

Factors Explaining the Extent of Use of Management Accounting Practices in Malaysian Medium Firms

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ABSTRACT

There is little recent empirical research relating to what factors affected the use of specific management accounting practices in SMEs context. This research addresses the omission and report the findings derived from a survey of Malaysian firms in SME sector. Based on the 110 Malaysian medium firms in the manufacturing sector, the study indicates that size of the firm, intensity of market competition; commitment of owner/manager of firm and advanced manufacturing technology (AMT) have significant influence on the use of certain management accounting practices i.e costing system and performance evaluation system. The some use of more sophisticated MAPs (decision support system and strategic management accounting) is largely associated with the commitment of owner/manager. This research provides support for a contingency based explanation for the extent of use of MAPs and identifies new variable such as commitment of owner/manager as one of a key factor that affect the extent of use of management accounting practices in Malaysian medium firms.

Keywords: Management accounting practices, Small and medium-sized enterprises (SMEs), manufacturing sector, Malaysia

I INTRODUCTION

Small and medium-sized enterprises (SMEs) make up the vast majority of the business population in most countries in the world therefore they constitute a vital force in modern information-based economies (Mitchell and Reid, 2000). In Malaysia the SMEs population comprises approximately 99 per cent of all Malaysian businesses (DOS, 2005). As such this sector plays a crucial role in the economy as an engine to generate economic growth in Malaysia. SMEs also contribute to the Malaysian economy in many other ways such as the encouragement of entrepreneurship, the creation of employment opportunities, and poverty alleviation. Given the various potential advantages from a thriving SMEs sector, the Malaysian government/policy makers have enacted various policies and interventions to promote SME development and to ensure the sector's

sustainability and survival. Financial assistance as well as training in technical aspects of business, marketing and management skills is among the support from the government for this sector. These policies and support have successfully stimulated the growth of this sector. Despite the increasing interest in the SME sector, there is a dearth of academic research into Malaysian SMEs including their use of management accounting practices (MAPs) and what factors affect the extent of use of MAPs among Malaysian SMEs. Given this gap of research, it is vital to identify what factors underlying their development so that a knowledge relating to the development of SMEs from the perspective of management accounting can be enriched.

Most researches into factors that affect the use of MAPs were based on contingency theory framework. The contingency approach to management accounting is based on the premise that there is no universally appropriate accounting system which applies equally to all organisations in all circumstances (Otley, 1980). This theory suggests that particular features of an appropriate accounting system will depend upon the specific circumstances in which an organisation finds itself (Otley, 1980). Contingency theory must therefore identify specific aspects of an accounting system which are associated with certain defined circumstances and demonstrate an appropriate match. Researchers to date have attempted to explain the development or change of management accounting practices in larger firms by examining designs that best suit contingent variables including the nature of the environment, technology, size, structure, and strategy. Despite these numerous evidence in contingency-based management accounting research, there have been only a few empirical research studies specifically designed to examine contingency factor of MAPs in small firms or SMEs especially in developing countries. This leaves a significant gap in body of knowledge in understanding factors that influence the use of MAPs in relatively small firms particularly in a developing country. Accordingly, this paper represents the results of an effort to contribute additional evidence in this area and provides a basic explanation on the nature of development of MAPs in smaller firms or SMEs.

II LITERATURE REVIEW

There is a considerable amount of contingency-based research has been undertaken relating to management accounting practices. Within the contingency theory context, previous literature aims to explain particular circumstances (that is, contingencies) shape the use of management accounting practices (MAPs) (see for example Anderson and Larnen, 1999; Hoque and James, 2000; Szychta, 2002; Halma and Laats, 2002 and O'Regan et al., 2008).

Major studies have stressed the importance of external and internal factors as explanatory variables when examining the development of MAPs. For example Halma and Laats (2002) view contingent variables as external and internal factors. While internal contingencies are determined as technology, organizational aspects, and strategy; external factors indicate the features of external environment at the level of business and accounting that shape internal systems. One of the popular external variable market competition has been identified as the most important external factor for the development of management accounting. For example Bruns and Kaplan (1991) identified competition as the most important external factor for stimulating managers to begin to work on a new cost system. Anderson and Larnen (1999) explored the evolution of a broad range of MAPs in 14 Indian firms and found that changes in the external environment prompted changes in MAPs. Luther and Longden (2001) confirmed that contingent factors such as the intensity of competition and volatility of environment caused management accounting change in South Africa. Other studies that found similar results are Haldma and Laats (2002) and Szychta (2002). In contrast, there are a few studies found negative results (see Merchant, 1984; Hoque and James, 2000 and O'Connor et al., 2004).

