CHAPTER ONE
INTRODUCTION

1.1 INTRODUCTION

Changes in technology, shortened product lifecycle and innovation in production processes have significant implications on the use of Management Accounting Systems (MAS), in particular Performance Measurement System (PMS). Traditional or short-term financial measures are no longer adequate to provide required information essential for managers’ decision making. The system was claimed to suffer from lack of comprehensiveness, imprecise in evaluating performance, limited focus on long-term performance and too much focused on short-term performance (Ittner & Larcker, 1998). These predicaments of the traditional accounting system have resulted in the use of a broader set of performance measures for evaluating performance.

Bromwich and Bhimani (1989) suggest that dysfunctional impact of profit-based measures could be reduced by combining profit-based measures with non-financial measures. Multiple PMS covers a wider scope of performance measures and has greater emphasis on future and long term objectives. Kaplan and Norton (1992) introduced the Balanced Scorecard (BSC) to account for the limitation of the traditional accounting system. Thus, PMS evolves from a system that consists of a few measures focused on financial measures to a system consisting of multiple non-financial and financial measures (Kaplan & Norton, 1996).

Based on the review of literature, the terms Balanced scorecard (BSC), Strategic performance measurement system (SPMS) and Comprehensive performance measurement system (CPMS) are being used interchangeably in prior research. BSC is defined as a set of measures that
gives top managers a fast but comprehensive view of the business. The system includes financial measures and operational measures on customers satisfaction, internal processes and organisation’s innovation and improvement activities – operational measures that are the drivers of future financial performance (Kaplan & Norton, 1996, p. 71). Balanced scorecard is considered as comprehensive control system. BSC is also called as Strategic Performance Measurement System (SPMS) (Ittner et al., 2003b; Ullrich & Tuttle, 2004).

BSC is a widely known SPMS (White, 2008) and is considered as comprehensive PMS (Malina & Selto, 2001). According to Burney and Matherly (2007), SPMS is different from traditional PMS, as traditional PMS emphasises financial measures of performance whereas SPMS combines both financial and non-financial measures that are chosen through a filtering process to represent organisational strategy. Hence, SPMS permits an organisation to communicate information regarding its long-term strategy, the relations among the various organisational strategic objectives, and the link between strategic goals and the employees’ actions (Burney & Matherly, 2007; Ittner & Larcker, 1998).

Hall (2008) examined the behavioural consequences of the Comprehensive Performance Measurement System (CPMS) particularly, his research examines the effect of CPMS on role clarity, psychological empowerment and managerial performance. The findings support the research hypotheses showing CPMS positively affects managerial performance by enhancing role clarity and psychological empowerment. He suggested further research should examine others implications of CPMS. Thus, this research will extend the study by Hall (2008) examining the implication of informational aspect of CPMS on role stress, organisational commitment and job performance. This research focuses on cognitive abilities such as role clarity of the manager in using information provided by CPMS and how the information will
affect managers’ behaviour. This study utilises this definition of CPMS as defined by Hall (2008).

BSC is characterised by its diverse and comprehensive system which provides a better system for evaluating managerial performance. The main feature of BSC is its nature in linking the measures to the business unit strategy. According to Hall (2008), other PMS include techniques such as BSC (Kaplan & Norton, 1996), Tableau de board (Epstein & Manzoni, 1998) and performance hierarchies (Lynch & Cross, 1991). These techniques provide managers with broad set of measures covering important areas of the firm. In addition, Strategic Performance Measurement System (SPMS) is also used by organisations as a performance measurement tool. Specifically SPMS aids organisation to provide useful information for employees to facilitate behaviour in achieving organisational success (Kaplan & Norton, 2001a).

Previous studies have investigated the effect of SPMS such as BSC on organisational performance (Chenhall, 2005; Davis & Albright, 2004; Hoque, 2004; Hoque & James, 2000; Ittner et al., 2003b; Said et al., 2003; Van der Stede et al., 2006; Widener, 2006). Nevertheless, only few researchers have examined how SPMS would influence managers’ behaviour (Burney & Widener, 2007; Ittner & Larcker, 1998; Webb, 2004). Further, prior research identified that the relationship between PMS and individual performance is mediated and influenced by factors such as role ambiguity and job relevant information (Burney & Widener, 2007), procedural fairness and organisation commitment (Lau & Moser, 2008), psychological empowerment and role clarity (Hall, 2008), trust and fairness (Lau & Sholihin, 2005), justice perception (Burney et al., 2009), creativity and psychological empowerment (Webster, 2006) and goal specificity (Sholihin et al., 2010). This line of research provides
evidence that PMS plays an important influence in individual behaviour which is generally recognised by organisational theory that individual actions will largely contribute to the organisation’s long-term success (de Haas & Kleingeld, 1999; Otley, 1999). Thus, there is a need to further investigate other factors that may influence the relationship.

Furthermore, research examining behavioural consequences of the multiple performance measures is still lacking (Hall, 2008; Ittner & Larcker, 1998; Lau & Sholihin, 2005). Additionally, past research seems to suggest conflicting findings regarding the consequences of using multiple performance measures such as the BSC. SPMS such as BSC seems to create problems as it can limit manager’s ability to exploit fully the information found in its diverse set of PMS (Banker et al., 2004; Lipe & Salterio, 2000) and in addition would cause compressed and lenient performance evaluation (Moers, 2005). Contemporary PMS is also identified that may result in detrimental effects due to managers’ limited cognitive ability to cope with incompatible demands from the inclusion of multiple goals (Cheng et al., 2007). The use of PMS was also found may not be able to provide better informational feedback. In addition, it may lead to negative effect due to reduce mission clarity and subordinate trust that may result in reduced motivation (Van Rinsum & Verbeeten, 2010).

Chong and Eggleton (2003) and Luckett and Eggleton (1991) emphasise how individual differences or personality variable such as locus of control would affect how manager accept, perceive and respond to MAS information. Thus this research will extend the study in the area to examine moderating effect of locus of control (internal and external) in the relationship between CPMS, a part of Management Accounting System (MAS), and job performance.
1.2 PROBLEM BACKGROUND

In the last few decades, organisations have experienced unprecedented business competition, rapid market restructuring, and reorganisation. In order to survive in today’s turbulent environment, organisations have to be more concerned about the managers’ performance as their sustainability depends largely on their managers’ ability to make the right business decisions. Managers’ responsibilities are increasingly demanding and challenging which sometimes place their condition at high risk of low managerial performance. Longenecker, Neubert and Fink (2007) identified that the main reasons for managerial failure in the twenty-first century includes ineffective communication, poor work relationship, and failing to set clear direction or clarify performance expectation.

As a corollary of these factors embedded in managers, employees suffer dysfunctional stress, non-optimal performance and increased turnover of personnel. When employees are not given a clear sense of direction, motivation will decrease which will lead to ineffective resource allocation. Thus, this research highlights that managers carry an important role and responsibilities in managing and leading business units in line with the organisational objectives. There is an implied connection between Management Control System (MCS) and organisational outcomes. Chenhall (2003) anticipates that there is a broad leap linking MCS and organisational performance, which indicates the need to focus on the MCS implications on the individual manager’s behaviour in order to improve organisational performance.

MCS can offer satisfaction to individuals if managers perceive the system is useful in providing improved information relating to their task. As a result, an individual will manage to make better decisions in achieving organisational goals. However, there is lack of compelling evidence that supports the link between usefulness of MCS and improved job
satisfaction or organisational performance. According to Schiff and Hoffman (1996), a large number of measures may actually reduce managers’ performance. This is due to the extensive measures used that may exceed managers’ processing capabilities when making judgments. Thus this would direct the manager to fail to set a clear direction, which will create uncertainty and ambiguity.

Past researches examining the link between SPMS and organisational performance seem to provide ambiguous findings (Chenhall, 2005; Micheli & Manzoni, 2009). Positive implications were identified by some studies which found that SPMS led to enhanced ROA and ROE (Ittner & Larcker, 2003), improved organisational performance (Hoque & James, 2000; Said et al., 2003; Van der Stede et al., 2006) and improved composite financial measures (Davis & Albright, 2004). However few studies reveal equivocal findings or limitations of SPMS. Ittner, Larcker and Randall (2003b) identified greater measurement emphasis and diversity or BSC processes are associated with higher satisfaction and stock market performance; however no association was found between BSC and economic performance.

Thus, it is unclear whether CPMS which is integrated (Chenhall, 2005), comprehensive (Hall, 2008; Scott & Tiessen, 1999), broad and diverse (Ittner et al., 2003b) in its performance measurement will result in better individual outcomes. With reference to the literature, CPMS for a performance evaluation or decision influencing role seems to produce negative consequences (Ittner et al., 2003a; Moers, 2005). However the use of CPMS for providing relevant information for decision making is identified to be useful to managers and will have positive implications towards improving managerial performance through job-relevant information and role clarity (Burney & Widener, 2007; Hall, 2008).
1.3 RESEARCH PROBLEMS

Despite decades of academic research, SPMS is still under extensive research and analysis so as to determine its benefits as well as its limitations (Micheli & Manzoni, 2009). Past researches examining the link between SPMS and organisational performance indicate ambiguous findings (Chenhall, 2005; Micheli & Manzoni, 2009). Presently, due to greater emphasis of human element issue relating to PMS, a few researches shift to examine behavioural implication of SPMS (de Waal, 2002). Cognitive psychology research examining the implication of SPMS seems to provide contradictory findings.

Sprinkle (2003) highlights the two main purposes of performance measurement: decision facilitating and decision-influencing roles. Performance measurements for decision-facilitating or in a cognitive role refers to providing information to guide managers in decision-making (Sprinkle, 2003). Prior literatures also claim that performance measurement is used for decision-influencing or motivation roles in performance evaluation functions (Kren, 1992; Sharma et al., 2006; Sprinkle, 2003). In this context, performance measures provide information for motivating and controlling managers and employees. However, prior research indicates that even though CPMS is useful in providing information it may lead to negative effects (Banker et al., 2004; Cheng et al., 2007; Lipe & Salterio, 2000; Moers, 2005).

Furthermore prior research implied that certain characteristic of PMS may have different behavioural implication. Based on the theory of cognitive psychology, the cognitive role of CPMS suggests that CPMS would enhance goal commitment (Webb, 2004), provide managerial relevant information, reduces role stress (Burney & Widener, 2007) and increase
role clarity and psychological empowerment (Hall, 2008). Prior behavioural studies tend to focus on how CPMS affect subordinate managers’ performance evaluation processes. On the other hand, the use of CPMS for performance evaluation may also lead to judgement bias by superiors when comparing performance across different business units (Lipe & Salterio, 2000), and may lead to compress and lenient performance rating (Moers, 2005). It may be influenced by strategically-linked measures more than non-linked measures (Banker et al., 2004).

With regard to these findings, behavioural implication of CPMS requires further clarifications. Subjective PM could be detrimental to managers (Van Rinsum & Verbeeten, 2010); on the other hand, diversity of measure would have positive effects on individual managers. Nevertheless, research that examines the behavioural implication of CPMS is lacking. Research on the behavioural aspect of SPMS implementation found that managers’ cognitive limitations may prevent organisations to benefit fully from using the system and differences in cognitive limitation may lead to differences in using PMS. The use of SPMS (BSC) can be problematic as managers tend to ignore certain information from PMS (Banker et al., 2004; Lipe & Salterio, 2000; Moers, 2005). This is because an individual manager is unable to process a lot of information. Thus using comprehensive or SPMS may affect decision making and may lead to negative implications towards managerial behaviour. This implies a more complex and indirect relationship between SPMS and managerial performance.

Prior literatures generally suggest that there is a link between role stress and organisational commitment (Addae et al., 2008; Glazer & Beehr, 2005; Mathieu & Zajac, 1990; Meyer et al., 2002; Morris & Sherman, 1981; Yousef, 2002). These evidences suggest that employees
who perceive lower role stress will have a high level of organisational commitment. Further, recent researches also indicate cognitive implication on employees’ commitment. Prior meta-analyses research related to commitment, found determinants and antecedents of organisational commitment to include high intrinsic motivation (Moon, 2000), sense of competence (Ketchand & Strawser, 2001; Mathieu & Zajac, 1990; Morris & Sherman, 1981), feeling of comfort (Allen & Meyer, 1990; Ketchand & Strawser, 2001), and information adequacy and relevance (Addae & Parboteeah, 2006; De Ridder, 2004; Trombetta & Rogers, 1988). Since research in the area of PMS suggest that CPMS can enhance intrinsic motivation (Ilgen et al., 1979; Luckett & Eggleton, 1991) and sense of competence (Hall, 2008), it is anticipated that CPMS has an association with organisational commitment. Furthermore, research identified a mediating role of organisational commitment in the relation between organisational information and job satisfaction (Addae & Parboteeah, 2006).

Based on psychology theories, an individual will be motivated when provided with comprehensive feedback, as the feedback will be able to clarify expectation at the organisational and operational level (Ilgen et al., 1979). Management accounting information through feedback associated with the task to achieve strategies will also able to reduce managerial ambiguity (Collins, 1982; Luckett & Eggleton, 1991). However, prediction about how individuals perceive, accept and respond to information or feedback is depending on individual differences (Luckett & Eggleton, 1991). Thus, PMS is expected to be able to provide managers with feedback which can indirectly enhance managers’ motivation or commitment and which is argued to influence their performance. Thus, it is expected that CPMS will be able to provide better information which will reduce managers’ role stress and enhance their level of organisational commitment and in turn will have a positive effect on job performance.
Past research indicates personality trait locus of control affects the difference in how managers use information. According to Luckett and Eggleton (1991), individual differences influence how information is perceived by an individual. Particularly, a personality trait of locus of control explains the differences in the way managers perceived and processed the information. Social learning theory describes the two types of managers: internal manager and external manager (Lefcourt, 1966; Rotter, 1960). Internal locus of control believes that attribution of behaviour causality is caused by the individual himself, but external locus of control is influenced by sources external to the particular individual. Traditional PMS literatures suggest that the way the individual manager makes use of information is influenced by individual differences (Brownell, 1981; Fisher, 1996; Frucot & Shearon, 1991).

Prior research that examined moderating effect of locus of control personality between MAS and individual performance also indicates inconsistent findings (Brownell, 1981; Brownell, 1982; Chong & Eggleton, 2003; Fisher, 1996; Frucot & Shearon, 1991). Prior psychological studies suggest that internal managers have a tendency to search aggressively for task-relevant information compared to their external counterparts (Organ & Greene, 1974; Pines & Julian, 1972). Based on this theory, this research predicts that personality traits of locus of control influence the relationship between CPMS and job performance. Thus, apart from the mediating factors, role stress and organisational commitment, this research will further determine whether an internal manager or external manager may have any influence in the relationship.

1.4 RESEARCH OBJECTIVES AND RESEARCH QUESTIONS

Various characteristics of SPMS have been examined in past studies: multiple PMS (Lillis, 2002), PMS diversity, (Chenhall, 2005; Henri, 2006; Ittner et al., 2003b; Lipe & Salterio,
2000; Van der Stede et al., 2006), PMS subjectivity (Moers, 2005; Van der Stede et al., 2006; Van Rinsum & Verbeeten, 2010), integrative PMS (Chenhall, 2005) and CPMS (Burney & Matherly, 2007; Hall, 2008). The main objective of this study is to examine behavioural consequences of PMS implemented in Malaysian manufacturing companies. However, this research will focus only on one characteristic of PMS, comprehensiveness of PMS, which was developed by Hall (2008).

The specific objectives of the study are presented in Table 1.1 as follows:

**Table 1.1: Research Questions, Research Objectives and Underlying Theories**
1. Do role stress dimensions mediate the relation between CPMS and job performance?
2. Does organisational commitment mediate the relation between CPMS and job performance?
3. Is there any association between role stress dimensions and organisational commitment?
4. Is there any relation between CPMS and job performance?
5. Does locus of control moderate the relation between CPMS and each role stress dimensions, organisational commitment and job performance?

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<th>Research Question</th>
<th>Research Objective</th>
<th>Theory</th>
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<tr>
<td>1. Do role stress dimensions mediate the relation between CPMS and job performance?</td>
<td>1. To examine the mediating effect of role stress dimensions in the relation between CPMS and job performance</td>
<td>Cognitive motivational theory</td>
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<tr>
<td>2. Does organisational commitment mediate the relation between CPMS and job performance?</td>
<td>2. To examine the mediating effect of organisational commitment in the relation between CPMS and job performance</td>
<td>Role theory</td>
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<tr>
<td>3. Is there any association between role stress dimensions and organisational commitment?</td>
<td>3. To examine the association between role stress dimensions and organisational commitment</td>
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<td>4. Is there any relation between CPMS and job performance?</td>
<td>4. To examine the relationship between CPMS and job performance</td>
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<tr>
<td>5. Does locus of control moderate the relation between CPMS and each role stress dimensions, organisational commitment and job performance?</td>
<td>5. To examine the moderating effect of locus of control in each relation between CPMS and each role stress dimension, organisational commitment and job performance</td>
<td>Social learning theory</td>
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1.5 SIGNIFICANCE OF THE STUDY

This study is conducted realising that there is lack of empirical evidence examining the behavioural implication of CPMS. In addition, past research suggests a more complex relationship exists between CPMS and performance, which suggests further investigation is required so as to include other relevant factors into the context. Furthermore, prior researches examining behavioural implication of SPMS provide conflicting and inconclusive results. Past researches identified an indirect link between CPMS and managerial outcomes, and the
relationship is mediated by role clarity, empowerment, role stressor, job relevant information, procedural fairness, trust and organisational commitment.

