Business strategy-balanced scorecard measures alignment: an empirical test of its performance implications using systems approach

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Abstract: Using cross-sectional data from 120 Malaysian manufacturing firms, this study empirically examines the alignment, by way of systems approach, between business strategy and the use of balanced scorecard (BSC) measures. This alignment is proposed to provide a positive impact on firm performance. Alignment was conceptualised using the systems approach as proposed by Drazin and Van de Ven (1985) which defines it as the internal consistency of multiple contingencies and multiple structural characteristics. Given the importance of non-financial performance measures in providing better indicators of performance, many firms have used multiple performance measures, such as the BSC measures that comprise four perspectives: financial, customer, internal business processes, and learning and growth. Thus, this study intends to address the contribution of multiple performance measures which are consistent conceptually with the BSC framework

Keywords: balanced scorecard; business strategy; firm performance; Malaysian firms.


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1 Introduction

A strategically driven performance measurement system seems far from reality when the measures used are not relevant to the current strategies being pursued. Several researchers and authors have expressed concerns over the importance of alignment between performance measures and strategy (e.g. Bourne et al., 2000; Kaplan and Norton, 2001; McAdam and Bailie, 2002; Neely et al., 1994) For example, according to Neely et al., performance measures can encourage the implementation of strategy by matching measures and strategies. From the strategy literature, strategy can be considered as a contingency variable which can be broadly applied to a wide variety of settings and its relationship with other constructs (generally organisational performance) can be empirically tested. Strategy is considered as a central contingent variable in management control systems since it can heavily influence the choice of performance measures to be used, and that accounting control systems should be designed by taking into consideration the business strategy of the firm (Govindarajan and Gupta, 1985; Ittner et al., 1997; Khandwalla, 1972, 1973; Langfield-Smith, 1997; Simons, 1987, 1990).

Besides the issue of alignment, performance measurement systems designed to capture information on all aspects of business are required in today’s changing business and manufacturing environment. The traditional performance measurement tools designed for the industrial-age economy, which emphasise financial measures and tangible assets, are no longer adequate. Given this scenario, it is a challenge for organisations to deemphasise 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). According to Bruns (1992) and Bruns and McKinnon (1993), the use of multiple
performance measures, both financial and non-financial, is very important for management as these measures have the added advantage of providing enhanced protection against the consequences of uncontrollable outside events. As a result, the BSC was developed by Kaplan and Norton in 1992 as a way of addressing the traditional performance measurement limitations. Lynch and Cross (1995) and Chenhall (2005) claimed that BSC serves as a strategic performance measurement system (SPMS).

To date, relatively little research has examined the alignment between business strategy and performance measures, in particular, using the BSC framework. In fact, throughout the literature search, no-one has yet examined the alignment of performance measures and business strategy using the systems approach to fit as proposed by Drazin and Van de Ven (1985). In the literature, the terms alignment, fit, match, congruence, and consistency are often used interchangeably and provide the same meaning (Ensign, 2001). Therefore, the words alignment or fit are used interchangeably throughout this paper. According to Ittner and Larcker, the “performance effects of the balanced scorecard and other value driver techniques remain open issues.” (2001, p.375) Besides, according to Venkatraman (1989), there has been a general lack of theoretical and empirical research related to the fit concept. Most of the previous researchers have limited themselves on studying fit related to strategy, structure, technology and environment. Therefore, the objective of this study is to gain some knowledge about fit in the contingency framework. The purpose of this study is to evaluate empirically whether performance measures used by the Malaysian manufacturing firms are reflective of the multidimensional and integrated approach as proposed in the BSC framework and aligned with the extent to which a business strategy is emphasised which, in turn, impacts firm performance. The alignment will be assessed using the systems approach to fit as proposed by Drazin and Van de Ven (1985). Under the systems approach, this study tried to use multivariate analysis that examined the joint linkage between business strategy and the four perspectives of the BSC measures.

The paper proceeds as follows. The next section presents a review of the related literature and the hypothesis development. Also discussed is the systems approach to contingency fit as proposed by Drazin and Van de Ven (1985) within the context of business strategy and BSC measures. The subsequent section discusses the research methods including the sample and variable measurement methods. This is then followed by the statistical results. Finally, discussion on the findings, implications, and limitations of the study as well as concluding comments are provided.

