

Analysis of balanced scorecard usage by private companies

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Abstract

Purpose – The purpose of this paper is to examine the factors related to the use of the balanced scorecard (BSC) by private companies. Specifically, the authors examine how foreign ownership, focus on a global market beyond the local company's geographic region and other sophisticated management accounting practices (MAPs) (activity-based costing, just-in-time and total quality management) are related to the use of the BSC.

Design/methodology/approach – The paper takes a contingency theoretic perspective. The data in this study is based on responses to a survey questionnaire that was mailed to 300 non-listed private companies in Singapore. A total of 135 responses were received, but 23 were incomplete, and thus, rendered unusable. Therefore, the final sample for the study is 112 private companies yielding a 37.3 per cent response rate that is considered high for survey research.

Findings – The authors find significant associations between the use of BSC and foreign ownership, focus on a global market and other sophisticated MAPs. The authors find that foreign ownership and a global market focus are significantly and consistently related to the extent to which the BSC is used across seven different management control purposes. The authors also find some evidence of associations between other sophisticated MAPs and the extent to which the BSC is used for management control purposes.

Practical implications – Private companies can use the BSC to better manage risks and use it for purposes such as communicating strategy and objectives, setting targets, evaluating performance, rewarding employees and managers, motivating employees and managers, controlling performance and coordinating across activities, departments and/or functional areas. The study has limitations such as the model is limited and excludes the effects of other significant contingency factors such as organisational culture. It may be appropriate to interview organisational participants to learn more about how their national and organisational culture affects the decision to use the BSC.

Originality/value – The findings fill a critical void in the literature by providing new evidence on the determinants of the use of the BSC by private companies.

Keywords Balanced scorecard, Control, Contingency theory, Total quality management, Activity based costing, Just-in-time

Paper type Research paper



1. Introduction

We examine the use of the balanced scorecard (BSC) by private companies[1]. We test whether foreign ownership, sales focus on a global market beyond the local company's

This paper forms part of a special section "Performance measurement and management", guest edited by Ralph Adler and Rakesh Pandey.

The authors thank Steven Cahan, Charl de Villiers and Stewart Lawrence for their comments and suggestions.

geographic region (hereafter focus on a global market)[2] and management accounting practices (MAPs) such as total quality management (*TQM*), activity-based costing (*ABC*) and just-in-time (*JIT*) are potential determinants of BSC. Our focus on the BSC is motivated by the dearth of research, and thus, lack of understanding of why some firms adopt a BSC and how it is used (Hoque, 2014; Cooper and Ezzamel, 2013; Nothcott and Taulapapa, 2012; Yongvanich and Guthrie, 2009; Awadallah and Allam, 2015). In his comprehensive review of 20 years of BSC research, Hoque (2014) finds the limited empirical literature reports inconsistent findings regarding the use of the BSC. Consequently, he urges future research to extend our understanding of why firms use a BSC[3]. Similarly, Malmi (2001) argues for more research on understanding how firms use BSC. Our first motivation for this study is to respond to these calls for more research and fill a critical void in the literature. There is also limited study on foreign ownership and global market presence and the usage of a performance measurement system (PMS) that embodies BSC characteristics (Chen and Huang, 2004; Cooper and Ezzamel, 2013; Fleming *et al.*, 2009; Nath and Sharma, 2014; Kihn, 2007). We extend the literature by introducing new contingency variables such as foreign ownership and sales focus on a global market beyond the firm's geographic region as additional potential determinants of BSC usage. BSC is considered a strategic performance tool developed by the management of foreign-owned companies and those with global operations and reach, and is implemented to provide information about organisational performance (Kaplan and Norton, 1996a). As we explain and demonstrate in the method and results section, the foreign ownership and global market focus constructs are distinct from each other. The former relates to managing agency costs faced by the foreign firm because of remoteness, information asymmetry and lack of transparency, while the latter relates to the local private firm's sales strategy. These two perspectives are novel to the BSC usage literature.

Our second motivation stems from the limited generalisability of prior research. Prior BSC studies focus their attention on larger organisations because of the conventional wisdom that larger firms face more internal communication and coordination challenges, and thus, are more likely to use a BSC. The originators of the BSC, Kaplan and Norton, did not propose that the use of BSC be limited to large organisations. Also, prior research tends to study manufacturing organisations yet the applicability of the BSC is not confined to a particular industry (Hoque, 2014). Therefore, we extend the generalisability of the prior literature by examining the use of determinants of the BSC in private companies across various industries.

Our third motivation is related to the agency issues facing multinational companies (MNCs) operating across different geographic regions. An important economic development of the millennium has been the opening up of markets such as China, India and the Middle East. Many MNCs have established their presence in these markets with some companies setting up their major operations and regional head-office in Singapore because of the country's strong infrastructure and western influence on corporate systems. International operations of MNCs usually operate as a private company but with significant autonomy from the MNC's head-office (O'Connor, 2006; Cooper and Ezzamel, 2013). Thus, the management of the private companies is not subject to capital market or listed company regulatory scrutiny. MNCs, therefore, face a challenging organisational control issue because of the geographical remoteness between the home country and the overseas operations, which could lead to agency problems (Dennis *et al.*, 2002; O'Connor, 2006; Kim and Mathur, 2008). Hence, while venturing into a global market has potential benefits, it also poses management control challenges for the foreign owners.

Hoque (2014) urges future researchers to consider internationalisation in the design and use of the BSC; we make a contribution towards his call. In doing so, our international setting allows us to extend the literature by introducing new contingency variables such as foreign ownership and global market presence as additional potential determinants of the adoption and use of the BSC. As discussed later, we contend that these two variables enrich our understanding of the adoption and use of the BSC.

Our fourth motivation is the lack of research on the link between innovative MAPs and BSC usage (Hoque, 2003; Modell, 2009). Malmi and Brown (2008, p. 288) quite strongly and rightfully argue that:

Accounting researchers have spent much time studying innovations in practice, such as activity-based costing/management, the BSC, value-based management, rolling forecasting and target costing, with the goal of explaining their development, adoption, use and impact. However, studying these systems individually may influence any conclusions we can draw if the use and impact of a new management control systems (MCS) element is related to the functioning of the existing broader MCS package.

To address this concern, we extend the literature by examining how three operational processes, which have implications for MAPs such as *ABC*, *JIT* and *TQM*, are related to the use of the BSC. Finally, when we examine the use of the BSC, we also extend the literature because we examine how the BSC is actually used for seven different managerial purposes including:

- strategy communication;
- setting targets;
- coordinating across activities, units and functions areas;
- controlling performance;
- performance evaluation;
- motivation; and
- reward.

According to Kaplan and Norton (1996a, 1996b, 2001), the BSC can be used for a number of purposes, and we investigate how private firms use the BSC. Wiersma (2009) is one of the first to empirically examine the different purposes for which organisations use the BSC. He examines within-firm determinants of three main uses of the BSC, namely, decision making and decision-rationalising, coordinating of activities and self-monitoring. He urges future research to examine firm-level determinants and other uses of the BSC, and we also respond to this call.

We select Singapore as our context because it has a relatively large number of private companies many of which are regional centres of MNCs. It is considered the hub of Asia offering inroads into growing markets such as China, India and the Middle East and many MNCs have set up subsidiaries there to access these emerging and fast-growing markets. Such institutional features make Singapore an interesting context particularly to examine how foreign ownership and the sales focus of the local private company beyond its geographic region are related to the design and use of MCS generally, and specifically, the adoption and use of the BSC.