Kaplan and Norton (1996) indicate the importance of CPMS in ensuring the success of BSC by providing feedback updating the managers on the progress of the business unit in relation to the business unit objectives. In order to fully exploit the benefit of the BSC, this study will take a further step in terms of model development to determine the influence of CPMS feedback on role stress and managers’ organisational commitment and in turn examining its effect on job performance. This research will also provide empirical evidence examining the influence of personality variable, locus of control, in the relationship. According to Lucket and Eggleton (1991) individual characteristics will determine how individuals perceive, accept and respond to feedback.

As has been examined in psychological research, the moderating influence of individual differences such as locus of control is important in accounting research (Brownell, 1981; Brownell, 1982; Chong & Eggleton, 2003; Fisher, 1996; Frucot & Shearon, 1991). According to Chong and Eggleton (2003), organisational MAS design might not be effective for certain individuals as such varying on relevant personality traits, particularly locus of control. The MAS may have to be modified or individuals who might be expected to have difficulty with a particular MAS would need to be trained to be able to make full use of the MAS information.

This research will further examine the benefit of CPMS and identify whether other factors such as role stress and organisational commitment have any influence in the relation between CPMS and job performance. Hall (2008) examined the mediating role of role clarity and empowerment in the relationship between CPMS and managerial performance. On the other

Based on cognitive motivational theory, role theory and social learning theory, this research will extend the study by Hall (2008), Burney and Widener (2007) and Webb (2004) to examine behavioural implication of CPMS as a decision facilitating role. Furthermore, prior research found how CPMS may influence individual cognition which may leads to ambiguity and bias (Banker et al., 2004; Liedtka et al., 2008; Lipe & Salterio, 2000; Moers, 2005), incompatible demand (Cheng et al., 2007), reduce mission clarity, trust and motivation (Van Rinsum & Verbeeten, 2010). Thus, this research is being motivated to explore further the implication of CPMS on individual cognition and motivation. Furthermore, there is no research that has examined how CPMS may influence individual role ambiguity and role conflict (role stress dimensions) and organisational commitment. Particularly, there is no research that has examined the mediating effect of role stress dimensions (role ambiguity and role conflict) and organisational commitment in the relationship between CPMS and job performance.

Research finding by Burney and Widener (2007) has highlighted how CPMS may enhance individual cognition through enhance JRI and reduce role stress that lead to improved individual performance, however no research has examined how role stress and organisational commitment may influence the link between CPMS and job performance. Additionally, the association between role stress dimensions and organisational commitment has been established by considerable prior literature (Addae et al., 2008; Chong et al., 2006; Dale & Fox, 2008; Yousef, 2002)
1.6 CONTRIBUTION OF THE STUDY

The results of the study have both theoretical implications and practical relevance. Theoretically, this research will contribute to the existing literature on MAS, particularly, PMS design. By integrating cognitive motivational theory, role theory (as reflected in the role stress variable) and social learning theory (as reflected by locus of control variable), this study contributes to further understanding of the behavioural implication of the use of management accounting information from PMS on job performance. This research will be the first to investigate the effect of CPMS on role stress and organisational commitment.

As noted earlier, prior researches indicate an indirect relation between CPMS and managerial performance. Further, the inclusion of the social learning theory into the context of study will provide empirical evidence in determining the difference in behavioural consequences of CPMS among the internal and external locus of control managers. Prior accounting studies have argued that personality traits have an important influence on the manner in which decision-makers process and use accounting information.

Practically, research is expected to provide evidence in relation to PMS practice among the Malaysian manufacturing companies. Additionally, research explores PMS implementation by Malaysian companies and will provide evidence in terms of PMS implementation and design. Particularly, research determines the comprehensiveness of PMS implementation and the behavioural implication of its practice in these companies. From the research, a factor that could influence the relation between PMS and job performance is examined to aid in devising policy and procedure of PMS implementation so as to promote employees’ commitment to the organisation and to reduce role stress at the managerial level.
Chong and Eggleton (2003) provide evidence that MAS information and managerial performance relationship is influenced by individual differences. Findings of the research indicate that the broad scope of MAS could be detrimental to managers. Evidence indicates that under low task uncertainty, broad MAS could have negative effects on performance. As a consequence of this finding, this research provides an extension of prior research to determine whether managers’ individual differences, particularly, managers’ locus of control moderates the relationship between CPMS and performance.

1.7 SCOPE OF THE RESEARCH
This study examined 120 manufacturing companies which are located in Peninsular Malaysia in year 2011. For the mail survey, the respondents include business unit (BU) managers who hold middle and top management position in the company such as production, manufacturing manager, senior general manager etc. BU is defined as either an organisation or a segment of an organisation, which is comprised of the usual business activities such as marketing, production, finance, personnel, distribution, customer services and research and development (R&D) (Mia & Clarke, 1999).

1.8 OPERATIONAL DEFINITIONS OF CONSTRUCTS
For the operationalisation of constructs, firstly, CPMS is defined in this study as measures that fully describe the BU’s operations and links to strategy and across the value chain (Hall, 2008). Role theory describes role stressor comprises primarily of role ambiguity and role conflict. Role ambiguity is the degree to which there is lack of clarity regarding the
expectations associated with a role, methods for fulfilling known role expectations, and/or the consequences of role performance (Dale & Fox, 2008; Rizzo et al., 1970).

On the other hand, role conflict is defined as a degree of incompatibility or incongruity (between job tasks, resources, rules or policies and other persons) resulting in inconsistent behavioural expectations of an individual (Dale & Fox, 2008; Rizzo et al., 1970). Organisational commitment can be characterised by three (3) factors; a belief in and acceptance of organisational goals and values, the willingness to exert effort towards organisational goals accomplishment and strong desire to maintain organisational membership (Mowday et al., 1979; Porter et al., 1974). Finally, job performance is measured based on eight performance dimensions, product quality, product quantity, product timeliness, new product development, personnel development, budget achievement, cost reduction programs and political/public affairs (Govindarajan & Gupta, 1985; Nouri & Parker, 1998).

1.9 SUMMARY OF CHAPTER

The thesis is comprised of six chapters, as follows:

Chapter 1 presents brief explanation on the background of the study, as well as the research problem. The research objectives are also outlined in this chapter along with the significance of the study and contributions.
Chapter 2 provides literature on development of PMS, limitations of traditional PMS and CPMS. Also discussed in this chapter are empirical evidences and findings from prior literature regarding the research on the relation between PMS and performance. The literature also includes finding of research relating to the PMS and organisational performance as well as the implication of PMS on managerial behaviour. This chapter also reviews prior literature on behavioural factors and includes role stress and organisational commitment. Review of prior literature on personality variable, locus of control, is also discussed.

Chapter 3 proposes and discusses an integrative model of comprehensive performance measurement and employee performance. Theories underlying the model and describing the links between variables are also discussed. This chapter also provides discussion on the hypotheses development.

Chapter 4 presents the research methodology and justification of approach adopted in the research. Justifications for the selections of survey method, assessment of data quality, discussion of the survey, questionnaire development, sample examination and administration of survey are also included. Also described is the method of data analysis adopted in the study.

Chapter 5 provides discussion on the statistical analysis performed, results and findings from the quantitative data. This section also discusses findings from the data of the post survey interview.
Chapter 6 presents a summary of the findings and provides conclusion of the results. Additionally, this section also discusses limitations of the study and suggestions for future research.
2.1 INTRODUCTION
Management accounting (MA), management accounting system (MAS), management control system (MCS) and organisational controls (OC) are terms interchangeably used in management accounting research. MA refers to collection of practices, i.e. traditional performance measurement system (PMS) such as budgeting or product costing, whilst MAS refers to the systematic use of MA to achieve some goals. MCS is viewed as a broader term that encompasses MAS and MA (Chenhall, 2003). According to Henri (2006), PMS is one component of MCS. Thus PMS is also related to MAS and MCS. This chapter reviews prior literature that relates to PMS evolution, limitations of traditional PMS and assessments of the financial and non-financial measures.

The next section of this chapter also provides discussions on definitions of PMS, strategic performance measurement system (SPMS) and comprehensive performance measurement system (CPMS) based on the review of prior literature. Additionally, the following section also provides a review of literature on the role of SPMS and CPMS. For the review of literature on SPMS and CPMS, the section is divided into two: the first is PMS-related researches at the organisational level as well as at the managerial level. This also includes a review of research focusing on PMS as a decision-facilitating and decision-influencing role, which is also explained and discussed in this section. The second part of this section focuses on the PMS-related research emphasising the negative consequences of CPMS. Since PMS is an important element of MCS, this chapter will also include a discussion on research related to MCS and MAS. Particularly, MAS literature focusing on its informational characteristic and performance is also explained in this section.
2.2 PERFORMANCE MEASUREMENT SYSTEM

2.2.1 LIMITATIONS OF TRADITIONAL PMS

The development of PMS can be divided into two (2) phases. The first phase started in the 1880s and ended in the 1980s (Ghalayini & Noble, 1996; Ghalayini et al., 1997; Gomes et al., 2004). During this period the emphasis was on using financial measures of performance based on a traditional accounting system such as profit, return on investment (ROI) and productivity to control, monitor and improve operations. The second phase began in the early 1980s as a consequence of global competition that changed customer requirements and forced the implementation of new technologies and philosophies of production and management; for instance, computer integrated manufacturing (CIM), flexible manufacturing systems (FMS), just in time (JIT), optimised production technology (OPT) and total quality management (TQM).

Johnson and Kaplan (1987) published the book entitled Relevance Lost – The Rise and Fall of Management Accounting, which has criticised the use of traditional performance measures and has highlighted the need to have a more integrated PMS. Traditional performance measures are criticised for their focus on minimising variances rather than for continuous improvement. This book signifies the beginning of the second phase of the PMS development. In addition, traditional management cost systems are argued to be outdated and incompatible with the new operating philosophies. Manufacturing companies are criticised for using traditional performance measures to assess their success, which are argued to be unsuitable in the new manufacturing environment.

There are many terms used to refer to traditional PMS in prior research. These terms include traditional management system (Kaplan & Norton, 1996), traditional management accounting
systems (Ghalayini & Noble, 1996), traditional cost accounting systems (Ghalayini et al., 1997); traditional PMS, traditional management cost systems and traditional performance measures (Bourne et al., 2000) and traditional accounting based approaches (Burgess, 2007). Traditional performance measures are based mostly on financial data such as return on investment (ROI), return on assets (ROA), return on sales (ROS), purchase price variances, sales per employee, profit per unit production and productivity (Ghalayini & Noble, 1996; Ghalayini et al., 1997). Traditional PM was introduced in the early 1900s and was developed from costing and accounting systems. Despite wide use of traditional PM during this period (Ghalayini et al., 1997), much prior research has criticised traditional performance measures that are claimed to rely more on financial metrics. Numerous scholars address many deficiencies of the traditional PM mainly because it is based on traditional management accounting systems that are concerned with direct labour efficiency through controlling and reducing direct labour costs (Ghalayini & Noble, 1996; Ghalayini et al., 1997).

The reliance on direct labour related measures is argued to be inconsistent with the current manufacturing cost components whereby the ratio of a firm’s direct labour cost is significantly lower than the ratio of overhead cost out of the firm’s manufacturing cost. Traditional PMS was also criticised for encouraging short-term thinking which impedes the achievement of long-term goals (Banks & Wheelwright, 1979; Bourne et al., 2000; Neely, 1999; Neely et al., 2005; Olsen et al., 2007). Also, traditional measures are claimed to be unable to integrate corporate strategy, particularly undercut firm strategy which usually focused on customer service (Eccles, 1991; Ghalayini & Noble, 1996; Neely et al., 2005). Besides, the measures are also claimed to focus more on minimising cost, enhancing efficiency of labour and utilisation of machine (Ghalayini & Noble, 1996). Additionally, they are also claimed to have no external focus and contradict the concept of continuous
improvement. The measures fail to provide essential information on continuous improvement, such as information related to customer needs and competitor performance (Bourne et al., 2000; Kaplan & Norton, 1992; Neely, 1999; Neely et al., 2005; Olsen et al., 2007).

The traditional measures are also limited because the measures encourage sub-optimisation, for instance manufacturing inventory, to ensure the efficiency of individuals and equipment (Bourne et al., 2000; Neely, 1999; Neely et al., 2005; Olsen et al., 2007). Traditional PMS or financial performance measures are also criticised for lack of requisite variety to give decision makers the range of information required to manage processes. Atkinson et al. (1997) also argued that PMSs based primarily on financial measures lack the focus and robustness needed for internal management control. Particularly, the systems are not designed to communicate decision-relevant information for internals in the organisation. Furthermore, it is also argued that conventional financial information is too historical and backward-looking (Ittner & Larcker, 1998).

Furthermore, the measures ignore important issues such as customer satisfaction and cannot provide predictions as they are based on historical cost and have little or no basis to judge effectiveness of processes, such as personnel relations systems (Atkinson et al., 1997). Traditional measures are also criticised as lagging behind metric, as the measures in the financial reports are closed monthly as a consequence of decisions made in a prior period (Ghalayini & Noble, 1996; Ghalayini et al., 1997). Also most of the performance and improvement efforts are difficult to quantify using financial terms. Additionally, traditional measures have a predetermined format which is argued to be inflexible, ignores the unique characteristics of each department and is not applicable to new management techniques.
(Ghalayini & Noble, 1996). Financial PM does not reflect a more independent management approach. In contrast, shop floor that operators are given more responsibility and autonomy to meet customer requirement indicates irrelevant use of traditional PM. Measures are also said to encourage managers to make decisions that are not in the company’s best interests (Epstein & Manzoni, 1998).

Another limitation of traditional PM is related to cost of preparing the information. The cost of acquiring the information required in preparing traditional financial reports is expensive, as extensive amounts of data will be gathered in preparing the reports (Ghalayini & Noble, 1996). As a result of the traditional PM constraints, non-financial performance measures are developed to complement the traditional performance measures (Ghalayini et al., 1997). Table 2.1 shows the comparison between traditional and non-traditional performance measures as highlighted by Ghalayini et al. (1997):

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<th>Characteristic</th>
<th>Traditional performance</th>
<th>Non-traditional</th>
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<td>measures</td>
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<td>Basis of system</td>
<td>Accounting standards</td>
<td>Company strategy</td>
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<td>Types of measures</td>
<td>Financial</td>
<td>Operational and financial</td>
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<td>Audience</td>
<td>Middle and top managers</td>
<td>All employees</td>
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<tr>
<td>Frequency</td>
<td>Lagging (weekly or monthly)</td>
<td>Real-time (hourly or daily)</td>
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<td>Linkage with reality</td>
<td>Indirect, misleading</td>
<td>Simple, accurate, direct</td>
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<td>Shop floor relevance</td>
<td>Ignored</td>
<td>Used</td>
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<tr>
<td>Format</td>
<td>Fixed</td>
<td>Flexible/variable</td>
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<tr>
<td>Local-global relevance</td>
<td>Static, non-varying</td>
<td>Dynamic, situation structure dependent</td>
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<td>Stability</td>
<td>Static, non-changing</td>
<td>Dynamic, situation timing dependent</td>
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<td>Purpose</td>
<td>Monitoring</td>
<td>Improvement</td>
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<td>Support for new</td>
<td>Hard to adapt</td>
<td>Applicable</td>
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<td>improvement approaches</td>
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<td>(JIT, TQM, CIM, FMS, etc.)</td>
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A few performance measurement frameworks have been developed to account for the limitations associated with traditional PMS. These frameworks are the Strategic Measurement Analysis and Reporting Technique (SMART) (Cross & Lynch, 1988), the performance measurement questionnaire (PMQ) (Dixon et al., 1990) and the Balanced Scorecard (Kaplan & Norton, 1992; Kaplan & Norton, 1996; Kaplan & Norton, 2001b).

These three (3) integrated performance measurement systems (IPMS) were developed to provide overall view of company performance and to avoid sub-optimisation.

SMART system is one of the IPMSs and consists a four-level pyramid of objectives and measures: corporate vision/strategy, business unit market and financial objectives, business unit operational objectives and priorities, departmental level operational criteria and measures which ensures an effective link between corporate objectives & strategies and operational performance measures (Bourne et al., 2000; Cross & Lynch, 1988; Ghalayini et al., 1997).

The measures also integrate performance through a hierarchy of organisation. Despite this
benefit, SMART is disputed for its inability to provide a mechanism to recognise key performance indicators and integrate the concept of continuous improvement (Ghalayini et al., 1997). Performance measurement matrix is another framework proposed in response to the criticism towards traditional financial measures. This system provides a balance between internal and external measures and between financial and non-financial measures (Keegan et al., 1989).