2 Literature review and hypothesis

2.1 Balanced scorecard framework

There is considerable interest in the role of strategic performance measurement systems (SPMS), such as 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 non-financial measures of customer, internal business processes, and learning and growth (Kaplan and Norton, 1996). In the earlier version of the BSC framework, Kaplan and Norton (1992) had used innovation and learning instead of learning and growth
Business strategy-balanced scorecard measures alignment

Thus, this study used innovation and learning instead of learning and growth perspective as the former is more relevant to the current study. This approach is also consistent with the study by Hoque and James (2000), Hoque et al. (2001) and Olson and Slater (2002). For example, Olson and Slater used innovation and growth perspective in examining whether benefits can be derived from matching an emphasis in the scorecard to strategy type. Earlier, Slater et al. (1997) noted that the BSC presents managers with four different perspectives (financial, customer, internal, and innovation and learning) on performance from which to choose the strategy-specific measures that become the centrepiece of the strategic control system. All the four perspectives of BSC measures would play an important role in providing solutions to the entrepreneurial, engineering, and administrative problems. The BSC framework still retains financial performance measures that are known as lagging outcome indicators and supplements these with non-financial performance measures that are leading indicators of future financial performance.

The financial perspective is concerned with how any profit-oriented organisation can provide superior returns, in terms of financial measures, to the shareholders based on the capital invested in the organisation. Financial measures indicate whether the company’s strategy, implementation, and execution are contributing to bottom-line improvement (Kaplan and Norton, 1992). Financial perspective is considered as a strategy for growth, profitability, and risk viewed from the perspective of the shareholder (Kaplan and Norton, 2001). In the BSC framework, financial perspective is considered as the ultimate outcome or bottom-line improvement of the organisation where it measures the economic consequences of actions already taken in the innovation and learning, internal business process, and customer perspectives. Key measures under financial perspective include operating income, sales growth, sales revenue, cash flows, and return-on-investment (ROI).

The customer perspective demands that managers translate their general mission statement on customer service into specific measures that reflect the factors that really matter to customers (Kaplan and Norton, 1992). The customer perspective captures the ability of the organisation to provide quality products and services, the effectiveness of its delivery, and overall customer service and satisfaction. Customer perspective provides a strategy for creating value and differentiation from the perspective of the customer. This perspective helps an organisation to connect its internal business processes to improved outcomes with its customers. Measures included under customer perspective are customer satisfaction, customer response time, number of warranty claims, and number of customer complaints.

The internal business process perspective focuses on the internal processes that the organisation must excel in, in order to add value to customers through customer satisfaction and generate financial returns to shareholders. While traditional performance measurement systems focus on controlling and improving manufacturing and operational processes, the BSC, on the other hand, focuses on integrated business processes which encompass several cross-functional activities (Kaplan and Norton, 1996). This perspective embraces many performance measures which include efficiency measures such as materials efficiency, labour efficiency, and production output, as well as cycle time and flexibility measures. These measures are not quantified in financial terms but in some other quantifiable forms such as yards, tons, hours, units, ratios or percentages.

According to Kaplan and Norton (1992), the innovation and learning perspective focus on the organisation’s ability to develop and introduce new products. An organisation’s
ability to innovate, improve and learn ties directly to the organisation’s value. This is because only through the ability to launch new products, create more value for customers, and improve operating efficiencies continually can a business organisation penetrate new markets and increase revenues and profits, thereby increasing shareholder value. Performance measures under the innovation and learning perspective would include the training and development of employees, research and development, new product development, and employee satisfaction.

The importance of non-financial measures in accounting and control systems, performance measurement systems and evaluation of managers has now been discussed widely in the management control system literature. According to Chapman (1997), the first work introduced the issue of non-financial information into accounting systems comes from Gordon and Miller (1976). Gordon and Miller suggested that as environmental dynamism increases, the effective accounting information system (AIS) begins to incorporate more non-financial data to provide managers with information on competitor actions, consumer tastes, and shifting demographic factors. Meanwhile, Ghalayini and Noble (1996) and Chenhall (2005) argued that non-financial measures are one of the characteristics of emerging integrative strategic performance measurement systems. Non-financial measures are indicators of intangible assets and key drivers of firm value and may be better predictors of future financial performance than historical accounting measures, and thus should be disclosed (Ittner and Larcker, 1998; Kaplan and Norton, 1996; Wallman, 1995). Similarly, Banker et al. (2000) noted that the primary reasons to use non-financial performance measures are that they provide better indicators of future financial performance than accounting measures and they are valuable in evaluating and motivating managerial performance. Also, studies by Droge et al. (2000), Hoque and James (2000), and Maiga and Jacobs (2003) indicate that firms may perform better if multiple performance measures, in particular non-financial measures, are used for performance evaluation of the firms.

2.2 The alignment between Miles and Snow’s strategy (1978) and BSC measures and its impact on firm performance

According to Bourne et al. (2000), to achieve alignment, there must be a broader and more holistic approach to devising and using performance measures in order for them to be meaningful in a dynamic and complex situation. Within the BSC framework, performance measures can be aligned with business strategy. According to Kaplan and Norton, “all Balanced Scorecards use certain generic measures which reflect the common goals of many strategies, as well as similar structures across industries and companies.” (1996, p.149) Hence, this study is premised on the belief that a BSC framework can provide a useful tool in translating strategic requirements of Miles and Snow’s (1978) strategies 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.