Apart from external factors, the contingency variable of production technology has also been employed in examining the employment of MAPs. Tayles and Drury (1994) studied the impact of advanced manufacturing technologies (AMTs) on management accounting systems. This study reported three main results: (i). the methods used to evaluate investment in modern manufacturing made little distinction between an investment of an AMT or non-AMT nature; (ii). in general only a minority of accountants with experience of Just in Time (JIT) systems considered that JIT adoption caused change to occur in their company's accounting system for generating product costs. However, on balance, those with experience of FMS (these were predominantly in motor vehicles and electrical industries) suggested that a significant or very

significant change did occur; and (iii). accountants with experience of the development of AMTs stated that these technologies had a significant or very significant effect on changing their company's management accounting system for performance measurement and control. Abdel-Maksoud et al. (2005) found that relatively sophisticated MAPs exist in firms that have made significant investment in AMT, Total Quality Management (TQM) and (JIT). Their findings were supported by Al-Omiri and Drury (2007), who reported that higher levels of cost system sophistication are positively associated with the extent of the use of JIT and lean production techniques. Similarly, Kader and Luther (2008) concluded that differences in management accounting sophistication are explained by the adoption of AMT, TQM and JIT systems. Szychta (2002) also agreed that technology is one of driving forces behind the shift in use of management accounting practices in Poland.

As with other contingency studies, the size of firm has been shown to affect the design and scope of MAPs see for example, Holmes and Nicholls (1999), Lamminmaki and Drury (2001), Brown et al. (2004), Cadez and Guilding (2008), or and Kader and Luther (2008). Research has also shown that larger firms have more sophisticated MAPs. For example, Hoque and James (2000) in a survey of 66 Australian manufacturing companies noted that larger firms make more use of a balanced scorecard (BSC). Joshi (2000) reported that the organisatioanl size was found to be an important factor in the adoption of advanced MAPs in India. Similarly, Cadez and Guilding (2008) found that strategic management accounting (SMA) usage is positively associated with company size. A possible reason is that larger organizations have greater resources than their smaller counterparts and can, therefore, afford to adopt more sophisticated MAPs (Haldma and Laats, 2002; Al-Omiri and Drury, 2007; Kader and Luther, 2008). Bjoernak (1997) argued that large organizations have large information fields and the necessary infrastructure which would facilitate the adoption of sophisticated MAPs. Apart from that, as organizational size increases, formal management control, and sophisticated MAPs, may be expected to become more important.

Another internal factor, which is commonly advanced as a possible explanation for variations in MAPs, is firm strategy. Collins et al. (1997) investigated the relationship between business strategy and budgetary usage, given a perceived crisis in Latin America. Using the Miles and Snow (1978) typology, it was hypothesized that a Defender and Reactor strategy usage would be positively associated with crisis, while a Prospector

and Analyser strategy usage would be negatively associated with crisis. However, the results indicated that the only significant relationship was between a Prospector strategy and budgetary usage. Gosselin (1997) showed that strategy influenced the extent to which strategic business units (SBUs) adopted activity-based costing. Hoque (2004), meanwhile, discovered a significant and positive association between strategy and management's use of non-financial measures for performance evaluation. Cadez and Guilding (2008) examined the effect of strategic choices on strategic management accounting (SMA), finding that SMA usage is positively associated with adopting a prospector strategy, deliberate strategy formulation, and accountants' strategic decision making participation. However, Kader and Luther (2008) found no evidence of a relationship between management accounting sophistication and competitive strategy.

Contingency factor research in smaller firms is very limited. However, the few studies that exist have identified several variables that may affect the development of MAPs in these firms. One important issue that might limit the adoption of MAPs in small organization is the abilities and competencies of the available human resources. Studies of SMEs have highlighted the importance of qualified accounting staff and owner/manager attitude as factors that may be associated with the adoption and development of management accounting practices. Collis and Jarvis (2002) concluded that qualified accountants, together with the generally high level of education and training of the accountant, may aid the generation and analysis of financial information. Sousa et al. (2006), found that poor training of employees was the major obstacle to the adoption of new performance measures. This situation may reflect a lack of skills by employees and a difficulty in understanding the performance measurement process.