PMQ was developed to assist managers in identifying an improvement area needed in an organisation. This system, however, is not regarded as a comprehensive integrated measurement system and claims to have a disadvantage similar to SMART, in which the system does not consider it a continuous improvement concept. On the other hand, Balanced scorecard approach was developed to integrate strategic, operational and financial measures (Ghalayini et al., 1997; Kaplan & Norton, 1992). For the purpose of providing a balanced view of performance, framework is multi-dimensional concern with the non-financial information. The framework attempts to integrate four important performance perspectives: customer, internal, innovation/learning and financial (Bourne et al., 2000; Kaplan & Norton, 1992) whereby specific goals for each perspective are set.

Although BSC was designed to provide an overall view of a firm’s performance for the senior manager, the system was argued to have disadvantages, since BSC is mainly designed to provide an overall view of performance thus it is not intended for the operational level, particularly at the factory operations level (Ghalayini et al., 1997). Another integrated performance measure framework conceptually similar to the Balanced Scorecard is Tableau de Bord, having been used by French companies for many decades and is also known as a precursor of the BSC (Chenhall & Langfield-Smith, 2007; Epstein & Manzoni, 1998; Gomes
et al., 2004). The system focuses on key control parameters and adopts a pyramidal analysis centres on three levels of managements: strategy, management and operations (Chenhall & Langfield-Smith, 2007).

Although these integrated PMSs have been developed to address the limitations of the traditional performance measure, they are criticised as less applicable in the current competitive market. The systems do not fully address the requirements of PMS for today’s manufacturing environment. The integrated PMS was argued to suffer from focusing only on monitoring and controlling tools rather than improvement tools. The systems do not allow any dynamic revision of the critical areas of improvement, do not promote global and local system optimisation and do not address the dynamic changing of system in a particular firm (Ghalayini et al., 1997). These limitations of integrated PMS have resulted in the introduction of Integrated Dynamic PMS (IDPMS) (Ghalayini et al., 1997).

Ghalayini et al. (1997) present integrated dynamic PMS (IDPMS). The system provides integration at several levels: integration of process improvement teams, management, and factory shop floor performance measurement, integration of general areas of success with associated performance measures and indicators and integration of relevant financial measures with operational measures. IDPMS integrates three main functional areas of the company: management, process improvement team and factory shop floor. The areas are linked through the specification, reporting and dynamic updating of the defined areas of success, associated performance measures and performance measure standards. IDPMS provides an integrated approach which supports PMS alignments across managerial and operational levels to enhance ability of a company to be competitive in the current dynamic environment (Ghalayini et al., 1997).
The review on the development of PMS suggests changes are required and the more comprehensive PMS are being implemented to suit with the needs of the current business environment. PMS has evolved from a system which consists of a few measures focused on financial measures to a system consisting of multiple non-financial and financial measures (Kaplan & Norton, 1996). The literature also suggests that more comprehensive PMS has distinct feature which is described to include not only the incorporation balanced concept of financial and non-financial measures but also the integration of firm’s strategy into the system (Chenhall, 2005). Among the most widely cited PMSs are SMART, the performance measurement matrix, Balanced Scorecard and IPMS (Gomes et al., 2004).

2.2.2 FINANCIAL AND NON-FINANCIAL MEASURES

Prior contemporary PMS related research show the importance of both non-financial and financial measures to enhance performance (Hoque, 2004, 2005; Said et al., 2003). Research also indicates that non-financial measures are complementary and not to replace measures of performance (Dossi & Patelli, 2010; Joiner et al., 2009).

Dossi and Patelli (2010) provide empirical evidence examining the factor related to the widespread use of non-financial indicators in PMS used in the relationships between headquarters and subsidiaries. The empirical study was based on 141 questionnaires administered in Italian subsidiaries of foreign companies. The research suggests that the non-financial measures included in the PMSs contribute to the strategic alignment of international organisation by means of supporting learning and dialogue between headquarters and subsidiaries. Data from the interviews suggest financial measures still remain the primary focus of PMSs and multiple perspectives provide comprehensive financial performance
assessment and evaluations. The findings show that non-financial measures are not dominant in the PMSs used and have the same likelihood to be included in the PMS.

A research by Joiner et al. (2009) highlights the importance of both non-financial and financial performance measures to improve performance in certain firms’ strategic choice. Joiner et al. (2009) examined the mediating role of both non-financial and financial performance measures in the relationship between a firm’s strategic orientation of flexible manufacturing and organisational performance in a manufacturing sector. The findings show non-financial and financial performance are being utilised by firms emphasising a flexible manufacturing strategy. Additionally, the results also indicate firms using both financial and non-financial performance measures will enhance both financial and non-financial organisational effectiveness. The results are consistent with the research by Hoque (2004) which shows that non-financial PMSs are more appropriate for firms with manufacturing flexibility. This is due to the characteristic of non-financial measures which are more actionable and future-oriented in which their implementation can enhance organisational capabilities in future planning and strategy implementation. On the other hand, financial measures represent current profitability which firms need to report to the stakeholders.

Non-financial measures have been in used by firms in past decades. They are believed to offer several benefits for firms and to affect firms’ profitability (Ittner & Larcker, 2003). Firstly, non-financial measures can provide an indication of the business’s progress before the financial reports are being disclosed. Secondly, non-financial measures are able to provide clearer information, particularly required action, to be taken by employees in attaining the firm’s strategic objectives. Finally, non-financial indicators are able to provide
better information to investors as these measures are the indicator of intangible value, such as R&D productivity.

However, in their field research, (Ittner & Larcker, 2003) discovered that most companies made little effort in identifying area of non-financial performance that may help attain the firm strategic objectives. Additionally, firms do not try to find cause-and-effect link between their non-financial area adopted with the cash flow, profit or stock price. The findings show that in a five-year period, firms which established a causal link between those measures and financial outcomes produced significantly higher return on assets (ROA) and returns on equity (ROE) and also highlight few mistakes firms made when using non-financial performance measures. Some companies ignore the causal relation between the measure and outcomes while others rarely validate the effect of the nonfinancial measures on the financial outcomes. Since target-setting is difficult, certain companies do not make the effort to estimate whether the non-financial performance improvements will pay off but instead focus more on initiatives that produce short-term financial outcomes. The findings also indicate a firm would also tend to make incorrect measurement even though had already identified the causal effect relationship.

According to Said et al. (2003), there are an increasing number of firm that implement new PMS to monitor nonfinancial firms’ performance, for instance customer and employee satisfaction, quality, market share, productivity and innovation. Despite being widely advocated and adopted, Said et al. (2003) claim there is lack of evidence available examining the relation between non-financial measures and economic benefits. Said et al. (2003) examine the implication of non-financial measures included in compensation contracts on current and future performance using sample data derived from Lexis/Nexis database for an
eight-year period from 1992 to 1999. The results of the research show firms that employ a combination of financial and non-financial performance measures have significantly higher accounting-based and market-based returns. The research result is consistent with prior studies which provide evidence on the association between non-financial measures and economic performance (Banker et al., 2000).

A survey research by Hoque (2005) on a sample of 52 New Zealand manufacturing organisations shows that greater reliance on non-financial measures are associated with improving organisational performance under conditions of high environmental uncertainty. Additionally, research implies that there is an appropriate ‘fit’ between the uses of non-financial performance measures and environmental uncertainty. This evidence support claims made by prior researchers that emphasis made by firms on the non-financial measures can improve organisational performance, because non-financial measures focus on a firm’s long term success factors, such as customer relations, internal business process, innovation and employee satisfaction (Hoque, 2005; van Veen-Dirks & Wijn, 2002). The research finding by Hoque (2005) somehow contradicts his earlier research, which found no evidence of a significant relation between environmental uncertainty and performance through management’s use of non-financial performance measures, but found a significant result for the relation between firms’ strategic choice and firms’ performance (Hoque, 2004). However, the study found support for a direct and positive relation between a firm’s emphasis on non-financial performance measures and increased organisational performance.

Jusoh et al. (2008) provide evidence from a study in a Malaysian context which reported the usefulness of CPMS among Malaysian companies. Their research concludes that how non-financial measures can best be combined with financial performance measures. Based on 120
usable respondents from a sample of 975 Malaysian manufacturing companies registered with the Federation of Malaysian Manufacturer (FMM), these findings suggest that the use of BSC framework, particularly, internal business process and innovation and learning measures appears to be important as it enhances firms’ performance. Additionally, the results also reveal that multiple performance measures which includes financial and non-financial measures (overall BSC measures) contributes to enhance organisational performance.

Several PMS researches conducted in Malaysia also show the importance in the use of more comprehensive PMSs, such as financial and non-financial measures in their PMS. In an exploratory study, Jusoh and Parnell (2008) studied the effect of competitive strategy on the use of performance measurement in Malaysia. Based on survey responses from 120 managers from Malaysian firms selected from Federation of Malaysian Manufacturer (FMM), the result shows that even though greater emphasis was placed on using financial measures, most companies are pursuing IEC (innovation, production efficiency and customer orientation) and low price strategies due to the uncertain environment. The findings also suggest the important role of performance measures in providing information for managers in achieving organisations’ strategic objectives (Jusoh & Parnell, 2008). Comprehensive measures or non-financial measures such as customer satisfaction, customer loyalty, employee training and employee satisfaction are significant for firms with EIC strategy that help the firms to outperform their counterparts pursuing either low price or uniqueness strategies.

CPMS such as BSC is also found to be useful under perceived environmental uncertainty (PEU) and for firm performance. The research is based on 120 Malaysian manufacturing firms showing the role of multiple performance measures in the relation between PEU and firm performance. Consistent with prior MAS research, Jusoh (2008) identified that the
multiple performance measures conceptualised according to the BSC framework mediate the relation between PEU and firm performance. Particularly, the result implies that the degree of PEU and the extent to which firms use BSC measures are important in determining the firm’s performance. Greater use of BSC measures was found to lead to improved firm’s performance (Jusoh, 2008). In addition, results also indicate BSC partially mediates the relation between PEU and financial performance, but fully mediates PEU and non-financial performance. However, inconsistent with prior MAS information literature, a negative relationship was found in the relation between PEU and the use of CPMS, i.e. a higher degree of PEU is associated with lower BSC usage.

Another research in Malaysia was conducted by Jusoh et al. (2006) showing the importance of a more comprehensive PMS, such as multiple performance measures as better indicators of performance. Based on survey responses from executives of 120 Malaysian firms, the study empirically examines the alignment between strategy and the use of multiple performance measures. The research highlights the importance of multiple performance measures that are conceptualised as BSC supplementary financial measures with non-financial measures. Non-financial performance measures such as customer, internal business process and learning and growth are found to interact with prospector strategy, which leads to a significant and positive impact on firm’s performance. However, research reveals that financial measures are less important to determine performance for firms emphasising prospector strategy. A firm with defender strategy shows significant impact of interaction terms on performance when using financial measures. The finding of research is consistent with prior research, indicating more comprehensive PMS provides broad scope information that may lead to a positive effect on performance particularly for a firm emphasising a strategy of continuous product/market development and innovation (prospector strategy).
Jusoh (2008) also provides more evidence that indicates the importance of more comprehensive PMS. PMS, which is conceptualised based on BSC framework. The research examined the extent of comprehensiveness of PMS or multiple performance measure usage and the effect of the system on performance among the Malaysian manufacturing firms. The results indicate higher emphasis on using financial performance measure by the firms than non-financial performance measures. The result of the research identified that the use of non-financial measures, such as internal business process measures, are also high. Additionally, responding firms indicate a high usage of customer measures and internal business process measures, but low for innovation and learning measures. However, when considering the perspective individually, results indicate improved firm performance is positively associated only with greater internal business process and innovation and leaning measures. The overall BSC measure was found to have a positive and stronger effect on firms’ performance, which indicates multiple performance measures are fundamental to organisational success.

Another PMS research conducted in Malaysia is a research by Burgess, Ong and Shaw (2007). The research gathered survey data from 149 electrical and electronic firms which are members of The Electrical and Electronic Association of Malaysia (TEEAM). Based on the result, more comprehensive PMS or contemporary PMS was found to dominate the sample. The prevalence of more comprehensive PMS was found greater in the larger companies, older organisations and firms with a higher degree of foreign ownership. Using cluster analysis, the result shows the two distinct features of PMS related to the design and use of PMS, are contemporary and traditional PMS. Based on the result, the contemporary PMS was characterised to reflect comprehensiveness in covering future needs, coordinating departments and incorporating strategic objectives. The results also indicate a balanced
approach of the PMS is described to be comprehensive, provide extensive coverage and balanced measures.

Ong and Teh (2008) examined the factors influencing the design and use of PMS. The factor analysis is conducted to determine whether organisational contextual factors: organisational profile, organisational culture, organisational strategy and technology have influence on PMS. The research findings indicate organisational culture with a high level of leaning and knowledge has an influence on firms’ PMS. Technology is another contextual variable that has significant influence on the firms’ PMS. Additionally, consistent with prior research, the cluster analysis indicates most of the companies implementing more comprehensive PMS or contemporary PMS are large in size, foreign-owned and newly-established. On the other hand, less comprehensive PMS or traditional PMS are mostly medium-sized, local-owned and new to moderately established companies. The chi-square results indicate significant difference between the two groups in terms of company size and ownership types but not for company age.

The discussion above shows that financial and non-financial measures have received increasing attention and are being used as the basis of PMS in today’s firms. In the next section the definition and role of PMS will be discussed.

2.2.3 DEFINITIONS OF PMS

According to Neely, et al. (2005), performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action. On the other hand, a performance measure is defined as a metric used to quantify the efficiency and/or effectiveness of an action. Further, a performance measurement system can be defined as the set of metrics used
to quantify both the efficiency and effectiveness of actions (Neely et al., 2005; Neely et al., 1994). PMS plays an important role in an organisation particularly in developing strategic plans, evaluating organisational objectives achievement and for managerial compensation. Particularly, PMS is as an information system that transforms performance data into measurement of organisational and individual performance (Burney & Matherly, 2007). Over the last twenty years, changes in business environment has led to the changes in management accounting as well as how firm assess or evaluate business outcomes (Ittner & Larcker, 1998).

PMS was described to have information of the assessment of organisational and individual performance. Many firms realised deficiencies of using traditional performance measures. Conventional PMS is unable to provide necessary the information needed for decision makers to manage business processes in an advanced business setting (Atkinson et al., 1997). Additionally, traditional performance measure was also recognised to be inappropriate for a manufacturing business environment which was claimed can lead to several disadvantages as follows (Neely et al., 2005):

- Encourage short-termism
- Lack of strategic focus, ignore information on quality, responsiveness and flexibility
- Encourage local optimisation
- Encourage minimisation of variance from standard rather than continuous improvement (Bourne et al., 2000)
- Fail to provide information related to customers and competitors (Neely et al., 2005).

Since the traditional performance measures concern only on variances such as utilisation, efficiency, productivity and other variances related to financial purposes, managers are not
getting enough information to aid them making critical business decisions (Cross & Lynch, 1988). Many firms realised the importance of non-financial factors in achieving organisational strategic objectives (Ittner & Larcker, 1998). Extensive prior literature review identified several characteristics of modern performance measurement systems (Edson Pinheiro de et al., 2009; Gomes et al., 2004) as follows:

- Measures must present relevant non-financial information based on firm key success factors
- System is being implemented to articulate strategy as well as to monitor business outcomes
- System should be based on organisational objectives, critical success factors, customer orientation and firms should also monitor financial and non-financial aspects of outcomes (Manoochehri, 1999)
- System must change according with the strategy (Bhimani, 1993)
- Performance system must meet the manufacturing operations requirements, long- term oriented and easily understood and implemented (Santori & Anderson, 1987)
- There is a link between performance system and reward systems (Albert et al., 1999)
- There is alignment and consistency between strategic framework and the measures (financial and non-financial measures)

The inherent limitations and criticisms of traditional performance measures which are widely discussed and highlighted by prior studies, have led to the development of a Strategic Performance Measurement System (SPMS). SPMS is a more complex and comprehensive version of PM systems (Burney & Matherly, 2007). SPMS has gained popularity and has been implemented by many firms over the last decade (Chenhall, 2005). According to Burney and Matherly (2007), SPMS is different from traditional PMS, as traditional PMS emphasises
financial measures of performance whereas SPMS combines both financial and non-financial measures that are chosen through a filtering process to represent organisational strategy. Hence, SPMS permits an organisation to communicate information regarding its long-term strategy, the relations among the various organisational strategic objectives, and the link between strategic goals and the employees’ actions (Burney & Matherly, 2007; Ittner & Larcker, 1998).

### 2.2.3.1 STRATEGIC PERFORMANCE MEASUREMENT SYSTEM (SPMS)

SPMS is an important aspect of new management accounting to assist organisations to provide a better service role or value to customers. Many organisations are trying to adapt to this role in various ways and implementing integrated performance measurement is one of the efforts. Integrated performance measurement provides consistent alignment of the strategy, actions and measurement. In integrated performance measurement, the emphasis of both financial and non-financial indicators is emphasised, enhancing value rather than minimising cost. Integrated performance measurement is also used to influence planning, unlike the traditional approach to manage cost in order to achieve control (Nanni et al., 1992).