A long time ago, Skinner (1969) found that manufacturing strategy and performance measurement were originally linked together. Moreover, Chenhall’s (1996) study supports the view that the association between strategies of manufacturing flexibility and
performance is stronger where manufacturing performance measures are used as part of managerial evaluation. A study by Ittner and Larcker (1997) also found strong evidence that the choice of performance measures is a function of the firm’s competitive strategy. Their findings indicate that non-financial measures have a positive relationship with innovation-oriented strategy, quality oriented strategy, regulatory requirement and competitive pressures.

According to Miles and Snow (1978), prospector-type strategy tends to develop broad-based information systems with non-financial and external performance measures as well in order to suit with its effectiveness and results orientation. On the other hand, defender-type strategy tends to have cost-oriented information systems which are efficiency and input oriented. For analyser, as balance is the common characteristic of this strategy, the requirement is a balanced set of information systems with emphasis on both efficiency and effectiveness. From these attributes, it is implicitly assumed that prospector-type strategy uses more of the non-financial performance measures, and is more innovative than the defender-type strategy. Thus, firms emphasising prospector strategy are expected extensively to use non-financial measures such as customer and innovation and learning measures. In contrast, it is expected that firms emphasising defender strategy would use extensively financial and internal business process measures. For example, Simons (1987) found that business units following a defender strategy tend to place a greater emphasis on the use of financial measures for compensating managers, while prospector strategy tends to place a greater emphasis on forecast data and gives reduced importance to cost control. Furthermore, Shank (1989) noted the need for management accounting to support a firm’s competitive strategies and showed how two different competitive strategies (cost leadership and product differentiation) demand different cost analysis perspectives.

Being a hybrid strategy, the analyser strategy greatly focuses both on aspects of innovation and efficiency. Hence, firms emphasising analyser strategy are expected to view customer and innovation and learning measures as well as financial and internal business process measures as being very important and in turn would use them extensively.

The strategy implementation literature has highlighted that different business strategies require different configurations of organisational practices to achieve optimal performance. Management control system or performance measurement system in particular, is a key organisational practice and should contribute to the successful implementation of business strategy. It is expected that performance will be enhanced when there is an appropriate alignment between business strategy and the extent of usage of multiple performance measures conceptualised as the BSC measures. Abermethy and Guthrie’s (1994) study indicates that broad scope information had a more positive effect on performance in firms employing a strategy of continuous product/market development and innovation (prospects) than in firms which were protecting a comparatively narrow and stable product-market (defenders). Both Miles and Snow (1978), and Porter (1980), suggest that effective implementation of any of their strategic types could lead to acceptable performance. Ittner and Larcker (1997) argued that performance deteriorates when measures used are not linked to the desired strategic outcome.

As BSC focuses on non-financial measures, evidence from Buckmaster’s (2000) study also lends support whereby the result indicates that high performing firms tend to use non-financial information extensively, are customer oriented and link performance
measurement systems with strategy; and low performers, on the other hand, tend to use financial information extensively, are sales oriented, and do not link performance measurement system with strategy. High performers tend to put less emphasis on cost reduction strategy as compared to low performers, but more emphasis on flexibility, quality and delivery performance (Badri et al., 2000). Meanwhile, Olson and Slater (2002) found that the high performing analysers placed greater emphasis on innovation and growth perspectives while low performers placed greater emphasis on financial perspectives. The high-performing and low-cost defenders placed greater emphasis on financial perspectives and a lower emphasis on both customer and innovation and growth perspectives, while the high-performing differentiated defenders placed greater emphasis on the customer perspective. More recently, Ittner et al. (2003) found that a variation of the measurement diversity approach has the strongest association with stock market performance, whereby firms that make more extensive use of a broad set of financial and non-financial measures than those with similar strategies or value drivers earn higher stock returns.

2.3 Systems approach to contingency theory fit

Systems approach to contingency theory fit has been addressed by Drazin and Van de Ven (1985). The systems approach is a holistic approach to studying the interdependencies in organisations (Selto et al., 1995). According to Drazin and Van de Ven, systems approach to fit results in a pattern of structure and process that matches the contextual setting and is internally consistent. This approach is particularly relevant for examining patterns of consistency among sets of variables simultaneously. Under the system approach, fit is conceptualised as the degree of correspondence to an externally specified ideal profile. Ideal profiles can be generated either theoretically or empirically. As the degree of correspondence to the theoretically/empirically derived ideal profile increases, organisational performance should also increase and vice versa (Drazin and Van de Ven, 1985; Venkatraman, 1989). The degree of correspondence to or deviation from the ideal profiles is better known as Euclidean Distance (ED). Drazin and Van de Ven argued that optimal fit may occur when all design elements of structure, control and context are congruent. However, it is important to note that there is a primary drawback to the systems approach with regards to equifinality, whereby feasible sets of equally effective alternative design elements facing an organisation cannot be identified because it is possible that there are many feasible sets of organisational structures and processes that are equally effective for different context configuration.