We analyse questionnaire survey responses from 112 private companies from a mail-out of 300 to yield a response rate of 37.3 per cent. Our results suggest that foreign ownership and usage of innovative practices such as *ABC*, *JIT* and *TQM* are positively associated with the likelihood of BSC usage after controlling for organisational size, structure and perceived

environmental uncertainty (*PEU*). Focus on a global market beyond its geographic region is negatively associated with the likelihood of BSC usage. We further find that foreign ownership and adoption of *ABC* and *TQM* are positively associated with the use of the BSC for most of the seven purposes of BSC usage we examine while controlling for organisational size, structure and *PEU*. The adoption of *JIT* is not related to the BSC usage while a focus on a global market is negatively associated with the usage of BSC across all seven different purposes.

These results extend the prior literature and enhance our understanding of the determinants of the use of the PMS exhibiting features of BSC. First, we show that foreign ownership, a variable not previously examined, motivates the use of the BSC for managerial control purposes. Foreign owners such as large MNCs that establish operations in other countries may demand a comprehensive MCS by using systems such as the BSC to ensure that performance objectives are congruent with overall organisational level objectives and strategies. The more comprehensive set of information captured by a BSC system can help MNCs manage risks associated with information asymmetry and goal incongruity. Second, focus on a global market beyond its geographic region, which is beyond Asia in our context, may create greater complexity and subject the local operations to economic effects beyond their control. In addition, a focus on a global market may be determined by the head office or for tax avoidance and transfer pricing purposes. These possibilities may explain the negative association between a focus on a global market and BSC usage. Third, of the three innovative practices, *ABC*, *JIT* and *TQM*, we find that *TQM* is significantly related to the use of the BSC. We conjecture this is because relative to *ABC* and *JIT*, *TQM* has more non-financial features, which makes it more compatible with the BSC. This finding suggests that firms need to consider the compatibility of other management information tools and techniques when designing an MCS that includes the BSC as its central feature.

The rest of the paper progresses as follows. Section 2 provides the background and develops the hypotheses, Section 3 describes the research design and Section 4 presents and discusses the results including a battery of additional analyses. Section 5 concludes the study.

2. Theoretical development and hypotheses

2.1 Background and literature review

The use of financial performance measures, although important, is perceived as concealing the reasons underlying organisational performance (Kaplan and Norton, 1992, 1996a; Sharma and Hoque, 2001; Sharma and Kelly, 2015; Hoque, 2014; Woodhouse *et al.*, 2017) and conflicting with the strategic goals of the organisation (Atkinson *et al.*, 1997; Hansen and Mouritsen, 2005; Lawrence and Sharma, 2002; Merchant, 1990; Nothcott and Taulapapa, 2012). In contrast, the BSC extends the traditional PMS to address four perspectives; the customer, internal business processes, learning and growth and the financial perspectives (Kaplan and Norton, 1992, 1993, 1996b). As its relatively simple beginnings as a PMS in general electric in the 1950s, the BSC has evolved into a sophisticated strategic management system that “links today’s actions to tomorrow’s goals” (Hansen and Mouritsen, 2005; Kaplan and Norton, 1996a, 1996b, 2001; Norreklit, 2003; Cooper and Ezzamel, 2013).

A growing body of research has studied the implementation of BSC and comprehensive PMS in mainly large organisations (Chen *et al.*, 2006; Hoque and James, 2000; Kaplan, 2012; Silk, 1998; Speckbacher *et al.*, 2003; Cooper and Ezzamel, 2013). However, our review of the literature shows this evidence is typically limited to one location or sub-units of large

organisations with virtually no study across private companies and operations of MNCs in overseas locations.

Because of the complexity of the BSC, it may appear that larger listed companies tend to adopt it because of the relative availability of resources (time, expertise, funds, etc.) to support its usage. Kaplan and Norton do not specify that the use of BSC should be limited to larger listed firms. In their subsequent work, [Kaplan and Norton \(2001\)](#) suggest the applicability of their framework to non-listed organisations. However, they do not specifically discuss factors that could influence the use of BSC in such companies. [Javis et al. \(2000\)](#) emphasise that differences between large and small firms suggest it is inappropriate to compare the behaviour of small firms with practices in large businesses and to generalise results from large organisational settings to smaller organisations.

2.2 Hypotheses development

The framework for the research is illustrated in [Figure 1](#). Taking a contingency theoretic perspective[4], we explore the potential impact of foreign ownership, focus on sales in global markets and MAPs as contextual factors of PMS that match characteristics of BSC usage, while controlling for organisational size, structure and *PEU*.

2.2.1 Foreign ownership. MNCs have developed global strategies to exploit new markets, access less costlier factors of production, reduce transportation costs, enhance logistical efficiencies and exploit foreign knowledge and expertise ([O'Connor, 2006](#); [Kihn, 2007](#); [Kim and Mathur, 2008](#); [Cooper and Ezzamel, 2013](#)). However, venturing into geographic markets may present challenges and create agency issues because of information asymmetry and loss of transparency ([Dent, 1990](#); [Nakamura and Xie, 1998](#); [Kihn, 2007](#); [Cadez and Guilding, 2008](#)).

To address these agency issues, [Dent \(1990\)](#) posits that when firms invest in operations overseas, MNCs need an integrated framework, which is information-intensive and has three implications for management accounting systems. The first implication is the need for broad scope information to capture and disseminate knowledge worldwide. The second implication is to move beyond financial indicators to capture resource allocation and decision delegation around the world. [Dent's \(1990\)](#) third implication of investing in operations globally is that activities, decision making and resource allocation will cut across functional boundaries. In addition, [Dent \(1990\)](#) stresses the need for MNCs to balance multiple perspectives (e.g. national responsiveness, standardisation and cost control and technology transfer), coordinate complexity (i.e. manage across different physical and cultural distances) and understand competitor resources and capabilities.

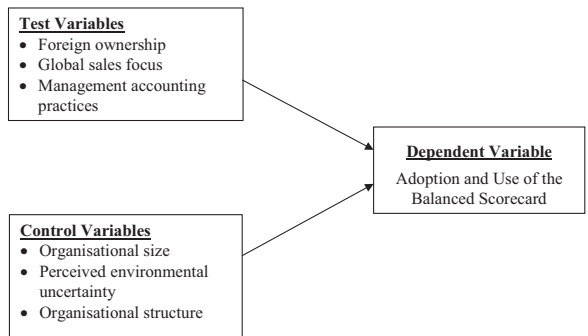


Figure 1.
Framework for the study

Kaplan and Norton's (1996a) BSC is an appropriate system that can enable MNCs to effectively manage investments in foreign operations. The BSC is a broad and flexible system that addresses a number of perspectives germane to business performance and activities, which has been used to provide clearer linkages between organisational level strategy and key sub-unit actions needed to implement the overall strategy (Kaplan and Norton, 1996a). Communicating and coordinating strategic intent and commensurate performance targets and measures across various perspectives, across functional boundaries and different organisational levels through the BSC can help MNCs to manage remote activities, and thus, reduce information asymmetry and transparency. Kihn (2007) posits that MNCs faced with geographical and cultural distances will compel the MNC headquarters to heighten its emphasis on financial and non-financial measures of performance to maintain tight control over the international operations. Thus, the MNC may use a BSC at a foreign location. In addition, Burgess *et al.* (2007) find that organisations are more likely to use a contemporary performance system when they are foreign-owned. They argue that these foreign owners may impose their home-grown system on the international location because the headquarters is pre-disposed to such a system. Furthermore, with increasing foreign ownership, the foreign firm can exert greater bargaining power over the local firm, that may manifest in technologies, systems and information production according to the demands of the foreign firm (Nakamura and Xie, 1998). Collectively, these discussions suggest the PMS that matches the characteristic of BSC can help address the coordination, communication and control implications organisations face when they have an ownership interest in foreign firms. Accordingly, we hypothesise that:

H1. The use of the BSC is positively related to foreign ownership.