Apart from the roles played by qualified staff, owner/managers also have part in the development of MAPs in small business. Holmes and Nicholls (1989) reported that the education level of a business' owner/manager has a significant influence upon the acquisition or preparation of accounting information. Lybaert (1998), who analysed the influences on the information use in SMEs among Belgian SME owner/managers, found that a greater use of information in managing the firm was present when SME owner/managers had a greater strategic awareness, less experience of working in other firms prior to the present position and a greater desire for growth. A study by Brown et al. (2004) found that top management support influenced the transition from not having

considered ABC to initiating interest in ABC. They argued that organizational factors may be more important in explaining the adoption of innovative management accounting practices than other factors.

In summary, a significant portion of the studies are based on work in larger companies as research into contingent variables. However in SMEs the research into this area is very limited especially in developing countries. Given the significant economic importance of SMEs and the gap in the literature, this research aims to examine factors that have positive relationship with the extent of use of MAPs among Malaysian SMEs. The remainder of the article is structured as follows. In the next section, the research method is presented. This is followed by a discussion of the survey results and summary and comparison with previous research. Conclusions, limitation of the studies and implications for future research are presented in a final section.

III RESEARCH METHOD

A survey was administered to 500 Malaysian medium firms in manufacturing sector. The firms were selected from the Federation of Malaysian Manufacturers (FMM). This source, although not comprehensive, provides detailed information about SMEs in the manufacturing sector. The sample was mailed with the first survey comprising a cover letter, questionnaire and a reply paid envelope. To encourage completion of the questionnaire, participants were promised a summary of the results and informed that their responses were anonymous. A month after the first mailing, 60 replies were received. A second and third mailing was used to increase the responses rate. At the end of the process a total of 115 questionnaires were received giving a response rate of 23% (115/500). Of these 5 were unusable for the following reasons:

- the firm had ceased operation, or was from another sector;
- the questionnaire had not been completed; and
- the firm did not want to participate in the survey.

Hence, 110 usable questionnaires were received which equal to the net usable response rate of 22.2% (110/495)¹. The usable response rate received in this survey is marginally better than the

¹ The usable response rate is calculated as follows:
 response rate = (number of completed and returned questionnaires) divided by (Number of respondents in sample – (non-eligible and non-reachable respondents))

expected response rate of between 12% and 15%. An expectation based on past response rates achieved by academic surveys of this type of population. Hence, it can be concluded that the usable response rate is considered acceptable and sufficiently large for analysis.

To examine for non-response bias, the responses from the first 30% of returns and those from the last 30% were compared, to test if responses differed between the two groups. The tests on profile of respondents as well as the use and the extent of management accounting practices were undertaken using chi-square and Mann-Whitney U non-parametric test. No differences were identified, providing some support for the absence of a non-response bias.

Selected contingent variables and their measurements

Five contingent variables that may be positively associated with the extent of use of management accounting practices were identified. The selection is based on theoretical appropriateness and the availability of the information. The measurements used as proxies for these contingent factors are detailed below.

- **Size of the firms**

Previous studies (e.g., Merchant, 1984; Haldma and Laats, 2002; Al-Omiri and Drury, 2007 and Kader and Luther, 2008) have demonstrated consistently that a firm's size has impacted the use of MAPs in business organizations. A larger firm has greater total resources, and better internal communication systems that facilitate the diffusion of management accounting practices. In addition larger firms are more complex and face more difficult problems. In consequent they require more control of, and information on, their business activities and, therefore, need more comprehensive and sophisticated MAPs. Thus it is essential to test whether the size of the SMEs will be associated with a greater use of MAPs. Size of the firms is measured based on annual sales turnover. In this case 1= less than RM250,000, 2 = RM250,000 to RM1.0 million, 3 = RM1.0 to RM5.0 million, 4 = RM5.0 to RM10.0 million, 5 = RM10.0 million to RM25.0 million.