As a consequence of prior research, SPMS is defined as the alignment between a set of measures, which includes causally-linked financial and non-financial objectives and measures of performance, individual actions and strategy of the organisation (Atkinson et al., 1997; Nanni et al., 1992; Webb, 2004). According to Chenhall (2005), SPMS’s distinctive features are designed to present managers with financial and non-financial measures covering different perspectives, which provide a way of translating strategy into a coherent set of performance measures. According to Burney and Widener (2007), SPMS is a performance measurement system that contains at least two measures which are linked to a firm’s strategy.
Particularly, the system combines financial and non-financial indicators to promote achievement of an organisation’s strategic objectives (Kaplan & Norton, 2001a; White, 2008).

SPMS also includes other organisational practices such as Balanced Scorecard, Economic Value Added (EVA) and Business modelling (Ittner et al., 2003b). Balanced scorecard introduced by Kaplan and Norton (1992) is a widely known SPMS (White, 2008). According to Micheli and Manzoni (2009), SPMS can help an organisation define and achieve strategic objectives, align behaviours and attitudes which consequently produces a positive impact on organisational performance. However, SPMS is also criticised for encouraging perverse behaviours, stifling innovation and learning, as well as having little effect on decision-making processes (Micheli & Manzoni, 2009).

Based on the review of literature, Michelli and Manzoni (2009) identified several factors that influence the success of SPMS:

- Fundamental success of SPMS depends on the design of SPM system and definition of its role which will have implication on business performance. It is also important whether the measurement of performance is linked to both formulation and implementation of strategy.
- Secondly, the types of behaviour promoted by SPMS whether the use of the system contributes for controlling and learning process purposes.
- Thirdly, SPMS should be dynamic, as a way of fostering strategy alignment, supporting empowerment and strategy adaptation.
Finally, indicators in SPMS should be linked to strategy and considered in a strategic review to help in the decision-making process to ensure a positive impact on organisational performance.

Despites decades of research in the area, the benefits and limits of SPMS are still inconclusive (Micheli & Manzoni, 2009).

For the purpose of this study, CPMS will be used to represent SPMS or BSC perspective following the definition used by Hall (2008). According to Hall (2008), most prior research only focuses on diversity of measure, which comprise a broad set of measures including financial and non-financial measures. Diversity of measure is insufficient to represent strategic linkages of a BSC or SPMS in practices. Thus, Hall (2008) defines CPMS as having a broad set of measures which relate to the main part of the organisation and provide integration of measures with strategy.

2.2.3.2 COMPREHENSIVE PERFORMANCE MEASUREMENT SYSTEM (CPMS)

Prior PMS-related research has explored various characteristics of SPMS, particularly performance-measure diversity (Henri, 2006; Ittner et al., 2003b; Moers, 2005), subjective performance measure (Moers, 2005; Van der Stede et al., 2006) and objective performance measure (Van der Stede et al., 2006), formality of performance measure (Hartmann & Slapnicar, 2009), multiple (Sholihin & Pike, 2008) and comprehensive measure of performance (Burney & Matherly, 2007; Hall, 2008; Scott & Tiessen, 1999). However, most of these researches focus on diversity of measurement in which the PMS in these studies was described as comprising of a broad set of measures which include the combined use of financial and non-financial measures.
Henri (2006) suggests CPMS includes a diverse set of measures that comprise of financial and non-financial measures. Henri (2006) examines the relation between organisational culture and attributes of PMS, diversity of measurement and nature of use. She identified that nature and intensity of use influence diversity of measurement, whereby PMS use for attention focusing and strategic decision making is highly related to measurement diversity. Additionally, managers with flexibility type are also found to be related to diversity of measurement that includes a mix of financial and non-financial measures. In examining the relation between measurement system outcomes and SPMS, Ittner et al. (2003b) capture strategic performance dimension based on measurement diversity which includes broad set of measures that consist of the mix of financial and non-financial measures.

In other PMS research, Van der Stede et al. (2006) examine the link between manufacturing strategy, performance measures and organisational performance. In this study, measures emphasise on more extensive and diverse measures, which includes non-financial performance measures with objective and subjective measures. Research on performance evaluation by Moers (2005), determine a link between performance measure and performance evaluation bias. The study also looked at performance measures’ diversity and subjectivity. Performance evaluation research by Hartmann and Slapnicar (2009) examine formality of performance evaluation and individual behaviour. Included in the formality of performance evaluation system are three evaluation cycles: target setting, performance measurement and performance-based reward. In this research, performance measurement refers to the use of quantitative and objectives measures.

Sholihin and Pike (2008) also examine behavioural implication of reliance on multiple performance measures (RMPM). In the research, Sholihin and Pike (2008) also used
performance measure diversity, the combined use of financial and non-financial measures to represent multiple performance measure. Based on these prior PMS design-related literature, there is lack of research focus on the comprehensiveness of performance measurement as previously explored or introduced by Hall (2008). The comprehensiveness aspect of performance measurement in his research has considered the comprehensive informational aspect of SPMS to include diversity of measure as well as the extent of the linkage between measurement systems with strategy. Scott and Tiessen (1999) which examined the link between performance measurement and team performance also measured comprehensiveness based on diversity of measure captured using a variety of performance measurements that can be grouped into financial performance (cost, revenue or return) and five categories of non-financial performance (productivity, quality, service, innovation and personnel).

In a study by Burney and Matherly (2007), they also used diversity of measure to reflect performance measure comprehensiveness. The system comprehensiveness captures the extent to which a PM system contains a broad spectrum of performance measures. Particularly, the system comprehensiveness reflects the breadth of measurement categories captured by respondent’s PMS, not the total quantity of measures in the system. Measures are classified into eight categories with reference to BSC perspectives and include financial outcomes, customer outcomes, product/service quality, operational performance, innovation in processes, employee outcomes, information systems capabilities and organisational procedures. Results of research provide significant finding on the benefit of CPMS. Firstly, findings indicate system comprehensiveness is associated with employee outcomes, as an individual can get access to more information when using the system. Additionally, findings also suggest that organisations benefit from PM systems that incorporate a broader set of measures.
Management accounting information particularly, performance measures provide two main purposes: decision-influencing role and decision-facilitating role (Grafton et al., 2010; Kren, 1992; Sprinkle, 2003; van Veen-Dirks, 2010). These two functions are highlighted to be dependent upon each other. In other words, these two purposes are not necessarily disjointed. Decision-influencing role relates to the use of managerial accounting information to alleviate organisational control problems for the purpose of motivating and controlling the managers and employees. Alternatively, decision-facilitating role refers to the use of management accounting information to resolve pre-decision uncertainty.

SPMS was identified to provide quality information (White, 2008). A survey research by White (2008) examined the relation between the use of financial and non-financial performance measures in an SPMS and SPMS outcomes in particular, information quality and effectiveness. Based on the survey data from a sample of 1990 organisations, the result shows non-financial measures have the strongest correlation with both information quality and effectiveness. Hence, the result indicates that the wider the scope or comprehensiveness of measure used in the performance measurement system, the higher the quality of information produced by the system. This result implies that as the company includes more measures in the SPMS design, the better the quality of information produced by the SPMS. Based on these series of PMS literature, researchers seem to suggest that there are a few features of how comprehensiveness of PMS is described by prior studies. Generally, comprehensiveness of PMS is described to include a diverse set of measures that covers financial as well as non-financial measures of performance (Henri, 2006; Hoque & James, 2000; Ittner et al., 2003b; Scott & Tiessen, 1999). Henri (2006) also highlighted the characteristic of CPMS to be able to measure performance of all the important areas in an
organisation and consist of a broad set of measures that cover different parts of the organisation’s operations.

In his study, the performance measure diversity was measured using an instrument used by Hoque and James (2000) and Hoque, Mia and Alam (2001). Measures requires the respondent to state the frequency of use of 20 performance measures which items are based on four dimensions of Balanced Scorecard (Kaplan & Norton, 1992). Hoque and James (2000) found diversity of measure to have a positive relation with organisational performance. According to Ittner, et al. (2003b), PMS is comprehensive if it consists of broad sets of measures, use of a broad set of financial and (particularly) non-financial measures, use of a broad set of financial and (particularly) non-financial measures. Their research used measures by Krumwiede (1998) to measure the implementation of BSC.

Similar to Scott and Tiessen (1999), who identified team performance as positively associated with comprehensive performance measures that are diverse and comprise both financial and non-financial measures, Burney and Matherly (2007) suggest that comprehensive PM is characterised as including a diverse set of measures and incorporating a broad set of measures. In their study, the comprehensive PM comprises a number of performance measures in eight categories corresponding to the BSC perspectives (Kaplan & Norton, 1996). These categories are: financial outcomes, customers’ outcomes, product/service quality, operational performance, innovation in processes, employee outcomes, information systems capabilities and organisational procedures.

Van der Stede et al. (2006) also have the view that measurement diversity is an important feature of more comprehensive PMS. Their research suggests that CPMS is an extensive
PMS, which includes a financial measure of performance and a non-financial measure of performance comprising subjective and objective non-financial measures. The finding of the research on a sample of 128 manufacturing companies in Europe and the US found that firms with more extensive performance measurement systems, particularly those that include objective and subjective non-financial measures, have higher performance. Their study also found firms that emphasise quality in manufacturing use a more comprehensive PMS, which includes both objective and subjective non-financial measures. Positive association with performance was identified with extensive use of subjective than objective non-financial measures.

An exploratory study by Chenhall (2005) suggested another characteristic of CPMS. His study had identified a key dimension of SPMS such as BSC can assist managers to develop their competitive strategies. He claimed that SPMS has a distinctive feature able to provide managers with financial and non-financial measures, which in combination provide information for managers to translate strategy into a coherent set of performance measures and to develop competitive advantage. Three interrelated dimensions of integrative SPMS were identified from his study; the first, strategic and operational linkages, was a generic factor that captures the overall extent to which the systems provide for integration between strategy and business operations and integration across elements of the value chain. The second attribute, customer orientation, focuses on customer linkages and includes financial and customer measures. The third dimension, supplier orientation, is based on linkages to suppliers and includes business process and innovation measures.

This is analogous to the study by Nanni et al. (1992) who also suggests CPMS to include measures that integrate with strategy to provide information about parts of the value chain.
Nanni et al. (1992) in the study provide empirical evidence of how PMS has developed from a traditional management accounting to strategically-driven performance management systems. They argued that CPMS that integrate actions across functional boundaries and focus on strategic outcomes are vital for a firm to survive or sustain particularly in the manufacturing and competitive environment surrounding the firms. Integrated PMS can provide relevant information about performance dimensions of different parts of the business. According to Malina and Selto (2001), BSC is considered comprehensive, as the system provides a firm with a more broad set of performance measures than the traditional PM. The system covers a set of things together and uses them to manage the business.

According to Malina and Selto (2001) balance scorecard is a CPMS. The PMS is comprehensive as the system includes the key financial and non-financial measures which reflect overall success in managing a firm’s critical factor. Particularly, BSC gives a broader set of measures of success than the more traditional financial and market share. Thus, CPMS would provide managers with sufficient information related to how they are managing the overall business for both current and future results (Malina & Selto, 2001, p. 70). The measures wrap a set of things together which make sense for managing the business. Evidence also shows CPMS promotes strategic alignment as the system consists of a parsimonious set of performance measures which are linked to the firm’s strategy.

Malmi (2001) investigates how BSCs are being implemented in Finland and identifies the reason for its adoption by Finnish companies. His study gathered the data using semi-structured interview in 17 companies which are identified to have implemented BSC. His findings show that there are two reasons for the use of BSC by the companies. Some companies use the PMS purely as an information system than as a mean for strategy
implementation. Thus, there is no target set for the measures. The system is just a tool for management to identify what needs to be improved. On the other hand, BSC is used as a tool to implement strategy or as a steering device. BSC is used to provide a target to managers. Particularly, the system provides a tool for upper and lower levels of management to agree on targets. Non-financial, financial measures and targets provide managers with more comprehensive accountabilities to direct managerial focus to strategic relevance issues.

In this research, drawing on the work by Hall (2008), CPMS refers specifically to the broad set of measures associated to the main parts of the organisation (Burney & Matherly, 2007; Ittner et al., 2003b; Malina & Selto, 2001; Scott & Tiessen, 1999). PMS that is comprehensive has a broad set of measures that are associated and designed to provide information relating to the performance of all the important areas of the firm (Henri, 2006; Nanni et al., 1992). CPMS integrates measures with strategy and provides information about parts of the value chain (Nanni et al., 1992). In addition, Chenhall (2005) argued that CPMS provides understanding of the linkages between business operations and strategy.

2.2.3.3 THE IMPORTANT ROLES OF SPMS/CPMS

Effective use of PMS is very critical for firms to create value for the organisation stakeholders in the current competitive environment. PMS can help an organisation monitor the implementation, achievement and improvement of its plans or objectives. Based on a study by Atkinson et al. (1997), PMS is central to the control system which plays important roles in organisations as follows:

- PMS help firms to assess expected value received from its internal stakeholder; employees and suppliers. Firms will identify reasons and actions if value is not as expected
The system evaluates value provided to stakeholders for them to contribute to achieve primary objective which is usually financial (profitability)

PMS helps ensure process efficiency, provides guidance in designing and implementing process contribution to secondary/ non-financial objectives (drive performance on primary objective)

Finally, the system helps in evaluation of the firm’s planning and determining the effect of the firm’s secondary and primary objectives

Prior researchers have discussed several critical informational roles of the SPMS (Atkinson et al., 1997; Henri, 2006). Based on stakeholders’ approach, SPMS plays three (3) fundamental contributions in an organisation, namely coordination, monitoring and diagnosis (Atkinson et al., 1997). In terms of coordination, the use of SPMS will lead a decision-maker’s focus on the firm’s secondary and primary objectives. The system also coordinates decision-making activities of the knowledgeable employees by designing, monitoring and evaluating aligned comprehensive performance measures. The monitoring role of SPMS involves assessment of progress in meeting the objectives. The monitoring process is important to define and support the learning process, which involves continuous evaluation and improvement of the existing processes. SPMS can also play a diagnostic role in identifying causal link between process results or between a firm’s secondary and primary objectives. The diagnostic role of the PMS also includes assessment of the effect of process outcomes towards organisational learning and performance.

On the other hand, Henri (2006) discussed four basic roles of SPMS: monitoring, attention focusing, strategic decision-making and legitimisation based on his analysis of classification of PMS use from prior literature. According to Henri (2006), the monitoring role of PMS is
associated to a feedback system based on cybernetic logic. The monitoring role involves setting standards of performance in advance, observing deviation between objectives and actual, providing feedback and ultimately taking corrective action. Similar to Atkinson et al. (1997) the PMS monitoring role refers to the feedback or assessment of progress for strategic objective achievement in meeting stakeholders’ requirement. Additionally, PMS also plays an important role in attention focusing. Feedback from PMS can provides signals to direct employee’s attention to problems identified in the business operation. The information provides indications to the primary and secondary objective that need focus from the employees.

PMS also provides helps and facilitate managers in the strategic decision-making process (Henri, 2006). Feedback from the PMS helps top managers choose the best action among the available alternatives. The assessment of cause and effect relation between secondary and primary objectives would provide relevant information needed by managers for strategic decision-making and problem-solving (Atkinson et al., 1997; Henri, 2006). Under conditions of uncertainty, PMS is important for legitimising organisational activities. In this condition, feedback from SPMS is used to justify and validate past action or decisions made by managers (Henri, 2006). Using SPMS as a control system, managers would be able to enhance legitimacy of the organisational activities.

According to Ittner et al. (2003b), SPMS provides two (2) important roles: firstly, to provide information that allows the firm to identify the strategies offering the highest potential for achievement of the firm’s objectives, and secondly, to align management processes, such as target setting, decision-making, and performance evaluation with the achievement of chosen strategic objectives (Otley, 1999). In the current competitive business environment,
organisations have to develop more comprehensive PMS to provide managers with information to manage business operations. Malina and Selto (2001) investigated the process and implication of implementing PMS such as BSC in managing an organisation. BSC is regarded as CPMS.

Based on data from multiple divisions of a large international manufacturing company, the result provides evidence that CPMS, such as BSC, plays an important role as an effective device in controlling corporate strategy. The system provides significant opportunities for a firm to develop, communicate and implement strategy. Results also show evidence of causal relations between effective management control, motivation, strategic alignment and other positive implication of CPMS. Furthermore, CPMS is effective, as it leads to enhance employee motivation apart from promoting strategic alignment. Evidence shows that manager respond positively to BSC measures: organising measures, organising resources, and activities to enhance performance relative to those measures. They believe that BSC performance leads to improve sub-unit performance and consequently improves their business efficiency and profitability.

