

THE LEVEL OF PROFESSIONALISM AND THE USE OF PMS AMONG MANAGERS IN MALAYSIAN MANUFACTURING FIRMS

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ABSTRACT

Nowadays, stringent competition has forced the manufacturing sector to focus on performance measurement systems (PMS) to ensure individual employee's actions are in line with organizational objectives. Accordingly, the individual level of professionalism is seen as one of the elements to be considered to enhance the use of PMS. Looking from the individual-level perspective, this study aims to examine the relationship between professionalism with the use of PMS and their impact on managerial performance. Upper Echelon Theory (UET) is used as the underlying principle in developing the model of the study. UET suggests personal characteristics such as expertise and specialization are crucial in dealing with complex and complicated decision making processes and consequently affect performance. Data were collected through a mail questionnaire from 100 operation managers of manufacturing firms. Path models were analyzed using structural equation model (SEM). Findings indicate the level of managers' professionalism positively affects the use of PMS for attention focus and strategic decision making. The result also suggests that the use of PMS for strategic decision making positively affects managerial performance. In addition, results indicate that PMS used for strategic decision making has a mediating effect on the relationship between professionalism and managerial performance. This study provides new insights into the improvement of PMS by considering individual elements such as level of professionalism of managers and contributes to the body of knowledge.

Keywords: managerial performance, manufacturing sector, performance measurement system, professionalism, upper echelon theory.

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INTRODUCTION

The concept of management control system (MCS) has been known to help organizations in managing conflicts between employees creative innovation and organization desired objectives (Henri 2006). One of the components of the MCS, namely the performance measurement system (PMS), has received much attention especially in the high diversity environments such as the manufacturing sector (Jusoh et al., 2008). However, the success of a PMS is not fully utilized by the firms due to misalignment between employee and organizational objectives. Malaysian manufacturing production have been declining recently as a result of inefficiency and ineffectiveness (Yee, 2015). Inefficient management has become one of the problems that is reflected through poorly implemented PMS (Kennerley & Neely, 2002). Although much has been studied about the PMS, there is still a lack of understanding related to the use of the PMS among managers at the operational level, especially in the Malaysian context. However, Berman and Wang (2000) highlighted that the use of PMS can be enhanced through professionalism of managers by providing technical capacity such as the ability in analyzing and monitoring goals and performance.

In order to have a well executed PMS, it is important to have consistency between individual and organizational goals (Anthony & Govindarajan, 2007). This view is consistent with Kennerley & Neely (2003), claiming that a well-executed system should align the individual employees actions with strategies and objectives. Because of that, one of the issues of unsuccessful PMS might be due to the lack of understanding on how an individual employee deals with the use of the PMS. Unsuccessful PMS may need to be tackled by individual employees themselves to further improve the understanding of PMS use. Lack of studies on individual analysis has created different setting on PMS knowledge, on how to have a well implemented system. Moreover, Covaleski et al. (2006) claimed that the result of an organizational-level analysis is based on an individual behavior assumption, hence it is fruitful to gain an understanding from detailed results of individual-level analysis.

Since 1980s, the issues of performance measurement in operations have captured serious attention from organizations in order to resolving practical and conceptual challenges in the PMS (Choong, 2014; Wouters &

Sportel, 2005). This is due to the fact that the implementation of strategies set up by top management is to be done during the operations processes. However, some organizations seem unable to successfully operationalize the strategies set up. Operation managers use the PMS in order to ensure operations processes are effective, efficient and meets the strategies set (Wouters & Sportel, 2005). The use of performance measure among operations department involves various levels of management which include middle and lower management (Wouters & Sportel, 2005). It is important to understand the use of the PMS among operation managers as they are responsible to ensure that the PMS agenda is successfully implemented. In line with this, Tätilä, et al. (2014) added that there is a major practical concern to identify how the PMS should be used operationally to attain performance. However, successful PMS can only be achieved if individual goals align with organizational goals (Anthony & Govindarajan, 2007).