- **Intensity of market competition**

It has been argued that the intensity of market competition can play a major role in encouraging management to enhance management accounting systems and adopt sophisticated management accounting practices (Khandwalla, 1972; Libby and Waterhouse, 1996; Bjornenak, 1997; O'Connor et al., 2004 and Al-Omiry and Drury, 2007). As competition increases, a more reliable management accounting information is likely to be needed by the firms to compete effectively and avoid planning based on erroneous information when making decisions (Cooper, 1988). Therefore market competition as a more relevant sub-set of environmental uncertainty will be used in testing whether or not external factors positively affect the extent of use of MAPs in Malaysian SMEs. The intensity of market competition as perceived by the respondent is measured based on the five-point Likert scale. The scale is 1= Not intense at all, 2 = Not intense, 3 = Slightly intense, 4 = Intense, and 5 = Very intense. This approach is based on a study by Hansen and Van der Stede (2004).

- **Commitment of owners/directors of firms**

Since the owner/manager will probably be involved closely in the management of the firm, the commitment of the owner/manager of the firm might directly influence the extent of use of MAPs. Previous research in management accounting supports this contention (see for example Shields, 1995; and Brown et al., 2004), therefore this variable will be a contingent variable for testing the first hypothesis that there is a positive relationship between the commitment of the owner/manager and the extent of use of MAPs in SMEs. The level of commitment of owner/directors of the firm to the use of management accounting practices within the firm is measured using the five-point Likert scale. The scale is 1 = Not at all, 2 = Low extent, 3 = Moderate extent, 4 = High extent, and 5 = Very high extent. This measurement approach is based on a study by Ismail and King (2007).

- **Advanced manufacturing technology**

The use of modern technology in production activities has been shown to impact on the extent of use of MAPs in many populations but not for SMEs. Even though advanced production techniques may be limited to smaller firms, it is assumed that manufacturing firms employ technology of some form in assisting their production activities. Moreover, in today's modern business, technology has been evolving very

quickly and has been widely disseminated. For this reason, it is essential to test this variable as one of the potential contingent factors that explain the extent of use of MAPs in SMEs. A five-point Likert scale is used to measuring the extent of the use of advanced manufacturing technology (AMT) by the firm. Respondents are required to indicate the extent of the AMT usage using a Likert scale from 1 = Not used to 5 = Widely used. This measurement is identical to that used by Tayles and Drury (1994).

- The level of qualification of accounting staff

In small firms, the existence of qualified internal accounting staff can be a significant factor underlying the adoption of MAPs. Most large firms have specific accounting and finance departments and prefer, therefore, to hire qualified internal staff to do professional reporting and consultation. Previous literature provides some support for the exogenous nature of this variable. For example Halma and Laats (2002); Al-Omiri (2003) and Ismail and King (2007) suggest that the presence of competent accounting staff is associated with a high level of uptake of MAPs; while in a SME context, both Collis and Jarvis (2002) and McChlery et al. (2004) suggested that qualified accountants help the development of MAPs in SMEs. Therefore the level of qualification of accounting staff will be included as one of the potential factor that might affect the uptake of MAPs in Malaysian SMEs. The qualification status of the firm's accountant is measured simply by reference the type of qualifications that the accountant possesses.

Other potentially relevant factors such as profitability, age/maturity of firm, ownership of firm are not addressed due to limited evidence in the previous literature regarding the positive relationship between these variables and the use of MAPs particularly in the SMEs context. Therefore these factors are disregarded in this study.

Management accounting practices (MAPs) measurement

MAPs were grouped into five major parts; costing system; budgeting system; performance evaluation system; decision support system; and strategic management accounting. The questionnaire ascertained whether or not the respondents used each particular practice in their firms (1=Yes/0=No).

The general hypotheses

In this study a general hypotheses were developed for empirical testing.

H1: There are significant and positive relationships between selected contingent factors and the use of management accounting practices.

This leads to the test of 20 sub-hypotheses that hypothesized the relationship between each contingent factors (size of the firm, intensity of market competition, advanced manufacturing technology (AMT) and commitment of owners/managers of firms) and each five main area of MAPs (costing system, budgeting system, decision support system and strategic management accounting).

Given the mix of binary and ordinal data, one of four basic assumptions for parametric testing is not met as data must be on a ratio or interval scale. Non-parametric test (Kendall's tau correlation analysis test) was therefore employed.

IV RESULTS

The results of tests for Kendall's tau analysis are presented under the five different areas of MAPs are as follows:

A. Size of the firm

Table 1 reports the result of Kendall's tau correlation for the relationship between size of the firm and the use of MAPs.