2.2.2 Global market as a strategic focus. While there is no study on a sales focus on a global market and the usage of the BSC, a limited number of studies have investigated the impact of using management accounting information (including nonfinancial information) on the relationship between global growth strategy and performance (Chen and Huang, 2004; Chong and Chong, 1997; Fleming *et al.*, 2009). This limited research finds that greater use of management accounting information increases performance for business units following a prospector or growth-oriented strategy in a global market setting. Fleming *et al.* (2009) find a strategic emphasis on growth is accompanied by greater use of the BSC. Chen and Huang (2004) report that small and medium business owners in Taiwan generally feel that the use of management accounting information helps them better understand the market, and increases awareness of their competitive advantages and disadvantages.

The BSC is a potentially useful system that can be implemented to manage global corporate strategies because the BSC incorporates a combination of financial and non-financial measures, it can facilitate linkages between global growth strategy and operations across the value chain, thereby enhancing the strategic global competitiveness of the organisation (Chen and Huang, 2004; Cooper and Ezzamel, 2013; Chenhall, 2005) and enhancing growth in a global market (Jusoh *et al.*, 2006).

While the preceding discussion suggests that global diversification may heighten the need to use a BSC, Kim and Mathur (2008) argue that global diversification is inherently risky posing complicated challenges. Global diversification not only creates communication and coordination challenges but also subjects the entity to foreign exchange, regulatory and political risks, exposes the entity to unexpected changes in government and economic policies, poses staffing difficulties and introduces the impact of cultural differences (Kim and Mathur, 2008). Many of these challenges require localised knowledge and experience, and considerable delegation of decision rights and control to managers. The use of a BSC

may be incompatible with such an approach when firms diversify globally for the following reasons.

First, the global diversification challenges may be difficult to capture, and thus, measure and monitor using a BSC. For example, how would one define, measure and evaluate unexpected changes in foreign government policies or regulatory and political risks? Second, some of the inherent risks of global diversification such as political, regulatory and fiscal policy risks and cultural effects are beyond the control of management. Kaplan and Norton (2001) recommend that the BSC include factors that are controllable by management otherwise dysfunctional management behaviour is likely.

A third reason that may suggest no relationship between a focus on the global market and BSC usage is the incentive for MNC's to operate in Singapore. MNC's may set up operations in Singapore for transfer pricing and tax advantages (Rego, 2003; Desai *et al.*, 2006; Lawrence *et al.*, 2010; Sikka and Willmott, 2010).[5] In particular, Rego (2003) reports that MNCs with greater foreign sales have lower effective tax rates and Desai *et al.* (2006) find that MNCs operate in tax havens that include Singapore to reduce their tax burden through transfer pricing activities. As Singapore ranks in the top or "big" tax haven countries, it has the second most number of MNC's setting up affiliates there (Desai *et al.*, 2006). Under such circumstances, the need for a BSC may be negligible as the MNC would have implemented stringent financial-based controls and appointed a high-quality international audit firm such as the Big Four to reduce agency problems and foster their tax avoidance schemes (Jones *et al.*, 2018). These competing arguments suggest it is not clear whether a global strategic focus for sales will be related to the use of the BSC. Hence, we advance the following null hypothesis:

H2. There is no relationship between the use of the BSC and a sales focus on a global market beyond the local firm's geographic region.

2.2.3 *Management accounting practices.* Hoque (2003) observed a lack of empirical research on the relationship between innovative MAPs and the BSC. Success in a competitive environment requires organisations to produce at low costs and high quality. Many organisations have implemented more sophisticated MAPs to help them attain these goals. MCSs play an important role in ensuring that performance in this area is properly measured and managed (Abdel-Kader and Luther, 2008; Northcott and France, 2005; Sharma *et al.*, 2010; Sutton *et al.*, 2016; Moulang, 2015) and some studies suggest broad scope non-financial information is compatible with MAPs such as *TQM*, *JIT* and *ABC* (Ittner and Larcker, 1998; Chua and Petty, 1999; Kalagnanam and Lindsay, 1999; Theriou *et al.*, 2007).

For example, Ittner and Larcker (1998) find evidence of linkages between quality and strategic controls, especially in terms of implementation and monitoring strategic intent. Kalagnanam and Lindsay (1999) show that organic control systems are associated with the effective implementation of *JIT*. Sim and Killough (1998) report that compared to financial measures, the use of BSC style indicators (e.g. customer and quality measures) enhance performance in *JIT* and *TQM* environments. Chenhall (1997, p. 188) states that *TQM* implementation requires non-financial information, which includes "[...] customer satisfaction [...] on-time delivery, responsiveness to customer needs and various aspects of the value chain". Finally, Theriou *et al.* (2007) investigate the integration of *ABC* with BSC to achieve organisational strategy. They maintain that BSC provides a model to achieve multiple organisational targets, whereas the *ABC* model provides a "cost driver mapping", which enable management to develop an integrated and more comprehensive understanding of business processes and activities. Other researchers also report that companies tend to follow a holistic approach by using sophisticated systems as a bundle

because they are complementary (Chenhall and Langfield-Smith, 1998; Hoque, 2003; Modell, 2009; Malmi and Brown, 2008; Grabner and Moers, 2013). For instance, Hoque (2003) argues that shortfalls in *TQM* can be alleviated through a BSC. Accordingly, we hypothesise that:

H3. The use of the BSC is positively related to innovative MAPs.

3. Research design

The data in this study were collected from responses to a survey questionnaire that was mailed to 300 non-listed private companies in Singapore that agreed in principle to participate in the study following initial phone calls and/or emails.[6] A total of 135 responses were received, but 23 were incomplete, and thus, rendered unusable. Our usable responses of 112 yield a response rate of 37.3 per cent, which is relatively satisfactory for survey research. We checked for response bias by comparing late ($n = 43$) vs early ($n = 69$) responders and found no significant difference across the variables analysed in this study (i.e. firm size, foreign ownership, foreign sales, *PEU*, *STRUCTURE* and adopters or non-adopters) as follows:

- a formal BSC or non-financial reporting system;
- *TQM*;
- *ABC*; and
- *JIT*.

Our questionnaire design was adopted from prior research such as Gordon and Narayanan (1984), Hoque and James (2000) and Sharma (2002). The Appendix describes the questionnaire items pertinent to this study. To capture whether a firm adopted a formal BSC, we asked the following question: “does your organisation use a BSC?” We obtained data on foreign ownership by asking respondents to indicate the extent to which the organisation was owned by:

- local owners; and
- foreign owners.

We asked these two questions to ensure respondents carefully thought about the nature of ownership. Data on sales focus on a global market was gathered by asking respondents to indicate their major geographic markets and the percentage sales in each. The options given were:

- Singapore only;
- Asia region; and
- global beyond Asia.

Data on the adoption of sophisticated MAPs such as *TQM*, *ABC* and *JIT* were obtained through questions asking if the organisation adopted any one of these. The questionnaire spelt out these acronyms to ensure uniform understanding across all respondents.