Berman and Wang (2000) highlighted that performance measurement should be accompanied by technical capacity which reflects through professionalism of manager handling performance measurement. Without technical capacity, performance measurement may not be successfully implemented. Although various issues on PMS has been widely discussed, there are few focused studies that investigate the interplay between professionalism and PMS, especially at the individual-level analysis. In addition, it is crucial to analyze the use of the PMS among operation managers as they are the responsible individuals to ensure that the organization's PMS agenda is successfully implemented. Hence, this study seeks to extend the knowledge on the relationship between professionalism of manager and managerial performance through the use of the PMS. This study aims to investigate the impact of professionalism on managerial performance through PMS use through one research question: *To what extent may the relationship of professionalism and the use of PMS affect managerial performance?*

This study contributes to prior research that has examined the practice of PMS and managerial performance (Hall, 2008), and also extends prior research on PMS use to be examined at the individual level of-analysis. This study also extends the limited research on the effect of professionalism on management control systems. Finally, this study contributes to the theory by adopting the upper echelon theory at the individual level of analysis.

The remainder of the paper contains four sections. The next section presents the review of literature including the development of hypotheses. The research methodology is then presented, including sample selection and variable measurement. This is followed by interpretation of results. The final section involves discussion of result and concludes the paper.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

PMS use refers to the different roles of PMS information to support organizational goals. Henri (2006) and Said, Hui, Othman and Taylor (2010) explained in his research on organization culture and PMS that managers use the PMS differently depending on their needs to support different types of organizational culture. At the same time, other studies such as Hansen & Van der Stede (2004), Henri (2006), Franco-Santos et al. (2007), Simons (1990, 1995) and Speklé & Verbeeten (2014) discussed and proposed different classifications of performance measurement system use. Table 1 shows the classification of PMS used by prior studies. It can be seen that there are multiple uses of the PMS to achieve alignment between strategy and organizational effort. Despite the various classifications, one common use of the PMS that has been well discussed is the use of the PMS information for feedback and control processes such as monitoring and performance evaluation. The evolution of contemporary PMS has also introduced new dimensions of PMS use such as for communication and strategic drive. On top of that, there is also introduction of new dimensions such as PMS use for legitimization and as incentives. Despite all these dimensions, the indicator of a successful PMS depends on the consistency between employees and organizational objectives. Because of that, there is a serious need to understand the impact of PMS use at the individual level. Thus, the current study intends to provide new insights of PMS use from the perspective of individual employees and its impact on their performance.

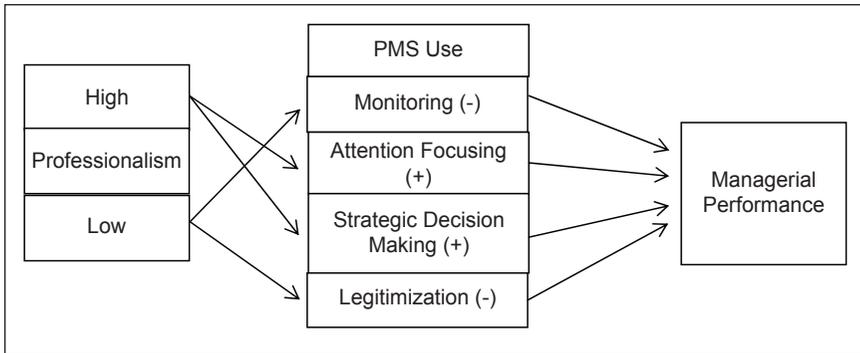


Figure 1: Theoretical Model

Almost all the research explaining the use of the PMS has been carried out either at the organizational level or at the business unit level (Henri, 2006; Speckle & Verbeeten, 2014; Simons, 1990; Hensen & Stede, 2004) except a study by Franco-Santos et al. (2007), where a literature review approach was used to discuss the roles of business PMS. As explained earlier, Henri (2006) proposed classification of PMS use based on monitoring, attention focusing, strategic decision making and legitimization. His research investigated how top managers use the PMS differently and its impact on the diversity of measurement. The explanation and the scope of each use are closely related to individual perspectives. For example, the use of PMS for legitimization was explained where the PMS can help a managers in seeking justification for past decisions and actions that may have been done by a particular unit or individual. Hence, this study uses Henri’s typology to explain the classification of PMS use at the individual level.