Table 1: Kendall's tau correlation coefficient test results for the relationship between annual sales turnover and the use of MAPs.

	Correlation coefficient	Sig. value
Costing system	0.296	0.000
Budgeting system	0.075	0.201
Performance evaluation system	0.206	0.011
Decision support system	0.089	0.159
Strategic management accounting	0.091	0.155

The results presented in Table 1 show a moderate, positive and significant relationship between annual sales turnover and the use of a costing system and a performance evaluation system. However, there is no support for any statistically significant

relationship between annual sales turnover and the use of budgeting systems, decision support systems or SMA.

B. Intensity of market competition

Table 2: Kendall's tau correlation coefficient test results for the relationship between intensity of market competition and the use of MAPs.

	Correlation coefficient	Sig. value
Costing system	0.186	0.023
Budgeting system	0.180	0.027
Performance evaluation system	0.180	0.027
Decision support system	0.091	0.165
Strategic management accounting	0.095	0.154

The results presented in Table 2 provide some evidence for intensity of market competition effect on the use three specific MAPs. The results suggest a small, positive and significant relationship between the intensity of market competition and the use of costing systems, budgeting systems and performance evaluation systems. However, there are no significant relationships between the perceived intensity of market competition and the use of decision support systems and SMA although the direction of association was consistently positive in accordance with the hypothesised relationship. Therefore three sub-hypotheses (H_{1-6} , H_{1-7} and H_{1-8}) are accepted and the other two sub-hypotheses H_{1-9} and H_{1-10} are rejected.

C. Commitment of owner/manager

The results are shown in Table 3 below.

Table 3: Kendall's tau correlation coefficient test results for the relationship between commitment of owner/manager and the use of MAPs.

	Correlation coefficient	Sig. value
Costing system	0.187	0.374
Budgeting system	0.134	0.067
Performance evaluation system	0.129	0.075
Decision support system	0.224	0.049
Strategic management accounting	0.233	0.005

The results presented in Table 3 provide some evidence for an owner/manager relationship on the

use three specific MAPs. The results suggest a moderate, positive and significant relationship between the commitment of the owner/manager and the use of decision support systems and SMA. However, there is no support for any statistically significant relationship between commitment of owner/manager and the use of costing systems, budgeting systems and performance evaluation system. Therefore two sub-hypotheses (H_{1-14} and H_{1-15}) are accepted and the other three sub-hypotheses (H_{1-11} , H_{1-12} and H_{1-13}) are rejected. It was also noted that the direction of association was consistently positive in line with the hypotheses.

D. Advanced manufacturing technology (AMT)

Table 4: Kendall's tau correlation coefficient test results for the relationship between reported use of AMT and the use of management accounting practices.

	Correlation coefficient	Sig. value
Costing system	0.280	0.001
Budgeting system	0.104	0.115
Performance evaluation system	0.250	0.002
Decision support system	0.114	0.094
Strategic management accounting	0.285	0.000

The results in Table 4 show a moderate, positive and significant relationship between AMT and the use of costing systems, performance evaluation systems and SMA. This means that in general the firms with more use of AMT are more likely to use a costing system and have a system for performance evaluation and SMA. Therefore sub-hypotheses H_{1-16} , H_{1-18} and H_{1-20} are accepted and H_{1-17} and H_{1-19} despite having a consistently positive correlation coefficient in line with the hypothesis are rejected.

E. The level of qualification of accounting staff

Table 5: Kendall's tau correlation coefficient test results for the relationship between the level of qualification of accounting staff and the use of management accounting practices.

	Correlation coefficient	Sig. value
Costing system	0.147	0.055
Budgeting system	0.021	0.408
Performance evaluation system	0.112	0.111
Decision support system	0.055	0.273
Strategic management accounting	0.048	0.301

The results show that there are no significant relationships between the level of qualification of accounting staff and the use of MAPs. Therefore sub-hypotheses H₁₋₂₁ to H₁₋₂₅ are rejected.

V SUMMARY

This paper reports the results of the correlation analysis of data obtained from medium firms in the Malaysian manufacturing sector. The objective of the analysis was to investigate for significant relationships between a number of contingent variables and the use of specific management accounting practices. Kendall's tau was employed to investigate the hypothesized relationships.