From the earlier discussion, it is implied that for firms to effectively implement their business strategy, they need to align more completely their performance measures with the requirements of their business strategy so that they will perform better than others that do not achieve such an alignment. Thus, there must be an appropriate alignment between business strategy emphasised and the extent of the BSC measures used. This means that if a firm can appropriately align all four perspectives of BSC measures that it uses simultaneously to the business strategy that it emphasises, it will operate at higher levels of performance than otherwise. This systems analysis focuses on differences in pattern profiles and accounts for all four dimensions of BSC measures as a set. Fit would result in a pattern of BSC measures usage that matches the level of emphasis of business strategy and is internally consistent. Drawing from this notion, a specific hypothesis of alignment for the systems approach is formulated as follows:
An appropriate alignment of all four perspectives of BSC measures with business strategy will be associated with high performance. A misalignment will be associated with low performance.

3 Research methods

3.1 Sample

This study is based on data collected using a mail survey. Directory of Federation of Malaysian Manufacturers (FMM) year 2003 was used as the population frame where a total of over 2000 firms were listed. From this, a total of 975 firms were randomly selected. Only firms with at least 25 employees and an annual sales turnover of at least RM10 million were selected so as to have a satisfactory number of small and large firms. These firms are located all over West Malaysia, particularly in Klang Valley, Penang, and Kedah. Adoption of and knowledge of BSC was not a prerequisite for these targeted firms. This means that this study did not solely focus on firms that have implemented BSC, so that the results may be generalisable regardless of the type of performance measurement system the firms adopt. Of 975 questionnaires sent out, a total of 133 questionnaires were returned. However, only 120 responses were used in the data analysis of this study, making a usable response rate of 12.3%. This return rate is quite common in the Malaysian environment and roughly comparable with similar surveys. The sensitive and confidential nature of the information requested likely accounts for the modest response rate. The 120 responding firms are represented by electrical and electronics product manufacturing (25); iron, steel, and metal product manufacturing (18); food and beverage manufacturing (13); rubber and plastic product manufacturing (11); paper, printing, packaging, labelling product manufacturing (7); pharmaceutical, medical equipment, cosmetics, toiletries, and household product manufacturing (7); chemicals and chemical product manufacturing (7); machinery and equipment product manufacturing (4); and other product manufacturing (19).

3.2 Variable measurements

3.2.1 Business strategy

Miles and Snow’s (1978) strategic types, comprising prospector, defender, and analyser strategy, were used in this study. Another type, reactor strategy, was excluded from the scope of analysis because, in the Malaysian context, studies by Sim and Teoh (1997) and Abdul Rashid and Anantharaman (1997) indicated that reactor strategy was insignificant and almost non-existent. However, for the purpose of collecting data, the reactor type of strategy was also asked about in the questionnaire. Miles and Snow’s strategic type was chosen because it is well-documented and representative of the current strategy content of the literature (Simons, 1987), well empirically tested, and well accepted and internally consistent (Gosselin, 1997).

A newly developed multi-item scale developed by Parnell (1997), based on the work of Conant et al. (1990) was used for operationalising the Miles and Snow strategic types. This new multi-item scale can be referred to as multivariate measurement of strategy.
which contains a broad set of strategic variables (Hambrick, 1980). There were a total of 12 questions each consisting of four statements, one for each possible strategy. Each respondent was required to indicate whether he or she agreed or disagreed with each statement concerning their organisation by using a seven-point Likert scale ranging from ‘1 = strongly disagree’ to ‘7 = strongly agree’. The terms Prospector, Analyser, Defender, and Reactor were omitted from the questions in order not to indicate that the types necessarily represent good or poor strategy. To measure the strategy, an overall evaluation of the degree to which the firm emphasises a given strategy was derived by taking the mean score across the 12 items. The approach of taking mean or average scores to measure strategy is consistent with Segev’s (1987) study. This is in parallel with Parnell’s (1997) suggestion that the combination strategy was viable in the long-term and can be associated with superior performance. A reliability check using Cronbach’s alpha (Cronbach, 1951) was done to test the internal consistency of the business strategy constructs. This test produced the alpha coefficients of 0.89 (prospector), 0.86 (analyser) and 0.56 (defender). According to Nunnally (1978), alpha coefficients of 0.50 to 0.60 are acceptable for exploratory research.