Table 1: Classification of PMS Use

Speckle & Verbeeten (2014)	Hansen & Van der Stede (2004)	Henri (2006)	Simons (1990)	Franco-Santos et al. (2007)
<ul style="list-style-type: none"> • Operational use • Incentive use • Exploratory use 	<ul style="list-style-type: none"> • Operational planning • Performance evaluation • Communication of goals • Strategy formulation 	<ul style="list-style-type: none"> • Monitoring • Attention focusing • Strategic decision making • Legitimization 	<ul style="list-style-type: none"> • Diagnostic use • Interactive use 	<ul style="list-style-type: none"> • Measure performance • Influence behaviour • Strategy management • Learning and improvement • Communication

Source: Speckle & Verbeeten, 2014

The dimensions of PMS use proposed by Henri (2006) have been tested at the organizational level based on the response from the top management of manufacturing companies. However, this study intends to use the dimensions to be empirically tested at the individual level based on the response from managers of manufacturing firms. Established organizational-level measurement into the individual-level has been used in prior studies. In the study of PMS, Chenhall (2005) developed an instrument to measure integrative strategic PMS at the organizational level. Hall (2008) then used the established instrument by Chenhall (2005) to measure the comprehensive PMS and how it may affect individual manager's performance. Eventually, this study adopts a similar reasoning to extend Henri's (2006) classification of PMS use to be applied at the individual level, where managers may use the PMS for management control purposes such as for monitoring, attention-focusing, strategic decision making and legitimization. Each of these dimensions is explained below:

1. PMS use for monitoring
PMS information was used to monitor the outcomes to be matched with pre-set standards. A comprehensive PMS system plays a vital role in diagnostic, monitoring and coordination within an organization (Atkinson et al., 1997).
2. PMS use for attention-focusing
Simons (1990) suggested that the PMS is a tool to promote organizational dialogues within an organization. The organizational dialogues can be enhanced by the role of the PMS to transmit signals across a particular organization in order to focus the attention of employees.
3. PMS use for strategic decision making
Managers use the PMS for strategic decision making as a learning tool (Burchell et al. 1980) and problem solving tool (Vandenbosch, 1999) to facilitate them in resolving strategic issues.
4. PMS use for legitimization
PMS use for legitimization involves the use of the PMS information to justify or rationalize decisions and actions taken under uncertain conditions.

In making decisions on PMS use, there are other factors that may affect managers' decisions especially related to individual attributes of the managers. Naranjo-Gil et al. (2006) highlighted that knowledge-related factors such as professionalism is one of the several personal factors that are important for different uses of the PMS among managers. Professionalism is known as attitudinal attributes related to attitude and behavior such as how the professionals think about, believe and behave in their field as professionals (Hall, 1968). Brock et al. (2014) explained that new emerging professions which developed within organizations namely managerial specialisms. This group of managerial professionals use their expertise to enhance technical tasks and corporate functions to add value to their organization. This study uses one of the managerial specialisms groups to represent the professional which is the operation managers. Hall (1968) suggested that there are five characteristics of professionals: professional community affiliation, social obligation, belief in self-regulation, professional dedication, and autonomy demands.

The concept of professionalism and PMS is rarely discussed together. However, there are some studies that imply to the relation of these two variables. One of the studies highlighted that performance measurement can be improved further by professionalism (Berman & Wang 2000). In the study, they asserted that professional managers are able to increase performance and enhance accountability. Professional managers also have the capacity to make accurate evaluation in the context of the performance measurement system which may affect their performance. The important aspect that links the concept of professionalism and the use of PMS is the knowledge and skills that the managers acquire through the process to become professionals. It may assist the managers to improvise the system by using the performance measurement system differently to optimize the functions of the performance measurement system and at the same time increase their performance as well as improve organizations' performance for a long period of time.

The Upper Echelon Theory (UET) suggests that personal characteristics of the top management such as age, tenure and specialization are crucial in dealing with complex and complicated decision making processes such as strategic planning and measures and consequently affect performance (Hambrick & Mason, 1984). Earlier study by (Sosik et al., 2012) applied

Upper Echelon Theory into individual-analysis study to examine the relationship between character strength and individual executive performance. Based on this similar reasoning, this study applies the UET to explain on the relationship between professionalism, PMS use and managerial performance.

Professionalism and PMS Use

Top level managers with low professional background would usually rely on financial controls to run the organization. These controls put much attention on measurement of performance against target which has been set up earlier (Henri, 2006; Simons, 1990, 1995). Naranjo-Gil and Hartmann (2006) further highlighted that managers with a low level of professional background would use the management accounting systems (MAS) information diagnostically. Monitoring process is one of the cybernetic controls that is aligned with diagnostic use as proposed by Simons (1990). In a different setting, Kirkland (1996) suggested that managers with a high level of professionalism have been found to become qualified to make strategic decisions. In addition, these professionals are inclined to use autonomy and promote participation at the lower hierarchical level (Bacharach, Bamberger, & Conley, 1991; Naranjo-Gil & Hartmann 2006). It is to ensure that strategic issues can be resolved by considering ideas from others. Hence, professional managers use the PMS for strategic decision making in order to identify new ideas and solutions to achieve strategic objectives.