MAS information, such as information provided by PMS, is useful for managers to assist them in managing the business operation (Fullerton & McWatters, 2002). The implementation of new management philosophy by firms requires changes in the MAS. Based on survey data obtained from top manufacturing executives at 253 US firms, this study empirically examines the relation between one of the world-class manufacturing strategies, just-in-time (JIT) practices and the performance measures incorporated in their MAS. The statistical tests provide empirical evidence that the use of non-traditional performance measures such as bottom-up measures, product quality, and vendor quality, as well as
incentive systems of employee empowerment and compensation rewards for quality production are related to the degree of the manufacturing practice. Thus, the more comprehensive PMS implemented by a firm the more information is provided for managers to manage the firm’s operation.

New approaches to performance measurement are required in meeting the needs of changes in manufacturing competition. Qualitative research conducted on 36 profit centre managers in Australian manufacturing firms asserts that PMS facilitates firms in strategy implementation (Lillis, 2002). Additionally, PMS consisting of financial and non-financial measures provides relevant information in managing the business process. More comprehensive PMS is required when multiple measures are disaggregated from the profit centre performance dimension to manufacturing subunits. It is also argued that difficulties in designing complete measures have a negative implication to facilitate strategy implementation. Lillis (2002) argued that as PMS consists of more complete measures of performance, profit centre managers would be likely to face fewer problems in managing cost centre performance. On the contrary, managers would experience strategy implementation problems with incomplete measures.

SPMS, such as balanced scorecard, is a recent innovation in management control system (MCS) that is able to provide managers with information to redirect their attention to firms’ multiple objectives and areas. BSC is considered as a comprehensive control systems that can influence the way managers allocate their attention between firms’ objectives (Ullrich & Tuttle, 2004). Comprehensive control system is a system that monitors performance in multiple areas in an organisation. Using SPMS such as BSC would direct managers to focus on non-financial areas apart from financial areas. This finding supports previous evidence which indicates higher performance among companies that use comprehensive control
systems like BSC. Furthermore, redirecting managers’ attention to multiple areas has been associated with the primary antecedents for firms to sustain long-term performance (Kaplan & Norton, 1992; Ullrich & Tuttle, 2004). This finding also provides an explanation for superior performance among companies with comprehensive control systems; companies performance is enhanced as managers’ attention is redirected towards achieving financial as well as non-financial goals.

2.2.4 PMS AND ORGANISATIONAL/INDIVIDUAL PERFORMANCE (POSITIVE)

Prior research in the area of PMS emerges into two (2) streams; the first stream of research examines the relationship between PMS and organisational performance (Hoque, 2004; Hoque & James, 2000; Ittner et al., 2003b; Van der Stede et al., 2006). The second stream of PMS research contends that the major purpose of PMS to some extent would influence the behaviours of individuals whose actions have large influence on organisational performance (de Haas & Kleingeld, 1999; Otley, 1999). Despite decades of academic research, SPMS is still under extensive research and analysis to determine its benefits as well as its limitations (Micheli & Manzoni, 2009). Furthermore, past researches examining the link between SPMS and organisational performance indicate ambiguous findings (Chenhall, 2005; Micheli & Manzoni, 2009).

Presently, due to greater emphasis of human element issues relating to PMS, current researches shift to examine the behavioural implication of SPMS (de Waal, 2002). Furthermore, based on an in-depth review of research on 76 empirical studies, Franco-Santos et al. (2012) developed a framework showing the consequences of contemporary PMS. The framework suggests that the consequences can be categorised into organisational capabilities, performance and also people’s behaviour. The extent to which PMS positively influences
people’s behaviour is directly linked with how the system is being designed (Franco-Santos et al., 2012). Particularly, contemporary PMS has implications towards people’s actions and cognitive mechanism. Motivation and perceptions are a few of the variables that are related to the consequences of PMS towards people’s behaviour.

2.2.4.1 PMS AND ORGANISATIONAL PERFORMANCE

Extant PMS-related researches indicate ambiguous finding in the relationship between PMS and organisational performance (Chenhall, 2005; Davis & Albright, 2004; Hoque & James, 2000; Ittner et al., 2003b; Said et al., 2003; Van der Stede et al., 2006).

Using contingency framework, Hoque and James (2000) examine the association between BSC usage and organisational performance. BSC is measured using generic measures including four key perspectives of performance: customer, financial (shareholders), learning and growth and internal aspects. In the research, organisational performance was self-reported and measured based on the relative performance of firms within the same industry. Based on a survey conducted on 66 Australian manufacturing firms, the result of the research shows a significant positive association between performance and greater usage of BSC. The relationship between greater BSC usage and organisational performance does not depend significantly on organisational size, product life cycle or market position. However, instruments to measure BSC in this study did not include the strategic linkages of a real BSC. Diversity of measures was applied in the measurement of BSC to represent the actual use of BSC.

Ittner, Larcker and Randall (2003b) examined the relation between two approaches of strategic performance measurement (greater measurement diversity and improved alignment
with firm strategy and value drivers) and measurement system satisfaction and economic performance. The economic performance is measured based on two publicly-available accounting measures (return on assets and sales growth) and stock return measures. Based on a sample of a single industry, 140 US services firms, Ittner et al. (2003b) found consistent evidence that SPMS practices are positively associated with stock market returns. Particularly, firms extensively implementing a broad set of financial and non-financial measures than firms with similar strategies or value drivers, earned higher measurement system satisfaction and stock return. Ittner et al. (2003b) also found that the techniques which help firms improve alignment with strategy and value drivers such as BSC process, causal business modelling and economic value measurement are associated with higher measurement satisfaction, but revealed no relation with economic performance.

Ittner and Larcker (2003) conducted field research in more than 60 manufacturing and service companies and also supplemented it with surveys on 297 senior executives. The result of the research discovered that most companies have made little attempt to identify areas of non-financial performance that might advance their chosen strategy, and there is lack of effort to demonstrate a cause and effect link between improvements in non-financial measures and financial measures such as cash flow, profit or stock price. Findings indicate companies that built and verified causal models show higher ROA and ROE than companies that did not use causal models. Companies would perform better if they were able to identify which non-financial factors have the most powerful effects on long term performance. Thus companies should develop a causal model in the strategic plan which shows strategic clarity in a form of road maps rather than mission and vision statements.
Said et al., (2003) examines the implications of non-financial performance measures included in compensation contracts on current and future performance. In addition, performance consequences of non-financial measures are also determined in relation to contextual factors, environmental factors, and strategic plans, which vary across firms. In the research, the performance of sample of firms that used both financial and non-financial measures is compared with a sample of firms that based their performance measurement solely on financial measures. Archival data covering the period from 1993 to 1998 is used in the study to examine the difference. Findings indicate firms that employ a combination of financial and non-financial performance measures have significantly higher mean levels of return on asset (ROA) and higher levels of market returns. Although their research finds evidence that indicates the adoption of non-financial measures improves firms' current and future stock market performance, there is only partial support for accounting performance improvements. In other words, the impact on accounting-based performance is mixed. Overall, the results indicate that the association between the use of non-financial measures and firm’s performance is dependent on the match between firm’s use of non-financial measures and competitive characteristics.

According to Davis and Albright (2004), BSC can be used not only as a PMS but also as a medium of communication to the business unit about the long-term strategic initiatives for achieving long-term performance. In the research, researchers investigate the impact of BSC on a banking institution’s financial performance. Research provides another empirical analysis showing positive implication on firms’ performance with SPMS or BSC implementation. The research conducts a quasi-experimental study to investigate whether bank branches implementing the BSC outperform bank branches within the same banking organisation on key financial measures. A longitudinal approach was used to determine changes in financial performance during BSC implementation. The result provides evidence
that there is superior financial performance for bank branches that implement BSC compared to bank branches that do not implement BSC. This study contributes to the existing literature providing evidence that BSC helps firms to improve financial performance.

Chenhall (2005) provides empirical evidence that integrative information, which includes a key dimension of SPMS, associates with firms’ competitive strategic outcomes. The system provides information to assist managers to deliver positive strategic outcomes. SPMS has unique features designed to provide managers with financial and non-financial indicators that measure different perspectives. Combination of these measures provides a means of translating strategy into a coherent set of performance measures. The attributes of integrative information were based on the key dimensions of SPMS which was developed as part of the research model; strategic and operational orientation, customer orientation and supplier orientation. Based on survey data of 80 strategic business units, research identified alignment of manufacturing with strategy, and organisational learning mediates the relationship between integrative SPMS and strategic competitiveness of the organisation.

Van der Stede et al. (2006) examine the relationship between quality-based manufacturing strategy and the use of different types of performance measures, as well as their separate and joint effects on performance. Based on a survey on 128 European and US manufacturing firms, research manages to provide empirical evidence in relation to the link between strategy, performance measurement and performance. Van der Stede et al. (2006) distinguished non-financial measures into both objective and subjective non-financial measures. Results show that regardless of strategy, performance measurement diversity, or extensive PMS (objective or subjective non-financial measures) benefits performance. Findings indicate that firms that emphasise quality in manufacturing use more of both objective and subjective non-financial measures. There is also evidence showing that the
strategy-measurement "fit" affects performance. However, positive effect on performance was identified from pairing a quality-based manufacturing strategy with extensive use of subjective measures but not with objective non-financial measures.

Using contingency framework, Hyvonen (2007) provides empirical evidence of the consequences of contemporary performance measure implementation. In the research, contemporary performance measure examined includes non-financial performance measures, BSC, customer satisfaction survey and qualitative measures. Findings show negative implication of contemporary performance measures whereby it does not help firms with customer-focused strategy to improve the performance. Without customer-focused strategy, contemporary performance measures with advanced information technology are linked to high customer performance. In contrast, financial performance measures will help a company improve its performance. A fit between customer-focused strategy and financial measures will lead to enhanced performance of the firm. Results of the study imply the disadvantage of using contemporary performance measure.

2.2.4.2 BEHAVIOURAL IMPLICATION OF PMS

Prior PMS-related research on behavioural consequences of PMS design had focused the research on both the PMS role either as decision-facilitating or decision-influencing roles, applying a range of theories: cognitive psychology, cognitive motivational theory (Hall, 2008), role theory (Burney & Widener, 2007), goal setting theory (Cheng et al., 2007; Webb, 2004) organisational fairness theory, self–interest theory (Lau & Sholihin, 2005), economic theory and agency theory (Burney et al., 2009) and attribution theory (Hartmann & Slapnicar, 2009; Schiff & Hoffman, 1996).
Table 2.2 presents several main researches on the behavioural implications of PMS, focusing on both PMS as decision-facilitating and decision-influencing roles. Dependent variables, mediating variables and moderating variables investigated in the research are also summarised in the table.
### Table 2.2: Empirical Studies on Behavioural Implications of PMS as a Decision-facilitating and Decision-influencing Roles

<table>
<thead>
<tr>
<th>No</th>
<th>Year/ Journal/ Author</th>
<th>Research Objectives</th>
<th>IV/MED/MOD/ DV</th>
<th>Method/ Theory</th>
<th>Sample/ Response rate/Industry/ Country/ Unit of analysis</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2007 Behavioral Research in Accounting Burney &amp; Widener</td>
<td>Examine the association between managerial behaviour and PMS linked to strategy</td>
<td>IV: Strategic PMS MED: Job-relevant information, Role stress (Role ambiguity and role conflict) MOD: Evaluative process, complexity, managerial experience DV: managerial performance</td>
<td>Questionnaire survey/Role theory</td>
<td>763/1524; 50.07%; US; Managers with IMA member</td>
<td>SPMS is associated with high JRI. Clear information regarding duties and responsibilities will reduce RA &amp; RC thus lead to better managerial performance. The link between SPMS and JRI, RA and RC is moderated by the evaluative process, complexity, and managerial experience.</td>
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<td>2</td>
<td>2004 Contemporary Accounting Research Webb</td>
<td>Identifies and tests features of an SPMS on goal commitment: 1. The cause-effect links among the nonfinancial and financial performance</td>
<td>IV: SPMS (Cause-effect structure) MED: Goal self-efficacy, goal attractiveness DV: Goal commitment (financial and non-financial goal)</td>
<td>Experimental research design/Goal setting theory</td>
<td>56/82; 68%; Financial service industry; Canada; Managers</td>
<td>SPMS contains strong cause-effect linkages. Manager's self-efficacy for achieving the nonfinancial goals has a significant impact on both nonfinancial and financial goal commitment. Both SPMS features have a positive effect on goal commitment. Commitment can be further strengthened through the provision of task-relevant</td>
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<td></td>
<td>measures 2. Managers' beliefs in their ability to achieve the SPMS nonfinancial goals</td>
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<td>information.</td>
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<td>3</td>
<td>2008 Accounting Organizations and Society Hall</td>
<td>Examine how CPMS effects managerial performance</td>
<td>IV: CPMS MED: Role Clarity (Process clarity and goal clarity), Psychological empowerment (Self-determination, competence, impact, meaning) DV: Managerial performance</td>
<td>Questionnaire survey research/Cognitive motivational theory</td>
<td>83/369; 22.5%; Manufacturing firm; Australian; SBU managers</td>
<td>CPMS indirectly influence managerial performance through two mediating variable; role clarity and psychological empowerment. This system influences managers’ cognition and motivation and thus leads to the performance.</td>
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<td>4</td>
<td>2006 Working paper Webster</td>
<td>Examines the relationships between the interactive use of PMS with the outcomes of creativity and performance.</td>
<td>IV: Interactive PMS MED: Creativity and psychological empowerment DV: Performance</td>
<td>Questionnaire survey</td>
<td>114/177; 64.6%; manufacturing organisations; Australia; Middle-level managers</td>
<td>This study identifies a key intervening variable, psychological empowerment, as being instrumental in the interactive use of PMS leading to the enhancement of creativity and performance in individuals.</td>
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<tr>
<td>Year</td>
<td>Journal/Reference</td>
<td>Methodology</td>
<td>IV</td>
<td>MED</td>
<td>DV</td>
<td>Sample Size</td>
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<td>5</td>
<td>2010, Journal of Managerial Issues, Burney and Swanson</td>
<td>To investigate whether two (2) BSC characteristics (the perspective framework and the strategy link) influence manager’s behaviour.</td>
<td>IV: Balance scorecard characteristics (perspective framework &amp; strategy link)</td>
<td>MED: No</td>
<td>DV: Job satisfaction</td>
<td>Questionnaire survey</td>
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<td>6</td>
<td>2005, The British Accounting Review, Lau &amp; Sholihin</td>
<td>This study investigates the behavioural consequences of the use of financial measures and nonfinancial measures for performance evaluation.</td>
<td>IV: Performance measure (Financial and non-financial)</td>
<td>MED: Fairness and interpersonal trust of measure</td>
<td>DV: Job satisfaction</td>
<td>Questionnaire survey/Self Interest theory</td>
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<td>7</td>
<td>2008, Behavioral Research in Accounting, Lau &amp; Moser</td>
<td>This study seeks to explain how nonfinancial performance measures affect employee behaviours; procedural fairness perceptions, organisational</td>
<td>IV: Nonfinancial Measure</td>
<td>MED: Procedural fairness, Organisational commitment</td>
<td>DV: Managerial performance</td>
<td>Questionnaire survey</td>
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<td>8</td>
<td>2008</td>
<td>Behavioral Research in Accounting</td>
<td>This study extends prior research on general Balanced Scorecard (BSC) evaluation tendencies (e.g., Lipe and Salterio 2000; Ittner et al. 2003; Banker et al. 2004)</td>
<td>IV: Balanced scorecard category variation MED: Ambiguity tolerance &amp; performance level DV: Overall performance judgment</td>
<td>Experimental research design</td>
<td>A large corporation with four division; US; Division manager</td>
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<td>9</td>
<td>2009</td>
<td>Accounting Organizations and Society</td>
<td>To determine which aspects of performance evaluation systems affect trust and how the attribution effects that such systems have may affect the creation of trust.</td>
<td>IV: Formality PES (3 steps in the performance evaluation cycle; target setting, performance measurement and rewarding) MED: Perception of justice and feedback quality DV: Trust</td>
<td>Questionnaire survey/ Attribution theory</td>
<td>160/260; 61.5%; Financial service industry (Commercial bank); Slovenian; Departmental managers</td>
</tr>
<tr>
<td></td>
<td>Year</td>
<td>Journal Name</td>
<td>Study Objective</td>
<td>IV: Independent Variable (IV)</td>
<td>MOD: Moderating Variable (MOD)</td>
<td>MED: Mediating Variable (MED)</td>
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<tr>
<td>10</td>
<td>2009</td>
<td>Accounting Organizations and Society Burney, Henle, &amp; Widener</td>
<td>To examine behavioural consequences of SPMS as basis for allocation of bonuses. Investigate whether characteristics of SPMS are associated with perceived organisational fairness.</td>
<td>IV: SPMS</td>
<td></td>
<td>MED: Procedural fairness</td>
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</table>

[IV: Independent Variable, MOD: Moderating Variable, MED: Mediating Variable, DV: Dependent Variable]
2.2.4.2.1 PMS AS DECISION-FACILITATING ROLE

The preceding discussion indicates how diverse performance measure is important as a decision-facilitating role (to facilitate planning and control) in organisations (Sholihin et al., 2010). Even though findings from the literature provide ambiguous findings, generally findings from the research show that PMS has a positive association with organisational performance. For research examining the behavioural implication of PMS as a decision-facilitating role, empirical evidences indicate positive implications of PMS on managerial behaviour (Burney & Widener, 2007; Hall, 2008; Webb, 2004). Even though empirical research in this area is still lacking, these researches somehow support prior research which suggests a better fit of indirect relationship between a control system and performance (Shields et al., 2000).