3.2.2 Balanced scorecard measures

Using the BSC framework, performance measures were assessed using 29 items comprising four dimensions, namely, financial, customer, internal business process, and innovation and learning. These measures represent generic measures that are commonly used by and fundamental to the success of many manufacturing firms. Twenty items were taken from Hoque et al. (2001), which is originally adopted from Kaplan and Norton (1992). The remaining nine items added were self constructed and were gathered from the literature. The respondents were asked to indicate the extent of their firm’s use of each indicator across the four dimensions using a seven-point Likert-type scale ranging from one (not at all), four (to some extent), to seven (to a greater extent). It is important to note that this is the extent of usage of each measure, not the actual performance for that measure. Table 1 presents the 29 performance measures that were included in the questionnaire together with their assigned dimensions, mean scores and standard deviations.

Factor analysis was performed for all 29 performance measures and the results are roughly consistent with the four perspectives identified by Kaplan and Norton (1992) which were later confirmed by Hoque and James (2000) and Hoque et al. (2001). The results also indicate that the Bartlett Test of Sphericity (Bartlett, 1954) reached statistical significance (Chi-Square = 929.65, $p < 0.01$) and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.76, exceeding the recommended value of 0.60 (Kaiser, 1974). These results suggest that the factorability of the data is considered appropriate. 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. Finally, five component factors were extracted with Eigen values exceeding one, explaining a total of 71.9% of the variance. Results of the principal component factor analysis for the BSC measures are shown in Table 2.
The interpretation of the five components was quite consistent with previous research on the BSC scale. As can be seen from Table 2, Components 1 and 5 essentially represent customer measures of BSC except that Component 1 is related to the product aspect of customer measures while Component 5 is related to the time aspect of customer measures, thus, it is appropriate to combine these two components into one component so called ‘customer’. Component 2 represents the internal business process measures of BSC and thus, was named as ‘internal business process’. Component 3 was named ‘innovation and learning’, while Component 4 was named ‘financial’. The factor patterns are consistent
with the *a priori* expectation of the four perspectives identified by Kaplan and Norton (1992) and are also consistent with those found by Hoque et al. (2001) and Hoque and James (2000).

### Table 2  Results of the principal component factor analysis for the BSC measures

<table>
<thead>
<tr>
<th>Component</th>
<th>Items</th>
<th>Factor loadings</th>
<th>Eigen value</th>
<th>Percentage of variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>% of shipments returned</td>
<td>0.840</td>
<td>5.58</td>
<td>17.95</td>
</tr>
<tr>
<td>1</td>
<td>Number of overdue deliveries</td>
<td>0.839</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Number of warranty claims</td>
<td>0.817</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Number of customer complaints</td>
<td>0.777</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Manufacturing lead time/cycle time</td>
<td>0.836</td>
<td>2.24</td>
<td>14.53</td>
</tr>
<tr>
<td>2</td>
<td>Ratio of good output to total output</td>
<td>0.830</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Labour efficiency variance</td>
<td>0.659</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Flexibility</td>
<td>0.540</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Time-to-market new products</td>
<td>0.875</td>
<td>1.84</td>
<td>14.44</td>
</tr>
<tr>
<td>3</td>
<td>Number of new product launches</td>
<td>0.849</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Number of new patents</td>
<td>0.815</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sales revenue</td>
<td>0.910</td>
<td>1.42</td>
<td>12.77</td>
</tr>
<tr>
<td>4</td>
<td>Sales growth</td>
<td>0.840</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Operating income</td>
<td>0.640</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>On-time delivery</td>
<td>0.840</td>
<td>1.15</td>
<td>12.20</td>
</tr>
<tr>
<td>5</td>
<td>Customer response time</td>
<td>0.811</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Survey of customer satisfaction</td>
<td>0.654</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Extraction method: principal component analysis.
Rotation method: Varimax with Kaiser normalisation.
a Rotation converged in six iterations.

A reliability check for the four dimensions of BSC measures produced Cronbach’s alpha values 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 for each dimension was considered individually in the data analysis.

### 3.2.3 Firm performance

The measurement of firm performance was captured by using both financial and non-financial indicators. As obtaining the actual and objective financial and non-financial data was rather difficult and in some cases was impossible when the firms surveyed were not necessarily public listed firms, the actual performance was measured using the perception of the respondents. Firm performance was measured by a self-rating scale
using 12 indicators taken from Mia and Clarke (1999) and Govindarajan (1984). Five indicators taken from Mia and Clarke were: productivity, costs, quality, delivery schedule, and market share. Those taken from Govindarajan (1984) were: sales growth rate, operating profits, cash flow from operation, return on investment, new product development, R&D activities, and personnel development. An advantage of this multiple indicator approach is that it incorporates all aspects of quantitative and qualitative, financial and non-financial performance in the assessment. Respondents were asked to identify the changes in the performance indicators in the last three years using the scale of 1 to 7 (decreased tremendously = 1, no change = 4, and increased tremendously = 7). The 12 items were later reduced to two performance indexes called financial and non-financial performance by taking mean scores of each. Cronbach’s alpha values for financial and non-financial performance are 0.81 and 0.79 respectively.