Professionals also use accounting systems to resolve role conflicts within an organization. Abernethy and Vagnoni (2004) highlighted that professional managers use the MAS information to communicate among their professional peers. As further asserted by Naranjo-Gil and Hartmann (2006), professional managers would use the MAS information interactively to stimulate communication. Consistent with this, professional managers use the PMS for attention focusing in order to clarify the role and objectives to ensure employees' attention is focused. The use of politics within organizations is usually associated with legitimization (Eisenhardt & Bourgeois 1988). Based on Dermer (1990), managers use politics in organizations to maintain credibility and establish authority. The use of politics is usually associated with centralization of power; however, professionals usually promote decentralization through involvement of the

low level hierarchy to seek others' opinion (Naranjo-Gil & Hartmann 2006). Based on the discussion, the hypotheses below are proposed:

- H1a:** Managers with high levels of professionalism are negatively associated with the use of the PMS for monitoring.
- H1b:** Managers with high levels of professionalism are positively associated with the use the PMS for strategic decision making.
- H1c:** Managers with high levels of professionalism are positively associated with the use the PMS for attention focusing.
- H1d:** Managers with high levels of professionalism are negatively associated with the use of the PMS for legitimization.

PMS Use and Managerial Performance

Epstein and Manzoni (1998), Hall (2008), Kaplan and Norton (1996b) have argued that the main purpose to develop a comprehensive PMS is because it affects managerial performance positively. The use of the PMS for monitoring involves a feedback process that focuses on single-loop learning, or learning from repetition of past behavior (Argyris & Schön, 1978; Henri, 2006). This type of learning does not promote exploration of new knowledge as it involves a repetitive behavior and indicates a low-level learning (Henri, 2006). In addition, monitoring as a type of cybernetic control has received negative critics that may impair work performance, such as defensive repetitive behavior (Argyris, 1990) and lead to dysfunctional acts (Birnberg, Turopolec, & Young, 1983). Monitoring is also always related to vertical and hierarchical communication (Henri, 2006) which limits learning that may enhance the capabilities of a manager.

Managers who can understand the decision environment of their organizations are more successful to change operation situations, thus enhancing their performance (Hall, 2011; Hedberg, 1981). Managers who use the PMS for strategic decision making to solve strategic issues, while at the same time exploit their own strength and own competencies (March, 1991). This exploitation may improve their performance. Another perspective of PMS use for strategic decision making is that it involves problem solving by considering ideas from others. Mintzberg (1975) also claimed manager use performance information to support decision making by identifying problems and opportunities and to build mental models of the business. By doing so, they can enhance their skills and job performance.

Based on Henri (2006), PMS use for attention focusing involves transmitting signals within organizations regarding the objectives that employees should focus on. Attention focusing role serves as a control to promote organizational dialogues and communication. The uses of the PMS among managers affects managerial performance by providing role clarity (Hall, 2008). By having a clarified role, managerial performance may improve. This finding is consistent with Burney and Widener (2007), who claimed that the use of the PMS also leads to decreased role ambiguity and positively affects workforce performance. PMS use for legitimization involves the use of politics within organizations to establish authority and maintain credibility (Henri, 2006). It also involves the act of rationalizing action and decision made earlier. The use of politics within organizations is usually associated with intentional action to improve self-interest of particular individual or group (Allen et al., 1979). Eisenhardt and Bourgeois (1988) further asserted that the use of politics is usually associated with the use of power centralization. However, decentralization practices may improve job performance (Merchant, 1981) because centralization and politics within organizations may limit the learning and participation that otherwise may enhance capabilities of the managers. Based on this discussion, the hypotheses below are proposed:

- H2a:** The use of the PMS for monitoring is negatively associated with managerial performance.
- H2b:** The use of the PMS for strategic decision making is positively associated with managerial performance.
- H2c:** The use of the PMS for attention focusing is positively associated with managerial performance.
- H2d:** The use of the PMS for legitimization is negatively associated with managerial performance.