Shields et al. (2000) tests the effect of two models of the control systems: direct model and indirect models of performance. Control system components examined includes standard-based incentives, standard tightness and subordinate participation in standard setting. Using structural-equation modelling to test the hypothesis, research indicates that the indirect model shows a better fit to the data in contrast to the direct model. Results indicate that there is an intervening effect of job-related stress between the control-system components and job performance. The link between control-system components and job performance is identified to be stronger for the indirect model compared to the direct model. The finding implies a complex link between control system and performance, which is influenced by certain types of behaviour. The result also suggests that there is better fit for a model showing an indirect relation between control system and performance.
Burney and Widener (2007) examined behavioural consequences of SPMS. The result was based on data from over 700 respondents, indicating SPMS is positively associated with managerial performance. Indeed, research provides evidence that the link between SPMS and performance is mediated by job-relevant information and role stressors. SPMS can enhance the levels of job-relevant information (JRI) and alleviate the levels of role stressors, which are then associated with higher levels of managerial performance. SPMS contains informative content as managers tend to search for JRI when using SPMS, which leads to less role ambiguity and role conflict. In other words, SPMS will enhance the managers’ JRI and reduce role ambiguity and role conflict. SPMS closes the gap between information required and information available to perform duties.

In fact research identifies that the link between SPMS and JRI, RA and RC is moderated by the evaluative process, complexity, and managerial experience. Role ambiguity is reduced as managers have a clear expectation to perform duties which in turn cause improvement in managerial behaviour through strategic planning and decision making. The implication of SPMS relates to design and use of the system which is moderated by evaluation, complexity and experience. Findings of the research seem to suggest that the strongest relation with JRI is associated with low or high levels of managers’ experience. Further, strongest relation between SPMS and RA is linked to evaluation of low or high levels of managerial experience. When complexity is low, the link between SPMS and the role conflict is strong. Hence, in order to ensure an organisation will achieve high performance, certain factors such as evaluation, complexity and experience should be taken into consideration.
Similar to research by Burney and Widener (2007), Webb (2004) had also examined the behavioural consequences of SPMS. SPMS was defined as a set of causally linked non-financial and financial objectives, performance measures, and goals designed to align managers’ actions with an organisation’s strategy (Webb, 2004). She argued that SPMS has a unique feature in which the system has its cause-effect structure. In the research, this unique feature of SPMS was identified to have an effect on goal commitment. Goal commitment is an important antecedent to managerial performance. Results show that if an individual is inclined to commit themselves to achieve a difficult goal, or multiple objectives set in the SPMS, these will consequently lead to improvement in overall performance. Research identified two features central to the SPMS approach which is predicted to affect goal commitment; firstly is the strength of the cause-effect links among the nonfinancial and financial performance measures and contained in an SPMS, and secondly is the managers’ beliefs in their ability to achieve the SPMS nonfinancial goals.

Past researchers examined the effect of CPMS on performance. CPMS was found to produce a positive effect on performance (Hall, 2008; Scott & Tiessen, 1999). Based on research in cognitive psychology, with regard to the system informational effects, SPMS was identified to be able to help frame managers’ mental representations of the business. Based on psychological theories, Hall (2008) examines the relationship between CPMS and managerial performance. The study identified that the effect of CPMS on managerial performance is indirect through mediating variables of role clarity and psychological empowerment. Data collected for the study was from a survey of 83 strategic business unit managers. This study suggests that the role of cognitive and motivational mechanisms affect the relationship between the management accounting systems and managerial performance (Collins, 1982). The result suggests that
managers’ cognition and motivation can be influenced by the use of PMS which will affect managerial performance. CPMS will provide managers with relevant information that help them to be clear of their role. The PMS can also enhance the managers’ empowerment, which in turn improves managers’ performance.

Prior research had also examined the implication of PMS use and innovation. Webster (2006) examined the influence of PMS use (Interactive use of PMS) in enhancing performance and innovation. Data was collected using a survey on a sample of middle-level managers of large Australian manufacturing organisations. The nature of the relationship between the variables was examined using Partial Least Square (PLS) analysis. Findings of the research suggest that there was an indirect significant relationship between the interactive use of PMS and performance. Despite the influence being indirect, findings provide support for the influence of PMS use and individual outcome. The study identified a few key variables to mediate the relationship.

Psychological empowerment was found to be instrumental in the relation between the interactive use of PMS and individual performance and between the interactive use of PMS and creativity. Additionally, evidence also showed that psychological empowerment mediates the associations between the interactive use of PMS with individual outcomes of creativity and performance. These finding suggests that PMS use also has behavioural implications. The PMS use can enhance individual psychological empowerment and lead to higher creativity and performance.

Burney and Swanson (2010) focused on the BCS’s effect on managers’ behaviour. Particularly, their research investigates the implications of the two major characteristics of BSC (strategy link and the perspective framework) on managers’ job satisfaction.
Data was collected using a questionnaire survey method and sample consisting of 763 accounting managers who were also members of the Institute of Management Accountants in BSC firms. Results demonstrate a strong positive relation between the respondents’ perception on the strength of the link between performance measures to organisational strategy and job satisfaction. This finding also implies CPMS that has a strong connection with strategy (first characteristic) may reduce managers’ ambiguity as they are better informed with organisational-desired action. Additionally, evidence also suggests greater emphasis on using leading indicators (second characteristic) for decision making is associated with greater job satisfaction.

2.2.4.2.2 PMS AS A DECISION-INFLUENCING ROLE

The forgoing sections discuss how performance measurement is used as a decision-facilitating role that may have positive implications on organisational performance and individual performance. Performance measurement as a performance evaluation is viewed as a decision-influencing role as it can be used to monitor, measure, evaluate and reward actions and performance, with the objective of influencing employee behaviour for motivation (Sprinkle, 2003; van Veen-Dirks, 2010). According to Sholihin et al. (2010), decision-influencing role of PMS refers to the use of PMS to motivate individuals to perform better.

Wiersma (2009) examined factors that drive BSC adoption. A survey administered in 19 Dutch firms provides responses from 224 individual managers. Finding of the research indicates three main purposes for which managers use BSC: these include: (1) decision-making and decision-rationalising; (2) coordination; and (3) self-monitoring. Research identified the usage for each purpose is driven by a dimension of evaluative style, alternative controls and the receptiveness of managers to new types of information. For
decision-making and decision-rationalising purposes, the usage is motivated by a degree of action controls used and manager’s receptiveness to new information types. Coordination purposes of using BSC are driven by the importance placed on managerial evaluation of subordinates as well as managers’ receptiveness to new information.

Performance evaluation is one of the main elements of the organisational incentive systems (Merchant et al., 2003). The incentive system which is part of management control system (MCS) has a prime objective to motivate managers to attain organisational goals. In the research, content analysis was conducted to analyse researches on organisational incentive systems for the past 20 years. Organisational incentive system variables studied during this period relates to the four elements: standard setting, performance measurement, performance evaluation and the actual reward itself. The analysis shows that past researches on this area can be classified into two broad categories: economics-based discipline and behavioural research. Agency theory was used in most of the researches of the economic-based discipline, whilst the behavioural researches build on established theories developed in the field of psychology. Common behavioural theories cited in organisational incentive literature are expectancy theory, goal-setting theory, equity theory and attribution theory.

Performance evaluation system is an important element to motivate managers, and normally accounting numbers are used to evaluate management performance. Agency research by Feltham and Xie (1994) claims the disadvantages of financial measures for performance evaluation. Single measures or financial measures alone are inadequate to be used as indicators in the performance evaluation system and insufficient to motivate managers. Multiple measure is more meaningful and more informative than single measure (Feltham & Xie, 1994). Indeed, agency theory claims difficulties in developing
performance measure for management performance due to the reasons that action and strategies implemented by the manager are unobservable directly. Secondly, the full consequences of the manager’s actions are not observable, as the impact is beyond the sub-unit and the time. Finally, uncontrollable events influence the consequences that are observed.

Marco Van et al. (2005) examined the effects of compensation systems on the motivation of employees. In the study, a compensation system includes rewards, performance measurement and evaluation system and career concern. Based on economics (agency theory) and psychological theories (crowding theory), research shows that effective performance measurement and compensation system is characterised by transparency, controllability and fairness of the system which can influence the managers’ level of motivations. Findings from the research managed to provide evidence that an increase in the perception of fairness and controllability will increase the level of motivation. Research provides empirical evidence which indicates that a well-designed performance evaluation system or effective compensation system is important to managers in order to increase both motivation and individual performance or productivity.

Lau and Sholihin (2005) is the first research to provide empirical evidence to examining the implications of implementing a diverse set of performance evaluation systems (Balanced scorecard) on managerial outcomes, as research claims unclear relative importance of the financial and non-financial measures on the behavioural consequences of the managers. Performance evaluation systems examined in the study includes both financial and non-financial measures. The result indicates that the effect of measures on job satisfaction is mediated by managers’ fairness perception and
interpersonal trust. However, based on a sample of 70 managers, the results suggest that there is no difference in the process by which non-financial measures affect employee job satisfaction and that of financial measures, and the relative importance of non-financial measures in relation to financial measures has no significant effect on the employee job satisfaction.

Lau and Moser (2008) examine the link between non-financial performance measures and managerial outcome. Extant researches suggest that non-financial measures are essential to overcome inadequacies of traditional financial measures, and there is widespread adoption of such measures. Research claims that how employees react to these new measures is still uncertain. Hence, research examines whether procedural fairness and organisational commitment are relevant and important in the relationship between non-financial measures and managerial performance. Results suggest that if employees perceive performance evaluation criteria as fair, it will lead to favourable employee behaviour. It is therefore important to ascertain if the use of nonfinancial measures as performance criteria is procedurally fair. Based on a sample of 149 managers from the United Kingdom, the results indicate that the use of nonfinancial performance measures was perceived as procedurally fair. The study also finds that when employees perceive their evaluation is fair, it will lead to higher organisational commitment, which in turn, enhances their job performance.

Management accounting system (MAS) is useful to provide an information base for decision-making and rewarding performance in managerial teams. Scott and Tiessen (1999) examines the relationship between diversity of performance measures and team performance. Research provides empirical evidence that diverse, variety or comprehensiveness of performance measurement system with both financial and non-
financial performance measures positively associated with team performance. Participation or involvement of team members in a target setting was found to be essential for performance enhancement. Managerial teams will be at their best performance with the combination of comprehensive measurement and high participation of the employees. There is also a link identified from the team performance to compensation which contributes to the team performance. Based on the research, CPMS is able to provide more complete and better understood information in a complex business environment.

Hartmann and Slapnicar (2009) examine how formality of performance evaluation affects interpersonal trust between superior and subordinate managers. Research is based on a survey conducted in a Slovenian commercial bank. Formality of performance evaluation system is represented by the three steps in the performance evaluation cycle: target setting, performance measurement and rewarding. Formality of target setting refers to the explanation of performance targets in quantitative and written terms. Whilst, informal target setting is a target that is informally communicated in which achievement is not objectively measured. For performance measurement, quantitative and objective measure relates to formal performance assessment. In terms of rewarding, formulaic determination of rewards and bonuses is related to a high level of formality of performance-based reward. Using attribution theory, research determines how the formality aspect of performance evaluation system can affect trust. Findings indicate that the formality of performance evaluation procedure is important in developing a subordinate’s trust in the superior. The link between performance evaluation procedure and trust is indirect through higher perceived feedback quality and managerial perceptions of justice.
Burney, Henle and Widener (2009) examine behavioural consequences of SPMS as a basis for allocation of bonuses. There is conflicting evidence regarding the use of multiple financial and non-financial measures or SPMS for evaluating and compensating managers. Evidence indicates that the system is useful in directing and motivating employees aligned with organisational objectives. However, past research provides contradicting findings whereby linking incentives to SPMS leads to dysfunctional behaviours, unbalanced performance and incomplete PMS. Subjectivity in compensation is one of the ways to reduce the problem, however it was claimed to create favouritism and bias. The research has extended the economic theory examining the perception of organisational fairness for using SPMS for allocation of bonuses. Findings show that SPMS is associated with better employee performance through higher perception of organisational fairness and organisational citizenship behaviour. Hence research suggests linking SPMS to incentive contracts instead of implementing a subjective incentive contract system as long as the system provides attributes which enhance employees’ fairness perception.

Another research by Sholihin et al. (2010) also contributes to the literature on the use of multiple performance measures for performance evaluation. Drawing on goal-setting theory, their research demonstrates that the effect of performance measure diversity on job performance is contingent on goal specificity, however no evidence supports the influence of goal difficulty. Research is based on 50 functional managers in an organisation. It is argued that when subordinate managers know precisely what they want or are supposed to do, they will do better than subordinate managers whose goals are vague. Specific goals will clarify what is required to accomplish their task. Those managers with specific goals will exert more effort and more time pursuing those targets. The finding is consistent with prior research showing positive association
between CPMS and goal clarity (Hall, 2008). The result also suggests that diverse or
CPMS is important as it will provide guidance for the manager on what to be achieved.
Thus CPMS is an effective control system as it helps to provide clear goals and can
motivate manager to produce better results to improve their job performance.

2.2.4.2.3 MAS AND PERFORMANCE

Considerable prior research has highlighted the importance of MAS information as a
decision-facilitating role and how the information can affect performance. Particularly,
these researches provide further understanding of the MAS-informational
characteristics, showing that the broad scope MAS information is perceived to be useful
for performance under environmental (Agbejule, 2005; Chenhall & Morris, 1986; Gul
& Chia, 1994) and task uncertainty situation (Chong, 1996; Chong & Eggleton, 2003).
Additionally, significant prior literature also indicates how the MAS informational
characteristics are important to enhance decision-making and managers’ performance
(Agbejule, 2005; Chong, 1996; Gul & Chia, 1994; Mia & Chenhall, 1994).

A research by Chenhall and Morris (1986) shows that MAS information is important
under perceived environmental uncertainty (PEU). Their research examines how
perceived usefulness of MAS design is influenced by PEU, structural decentralisation
and organisational interdependence. In the research, MAS design is defined in terms of
its informational characteristics, including timeliness, aggregation, broad and
integration. Based on a sample gathered from 68 managers from manufacturing
organisations in Australia, the results provide evidence showing broad scope
(information on external environment, non-financial measurement and estimates of
future event) and timely MAS information is associated with PEU. This result suggests
that there is an increase in the perceived usefulness of broad-scope MAS information by
managers when PEU increases, as the information can help them in decision making and in environmental scanning. Additionally, the research also provides evidence that broad-scope MAS information is also useful to those managers with interdependent operations.

Another research also examining the usefulness of MAS information is a research by Gul and Chia (1994). Based on responses of 48 managers from Singaporean companies, their study identified that decentralisation and the availability of MAS informational characteristics, broad-scope of MAS information (financial, non-financial and future management accounting) and aggregation are associated with higher managerial performance under high PEU. This finding suggests that under conditions of high PEU, managers require more information for decision-making. MAS provides sophisticated information in terms of scope and aggregation that may enhance managers’ decision and hence improve their performance. This research also contributes to the literature providing evidence indicating the importance of broad-scope or sophisticated MAS information to enhance managers’ decision making that helps to improve individual performance.

Findings in research by Gul and Chia (1994) are consistent with Chong (1996). Different from Gul and Chia (1994) who examine the moderating role of PEU, Chong (1996) examines the importance of broad-scope MAS information under a task uncertainty situation. Chong (1996) examined the interactive effects of MAS design, particularly focusing on broad-scope MAS information and task uncertainty on managerial performance. Findings of the research shows that under high task uncertainty situation, the use of broad-scope MAS information led to effective managerial decisions and enhanced managerial performance. It is concluded that
managers need more information, thus broad-scope information is useful when uncertainty is high. However, broad-scope information may lead to information overload and would be dysfunctional to managerial performance under a low task uncertainty situation.

Consistent with Chong (1996), Chong and Eggleton (2003) found similar findings. Different from Chong (1996), personality variable is also examined in their study. Their research examines the three-way interaction between task uncertainty, locus of control and MAS on managerial performance. The result shows that broad-scope MAS (such as in integrated reporting format such as BSC, i.e. CPMS) will result in higher managerial performance under a high task uncertainty situation, particularly to those individuals who have higher belief in personal control or have internal locus of control personality. This research also provides additional contribution to the MAS literature and demonstrates the importance of broad-scope MAS information for higher individual performance. The research findings provide support for prior MAS literature (Agbejule, 2005; Chong, 1996; Gul & Chia, 1994).