4 Results

4.1 Descriptive statistics and the correlation matrix

Table 3 displays means, standard deviations, and correlation coefficients for all variables. It can be seen that, except for financial measure, all other three dimensions of BSC, namely, customer measure, internal business process measure, and innovation and learning measure are significantly positively correlated with prospector strategy at $r = 0.26 \ (p < 0.01)$, $0.29 \ (p < 0.01)$, and $0.42 \ (p < 0.01)$ respectively. Similarly, there is a strong positive correlation between analyser strategy and customer measure ($r = 0.27, p < 0.01$), analyser strategy and internal business process measure ($r = 0.31, p < 0.01$), and analyser strategy and innovation and learning measure ($r = 0.27, p < 0.01$).

The results also show that innovation and learning perspective is significantly correlated with internal business process perspective ($r = 0.38$), internal business process perspective is significantly correlated with customer perspective ($r = 0.54$) and financial perspective ($r = 0.28$), and customer perspective is significantly correlated with financial perspective ($r = 0.30$) and innovation and learning perspective ($r = 0.26$). However, financial perspective is not significantly correlated with innovation and learning perspective. Overall, these findings are consistent with the studies of Sim and Koh (1999) and Bryant et al (2004) where they showed that there are correlations among the four perspectives of the BSC perspectives. The correlations between the four perspectives are expected as these perspectives are linked by cause-and-effect relationships. Although the cause-and-effect is difficult to prove, the strong association between the four perspectives suggests the existence of such relationship.

Table 3 also reveals that except for defender strategy, both prospector and analyser strategy show strong positive bivariate relationships with performance. There is a positive correlation between prospector strategy with financial performance ($r = 0.55, p < 0.01$) and non-financial performance ($r = 0.64, p < 0.01$). Similarly, at $r = 0.49 \ (p < 0.01)$ and $r = 0.61 \ (p < 0.01)$ respectively, analyser strategy is correlated significantly with financial and non-financial performance. The correlation coefficients between the analyser and the other two strategies are 0.76 ($p < 0.01$) and 0.32 ($p < 0.01$), respectively, while defender and prospector are significantly positively correlated ($r = 0.25, p < 0.01$).
4.2 Hypothesis testing

The systems approach examined the impact of alignment between the extent of use of BSC’s four perspectives of measures, taken as a set, and the extent of emphasis of Miles and Snow’s (1978) strategy on firm performance. In order to test the hypothesis, a three-step procedure was used to analyse the systems approach.

In the first step, it is necessary to empirically derive separate ideal profiles for the BSC measures of each strategy representing prospector, analyser, and defender. Drazin and Van de Ven (1985) and Thomas et al. (1991) also used empirically-based ideal profiles. Empirically-based ideal profiles were chosen because with this approach it is easier to gain a valid ideal profile compared to theoretically-based ideal profiles. Since the focus is to see the fit within the high emphasis of each strategy, each strategy was split into high and low extent of emphasis. Firms in each group were then ranked on the basis of performance. Empirical profiles were generated for the top 10% best performing firms in each sample (Thomas et al., 1991). The standardised mean scores of these selected firms on the four dimensions of BSC measures were considered as empirically derived ideal profiles, representing high and low groups.

In the second step, differences between these ideal profiles and the profiles of any given firms were computed using the following Euclidean distance metric proposed by Drazin and Van de Ven (1985):

$$ED = \left( \sum (X_{ij} - X_{ji})^2 \right)^{\frac{1}{2}}$$

<table>
<thead>
<tr>
<th>Business strategy:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prospector</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Analyser</td>
<td>0.76**</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. Defender</td>
<td>0.25**</td>
<td>0.32**</td>
<td>–</td>
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<table>
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<th>BSC measures:</th>
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<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>4. Financial</td>
<td>0.07</td>
<td>0.08</td>
<td>–0.09</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5. Customer</td>
<td>0.26**</td>
<td>0.27**</td>
<td>–0.06</td>
<td>0.30**</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. Internal</td>
<td>0.29**</td>
<td>0.31**</td>
<td>–0.00</td>
<td>0.28**</td>
<td>0.54**</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
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<td>business process</td>
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<tr>
<td>7. Innovation</td>
<td>0.42**</td>
<td>0.27**</td>
<td>0.18</td>
<td>0.05</td>
<td>0.26**</td>
<td>0.38**</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and learning</td>
<td></td>
<td></td>
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<table>
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<tr>
<th>Performance:</th>
<th>1</th>
<th>2</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<tbody>
<tr>
<td>8. Financial</td>
<td>0.55**</td>
<td>0.49**</td>
<td>0.15</td>
<td>0.04</td>
<td>0.18</td>
<td>0.31**</td>
<td>0.39**</td>
<td>–</td>
<td></td>
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<tr>
<td>9. Non-financial</td>
<td>0.64**</td>
<td>0.61**</td>
<td>0.13</td>
<td>0.18</td>
<td>0.36**</td>
<td>0.47**</td>
<td>0.53**</td>
<td>0.70**</td>
<td>–</td>
</tr>
<tr>
<td>Mean</td>
<td>5.34</td>
<td>5.75</td>
<td>4.76</td>
<td>5.98</td>
<td>5.33</td>
<td>5.30</td>
<td>3.99</td>
<td>4.49</td>
<td>5.08</td>
</tr>
<tr>
<td>Std deviation</td>
<td>0.85</td>
<td>0.60</td>
<td>0.55</td>
<td>0.78</td>
<td>1.08</td>
<td>1.10</td>
<td>1.57</td>
<td>0.94</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Note: **Significant at $p < 0.01$ (2-tailed)
where $X_{is} = \text{the score of the ideal profile on the } s\text{th BSC measures dimensions and } X_{js} = \text{the score of the } j\text{th firm on the } s\text{th dimension. This calculated distance measure represents the distance between the ideal profile in Euclidean space and the profile of any given firm, according to the firm’s level of strategy emphasis.}$