Level of Professionalism, PMS Use and Managerial Performance

Psychological theories have indicated there are mechanisms that can further explain the relationship between PMS and managerial performance which are cognitive and motivational factors (Hall, 2008). As such, professionalism as a cognitive mechanism can improve performance measurement as professional managers are able to increase performance and

enhance accountability (Berman & Wang, 2000). As such, it is predicted that professionalism may further enhance the PMS by integrating expertise and skills in profession into the PMS concept. In another study by Naranjo Gil et al. (2006), actual selection of information from the MAS was influenced by personal preferences of top manager. One of the preferences highlighted is knowledge-related factors. As explained by the upper echelon theory, the level of knowledge and expertise indicated by the level of professionalism influences the strategic choice made by managers through the way they use the PMS, consequently affecting their performance.

RESEARCH METHODOLOGY

The study focuses on individual operations managers in manufacturing firms from various industries by adopting a cross sectional design with the collection of primary data through a questionnaire. The manufacturing sector was selected because PMS use is a common practice in the manufacturing industry (Mohamad et al., 2013). The manufacturing environment is more responsive to the concept of contemporary PMS (Ong & Teh, 2008). This is because their mass production has led the manufacturing sector to be involved in diversity and complexity that require them to put extra concerns on the PMS (Jusoh et al., 2008). The findings of the current study may be comparable with previous studies (Amaratunga et al., 2002; Mohamad, Ali, & Amir, 2013; Rasit & Isa, 2014a) that discussed issues of the PMS. Data was collected through a mail questionnaire sent to 600 managers of manufacturing companies. 300 companies were selected from the Federation of Malaysian Manufacturer (FMM) directory of Malaysian industries 2015 (46th edition). The selection of companies was made through random sampling by choosing companies with more than 150 employees only. This is consistent with (Rasit & Isa, 2014b), where larger companies are more inclined to use the PMS compared to small companies. For each company selected, two questionnaires were sent to their operations managers.

The questionnaire together with a letter specifying the purpose of the study were sent to 600 respondents since according to Rasit and Isa (2014b), this number reflects the sampling frame of the total population for individual manager analysis study. The respondents were operations management (supervisor, low, middle and top management). Based on Wouters et al.

(2005), the operational section is the main concern of the PMS, where the success of the PMS depends on the achievement of the operation line to meet expected targets. A total of 124 questionnaires were returned providing a response rate of 20.7%; 24 responses were excluded due to incompleteness and outliers. The T-test was carried out to check for potential non-response bias. 55 responses were obtained within one month and 45 late responses after one month. Early responses and late responses have been tested and there are no significant differences between these two groups.

Table 2 presents the profile of the respondents in this study. More than 70% of the respondents are aged 31 to 50 years and more than 80% of respondents are low to middle management. More than 80% of them have more than 5 years working experience in their profession.

Table 2: Profile of Respondents

Demographic variables	Categories	Frequency	Percentage
Gender	Male	58	58
	Female	42	42
Age	Below 30 years	11	11
	31 to 40 years	28	28
	41 to 50 years	47	47
	51 to 60 years	14	14
Education	SPM/STPM	3	3
	Diploma	13	13
	Bachelor degree	60	60
	Master or above	16	16
	Professional	8	8
Work experience	Below 5 years	19	19
	5 to 10 years	44	44
	More than 10 years	37	37
Current position	Top management	7	7
	Middle management	44	44
	Low management	45	45
	Supervisors	4	4
Experience in current position	Below 5 years	52	52
	5 to 10 years	36	36
	More than 10 years	12	12

MEASUREMENT OF VARIABLES

Level of Professionalism

Professionalism of managers was measured as a multilevel variable by using the instrument by Hampton and Hampton (2004) which was originally developed by Hall (1968). Hall (1968) developed the instrument through the analysis from 11 occupational groups that consisted of physicians, nurses, accountants, teachers, lawyers, social workers, stock brokers, librarians, engineers, advertising personnel and managerial personnel. Hence, this instrument has been tested earlier in measuring the level of professionalism of a manager. In addition, the instrument has been used in several accounting studies (Sejjaaka & Kaawaase, 2014; Shafer, Park, & Liao 2002). The seven-Likert scale instrument captures five dimensions of professionalism which are professional community affiliation, social obligation, belief in self-regulation, professional dedication and autonomy demand.