To obtain data on our control variables, we adopted the measures and questionnaire items in Gordon and Narayanan (1984) and Sharma (2002) to capture organisational structure (*STRUCTURE*) and *PEU*. We use the average rating for *STRUCTURE* and *PEU* as our measures. Similarly, data about firm size (number of employees) was obtained by asking respondents to state the number of full-time employees.

3.1 *The sample*

Table I provides descriptive data and different tests on the variables used in the study for the total sample and by adopters and non-adopters of BSC. In total, 72 (64 per cent) of the respondents reported their organisation has a BSC. For the continuous variables, the average value for:

- percentage foreign ownership is 39 per cent;
- the natural logarithm of firm size measured as the number of full-time employees is 4.26;
- *STRUCTURE* is 4.58; and
- *PEU* is 4.47.

For the categorical variables, 18 per cent of respondents indicated a global sales focus, 28 per cent implemented *TQM*, 23 per cent use *ABC* and 13 per cent use a *JIT* inventory system. When we compare these characteristics between BSC adopters and non-adopters, Table I shows that adopters are significantly larger, have greater foreign ownership and are more likely to adopt other innovative practices such as *TQM*, *ABC* and *JIT*. There are no significant differences in global sales focus, *PEU* and *STRUCTURE* between BSC adopters and non-adopters.

In Table II we present the Spearman correlations.[7] The Spearman correlation is often used to evaluate relationships between variables, but we caution that these correlations cannot be relied upon because, by nature, correlations are pair-wise and do not consider the presence of other variables. The multivariate regressions are more appropriate for testing our hypotheses. We find that firm size, foreign ownership and use of other innovative practices (*TQM*, *ABC* and *JIT*) are significant and positively correlated with BSC usage. Not surprisingly, firm size is also correlated with *TQM* and *ABC* and *PEU* are positively correlated with *STRUCTURE*. This latter finding is consistent with prior studies (Gordon and Narayanan, 1984; Chenhall and Morris, 1986; Hoque and James, 2000; Sharma, 2002). Finally, we find that *TQM* is positively correlated with foreign ownership, and firms that implement *TQM* also tend to implement *ABC* and *JIT*. This latter result is not surprising because these three innovative MAPs are related

Variable	Total sample (n = 112)		BSC sample (n = 72)		Non-BSC sample (n = 40)		z-statistic
	Mean	SD	Mean	SD	Mean	SD	
<i>FOR_OWN</i>	0.39	0.47	0.46	0.48	0.25	0.39	2.381**
<i>GLOBAL</i>	0.18	0.39	0.17	0.37	0.24	0.43	0.982
<i>TQM</i>	0.28	0.45	0.38	0.49	0.15	0.36	2.742***
<i>ABC</i>	0.23	0.42	0.30	0.46	0.13	0.34	2.187**
<i>JIT</i>	0.13	0.33	0.17	0.38	0.04	0.21	2.068**
<i>SIZE</i>	4.26	1.34	4.65	1.51	3.91	1.24	2.627***
<i>PEU</i>	4.47	0.96	4.57	0.96	4.35	0.99	1.194
<i>STRUCTURE</i>	4.58	1.32	4.63	1.21	4.59	1.44	0.002

Table I. Descriptive statistics and difference tests between BSC and non-BSC firms

Notes: ***, **, * represent significance at 0.01, 0.05 and 0.10 levels, respectively. *FOR_OWN* = percentage of foreign ownership; *GLOBAL* = 1 if sales market is primarily global beyond Asia and 0 otherwise; *TQM* = 1 if firm adopted total quality management and 0 otherwise; *ABC* = 1 if firm adopted activity-based costing and 0 otherwise; *JIT* = 1 if firm adopted just-in-time system and 0 otherwise; *SIZE* = natural logarithm of number of employees; *PEU* = average rating of perceived environmental uncertainty; and *STRUCTURE* = average rating of extent of delegation

Variable	1	2	3	4	5	6	7	8	9
<i>BSC</i>	1.000	<i>0.234</i>	<i>0.218</i>	-0.085	0.103	0.001	<i>0.237</i>	<i>0.191</i>	<i>0.179</i>
<i>SIZE</i>		1.000	0.131	<i>0.198</i>	0.016	0.016	<i>0.281</i>	<i>0.183</i>	0.033
<i>FOR_OWN</i>			1.000	0.010	0.141	-0.024	<i>0.233</i>	0.048	-0.039
<i>GLOBAL</i>				1.000	-0.010	0.005	0.004	0.054	-0.016
<i>PEU</i>					1.000	<i>0.317</i>	0.093	0.101	-0.021
<i>STRUCTURE</i>						1.000	0.153	<i>0.236</i>	-0.026
<i>TQM</i>							1.000	<i>0.215</i>	<i>0.186</i>
<i>ABC</i>								1.000	<i>0.205</i>
<i>JIT</i>									1.000

Notes: Coefficients in italic are significant at $p < 0.05$ (two-tailed). *BSC* = 1 if a BSC is adopted and 0 otherwise; *SIZE* = natural logarithm of number of employees; *FOR_OWN* = percentage of foreign ownership; *GLOBAL* = 1 if sales market is primarily global beyond Asia and 0 otherwise; *PEU* = average of managers rating of perceived environmental uncertainty; *STRUCTURE* = average of managers rating of extent of delegation; *TQM* = 1 if firm adopted total quality management and 0 otherwise; *ABC* = 1 if firm adopted activity-based costing and 0 otherwise; and *JIT* = 1 if firm adopted just-in-time system and 0 otherwise

Table II.
Spearman correlation
coefficients ($n = 112$)

(Cooper and Kaplan, 1991; Anderson, 1995; Laurila and Ropponen, 2003). The correlations reported in Table II are at best modest as the correlations that are statistically significant hover between 0.179 and 0.317. By Cohen's (1988) standard, these are moderate effect sizes. The modest correlations maybe because of our sample being comprising private companies in Singapore that may not emphasise western-style MCS/PMS because of the dominating effect of local and national culture (Chow *et al.*, 2002; Harrison, 1995). Despite this, some of our correlations are similar to prior BSC research that have similar variables (Burgess *et al.*, 2007; Hoque and James, 2000; Chong and Chong, 1997). For example, Hoque and James (2000) find a correlation of 0.25 ($p < 0.10$) between firm size and BSC usage and we find a correlation of 0.234 ($p < 0.05$).

In Table II, the correlation between *FOR_OWN* and *GLOBAL* is 0.010 and not significant. This low and insignificant correlation is not unexpected or unreasonable because these are our test variables that are theorised to have differential associations with the usage of the BSC. *FOR_OWN* captures the extent of foreign ownership in the local (Singapore) private company, while *GLOBAL* captures whether the sales focus of the local (Singapore) private company is global and beyond its geographic region (Asia). Thus, as we explained earlier, *FOR_OWN* is a construct that has agency costs underlying its association with the BSC, whereas *GLOBAL* is a construct that has sales strategy underlying its association with the BSC. We corroborate the low correlation by performing Varimax rotated factor analysis and find there are two factors [8]. Accordingly and as hypothesised, we do not expect *FOR_OWN* and *GLOBAL* to have the same nature of the association with the BSC.