The third step, the calculated distance measure, was correlated with the two performance dimensions of financial and non-financial. Alignment, or perhaps more appropriately misalignment, would be demonstrated if the distance score was negatively correlated with the performance, as the distance from the ideal profile increases (misalignment), performance should decrease. Table 4 shows the results of this analysis.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Correlations of Euclidean distance measure with financial and non-financial performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance</td>
<td>Financial performance</td>
</tr>
<tr>
<td>Emphasising prospector strategy:</td>
<td></td>
</tr>
<tr>
<td>High emphasis</td>
<td>−0.209</td>
</tr>
<tr>
<td>Low emphasis</td>
<td>−0.057</td>
</tr>
<tr>
<td>Emphasising analyser strategy:</td>
<td></td>
</tr>
<tr>
<td>High emphasis</td>
<td>−0.201</td>
</tr>
<tr>
<td>Low emphasis</td>
<td>0.008</td>
</tr>
<tr>
<td>Emphasising defender strategy:</td>
<td></td>
</tr>
<tr>
<td>High emphasis</td>
<td>−0.288</td>
</tr>
<tr>
<td>Low emphasis</td>
<td>−0.117</td>
</tr>
</tbody>
</table>

Notes: *Excluding high-performing firms used to calculate the ideal profiles.
**Significant at $p < 0.05$ (2-tailed)
***Significant at $p < 0.01$ (2-tailed)

As predicted, except for a low emphasis on analyser strategy, both financial and non-financial performance was negatively correlated with a firm’s distance from its ideal profile for both high and low emphasis of prospector and defender strategy. At the 0.01 level of significance, firms with high and low emphasis on the three strategies show significant correlations between distance and non-financial performance. However, no significant correlations occur between distance and financial performance. For the non-financial performance, distance was significant for the high emphasis on prospector strategy, analyser strategy, and defender strategy at $r = -0.467\ (p < 0.01)$, $r = -0.477\ (p < 0.01)$, $r = -0.419\ (p < 0.01)$ respectively. Also, for the non-financial performance, distance was significant for the low emphasis on prospector strategy, analyser strategy, and defender strategy at $r = -0.439\ (p < 0.01)$, $r = -0.335\ (p < 0.05)$, and $r = -0.447\ (p < 0.01)$, respectively. However, except for defender strategy, groups with high emphasis on prospector and analyser strategies show greater correlation between distance and non-financial performance compared to low groups.

In order to find the appropriate alignment between business strategy and BSC measures, the focus is on the high emphasis of each strategy. The results obtained provide reasonably strong support for the hypothesis when the non-financials served as the
performance. Hence, it is plausible to conclude that the data provides support for the hypothesis. Departures from the ideal profiles at the high level of emphasis of all three strategies are found to influence significantly firm non-financial performance. However, when the financials served as the performance, there is no significant correlation between the distance and any of the strategy emphases. The results based on the systems analysis indicate that when financial measures, customer measures, internal business process measures, and innovation and learning measures are aligned together appropriately to meet the requirements of firm strategy, superior non-financial performance occurs. This is expected to happen regardless of what strategy type the firm emphasises or adopts. Furthermore, this systems fit is equally strong for both high and low emphases of strategy.

5 Discussion and conclusion

The central objective of this study was to explore the performance impact of the alignment between business strategy and the BSC measures. Under the systems approach, alignment is explained by a departure from a multivariate pattern of firm’s BSC measures taken simultaneously. According to the systems approach, the overall alignment of all four BSC dimensions explains the level of performance. This means that as the degree of correspondence to the empirically derived ideal profile increases, firm performance should also increase and vice versa. Results of the correlations of distance measures (or Euclidean distance) with non-financial performance are significant and negative for all sub-groups of high as well as low emphasis of prospector, analyser, and defender strategy. This implies that departures from the ideal profiles at each level of strategy emphasis are found to significantly influence non-financial performance. However, when financial performance is correlated with the distance measures, no significant correlations occur for both high and low groups.