PMS Use

PMS use was measured using an instrument developed by Henri (2006). Henri used the instrument to identify the extent of PMS use based on four classifications (monitoring, strategic decision making, attention focusing and legitimization) at management level. To facilitate the current study, the instrument was modified to identify the extent of PMS use at individual manager level.

Managerial Performance

Manager's performance was measured using a seven point Likert scale instrument by Parker and Kyj (2006) which was originally developed by (Mahoney, Jerdee, and Carroll 1965; Mahoney 1963). This instrument is based on the self-assessment approach and has been widely used in prior studies (e.g. Chong 1996, 1998; Gul & Chia, 1994; Hall, 2008, 2011). Even though there are many debates on self-assessment instrument, according to Heneman (1974), self-assessment has fewer issues on leniency and halo errors compared to assessments made by superiors. This instrument contains eight items to capture the multidimensional of performance including supervising, planning, coordinating, negotiating, evaluating, investigation,

staffing, and representing, and one item to capture overall performance dimension.

RESULT AND DISCUSSION

Two parts of analysis were involved in this study which are the measurement model and the structural model. Assessment of measurement model involved individual item reliability, construct reliability and convergent and discriminant validity of each reflective construct. Firstly, the factor loading for each item for the respective construct was examined. Whichever item having factor loading that is below 0.5 was removed to avoid bias (Hulland, 1999). One item was removed for having a factor loading of less than 0.5 which is autonomy demand item to represent the professionalism construct. Table 3 shows the properties of the measurement model. Individual item reliability is achieved when factor loading is more than 0.6 (Chin, 2010). This is because it illustrates that more than 50% of the observed items contribute to the construct. For composite reliability, as Table 3 indicates all constructs achieved a satisfactory composite reliability as all indicators are above 0.7, as suggested by (Hair et al., 2014).

The assessment of validity involves two types of validity which are convergent and discriminant validity. Convergent validity is the extent to which a measure correlates positively with other measures of the same construct. It was measured by using the average variance extracted (AVE). As shown in Table 3, all AVE indicators are above 0.5 indicating satisfactory convergent validity. This indicates that more than 50% of the variance is explained rather than unexplained (Fornell & Larcker 1981).

Table 3: Properties of Measurement Model

Construct	Indicators	Factor loadings	Composite reliability	Average variance extracted	Cronbach Alpha
Professionalism	BSR	0.622	0.836	0.572	0.734
	PCA	0.541			
	PD	0.912			
	RSO	0.880			
PMS use for monitoring	PMSM1	0.934	0.948	0.821	0.928
	PMSM2	0.921			
	PMSM3	0.883			
	PMSM4	0.886			
PMS use for attention focusing	PMSAF1	0.836	0.929	0.654	0.911
	PMSAF2	0.856			
	PMSAF3	0.854			
	PMSAF4	0.720			
	PMSAF5	0.872			
	PMSAF6	0.748			
	PMSAF7	0.760			
PMS use for strategic decision making	PMSSDM1	0.779	0.923	0.633	0.904
	PMSSDM2	0.706			
	PMSSDM3	0.809			
	PMSSDM4	0.893			
	PMSSDM5	0.772			
	PMSSDM6	0.803			
	PMSSDM7	0.794			
PMS use for legitimization	PMSL1	0.825	0.936	0.680	0.925
	PMSL2	0.880			
	PMSL3	0.787			
	PMSL4	0.645			
	PMSL5	0.734			
	PMSL6	0.817			
	PMSL7	0.779			
	PMSL8	0.792			
	PMSL9	0.815			
Managerial performance	MP1	0.685	0.925	0.580	0.907
	MP2	0.691			
	MP3	0.746			
	MP4	0.824			
	MP5	0.855			
	MP6	0.829			
	MP7	0.560			
	MP8	0.769			
	MP9	0.846			

BSR=Believe in self-regulation; PCA=Professional community affiliation; PD=Professional dedication; RSO=Recognition of social obligation.

Next, discriminant validity can be determined by using: (1) Fornell Lacker criterion; and (2) cross loading. The main difference between these two are the former evaluates on the construct level, while the latter assesses on the indicator level (Henseler et al., 2009). According to Henseler et al. (2009), Fornell and Lacker criterion indicates that respective variable should share more variance with its respected indicator than with other variables. Table 4 indicates that all the constructs have sufficient validity based on Fornel and Lacker criterion. For details on validity measured by cross loading, refer to Appendix A. The result indicates that all indicators load higher on their respective measured constructs than the alternative constructs. Hence, based on assessment of reliability and validity, the measurement model is valid and reliable. Hence, next the assessment continues on the structural model.