3.2 Test design and definition of study variables

The dependent variable, namely, the use of BSC, is measured as a dichotomous variable that is coded 1 if respondents indicated using a BSC and 0 otherwise. Therefore, we use logistic regression analysis as it imposes fewer statistical assumptions and is more robust and easier to interpret compared to other qualitative dependent variable techniques (Hair *et al.*, 2010). The logistic regression is specified as follows:

$$\begin{aligned} \text{Probability} &= (\text{BSC} = 1) \\ &= \beta_0 + \beta_1 \text{FOR_OWN} + \beta_2 \text{GLOBAL} + \beta_3 \text{TQM} + \beta_4 \text{ABC} \\ &\quad + \beta_5 \text{JIT} + \beta_6 \text{SIZE} + \beta_7 \text{PEU} + \beta_8 \text{STRUCTURE} + \varepsilon \end{aligned} \quad (1)$$

Where:

- FOR_OWN* = percentage of foreign ownership;
GLOBAL = 1 if the sales market is primarily global beyond Asia and 0 otherwise;
TQM = 1 if the firm adopted total quality management and 0 otherwise;
ABC = 1 if firm adopted activity-based costing and 0 otherwise;
JIT = 1 if the firm adopted the just-in-time system and 0 otherwise;
SIZE = natural logarithm of the number of full-time employees;
PEU = average rating of perceived environmental uncertainty; and
STRUCTURE = average rating of extent of delegation.

3.3 Test and control variables

Our hypotheses test variables are *FOR_OWN*, *GLOBAL*, *TQM*, *ABC* and *JIT*. *H1* relates to *FOR_OWN*, *H2* relates to *GLOBAL* and *H3* on MAPs relates to *TQM*, *ABC* and *JIT*. *SIZE* (organisational size), *PEU* and *STRUCTURE* are control variables. As we postulated relationships between the test variables and BSC when developing the three hypotheses, we next discuss the expected associations between the control variables and BSC.

3.3.1 Organisation size. Moores and Chenhall (1994) provide a review of evidence that size is an important factor influencing the adoption of more complex control systems. Hoque and James (2000) report a positive relationship between size and BSC usage. Finally, prior literature finds size is positively related to innovation because large organisations have more financial resources, human capital and research and product development capabilities (Kimberly and Evanisko, 1981; Nord and Tucker, 1987). Hence, we expect the size to be positively associated with BSC usage.

3.3.2 Perceived environmental uncertainty. *PEU*, as used in the accounting literature, refers to an administrator's perceptual experience of the organisation's external environment. Chenhall and Morris (1986) describe *PEU* as an important contextual variable as it influences the design and use of MCS. For instance, planning becomes challenging when future events are difficult to predict. Consequently, control activities also become difficult to manage (Chenhall and Morris, 1986). Prior research suggests that under higher *PEU*, the use of broad-scope information or MCS will provide a better fit for achieving organisational success (Sharma, 2002; Chong and Chong, 1997; Abernethy and Brownell, 1999; Fleming *et al.*, 2009). Hence, we expect a positive association between *PEU* and the usage of BSC.

3.3.3 Structure. Organisation structure refers to the formal specifications of different roles for organisational members to ensure that the activities are carried out (Chenhall, 2003). Decentralisation is one type of organisational structure, which refers to the level of responsibility that is delegated to lower-level managers for decision making. A higher degree of decentralisation points to more diffusion of decision making responsibility to lower levels in the hierarchy (Chia, 1995). The fit between organisation structure and MCS has been studied by many researchers (Chenhall and Morris, 1986; Chia, 1995; Gordon and Narayanan, 1984; Gul and Chia, 1994; Mangaliso, 1995; Sharma, 2002; Wiersma, 2009), with the general finding being greater decentralisation is associated with use of a more broad-scope and non-financial information system and innovation (Damanpour, 1991; Damanpour and Gopalakrishnan, 1998). Thus, we expect a positive association between *STRUCTURE* and the usage of BSC.

4. Results and discussion

The results of the multivariate logistic regression are presented in Table III[9]. The first hypothesis predicted that firms with greater foreign ownership would be more likely to use BSC. Our results in Table III show *FOR_OWN* is positive and significantly ($p < 0.01$) related to BSC, thus supporting *H1*. Next, we hypothesised a null association between the use of the BSC and a global sales focus. We did not make a directional prediction for this relationship because of alternative arguments. The results show that *GLOBAL* is negative and significantly ($p < 0.01$) related to BSC, thus rejecting the null in *H2*. In *H3*, we predicted that companies that adopt other innovative practices would be more likely to use the BSC because such practices are complementary. We tested the relationship between three innovative practices, *TQM*, *ABC* and *JIT*, and our results show that all three are positive and significantly ($p < 0.01$) related to BSC usage. Our two control variables, *PEU* and *STRUCTURE*, are not significantly related to BSC usage while *SIZE* is positive and significantly ($p < 0.01$) related to the usage of BSC.

We determine the effect size of the test variables using the exponent of the coefficient as it produces the estimated multiplicative change in the odds of the dependent variable occurring and $100[\exp(\text{coefficient}) - 1]$ yields the percentage change in the odds of the dependent variable given one unit change in the coefficient (Demaris, 1992). Based on the data in Table III, each unit increase in *FOR_OWN* increases the probability of a firm using the BSC by a factor of 3.078 or 207.8 per cent. Similarly, *GLOBAL* reduces the probability of BSC usage by a factor of 0.346 or 65.4 per cent. On the other hand, *TQM*, *ABC* and *JIT* all increase the probability of a firm using the BSC by a factor of 2.821 or 207.8 per cent, 3.555 or 255.5 per cent and 8.631 or 763.1 per cent, respectively[10]. Collectively, these are fairly large and meaningful effects.

Foreign-owned private companies probably adopt BSC style MCS because such practices are adopted by their foreign parents and/or because of the need for the foreign located MNC to manage agency issues stemming from information asymmetry and loss of transparency (Dent, 1990; Cooper and Ezzamel, 2013; Burgess *et al.*, 2007; Kihn, 2007; Cadez and Guilding, 2008). Private local companies with a focus on global markets beyond their geographic

Variable	Hypothesis (predicted sign)	Estimate	z-statistic
<i>FOR_OWN</i>	<i>H1</i> (+)	1.12	4.38***
<i>GLOBAL</i>	<i>H2</i> (?)	-1.06	2.95***
<i>TQM</i>	<i>H3</i> (+)	1.04	2.67***
<i>ABC</i>	<i>H3</i> (+)	1.27	3.60***
<i>JIT</i>	<i>H3</i> (+)	2.16	3.76***
<i>SIZE</i>	control	0.35	3.49***
<i>PEU</i>	control	0.08	0.10
<i>STRUCTURE</i>	control	-0.07	0.15
Constant		-1.71	1.65
Pseudo R^2		33%	
Chi-square		30.54***	

Notes: ***, **, * represent significance at 0.01, 0.05 and 0.10 levels, respectively; *FOR_OWN* = percentage of foreign ownership; *GLOBAL* = 1 if sales market is primarily global beyond Asia and 0 otherwise; *TQM* = 1 if firm adopted total quality management and 0 otherwise; *ABC* = 1 if firm adopted activity-based costing and 0 otherwise; *JIT* = 1 if firm adopted just-in-time system and 0 otherwise; *SIZE* = natural logarithm of number of employees; *PEU* = average rating of perceived environmental uncertainty; and *STRUCTURE* = average rating of extent of delegation

Table III.
Logistic regression
results of
determinants of BSC
adoption

region tend to not use a formal system such as the BSC probably because of the complexity of managing such markets. It is also possible that most of the foreign sales transactions relate to sales to affiliated entities and the primary purpose of setting up a private company in Singapore is for tax purposes. Singapore is one of the top tax havens for MNCs and tax research documents that MNCs engage in intra-firm sales with their foreign units for tax avoidance purposes (Rego, 2003; Desai *et al.*, 2006; Sikka and Willmott, 2010). From a management accounting perspective, our study sheds light on a new angle about why MNCs may not use a BSC system and suggests that future research may want to consider the role of tax planning in the context of MCS.