The results suggest that the effect of alignment between business strategy and all four dimensions of BSC measures usage on non-financial performance is prominent among both high and low emphasis of business strategy. Inconsistencies in a firm’s BSC measures usage, arising from departures from ideal profiles, were significantly related to non-financial performance. This result suggests that non-financial performance is related to the use of all BSC measures among firms with similar business strategy, no matter to what extent the emphasis is. It indicates that when financial, customer, internal business process, and innovation and learning measures are aligned appropriately together to meet the requirements of business strategy, either prospector strategy, analyser strategy, or defender strategy, superior non-financial performance occurs. The interdependencies and cause-and-effect relationships that occur between various aspects of the value chain embedded in all four perspectives of BSC measures may have provided the basis for such desired results. This outcome can be explained by the fact that when multiple performance measures are combined and used together as a performance measurement tool, such as the BSC, they can be translated from various strategies. The systems result indicates that the effectiveness of integrative, comprehensive, and coherent performance measurement systems depends on the extent to which strategy and performance measures are aligned, integrated, and harmonised so that firm performance can be improved. Therefore, integrative strategic performance measurement systems, such as the BSC, would serve as a tool to assist managers to achieve competitive outcomes, whether they will be concerned
Business strategy-balanced scorecard measures alignment

with product innovation and differentiation (prospector strategy), low cost-price (defender strategy), or both (analyser strategy).

The findings seem to be consistent with prior studies that found higher organisational performance when measurement is more closely aligned with the chosen strategy (Abernethy and Guthrie, 1994; Govindarajan, 1988; Govindarajan and Gupta, 1985; Simons, 1987). For example, Abernethy and Guthrie found support for the hypothesis that broad scope performance measurement systems are associated with higher performance in companies following prospector strategy. Also, the significant findings for all three strategies from the systems approach are parallel to the claim made by Kaplan and Norton in that the broad four perspectives of BSC measures can be common across and should be used with all strategic choices.

Furthermore, the insignificant results with regard to financial performance could be due to the use of BSC measures, which is predominantly about leading measures (non-financial measures), so that the effect of their usage may take some time to show up in financial performance. It could also be due to trade-offs among the four dimensions of the BSC measures whereby, regardless of strategy emphasis, firms are inclined more towards devoting and spending more resources on innovation, technological efficiencies, and R&D, which could lead to an unfavourable impact on current financial performance. The insignificant impact on financial performance may be due also to the use of cross-sectional data. However, on the whole, it can be concluded that the results provide half support for the hypothesis.

5.1 Implications of the study

The results of this study have both theoretical and practical implications. At the level of theory, the primary relevance lies in the examination of a contingency theory of BSC measures usage and an alternative form of measuring fit in contingency theory. This study attempts to contribute to the stream of research in the fields of management control and accounting systems, performance measurement system as well as strategic management. The findings suggest that the nature of the fit is not necessarily confined to the context–structure–performance relationships only, but fit also can be applied to other variables as well, such as the four dimensions of BSC measures. Thus, this study provides a theoretical framework for integrating and expanding prior research findings. Compared to bivariate conceptualisation of fit, this study provides a more holistic approach to fit.

At the level of practice, the results suggest to the designers of management control systems and performance measurement systems, particularly, for the development of the BSC measures, and to those executives responsible for the formulation and implementation of business strategy that they should have a better understanding of the relationship between business strategy and the use of multiple performance measures, such as BSC measures, to support the achievement of their organisations’ strategic objectives. Specifically on the design of control and measurement systems, one implication is that financial measures need to be de-emphasised and greater attention should be given to non-financial measures.

It is important to note that this study is not free from inherent limitations. Besides the small sample size and use of rather novel instruments, this study ignored the dynamic nature of organisations when examining the impact of fit on firm performance. Perhaps, there are firms that only recently had changed, or were in the process of changing, either their business strategy or usage of performance measures which in any circumstance may
invalidate the observed results. Thus, further research should be conducted to further refine the instruments by studying larger samples from different industries or sectors such as non-profit and government organisations and the service industries. Perhaps, the use of a longitudinal study may be appropriate to consider the dynamic nature of organisations.

As a conclusion, the correlations between distance measure and non-financial performance are significant for both high and low groups of strategy emphasis, suggesting that regardless of whether firms place a high or low emphasis on any business strategy, the alignment between the BSC measures as a whole and business strategy is important and may provide a positive impact on firm performance, in particular, non-financial performance.

References


Business strategy-balanced scorecard measures alignment