Mia and Chenhall (1994) also examines the role of broad-scope MAS information in enhancing managerial performance. Different from prior studies, their research examines the influence of differentiation activities in the association between the extent to which managers’ use broad-scope MAS information and performance. A study of 75 managers shows that the use of broad-scope MAS information is useful in enhancing managerial performance and the association was found to be stronger for managers of marketing than production activities. In terms of the importance of MAS information, their research is consistent with prior MAS research which emphasises the importance of MAS informational characteristics to aid managers’ decision-making, hence
contributing to higher performance. Other research also highlighted the significance of broad-scope MAS information to improve BU performance. Findings of the research by Mia and Clarke (1999), this demonstrates that firms using MAS information can effectively face competition in the market to improve the BU performance.

Another research examining the relationship between MAS and managerial performance is a research by Agbejule (2005). The research examines the moderating effect of PEU on the relationship between the use of MAS and managerial performance in Finnish companies. The result found support for the hypothesis that the effect of MAS on performance is influenced by PEU. Under high levels of PEU, sophisticated MAS has positive effect on managerial performance, but under low levels of uncertainty, there will be negative effects. Additional analysis from the study showed that PEU interacts with different variations of MAS to influence performance. Another research by Chong (1998) is consistent with his prior research which also suggests the importance of broad-scope MAS information to improve managerial performance. In his research, personality trait was found to affect information needs for managerial decisions. Broad-scope MAS information was found useful for managers with low levels of tolerance for ambiguity, as the information may help to overcome their lack of confidence in managerial decisions.

Thus, it is expected that sophisticated MAS or broad-scope MAS information such as CPMS would also plays an important role which could lead to improvements in individual performance. Based on these literatures, this research proposes that CPMS information as part of the broad-scope MAS information helps managers in decision-making lead to improvement in the managers’ performance.
2.2.4.3 BEHAVIORAL CONSEQUENCES OF PMS (NEGATIVE)

Issues relating to the incompleteness and imperfectness of performance measures are often raised. Kaplan and Norton (1996) supplemented the traditional accounting system and introduced multiple perspectives of measuring performance. Multiple performance measurement is also being linked to the use of diverse performance measures. However, a multiple performance measurement system was also linked to the problem of weighting the different performance measures in the system (Ittner & Larcker, 1998). SPMS was claimed to induce performance evaluation bias and have certain implications on managerial judgements.

Balanced Scorecard is a distinguishing feature of contemporary performance measurement systems that include multiple measures of performance. Many researches claim advantages of this system. Sharma (2009) claims that the system is able to ensure alignment with organisation strategy which may lead to better communication, motivation and ultimately enhanced organisational performance. However, recent researches on its use at managerial level revealed that using a comprehensive system like BSC for performance evaluation would cause detrimental effects. Even though research on performance evaluation is in the context of evaluation judgement, the concern is that diversity of measures may result in overloading managers’ cognitive ability to process information and may reduce the quality of job relevant information (JRI).

indicates that performance measurement diversity and subjectivity are positively related to performance evaluation bias. The use of multiple objectives PM and use of subjective PM are related to more compressed performance ratings and more lenient performance ratings (less differentiation among employees) which will lead to problems in personnel decisions and future incentives. The system is unable to differentiate among employees based on their ability and skills for promotion purposes.

Ittner, Larcker and Meyer (2003a) examined the use of performance measures by financial service firms in balanced scorecard bonus plan. Based on prior economic and psychological studies on performance evaluation and compensation, their research identified that different types of measures were weighted differently in the scorecard plan. The subjectivity of the scorecard plan indicates imbalance in the measures used, such as the scorecard places most of the weight on financial measures, incorporates other than the scorecard measure, changes evaluation criteria, ignores measures indicating future financial performance and weight measures that were not predictive of the desired results. Research asserts a firm’s measurement practice is better explained or relevant by psychology-based explanations. Findings indicate a balanced scorecard bonus plan introduces bias into the reward system and is not preferred by the managers. There is a high level of subjectivity which induces complaints by the branch managers who perceived the system to cause favouritism and lead to uncertainty in determining reward criteria.

Other prior research also found negative implications of using subjectivity in performance evaluation such as research by Moers (2005) and Ittner et al. (2003a). Rinsum and Verbeeten (2010) also add to the empirical evidence showing negative implications of PMS. However, their research is in the context of public sector
organisations. Their research predicts that subjectivity in the performance evaluation practices may have negative implication on manager’s motivation. Subjective performance evaluation practice has negative effect or may reduce mission clarity and subordinate’s trust. Based on a survey among 94 public sector managers in Netherlands, their research finds support implies that subjectivity in performance evaluation practices do not provide better informational feedback. The result supports their hypotheses showing that subjectivity in performance evaluation practices reduces managers’ mission clarity and trust result in decrease motivation.

Using behavioural theories, Lipe and Salterio (2000) determine how managers deal with multiple performance measurement as compared to the measure commonly used by all business units. One of the problems highlighted with regard to the use of multiple or diverse performance measurement is the tendency of the evaluator or superior to overemphasise objective and common measures when evaluating performance. Results from the research indicate that more emphasis is placed by managers on common, rather than unique measures when BSC is being used to evaluate performance of business units’ managers. Superiors will use their individual discretion when weighting the measure used in the multiple performance measurement system. The experimental research finds that cognitive difficulty of the superior managers’ subjectivity plays an important role in performance evaluation. Findings imply that managers tend to ignore information from CPMS.

The research was further examined by Lipe and Salterio (2002) to determine judgemental effect as a result of organising the measures into the BSC categories. Lipe and Salterio (2002) reported some evidence related to the use of BSC. The study examined the judgmental effect of the BSC’s organisation. Results show that
performance evaluations are influenced by organising the measures into BSC categories. Evaluations are affected when multiple below target (or above target) measures are contained within a category, but there is no affect when the above/below target measures are arranged according to the scorecard’s four categories. These studies suggest that the use of SPMS might produce negative consequences towards managerial behaviour. Dissatisfaction with how the managers are being evaluated will result in less motivation and less job satisfaction that could influence their performance.

An experimental research by Banker et al. (2004) supported research by Lipe and Salterio (2000). Results indicate that when evaluators are provided with detailed information about business unit strategies, performance evaluations are influenced by strategically-linked measures more than non-linked measures. In other words, evaluators rely more on strategically-linked measures than on common measures when detailed information about on the strategic linkages are provided. Findings of this research confirmed the research by Lipe and Salterio (2000) which indicates that the use of common measures are more than unique measures by evaluators. However, Banker et al. (2004) shows that when information on strategic linkages is available, evaluators rely more on strategically-linked measures than on common measures. If information is not available, the evaluator will rely on common measures not the unique measures.

Another research by Cheng et al. (2007) also provides another evidence on the negative behavioural consequences of PMS. Different prior research examined those managers who make the performance evaluation judgement (Lipe & Salterio, 2000; Moers, 2005). Cheng et al. (2007) examined the implication of contemporary PMS on those managers who are being evaluated. Their research suggests that the use of multiple performance measures may have undesirable effects due to managers’ limited cognitive ability to
cope with incompatible demands from the inclusion of multiple goals. Based on survey data from employees in a telecommunication company, the result demonstrates that in the used of contemporary PMS, perceived goal difficulty increases perceived goal conflict. Additionally, it is also revealed that perceived goal difficulty has a negative and indirect effect on task performance through perceived goal conflict. PMS provides information which may enhance individual managers’ understanding regarding work expectation, which may be influenced by individual’s perception towards goal difficulty and goal conflict to affect their performance.

Liedtka, Church and Ray (2008) documented findings showing a pattern in BSC evaluations varies with a quality of the evaluator. Results from the experimental research indicate that evaluators’ "ambiguity intolerance" influences their reaction to variation among performance measures within a BSC category. In addition, research identified increased variation within a BSC category causes ambiguity-intolerant evaluators to give lower performance evaluation scores when the BSC category indicates relatively strong performance, but has no significant effect when the BSC category indicates relatively weak performance. These results are consistent with the argument that ambiguity-intolerant individuals are more likely to discount or ignore ambiguous information when the ambiguity relates to positive information.

Schiff and Hoffman (1996) examines the use of financial and non-financial measures in the context of performance evaluation. Their research explores the ways in which a group of executives of a service organisation incorporate financial and non-financial measures in their performance evaluation policies. Based on an experiment administered in a large retail organisation, the finding was inconclusive for the use of financial and non-financial measures for performance evaluation. Greater emphasis on
financial information is used when evaluating performance of a business unit but indicates greater use of non-financial information when evaluating managers’ performance. However, their research demonstrates that the executives do not exclusively use financial measures or non-financial measures when judging the performance. Most of the executives incorporate both financial and non-financial measures to evaluate department and manager performance. However, extensive measures may also reduce performance as extensive measures may exceed managers’ processing capabilities, whereby results show the number of samples using fewer cues outnumbers the samples using more cues when making judgments.

These researches provide evidences that relates to the behavioural consequences of the CPMS on evaluators or superiors. Even though these findings were set in the context of an evaluative judgment (Banker et al., 2004; Liedtka et al., 2008; Lipe & Salterio, 2002; Lipe & Salterio, 2000; Moers, 2005), findings imply that CPMS may lead to managerial cognitive difficulties and negative implications on managerial performance. Furthermore, too many measures or greater measurement diversity, may overload manager’s cognitive ability to process information, which may have an impact on the quality of JRI provide by the PMS (Schick et al., 1990). Prior literatures indicate implications of accounting control systems, traditional performance measures on behavioural variables, such as job related tension, motivation, role ambiguity and satisfaction (Shields & Shields, 1998). However, lack of research examines the behavioural implication of contemporary PMS.

Essentially, understanding the implications of control systems on behavioural variables are fundamental, since they can have some effect on performance (Shields et al., 2000). Since indirect models between control systems and performance seems to have better fit
compared to the direct model. This would suggest an indirect relationship between PMS and performance. Figure 2.1 presents a diagram showing an overall view of the prior PMS related research. The figure indicates that prior PMS research has developed into two areas; firstly, research focusing on the PMS implication in organisational context and secondly, prior research focusing on the PMS implication on individual behaviour. Generally, prior research found that PMS has positive association with organisational performance. On the other hand, prior research on behavioural consequences of PMS indicates either the system is used as a decision-facilitating or decision-influencing role.

For decision-influencing role of PMS, besides for research examining the behavioural implication of PMS for performance evaluation function, prior research has also examined the implication of PMS in the context of evaluative judgements. Review of prior literature has also indicated that there is lack of research that examines behavioural consequences of PMS as a decision facilitating role. Additionally, prior studies that examined whether behaviour variables such as JRI and role stress (Burney & Widener, 2007), role clarity and empowerment (Hall, 2008), procedural fairness and trust (Lau & Sholihin, 2005), organisational commitment and procedural fairness (Lau & Moser, 2008), organisational justice (Burney et al., 2009), and creativity and psychological empowerment (Webster, 2006) mediate the relation between PMS and individual performance, found the relationship was indirect.
Figure 2.1: Overview of Prior PMS Related Research

PMS and Organisational performance

Positive Relation
(Hoque & James, 2000); (Said et al., 2003); (Davis & Albright, 2004); (Van der Stede et al., 2006)

Mix Relation
(Ittner et al., 2003b); (Hyvonen, 2007)

Decision-influencing Role
Performance
(Lau & Sholihin, 2005); (Cheng et al., 2007); (Lau & Moser, 2008); (Burney et al., 2009); (Hartmann & Slapnicar, 2009); (Sholihin et al., 2010); (Van Rinsum & Verbeeten, 2010)

Performance Evaluation Judgement
(Schiff & Hoffman, 1996); (Lipe & Salterio, 2000); (Lipe & Salterio, 2002); (Ittner et al., 2003a); (Banker et al., 2004); (Moers, 2005); (Liedtka et al., 2008)

Decision-facilitating Role

Behavioural Consequences of PMS

Research Gap
(Hall, 2008); (Burney & Widener, 2007); (Webb, 2004); (Burney & Swanson, 2010); (Webster, 2006)
Other research also indicates that PMS was found to be associated with other factors such as goal commitment (Webb, 2004), job satisfaction (Burney & Swanson, 2010), justice perception, feedback quality and trust (Hartmann & Slapnicar, 2009) and trust, mission clarity and motivation (Van Rinsum & Verbeeten, 2010). Thus, this research will fill in the gap from prior literature to examine further the behavioural consequences of CPMS on managerial behaviour. This research will examine behavioural consequences of CPMS on role stress dimensions (role ambiguity and role conflict), organisational commitment and in turn the effects on job performance. Accordingly, the research question addressed in this study is how the informational aspect of CPMS influences psychological aspects of managers. Consistent with a considerable body of accounting literature, this research will focus on the implication of a CPMS, a part of MAS information, on managerial behaviour.

Prior research that examined the behavioural implication of PMS in a context of PMS as a decision facilitating role found CPMS may lead to enhance role clarity and psychological empowerment (Hall, 2008), enhance JRI and reduced role stress (role ambiguity and role conflict), and increase in goal commitment (Webb, 2004). The implication of PMS on organisational commitment has also been examined in the context of PMS as a performance evaluation system (decision influencing function) but none has examined PMS in the context of decision facilitating function. Thus, this research will fill in the research gap by examining behavioural implication of PMS in decision facilitating context. Specifically, this study investigates the influence of PMS on two new variables, role ambiguity and role conflict (role stress dimension), and organisational commitment on job performance. This will contribute to the current gaps in the literature, particularly on the roles of role ambiguity and role conflict (role stress dimension), and organisational commitment in CPMS research.
2.3 ROLE STRESS

‘Role’ is defined as a perspective or pattern of human behaviour. It is one of the concepts of role theory (Tubre & Collins, 2000). Similarly, Rizzo et al. (1970) clearly define role as a set of expectations about behaviour for a position in a social structure. Expectations refer to the behavioural requirements or limits attributed to individual roles of certain positions which are conditioned by general experience and knowledge, values, perceptions and experience (Rizzo et al., 1970). Accordingly, this expectation will be regarded as a standard for evaluating appropriateness of behaviour. Role theory describes and divides role stress or organisational stress into two dimensions: role ambiguity and role conflict.

According to prior literature, the existence of role stress can be linked to the dysfunctional individual and organisational consequence in a complex organisation (Rizzo et al., 1970). These two dimensions of role stress have a significant influence on performance (Rogers & Molnar, 1976). Role ambiguity exists when an individual manager has insufficient information to select the most effective job behaviours or when they are unclear about duties, authority and responsibilities (Burney & Widener, 2007; Tubre & Collins, 2000). Additionally, role ambiguity is also referred to as the incompatibility between information required to perform task and available information (Burney & Widener, 2007). However, prior research claimed that the definition of role ambiguity is not quite elaborately conceptualised by literature (Rizzo et al., 1970; Van Sell et al., 1981).

Thus, Rizzo et al. (1970) described role ambiguity based on two aspects. Firstly, the term is defined based on predictability of outcome or responses to individual behaviour and secondly is the existence or clarity of behavioural requirements or expectations.
These two aspects reflect certainty about duties, authority, allocation of time, relationship with others, clarity or existence of guides, directives, policies, and the ability to predict sanctions as outcomes of behaviour. On the other hand, detailed explanation of role ambiguity by Van Sell et al. (1981) is the extent to which there is lack of clear information regarding: the expectations associated with a role, methods for fulfilling known role expectations and consequences of role performance. The main sources of role ambiguity are organisational stress and complexity, rapid organisational growth, reorganisation, technological advances, high rate of personnel changes and changes in organisational environment (Kahn et al., 1964).

Role conflict is the degree of incompatibility or incongruity of demand facing an individual in the requirement of the role that may lead to inability to fulfill job expectations (Burney & Widener, 2007; Dale & Fox, 2008; Rizzo et al., 1970; Tubre & Collins, 2000; Van Sell et al., 1981). There are four basic interrelated types of role conflict as identified by Rizzo et al. (1970) related to perceptions of inconsistent demands (Rogers & Molnar, 1976): (1) inter-role conflict as inconsistent expectations and demand by incompatible policies, others and standards of evaluation; (2) inter-role conflict that refers to a person that fills more than one positions at a time; (3) intra-role conflict when there are conflicts between the time, resources and capabilities of individuals and expected role behaviour; (4) intra-role conflict due to incompatibility between internal standards or values and defined role behaviour (Rizzo et al., 1970; Rogers & Molnar, 1976).
2.3.1 CPMS AND ROLE STRESS

According to Collins (1982), MAS is vital in the control process. Collins (1982) explores the relationship between MAS and organisational control. Based on his research, a few observations and propositions have been made. Research observed that organisations consist of role systems in which social control would be effective if management were able to control organisational values, norms and role expectations. Hence it is essential for the organisational members to be well informed and infused with the organisationally based values, norms and role expectations. In the context of role theory, Collins (1982) contends that MAS is useful to communicate role expectation. Thus, more comprehensive PMS would be able to provide more relevant information to improve role clarity of the manager. MAS was also found to have a motivational effect to influence performance and is useful in communicating a climate of organisational social processes to the organisational members.