Table 4: Discriminant Validity Analysis (Fornel & Lacker)

	MP	PMSAF	PMSL	PMSM	PMSSDM	PROF
MP	0.762					
PMSAF	0.508	0.809				
PMSL	0.353	0.424	0.788			
PMSM	0.369	0.591	0.565	0.906		
PMSSDM	0.514	0.752	0.525	0.509	0.796	
PROF	0.446	0.368	0.035	0.090	0.287	0.756

Table 5 shows the result for the structural model for hypotheses testing. Based on the result, three hypotheses are supported: H1b, H1c and H2c. This indicates that professional managers are positively associated with the use of the PMS for attention focusing and strategic decision making. H2c proves that PMS use for strategic decision making by managers may enhance their own performance. H1a and H2a are not supported due to the fact that monitoring is common and a traditional control which is widely used by managers. H1d indicates that there is no significant difference for professional managers in using the PMS for legitimization. There is also no clear relationship of PMS use for attention focusing and legitimization, thus H2b and H2d are not supported.

Table 5: PLS Structural Model Result

Hypothesis	Path	Path Coefficient	t value	p value	
H1a	PROF → PMSM	0.09	0.783	0.434	Not supported
H1b	PROF → PMSAF	0.368	4.526	0.000***	Supported
H1c	PROF → PMSSDM	0.287	3.550	0.000***	Supported
H1d	PROF → PMSL	0.035	0.275	0.783	Not supported
H2a	PMSM → MP	0.086	0.774	0.439	Not supported
H2b	PMSAF → MP	0.115	0.864	0.388	Not supported
H2c	PMSSDM → MP	0.223	1.778	0.076**	Supported
H2d	PMSL → MP	0.128	1.355	0.176	Not supported
	PROF → MP (Direct path)	0.327	3.676	0.000***	

p<0.05, *p<0.01 (one-tailed)

Additional analysis of direct effect of managers’ professionalism and managerial performance shows a significant result. This has led to the assessment of mediator between relationship of managers’ professionalism and managerial performance. Only one path is indirectly significant which is professional managers being positively associated with the use of the PMS for strategic decision making and enhancing their managerial performance (Figure 2). To assess further on the intensity of PMS use for strategic decision making as mediator, variance accounted for (VAF) was identified. Based on the VAF calculation, VAF value indicates partial mediation, in which 33.8% of the effect between managers’ professionalism and managerial performance was due to the use of the PMS for strategic decision making as mediator variable.

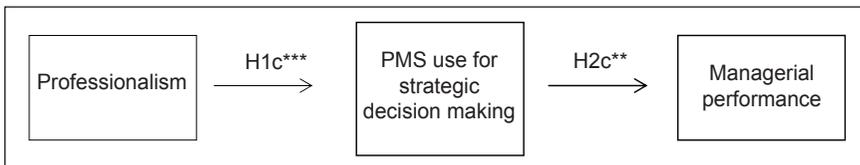


Figure 2: Mediator Analysis

Variance accounted for analysis,

$$\begin{aligned}
 \text{VAF} &= \text{Indirect Effect} / \text{Total Effect} \\
 &= (0.288 \times 0.422) / (0.288 \times 0.422) + 0.327 \\
 &= 0.122 / 0.449 \\
 &= 0.272 \sim 27.2\% \quad (20\% < \text{VAF} < 80\%; \text{partial mediation})
 \end{aligned}$$

The variance explained (R square) for the model is 0.464. Based on Chin (2010), the indicators for R square are 0.19 (weak), 0.33 (moderate), 0.67 (strong). Hence, R square value can be considered as moderate. This means the structural model has explained 46.4% variance of managerial performance.