The results of the analysis of the relationships between selected contingent variables and the use of MAPs in terms of the five main categories show that the direction of association of all 25 proposed sub-hypotheses was positive in line with the hypothesised relationship. However of these hypotheses ten were accepted and the other 15 were rejected.

The results indicate that four out of five explanatory variables were positively and significantly associated with at least two out of five MAPs. These results suggest that contingent factors are important predictors that shape the use of MAPs within Malaysian medium firms in the manufacturing sector. Costing systems and performance evaluation system have consistently been positively and significantly affected by similar contingent factors which are size of the firm, intensity of market competition and use of advanced manufacturing technology. These three variables may be viewed as reflecting the complexity of business environment in which the firms operate. Thus these results suggest that medium firms have prompted the need to seek and analyse more detailed information on costing and performance evaluation when they faced a higher level of complexity caused by external and internal factors. This perhaps shows the importance of firms having comprehensive records on production costs as well as an evaluation of progress or performance so that firms are able to act wisely and competitively. Additionally both intensity of market competition and the use of AMT have also significantly affected the use of other management accounting practices. First intensity of market competition is positively and significantly associated with a higher level of use of budgeting systems. This finding implies that increased market competition causes medium firms to be more prudent in planning and controlling their activities

in order to survive and compete effectively in the market. Second the result indicates that the use of AMT has been positively and significantly associated with a greater use of strategic management accounting. This result suggests that as a firms' business environment becomes increasingly dynamic (i.e through the use of modern technology), firms have found it increasingly important to use management accounting to develop coherent and logically consistent business strategies.

Table 6 also shows that commitment of the owner/manager has a positive and significant relationship with the use of a budgeting, decision support systems and strategic management accounting. Therefore owner/managers have major influence on the use of management accounting practices that related to decision making in the short-run, and planning and control including the development of strategy. This is perhaps because in smaller firms, which probably exhibit an entrepreneurial organization structure, the owner/manager acts as the main decision maker and are usually the shapers of the future of the business (Thong et al., 1996). Therefore committed owner/managers would have the means to press for management accounting practices that deliver appropriate managerial information to assist them achieve their strategic goals and objectives. The results fail to find positive and significant relationship between commitment of owner/manager and use of a costing system or performance evaluation system.

The last variable; the level of qualification of accounting staff was found not to have positive and significant relationships with the use of any MAPs. This result implies that a high extent of use of MAPs in medium firms is not dependent upon the presence of a qualified accountant in the firm. This result is consistent with Collis and Jarvis (2002).

VI COMPARISON OF RESULTS WITH THE PRIOR RESEARCH

Overall, the results show that not all practices are affected by the same contingent variables. In particular use of a costing system and performance evaluation are dependent on internal and external pressures whereas the use of other practices largely depend on owner/manager commitment. In conclusion, the hypothesis is partial accepted and provide support for a contingency based explanation for the extent of use of MAPs by respondents.

The first contingent variable, size of the firms was only found to be positively and statistically significant related to use of a costing system and a

performance evaluation system. The results are consistent with studies by Halma and Laats (2002), who found that the application of cost accounting tends to increase in line with company size, and Hoque and James (2000) who found a link between size and the use of performance measures. However the present results fail to find a relationship between size of the firms and the use of sophisticated management accounting and this is contrary to findings by, for example, Kader and Luther (2008) and Cadez and Guilding (2008). Kader and Luther (2008) who found that differences in management accounting sophistication are explained by size of a firm and Cadez and Guilding (2008) who found that strategic management accounting (SMA) usage is positively associated with company size. Hansen and Van der Stede (2004) also found that organizational size drives the use of budgets for performance evaluation and communication of goals. As has been previously observed, these differences in findings probably reflect the narrow size band of the firms who responded.

The second contingent variable; intensity of market competition has a positive and statistically significant relationship with use of a costing system, performance evaluation and a budgeting system. The result is consistent with a number of previous findings such as by Chenhall and Moris (1986); Mia and Clarke (1998) and Abdel-Maksoud et al. (2005). For example, Abdel-Maksoud et al. (2005) speculated that companies in difficult competitive situations measure performance on all the dimensions available to them. However the findings are at variance with the majority previous studies, which have reported a positive and significant association between market competition and the use of sophisticated MAPs. For example, Khandwalla's (1972) and Al-Omiri and Drury (2007) found a positive relationship between intensity of market competition and the employment of sophisticated management controls. A possible reason for these different findings is the narrow base from which the respondents came. It is probable that firms in a limited number of sectors and not widely varied in size face similar competitive environment. Thus the variation in reported intensity of competition is insufficient to generate statistically significant relationships.