Our findings also suggest that BSC adoption is related to other innovative practices such as *TQM*, *ABC* and *JIT*. This suggests that companies tend to use sophisticated systems as a bundle because they are complementary (Modell, 2009). For example, *TQM* embraces the view of continuous improvements throughout the organisation across all processes and the effective operation of *TQM* requires data analysis on both financial and non-financial performance measures such as BSC (Modell, 2009; Sharma *et al.*, 2010). *ABC* is aimed at managing cost processes or activities more efficiently and effectively so that non-value added activities can be identified and dealt with. The idea behind *ABC* neither is dissimilar to *TQM* nor is it foreign to the BSC philosophy. The *JIT* system also focusses on eliminating non-value added activities but is directed at inventory systems (e.g. such as reducing handling and storage)[11].

In addition, our results suggest that larger private firms are more likely to use BSC and this may be so for several reasons. First, larger firms have access to better resources (e.g. financial and human capital) to implement and support a sophisticated system such as the BSC. Second, larger companies inherently have to deal with a vast network of communication channels, coordinate different functional areas, and thus, convey overall organisational strategies to functional areas so that performance can be measured and evaluated (Kaplan and Norton, 2001).

4.1 Additional analyses – determinants of usage of balanced scorecard

In this section, we provide some insight on the purposes for which the respondent companies use the BSC. Prior studies on the determinants of the adoption of specific control systems (Gosselin, 1997; Islam and Kellermanns, 2006; Tillema, 2005; Wu *et al.*, 2007) provide limited insight about the nature and uses of non-financial information and the determinants of the same. We provide such evidence by documenting the purposes for which BSC information is used, and the determinants of the extent of usage.

We asked respondents to indicate the extent to which they use the BSC using a scale of 1-7 where 1 represents “not used at all” and 7 is “used to a great extent” for the following seven purposes:

- communicate strategy and objectives;
- set targets;
- evaluate performance;
- reward employees and managers;
- motivate employees and managers;
- control performance; and
- coordinate across activities, departments and/or functional areas.

The averages and frequencies for each of these purposes are shown in Table IV. Generally, the results indicate that most respondents (greater than 50 per cent) indicate greater than

moderate (rating equal to or greater than 4) extent of the use of BSC for each of the seven purposes examined. The results further suggest that the top three most extensive (rating equal to or greater than 6) use of the BSC is to evaluate performance, set targets and communicate strategy.

We estimate seven ordinary least square (OLS) regressions of the determinants of the usage of BSC information and report the results in Table V. We restrict this analysis to

Purpose	Mean	SD	1	2	3	4	5	6	7
Strategy (<i>n</i> = 69)	5.01	1.49	2 (3%)	4 (6%)	5 (7%)	7 (10%)	22 (32%)	20 (29%)	9 (13%)
Target (<i>n</i> = 68)	5.08	1.58	0 (0)	3 (4)	5 (7)	8 (12)	22 (32)	18 (26)	12 (18)
Coordinate (<i>n</i> = 69)	4.54	1.63	2 (3)	4 (6)	11 (16)	15 (22)	13 (19)	17 (25)	7 (10)
Control (<i>n</i> = 69)	4.72	1.68	4 (6)	2 (3)	6 (9)	13 (19)	21 (30)	13 (19)	10 (14)
Evaluate (<i>n</i> = 68)	5.23	1.62	0 (0.0)	3 (4)	4 (6)	8 (12)	19 (28)	18 (26)	16 (24)
Motivate (<i>n</i> = 70)	5.13	1.43	2 (3)	3 (4)	4 (6)	5 (7)	29 (41)	15 (21)	12 (17)
Reward (<i>n</i> = 70)	4.67	1.57	2 (3)	8 (11)	3 (4)	15 (21)	20 (29)	14 (20)	8 (11)

Notes: *Columns 1-7 represent the points on the rating scale from 1 to 7 where 1 indicates “not used at all” and 7 indicates “used to a great extent”. The data in Columns 1-7 represent the number and percentage (in parenthesis) of respondents marking a particular point on the scale to each of the questions about the extent of use BSC for a particular purpose. The purposes listed on the first column are as follows: Strategy = communicate strategy and objectives, Target = set targets, Coordinate = coordinate across activities, departments and/or functional areas, Control = control performance, Evaluate = evaluate performance, Motivate = motivate employees and managers and Reward = reward employees and managers. Because of some respondents not completing all questions, the number of responses, *n*, in the first column varies and do not equal to 72, which is the total number of BSC adopters

Table IV.
Descriptive statistics
on extent of use of
BSC*

Variable	Strategy Estimate	Target Estimate	Coordinate Estimate	Control Estimate	Evaluate Estimate	Motivate Estimate	Reward Estimate
<i>FOR_OWN</i>	1.01**	1.17***	0.64*	1.09***	1.01**	0.82*	1.01**
<i>GLOBAL</i>	-1.33***	-1.44***	-1.59***	-1.27***	-1.49***	-1.61***	-1.53***
<i>TQM</i>	0.87*	0.85*	1.00**	0.99**	0.96*	1.03**	0.64
<i>ABC</i>	0.93*	0.61	0.72*	0.96**	0.81	1.29**	0.99**
<i>JIT</i>	0.11	-0.23	0.69	0.18	-0.22	0.26	0.10
<i>SIZE</i>	0.45***	0.49***	0.52***	0.49***	0.46***	0.29*	0.24*
<i>PEU</i>	0.27	0.26	0.26	0.09	0.02	0.15	0.17
<i>STRUCTURE</i>	-0.37	0.08	0.04	0.07	0.08	-0.02	-0.08
Constant	-0.37	-0.88	-1.13	-0.49	0.38	0.82	1.07
Adj- <i>R</i> ²	15%	16%	21%	19%	13%	15%	10%
<i>F</i>	3.40***	3.61***	4.59***	4.19***	2.98***	3.33***	2.58**

Notes: ***, **, * represent significance at 0.01, 0.05 and 0.10 levels, respectively; *FOR_OWN* = percentage of foreign ownership; *GLOBAL* = 1 if sales market is primarily global beyond Asia and 0 otherwise; *TQM* = 1 if firm adopted total quality management and 0 otherwise; *ABC* = 1 if firm adopted activity-based costing and 0 otherwise; *JIT* = 1 if firm adopted just-in-time system and 0 otherwise; *SIZE* = natural logarithm of number of employees; *PEU* = average rating of perceived environmental uncertainty; *STRUCTURE* = average rating of extent of delegation. # = The purposes of use of BSC are as follows: Strategy = communicate strategy and objectives, Target = set targets, Coordinate = coordinate across activities, departments and/or functional areas, Control = control performance, Evaluate = evaluate performance, Motivate = motivate employees and managers and Reward = reward employees and managers. The extent of use is rated on a seven-point scale and where 1 indicates “not used at all” and 7 indicates “used to a great extent”