CONCLUSION

Theoretically, this study contributes to the body of knowledge on the MAS literature specifically on the use of the PMS. Based on the Upper Echelon theory, the result provides further knowledge on behavioral implication on management accounting information, for example professionalism and PMS use. It has further been extended to the effects on managerial performance. The result indicates the professional managers use their skills and expertise in the field to use the PMS for attention focusing and strategic decision making to enhance their performance. The finding is consistent with prior studies which discussed the effect of behavioral factors and the PMS such as Naranjo-Gil & Hartmann (2006), Hall (2008), Burney and Widener (2007). However, this study is the first to relate professionalism and PMS use. From practical perspectives, the outcome of this study could provide new insights into how level of professionalism of managers influences the use of the PMS, leading to an increase in managerial performance. The management may consider to hire professional managers and encourage the use of the PMS for strategic decision making to boost managers' motivation and company long-term success.

There are some limitations in this study. Firstly, the main survey questionnaire, may not have arrived to the intended person which may have somewhat affected the results of the study. Hence, future research may extend the methodology by taking into consideration both quantitative and qualitative approaches to further enhance the results. Next, future research should investigate various sectors, not just the manufacturing sector, which was addressed in this study. There are many other angles of PMS use issues that can be studied. Future research could focus on other dimensions of PMS use and investigate different levels of analysis.

APPENDIX

Appendix A: Discriminant Validity (Cross loading)

	M.PERF	PMS (AF)	PMS (L)	PMS (M)	PMS (SDM)	PROF
TPBSR	0.325	0.196	0.068	0.035	0.071	0.622
TPCA	0.193	0.195	-0.147	-0.009	0.224	0.541
TPD	0.379	0.365	0.076	0.113	0.273	0.912
TPRSO	0.417	0.318	0.048	0.092	0.269	0.880
PERF_1	0.686	0.331	0.257	0.235	0.281	0.295
PERF_2	0.690	0.350	0.282	0.344	0.299	0.188
PERF_3	0.745	0.429	0.287	0.281	0.383	0.304
PERF_4	0.825	0.376	0.343	0.289	0.485	0.387
PERF_5	0.856	0.478	0.350	0.350	0.438	0.527
PERF_6	0.830	0.350	0.218	0.290	0.421	0.346
PERF_7	0.557	0.362	0.038	0.049	0.285	0.337
PERF_8	0.770	0.381	0.211	0.281	0.452	0.315
PERF_9	0.845	0.411	0.364	0.358	0.421	0.278
PMSAF_1	0.406	0.837	0.369	0.477	0.584	0.296
PMSAF_2	0.386	0.856	0.344	0.490	0.598	0.292
PMSAF_3	0.464	0.855	0.357	0.591	0.650	0.289
PMSAF_4	0.365	0.722	0.213	0.331	0.482	0.247
PMSAF_5	0.452	0.873	0.320	0.521	0.692	0.301
PMSAF_6	0.361	0.747	0.420	0.426	0.590	0.353
PMSAF_7	0.429	0.757	0.363	0.481	0.635	0.302
PMSL_1	0.353	0.380	0.826	0.523	0.477	-0.010
PMSL_2	0.227	0.346	0.881	0.446	0.458	-0.006
PMSL_3	0.174	0.249	0.788	0.361	0.381	-0.078
PMSL_4	0.164	0.204	0.647	0.331	0.257	-0.039
PMSL_5	0.247	0.241	0.734	0.441	0.325	0.065
PMSL_6	0.153	0.331	0.817	0.474	0.355	-0.085
PMSL_7	0.335	0.415	0.776	0.475	0.501	0.104
PMSL_8	0.315	0.391	0.790	0.417	0.426	0.115

	M.PERF	PMS (AF)	PMS (L)	PMS (M)	PMS (SDM)	PROF
PMSL_9	0.333	0.327	0.815	0.460	0.411	0.029
PMSM_1	0.387	0.588	0.479	0.934	0.472	0.123
PMSM_2	0.352	0.525	0.494	0.921	0.457	0.079
PMSM_3	0.326	0.498	0.567	0.883	0.506	0.075
PMSM_4	0.233	0.526	0.528	0.885	0.391	0.023
PMSSDM_1	0.397	0.639	0.430	0.435	0.778	0.213
PMSSDM_2	0.257	0.476	0.320	0.306	0.707	0.102
PMSSDM_3	0.370	0.607	0.351	0.417	0.809	0.126
PMSSDM_4	0.512	0.636	0.463	0.445	0.892	0.290
PMSSDM_5	0.437	0.560	0.479	0.321	0.774	0.259
PMSSDM_6	0.421	0.597	0.436	0.397	0.804	0.251
PMSSDM_7	0.393	0.653	0.399	0.491	0.793	0.279

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