments that performance measures that are customer, marketing, and learning oriented are less emphasized by the defender strategy are not confirmed by this study.

Note that results of this study should be interpreted within the parameters of the research design and evaluated in the light of several limitations. The first limitation pertains to the sample. The sample is rather limited and not comprehensive enough as it was restricted to the FMM directory. Also, the sample is relatively small and confined to manufacturing

firms only, thus would provide a potential source of bias to generalizability. A second limitation of the study concerns the variable measurement. A multi-item scale for operationalizing the Miles and Snow strategic typology and the BSC measures scale is rather novel and further study could lead to refinement. Therefore, future research may wish to extend the instrument used in this study and study larger samples from different industries. Future research should also apply BSC concepts of performance measures to other sectors such as non-profit and government organizations as well as service industries in order to improve understanding of the BSC concepts and its application and how its application may differ between different types of organizations. However, one must take note that the original architecture of the BSC should be modified in order to suit and adapt with the mission and vision of the organization. As the strategy construct was limited to the Miles and Snow's typology, subsequent researchers might do well to extend this research by using other taxonomies of strategy such as Porter's competitive strategies. As the selection approach to fit ignores the performance impact, from the standpoint of theory development, considerable work is required to investigate and test the alignment impact of business strategy and performance measures on performance

In sum, from the results of the correlational analyses, it is plausible to conclude that reasonable support is found for the selection approach to fit. Thus, it can be concluded that business strategy sets the need for types of information to be used, that is in terms of performance measures. The different product-market strategies emphasized have different requirements for performance measures. The results of the selection approach to fit suggest that the firm's chosen strategies, that is, the extent to which the firm emphasizes the prospector strategy, analyzer strategy, or defender strategy, are in line with the performance measures used to achieve these strategies. Thus, all measures are not equally important in all settings and all product-market strategy emphasized. These findings provide an important implication for the designers of management control systems and performance measurement systems, particularly, the BSC, and for those executives responsible for the formulation and implementation of business strategy, whereby a better understanding of the relationship between business strategy and the use of multiple performance measures has been provided. In this respect, the study provides some useful insights into the role of multiple performance measures as information to managers to support the achievement of their organizations' strategic objectives.

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