The third contingent variable, commitment of owner/manager has a positive and statistically significant relationship with use of budgeting system, decision support system and strategic management accounting. This result supports the argument and findings of the previous studies that an owner/manager's commitment plays a critical role in the effectiveness of information system

implementation in SMEs. For example, Thong and Yap (1995) held that the owner/manager is an entrepreneur figure, who is crucial in determining the innovative attitude of a small business. Hence the commitment of the owner/manager is the determinant of the overall management style of the business and would possibly affect the adoption level of management accounting practices. Lybaert (1998), who analysed the influences on information use among Belgian SME, also found that owner/managers play a role in the development of MAPs. Al-Omiri (2003) also reported that top management was significantly associated with ABC implementation success.

The fourth contingent variable, advanced manufacturing technology, has a positive and statistically significant association with use of costing system, performance evaluation system and strategic management accounting. This suggests that technology can be an important factor that affects the use of MAPs in the smaller firm context. The association between technology with the use of costing system and performance evaluation system is consistent with several previous findings. For example Tayles and Drury (1994) reported AMT had a significant or very significant effect in changing company's management accounting system for performance evaluation system. Similarly Chenhall (1997) and Fullerton and McWatters (2002), who examined the interaction between JIT and TQM and the use of performance measures, similarly discovered a positive relationship between these two variables. Al-Omiri and Drury (2007) found a positive association between higher levels of cost system sophistication and the extent of the use of JIT and lean production techniques.

A significant link between AMT and SMA is consistent with past research. For example, Abdel-Maksoud et al. (2005) found that relatively sophisticated MAPs exist in firms that have made significant investments in AMT, Total Quality Management (TQM) and Just in Time (JIT), and Kader and Luther (2008) concluded that differences in management accounting sophistication are explained by the adoption of AMT, TQM and JIT systems.

VII CONCLUSION

In conclusion the results indicate that some use of particular MAPs depends upon specific contingent factors. Four contingent factors; size of the firm, intensity of market competition commitment of owner/manager of firm and AMT have a positive and statistically significant relationship with the use of certain MAPs. The analyses also suggest that costing systems and performance evaluation

systems have consistently been positively and significantly affected by similar contingent factors which are size of the firm, intensity of market competition and the use of AMT. Further the use of budgeting and more sophisticated MAPs is largely associated with commitment of the owner/manager of firm. Therefore, it can be suggested that the Malaysian SMEs make more use of MAPs when their firms face environmental complexity either internally or externally or when the owner/manager is committed to their use.

This research has shed light on factors influencing the use of MAPs in small businesses in a developing country. The findings indicate that MAPs can be influenced by external environment as well as by factors within the organization. As such this research has responded to the recent calls for additional contingency based research in management accounting in order to enhance understanding of potential contingency factors which explain the use of MAPs (Chenhall and Langfield-Smith, 1998; and El-Ebaishi et al., 2003). It extends the body of knowledge that use contingency theory to explore the significance of contingency variables in small businesses.

This study has certain limitations. First, the low response to the questionnaire survey potentially introduces non-response bias. Thus caution must also be exercised when generalizing from the results for medium enterprises given the low response rate. However, data collection for SMEs is difficult and therefore the limitation of low response rates cannot be avoided. Second a range of contingent variables used in this study is quite small. This reflects the less complex environment in which SMEs operate. The limited number of variables was also decided upon to avoid confusing respondents or discouraging them from responding by excessive complexity. Considerations that is especially important given that the sample is unused to academic research questionnaires.

Next, in the context of contingency theory it might be advantageous to focus on a sample from one particular industry such as electric and electronics or food and drinks in the manufacturing sector. This would mean that the sample would be more homogeneous and might be expected to use certain types of MAPs or certain techniques. This is also might make the contingent factors explaining differences more distinct. Alternatively a case study approach might be employed to highlight differences and reasons for them in a more detailed context so that how and why practices and techniques are applied or not applied would be identifiable. Lastly the lower use of sophisticated MAPs raises the question of the conditions

necessary to effectively implement these techniques within smaller firms. Again a qualitative case study approach would provide real insights that could not be gleaned from a questionnaire survey approach.

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