Table V.
Regression results of
determinants of the
extent of use of BSC
for various purposes

firms that use a BSC as the usage is only relevant to such organisations. As our tests here exclude organisations that do not use a BSC, our tests are not affected by differences in private companies that do and do not use a BSC. Accordingly, our tests are not biased because of selection effects, that is, companies' choice to use a BSC or not. We use the following form of the OLS regression because the dependent variable, usage of BSC, is measured on a scale:

$$\begin{aligned} \text{Use of BSC} = & \beta_0 + \beta_1 \text{FOR_OWN} + \beta_2 \text{GLOBAL} + \beta_3 \text{TQM} + \beta_4 \text{ABC} \\ & + \beta_5 \text{JIT} + \beta_6 \text{SIZE} + \beta_7 \text{PEU} + \beta_8 \text{STRUCTURE} + \varepsilon \end{aligned} \quad (2)$$

After controlling for size, structure and *PEU*, we find that greater foreign ownership (*FOR_OWN*) is significantly positively and consistently related to the use of the BSC across seven purposes. This finding is consistent with the view that the foreign owner, usually an MNC, implements a BSC to manage agency issues such as information asymmetry and loss of transparency. The significance of the results suggests that the use of a BSC helps these MNCs to largely set targets and control performance ($p < 0.01$), followed by to communicate strategy, evaluate and reward performance ($p < 0.05$) and then to motivate and coordinate ($p < 0.10$).

We find that companies with a more global sales focus (*GLOBAL*) tend to de-emphasise the use of the BSC across all seven purposes ($p < 0.01$). This finding may be explained by the lack of control management has over global market conditions and/or because the global market sales focus reflects transfer pricing and tax minimisation strategies. For all seven purposes but one (reward), we observe that companies adopting *TQM* also use the BSC, but the use appears to be greater ($p < 0.05$) for the purposes of coordination, control and motivation and to a lesser ($p < 0.10$) extent to communicate strategy and objectives, evaluate performance and to set targets. For companies adopting *ABC*, we find that the BSC is emphasised ($p < 0.05$) to motivate employees, control performance and to reward employees and to a lesser ($p < 0.10$) extent to communicate strategy and objectives, and coordinate across areas. We find that *JIT* is not related to the use of the BSC. The findings on MAPs (*ABC*, *TQM* and *JIT*) imply that *TQM* may be the most compatible with the BSC while *JIT* is the least compatible.

Results on our control variables suggest that organisational size is significantly and positively ($p < 0.05$) related to the usage of BSC and this is likely because larger organisations have more control, coordination and communication issues. Taken together, the results from these analyses suggest that the usage of BSC information in private companies depends on several factors, which relate to their ownership status, the complexity of the market, existence of innovative MAPs and their size.

5. Conclusions

This study contributes to extant research by providing important insights into the use of the BSC. Our focus on the BSC is motivated by the dearth of research, and thus, lack of understanding of why some firms use a PMS system, which characterises a BSC (Hoque, 2014; Cooper and Ezzamel, 2013). We fill an important void in the literature and examine the adoption and use of the BSC by private companies in Singapore. In doing so, we also extend the literature by introducing new contingency variables such as foreign ownership and global market presence beyond a firm's geographic region as additional potential determinants of the adoption and usage of BSC.

Our first set of results indicates that private firms with foreign ownership, a variable not previously examined and motivated from an agency cost perspective, are more likely

to adopt BSC and use BSC for managerial and control purposes. These results suggest that foreign owners (MNCs) may be mitigating agency problems such as information asymmetry and loss of transparency through the use of a BSC (Kim and Mathur, 2008). The information captured by a BSC can help MNCs manage risks associated with information asymmetry and loss of transparency because of a more comprehensive picture of operations and performance in overseas locations. Our additional analyses show the BSC is used for a variety of purposes when the entity is foreign-owned, which include:

- communicating strategy and objectives;
- setting targets;
- evaluating performance;
- rewarding employees and managers;
- motivating employees and managers;
- controlling performance; and
- coordinating across activities, departments and/or functional areas.

Further, foreign-owned private companies may also be using a BSC to be consistent and fit the management and control system of the foreign parent entity (Burgess *et al.*, 2007; Kihn, 2007; Cadez and Guilding, 2008).

In contrast, our second set of results indicates that private companies in Singapore with a focus on global market presence beyond their geographic region – beyond Asia – are less likely to use a BSC. The construct we term focus on global market presence beyond their geographic region is motivated from a strategic perspective and is distinct from foreign ownership. Results of our additional analyses corroborate the BSC adoption finding as global market presence beyond a private company's geographic region is negatively related to the usage of the BSC across the seven different purposes of the BSC we examine. There are two explanations for the findings here; companies that operate in complex markets and/or those that engage in transfer pricing transactions for cost control or tax minimisation purposes are less likely to use the BSC. A private company focussing on markets beyond its geographic region may face external challenges and complexities (e.g. market uncertainties, foreign government policies and geopolitical risks), which its managers would not be able to control. Consequently, these private companies may focus on controllable activities that directly influence financial performance by potentially adopting financial-control-based performance systems. They may also acquire consulting services from high-quality international audit firms such as the Big Four to help address external challenges, reduce agency problems and foster their tax avoidance schemes (Jones *et al.*, 2018). As Singapore is regarded one of the top tax haven countries and it has the second most number of foreign affiliates (Desai *et al.*, 2006), our results suggest that the strategic intent of a global sales focus beyond a local company's geographic region may be explained by tax planning strategies (Rego, 2003; Desai *et al.*, 2006; Sikka and Willmott, 2010; Jones *et al.*, 2018). If tax planning is a viable candidate explaining our findings, then future management accounting research may want to consider how tax planning strategies influence the design, adoption and use of MCS/PMS.

Our third set of results indicates that firms that implement *TQM*, *ABC* and *JIT* are more likely to use a BSC. Such findings suggest that private companies may be implementing a more comprehensive system of management and control, and are likely selecting MCS/PMS that complement each other (Malmi and Brown, 2008; Grabner and Moers, 2013). Our

evidence from the extent of use of the BSC indicates that the adoption of *TQM* and *ABC* are found to be consistently related to the extent to which the BSC is used for various purposes. The findings here suggest that the adoption of complementary systems as a “package” enhances and facilitates the extent to which the BSC is actually used (Malmi and Brown, 2008; Grabner and Moers, 2013). There is some evidence in the literature that the BSC does not always work in practice and firms often drop its adoption (Nath and Sharma, 2014; Awadallah and Allam, 2015). Our study suggests that when firms also adopt complementary systems then the BSC may be more useful, which supports the proposal in Malmi and Brown (2008) and Grabner and Moers (2013) that MCS operates as a package or a coherent system. This may be so because techniques such as *TQM* and *ABC* feed into and facilitate the utility of the BSC as both *TQM* and *ABC* can impact the non-financial and financial perspectives of the BSC. Furthermore, *TQM* and *ABC* may be more “tangible” in some sense as they can serve as the vehicles by which the strategic intent of the BSC is transformed into operational activities and communicated down and across different levels of the organisation structure and functional areas.

Inherent in research like ours are some common limitations. First, our model is limited and excludes the effects of other significant contingency factors such as organisational culture. It may be appropriate to interview organisational participants to learn more about how their national and organisational cultures affect the decision to use the BSC. However, limiting the location to one country helps us control for any effects of local culture. Second, the data is drawn from Singapore’s private companies, which may not be generalisable to other settings and large listed companies. Third, we provide evidence of associations and do not draw inferences about causation. These limitations provide opportunities to further advance and renew the limited literature on the use of the BSC.

Notes

1. We use private companies as we were interested in companies that operated with foreign ownership and global market mainly owned by private shareholders.
2. Our focus on a global market construct captures the local private company’s sales market focus beyond its geographic region, which in this study is beyond Asia as our respondent private companies are from Singapore. We use terms such as global market, focus on a global market, global market focus and like terms to refer to this construct.
3. Norreklit (2003) and Busco and Quattrone (2009) note that organisations use a BSC because of persuasive marketing accompanied by rhetorical characteristics that appealed to management.
4. For a review of the contingency literature, see Chapman (1997).
5. Sikka and Willmott (2010) posit that “globalisation has added new complexities to the politics of transfer pricing. Freed from the limitations of territorial jurisdictions, corporations can more easily establish subsidiaries, affiliates, joint ventures, special purpose entities and trusts in favourable geographical locations to take advantage of low taxes and subsidies”.
6. We pilot tested the questionnaire and made editorial modifications such as using the UK rather than US English and using words and phrases that were easier to understand. We obtained an initial list of private companies in Singapore using Hoovers and randomly selected 300 companies. We approached these 300 companies through our networks and personal contacts via telephone calls and/or emails, and all 300 companies indicated they were willing to participate in the survey, and would make the decision to participate by completing the survey only after they

had a chance to review the requirements of the survey. The participants were offered an executive summary of the findings of the study as a token of appreciation for their participation.

7. None of the correlations are large enough ($p > 0.80$) to raise multicollinearity concerns (Hair *et al.*, 2010).
8. In our factor analysis, we include two ownership measures (foreign ownership and local (Singapore) ownership) and the global sales focus beyond Asia measure. Using Eigen-value greater than one criterion and Varimax rotation, two factors are extracted. The two ownership measures load on one factor (foreign ownership loading is 0.879 and local ownership loading is -0.874 and they explain 51.34 per cent of the total variance) and the global sales focus measures loads on the second factor (loading is 0.996 and it explains 33.54 per cent of the total variance).
9. The model is a good-fit to the data as the chi-square (χ^2) is 30.54, which is significant ($p < 0.001$). The pseudo R^2 is 33 per cent suggesting reasonable explanatory power.
10. Firm size also has a large effect as the probability of BSC usage is 42 per cent for each unit increase in firm size.
11. We have the following industries represented in our sample: manufacturing, financial services, retail, other services, transportation and construction. Our results are robust to industry effects.

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DELEGATION OF RESPONSIBILITIES

To what extent has actual authority been delegated to the appropriate managers (or to you) for each of the following classes of decisions? (Please rate actual, rather than stated, authority).

	Not at all	Moderate extent	To a great extent	1	2	3	4	5	6	7
Development of new products/services	1	2	3	4	5	6	7			
The hiring and firing of managerial personnel	1	2	3	4	5	6	7			
Budget allocations	1	2	3	4	5	6	7			
Pricing decisions	1	2	3	4	5	6	7			
Selection of large investments/projects	1	2	3	4	5	6	7			

OPERATING ENVIRONMENT UNCERTAINTY

How intense is each of the following types of competition in your principal industry?

Competition for purchases or inputs or equipment (ie raw materials, heavy machinery, buildings etc)

Of negligible intensity 1 2 3 4 5 6 7 Extremely intense

Competition for technical manpower such as accountants, IT personnel, specialists such as engineers, architects, chefs, supervisors etc

Of negligible intensity 1 2 3 4 5 6 7 Extremely intense

Competition for price (selling price for products/services)

None i.e. a monopoly 1 2 3 4 5 6 7 Extremely intense (cut throat)

How many new types of products/services have been marketed during the past 3 years by your competitors?

No new lines 1 2 3 4 5 6 7 Hundreds of new lines

How static/dynamic is the economic and technological environment facing your organisation?

Economic:

Changing very slowly 1 2 3 4 5 6 7 Changing rapidly

Technological:

Changing very slowly 1 2 3 4 5 6 7 Changing rapidly

How would you classify the market activities of your competitors during the past 3 years?

Much easier to predict 1 2 3 4 5 6 7 Much harder to predict

During the past 3 years the tastes and preferences of your customers/clients have become:

Much easier to predict 1 2 3 4 5 6 7 Much harder to predict

(continued)

THE BALANCED-SCORECARD

Does your organisation use a Balanced-Scorecard (BSC) or similar score card system?

- No. If no, please go to the next section of the questionnaire.
- Yes. If yes, please continue answering the following questions. For convenience, the questions refer to the balanced-scorecard. If your organisation has a similar scorecard please interpret BSC as it refers to your scorecard.

How many years has the BSC been in use? _____ years

Please indicate the number of measures your entire BSC system has:

Very few (five) 1 2 3 4 5 6 7 A lot (more than 20)

How would you describe the complexity of your organization's BSC system?

Very simple 1 2 3 4 5 6 7 Extremely complex

How would you rate the general understandability of your organisation's BSC system?

Easily understood 1 2 3 4 5 6 7 Difficultly understanding

To what extent is the balanced-scorecard used:

(a) As a means by which management communicates strategy and objectives to other levels in the organisation

Not used at all 1 2 3 4 5 6 7 Used to a great extent

(b) To set targets for management and/or departments (cross out inapplicable)

Not used at all 1 2 3 4 5 6 7 Used to a great extent

(c) To evaluate performance of management and/or departments (cross out inapplicable)

Not used at all 1 2 3 4 5 6 7 Used to a great extent

(d) As a means for rewarding/compensating management and employees

Not used at all 1 2 3 4 5 6 7 Used to a great extent

(e) To motivate employees to do better

Not used at all 1 2 3 4 5 6 7 Used to a great extent

(f) To control performance by calculating and investigating variances

Not used at all 1 2 3 4 5 6 7 Used to a great extent

(g) To co-ordinate activities or inter-departmental or functional dependency

Not used at all 1 2 3 4 5 6 7 Used to a great extent

(continued)

(f) To control performance by calculating and investigating variances
Not used at all 1 2 3 4 5 6 7 Used to a great extent

(g) To co-ordinate activities or inter-departmental or functional dependency
Not used at all 1 2 3 4 5 6 7 Used to a great extent

Are the non-financial measures linked to financial measures: No Yes

If yes, please state six financial measures to which the non-financial measures are linked:

1..... 2.....

3..... 4.....

5..... 6.....

Does your organisation use any of the following management tools/systems/performance measures (please tick as many):

- Just-in-time (JIT) system Quality control circles Total quality management (TQM)
- Key performance indicators Critical success factors Statistical modelling
- Target costing Kaizen costing Life cycle costing
- EVA ROI ROA
- Residual income Net profit EPS
- Sales growth Profit growth Cashflow

Does your organisation have any ISO certification: No Yes; if yes please state:.....

.....
.....
.....

PARTICULARS OF THE RESPONDENT

Your Age: <25 26-30 31-35 36-40 41-45 46-50
 51+

Gender: Male Female

Position in the Organisation:.....

Number of years in current position: years

Please describe your Responsibilities:

.....
.....

Your experience in the industry of your organisation: years

Please state the time taken to complete the questionnaire: minutes

THANK YOU FOR YOUR PARTICIPATION
PLEASE BE ASSURED THAT YOUR RESPONSES WILL REMAIN ANONYMOUS & CONFIDENTIAL

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