Prior budgeting literatures had examined the implication of the traditional PMS cognitive role on managers’ levels of role stress (Chenhall & Brownell, 1988; Chong et al., 2006; Kren, 1992). From these studies, the role stressor dimension, particularly role ambiguity, was found to have a mediating influence in the relationship between budget and individual outcomes criteria. The budgeting process was found helpful in reducing managers’ role ambiguity and to lead to an improvement in both job satisfaction and performance (Chenhall & Brownell, 1988). Additionally, the result also indicates an important link of role ambiguity in the relationship, as the association between measurement and performance was found significant due largely to the indirect effect through this behaviour variable. Consistent with this finding, Chong et al. (2006) also found an important link of role ambiguity between participative budgeting and job
satisfaction. The cognitive role of participative budgeting was found to be able to reduce subordinates’ levels of role ambiguity, which in turn led to enhanced job performance.

Recent PMS-related research had also explored the implication of SPMS on managerial behaviour (Burney & Widener, 2007; Hall, 2008). These cognitive and social psychology researches showed that the informational effect of SPMS helps managers focus their mental representations of the business. Hall (2008), in his research investigating behavioural implication of CPMS, identified the system to be able to increase managers’ role clarity. In the study, role clarity is represented by goal clarity and process clarity of the managers in an organisation’s strategic business units and subsidiaries (Sawyer, 1992). Indeed, results show that the association between CPMS and role clarity is stronger with goal clarity than with process clarity. An association was identified between goal clarity and managerial performance, but not process clarity and performance, implying the possibility of an indirect relation between role clarity and performance.

A PMS is used to communicate organisational goals and objectives in a form of writing. Thus PMS contains formal goals which are set in advance. In other words, a CPMS would aid in the formalisation of goals that enhance role clarity of the managers. In fact (Rizzo et al., 1970) provides empirical evidence that formalisation of goals in an organisation is associated with reduced role ambiguity and role conflict. Consistent with prior study, research also found an association between formalisation and role ambiguity (Jackson & Schuler, 1985; Rogers & Molnar, 1976). Formalisation such as existence of written rules and procedures governing work activities help clarify role perceptions for employees. However, Jackson and Schuler (1985) found evidence that
formalisation has the tendency to reduce only role ambiguity, hence provides employees more clarity about what is expected.

Results in the study by Burney and Widener (2007) identified that SPMS is associated with job-relevant information (JRI) leading to reduce the level of role stressor. Because of SPMS’s informative content, managers tend to seek out additional JRI. JRI and role ambiguity are similar constructs, in that the latter reflects the extent to which managers understand their duties and responsibilities, while the former is a measure of the information available to managers to accomplish job-related tasks (Kren, 1992). Additionally, a result of the study also indicates PMS that is closely linked to strategy is associated with a lower level of role ambiguity and role conflict. There is strong association in the link between SPMS and role ambiguity when the system is linked to strategy and when the manager has low- or high-level experience. On the other hand, the strongest relation between SPMS and role conflict is when complexity is low. However, the result found no association between role conflict and performance. This result seems to suggest an indirect link between role stressor and performance, as in Hall (2008), reduction in role clarity would enhance motivation or empowerment and lead to improved managerial performance.

SPMS’s informative characteristic provides managers with clear expectations of their job duties and information necessary to perform relevant tasks. Thus, SPMS managed to reduce the gap between information available and information required to perform duties and responsibilities. According to Burney and Widener (2007) and Ittner et al. (2003b) PMS that is linked to strategy is anticipated to improve communication with regard to specific actions required by managers to achieve the chosen strategy, motivate individual managers’ performance against strategic value-driven goals and provide
more rapid feedback on whether strategy is achieving its objectives or not. As a consequence, SPMS can provide managers with better communication and consistent and clear information about managers’ job expectations.

As highlighted by Epstein and Manzoni (1998), CPMS such BSC has certain characteristics which will create a way for the company to communicate and reinforce strategy through its levels of management. BSC strategy link involves top management consensus regarding organisation strategy. Similar to the Tableau de bord, the concept of Balanced Scorecard can be cascaded down to an individual manager who uses the scorecard’s four perspectives to organise their personal goals and anchor them in the larger unit’s strategic framework. The process involved would reduce the conflict of role expectations from the superiors. Furthermore, development of a BSC forces the upper management team to sit down and develop a clear view of their objectives and reasons to achieve the objectives. The reinforcement is by traditional means of communication by translating strategy into quantifiable indicators. Using this tool as PMS would allow communication of information which may reduce role conflict between shareholders’ expectations and organisational long-term value creation (Epstein & Manzoni, 1998).

2.3.2 ROLE STRESS AND ORGANISATIONAL COMMITMENT

Considerable prior literature had established the relation between these role stress dimensions and organisational commitment (Fisher & Gitelson, 1983; Jackson & Schuler, 1985). Claimed unclear evidence provided by past researches, Fisher and Gitelson (1983) conducted meta-analysis investigation to examine magnitude/strength and direction/nature concerning relationships of role conflict and role ambiguity to the antecedents and correlates. Based on the result of 43 researches of the link between role
ambiguity and role conflict and 18 most frequent research correlates, a meta-analysis was conducted for two purposes: firstly is to produce mean correlations to provide a better picture of the magnitude of various relationships, and secondly to find out the reason for the apparent inconsistent finding produced from prior studies, whether it was due largely to artefacts or moderators.

In terms of magnitude and direction, particularly for the organisational commitment, result indicates role ambiguity and role conflict are negatively related to commitment. In fact, role ambiguity is more strongly related to commitment than role conflict. This result is consistent with Rizzo et al. (1970), House and Rizzo (1972) and Schuler (1980), in which respectively found that ambiguity was more strongly and negatively related to a variety of satisfaction variables, better predictors, intervening variables and more related to stress than conflict (Fisher & Gitelson, 1983).

Jackson and Schuler (1985) conducted a meta-analysis procedure to measure the strength and consistency of the relationship found between each of the 29 correlates and role ambiguity and role conflict. These correlates include ten organisational variables, five individual characteristics, ten affective reactions and four behavioural reactions. The result shows organisational commitment correlated negatively with role ambiguity and role conflict. Thus, consistent with prior research (Van Sell et al., 1981) whose result indicates average correlations between the affective reactions and role ambiguity and role conflicts are greater than those between behavioural reactions and role ambiguity and role conflict. This was also consistent with Mowday et al., (1982), who posited role characteristic is one of the determinants of organisational commitment. However, consistent with prior studies, the average correlations with commitment using role ambiguity are greater than those using role conflicts.
2.3.3 ROLE STRESS AND JOB PERFORMANCE

Generally, meta-analyses conducted by prior studies indicate role ambiguity and role conflict are associated directly and negatively with job performance (Fisher & Gitelson, 1983; Jackson & Schuler, 1985). Also, prior accounting researches had provided evidences of this relationship (Burney & Widener, 2007; Chong et al., 2006; Hall, 2008).

Meta-analysis investigation by Fisher and Gitelson (1983), who reviewed several prior studies, had concluded conflicting and unclear results with regard to the nature and strength of the relationships between role conflict and ambiguity and antecedents and consequences. Their study somehow manages to clarify confusion by means of meta-analysis results of numerous past studies. Specifically, out of several significant correlates identified, role ambiguity was found to be negatively and consistently related to satisfaction with co-workers. On the other hand, role conflict is also negatively related to satisfaction with pay, co-workers and supervision. However, the relation is stronger for role conflict with co-workers than is role ambiguity. Similar findings were also reported by Jackson and Schuler (Jackson & Schuler, 1985).

Meta-analysis conducted by Jackson and Schuler (1985) analysing 29 correlates role ambiguity and role conflict, which includes behavioural reaction (absence and performance). The correlation is predicted based on cognitive and motivational explanation. Results from the meta-analysis show that there is correlation between these role stress variables and behavioural reaction. However, for the correlation between role ambiguity and role conflict and performance, results show weak negative correlation between these dimensions and performance (Jackson & Schuler, 1985). This result is consistent with prior studies which found the average correlation using role ambiguity is
always greater than those using role conflicts (Schuler et al., 1977; Van Sell et al., 1981). Jackson and Schuler (1985) found that role ambiguity was weakly and negatively related to job performance for both objective performance ratings and performance ratings provided by supervisors or peers, and more strongly related to performance for self-ratings. There is negligible correlation between role conflict and objective and self-ratings; however the result indicates rather stronger but weak negative relationship for others’ (supervisor or peer) ratings.

Findings from meta-analysis by Jackson and Schuler (1985) are consistent with a more comprehensive meta-analysis by Tubre and Collins (2000). Specifically, Tubre and Collins (2000) conducted a meta-analysis of correlations between role ambiguity and job performance and role conflict and job performance. Different from prior research (Jackson & Schuler, 1985), Tubre and Collins (2000) analysis is based on larger sample size and includes distribution of inter-rater reliabilities and test of moderator to extend prior findings. Similar to prior findings, based on 74 independent correlations with a sample size of 11,698, research concludes role ambiguity is negatively related to performance. Indeed, when tested for moderator, this relation was found stronger for the professional, technical and managerial job category. Similar to a study by Jackson and Schuler (1985), the result reported stronger correlation with role ambiguity for self-ratings and supervisor/peer ratings than objective rating.

On the other hand, based on 54 independent correlations and a total sample size of 9910, the result indicates weak correlation and a presence of moderator in the relation between role conflict and performance. Results show negative weak correlation between conflict and job performance on supervisor and peer ratings. Additionally, correlation was found to be more related for professional, technical and managerial jobs. In view of
the cognitive perspective, both role ambiguity and role conflict are negatively related to performance due to lack of information and information overload, respectively. Performance should be hindered by role ambiguity and role conflict as an individual faces lack of knowledge about the most effective behaviours to engage in certain situations. Thus, regardless of the amount of effort, individuals are most likely to be inefficient, misdirected or insufficient. Motivational perspective suggests that ambiguity and role conflict result in decreased performance, since they tend to weaken effort-to-performance and performance-to-reward expectancies.

Prior accounting researches in PMS and budgeting had also provided evidence of a direct link between role stress dimensions with performance (Burney & Widener, 2007; Chong et al., 2006; Hall, 2008). Burney and Widener (2007) examined the mediating effect of role stress between SPMS and performance. The results found positive effects of PMS which is linked to strategy and performance through job relevant information and role ambiguity. SPMS was found to have a negative association with both role conflict and role ambiguity. In addition, performance was better when managers’ perceive that they have less role ambiguity. Results show that a lower level of role ambiguity is associated with higher level of performance. However, inconsistent with prior research, a direct relation between role conflict and performance was not supported by the study. Managers are able to perform relevant tasks if there is relevant task information which leads to clarity in their expectation of their duties and responsibilities. The lesser the ambiguity faced by managers, the better that they can perform their job. Burney and Widener (2007) had provided sufficient empirical evidence of the relation between role stress and performance.
Similarly, another PMS literature by Hall (2008) had also found negative relation between role ambiguity and performance. In his research, the measure of role ambiguity is represented by role clarity. According to Hall (2008) and Sawyer (1992), role ambiguity is analogous to role clarity. Role ambiguity refers to uncertainty regarding individual role expectations (Kahn et al., 1964) while role clarity relates to the extent of uncertainty (Hall, 2008; Sawyer, 1992). In the research by Hall (2008), role clarity is represented by process clarity and goal clarity. The result of the study found that only goal clarity has positive association with performance and no association was found between process clarity and performance. This result is consistent with a study by Collins (1982), who examined the relation between MAS information and organisational control in the context of role theory and identified that the information is useful to inform individuals what is expected of them in their role. Particularly, more comprehensive PMS would provide performance information that can clarify goals leading to appropriate managerial behaviour related to the task responsibilities (Ilgen et al., 1979). The lesser the manager’s uncertainty or ambiguity would result in positive behavioural implication of the managers.

Budgeting literature by Chong (2006) had also provided empirical evidence in the relation between role ambiguity and performance. This study examined multiple roles (cognitive, motivational and value attainment) of participative budgeting and the combined effects of these roles on subordinates’ job-related outcomes. Research identified the multiple role of participative budgeting on subordinate performance is indirect through role ambiguity, organisational commitment and job satisfaction. Particularly, there is negative relationship between role ambiguity and subordinate’s job performance.
2.3.4 RELEVANT THEORIES

Role theory has been used to describe and explain two dimensions of role stress: role conflict and role ambiguity. Based on the theory, role conflict exists when the behaviours expected of an individual are inconsistent; an individual will experience stress, become dissatisfied and perform less effectively than an individual who has no conflict in expectation imposed on him. Role conflict is also viewed as a consequence of violation of two classical principles (chain-of-command and unity of command principle) which may lead to decreased individual satisfaction and decreased organisational effectiveness. Chain-of-command principle states that an organisation has hierarchical relationships foundation with a clear and single flow of authority from the top to the bottom that would satisfy employees and lead to better performance and goal achievement.

On the other hand, the principle of unity of command states that an employee should receive instructions from a superior only in any action, and there should be only one leader and one plan for a group of activities with similar objectives. Role ambiguity is related to both classical organisational theory as well as role theory. Based on classical theory, each position in a formal organisational structure consists of a specified set of tasks or specific formal job requirements. If an individual is not clear with regard to his authority to decide, expected accomplishment, judgement, decision making process will be disturbed and may ultimately have to rely on trial and error approach in meeting the superior’s expectations (Rizzo et al., 1970). Role theory explains role ambiguity as lack of necessary information available to a given organisational position which may lead to increased probability of individual being dissatisfied with his role, who will experience anxiety and hence would not be performing well (Rizzo et al., 1970).
2.4 ORGANISATIONAL COMMITMENT

The conceptions of organisational commitment can be divided into two categories: exchange approaches and psychological approaches (Morris & Sherman, 1981; Stevens et al., 1978). The former approach views commitment as an outcome of contribution transactions between the organisation and members or explicitly emphasises the instrumentalities of membership. Thus the greater the favourability of the exchange from a member’s perspective, the greater the commitment (Morris & Sherman, 1981). The latter is in contrast to the first approach, which was described to have more active and positive orientation towards the organisation. The psychological approach or attitudinal approach has been the most commonly studied by prior researches (Mathieu & Zajac, 1990) and had mostly measured with a scale developed by Porter and his colleagues (Mathieu & Zajac, 1990; Mowday et al., 1979; Porter et al., 1974).

Mowday et al. (1979) classified several approaches to the study of commitment in terms of two broad perspectives, namely, behavioural and attitudinal definitions of commitment (DeCotiis & Summers, 1987). According to DeCotiis and Summers (1987), Mowday et al. (1979) and Buchanan (1974) had both described organisational commitment as having distinguishing characteristics, that is individual’s internalisation of the organisation’s goals and values. However, organisational commitment was further defined by Buchanan (1974), Mowday et al. (1979) and Porter et al. (1974) as a willingness to exert considerable effort on behalf of the organisation.

Similarly, Buchanan (1974) and Porter et al. (1974) also viewed commitment to include three components: internalising an organisation’s values, a willingness to focus strong effort towards achievement of organisational goals and strong attachment to the organisation. DeCotiis and Summers (1987) conceptualised organisational commitment
similar to prior literatures (Buchanan, 1974; Mowday et al., 1979; Steers, 1977), however limited to internalisation of the goals and values of the organisation and involvement in an organisational role in the context of the goals and values. DeCotiis and Summers (1987) had also highlighted attitudinal concept to focus on the cognitive state of attachment to an organisation.

Initially, Meyer and Allen (1984) proposed that a distinction was made between affective and continuance commitment. AC denotes emotional attachment to, identification with and involvement in the organisation. Continuance commitment denotes perceived costs associated with leaving the organisation. Allen and Meyer (1990) was then suggesting normative commitment, to be the third distinguishable component of commitment which reflects a perceived obligation to remain in the organisation. Later, Meyer and Allen (1991) describe organisational commitment as the strength and nature of an individual’s identification with and attachment to an organisation. Organisational commitment was then conceptualised and measured into three components (Addae et al., 2008; Allen & Meyer, 1990; Meyer & Allen, 1991): affective component, continuance component and normative component. Affective component is the extent to which employees are involved with and have emotional attached to their organisations because they identify with the goal and values of their organisations. Normative commitment refers to employees’ belief of the obligation to remain with the organisation. Finally, the continuance commitment reflects commitment based on costs that employee associate with discontinuing employment.

Prior literature claimed organisational commitment as a better measurement of employee behaviour in organisations compared to other measures, such as job satisfaction and job involvement (Crewson, 1997; Moon, 2000). Allen and Meyer
(1990) provide preliminary evidence examining clearer distinction between the three component model of organisational commitment. The result of the study shows that affective and continuance components of organisational commitment are empirically distinguishable constructs with different correlates. However, for affective and normative commitment components, even though found to be distinguishable, are seemed to be rather related (Allen & Meyer, 1990). Both scales for affective and normative commitment were also found to be significantly correlated and reflect scales to be overlapping (Meyer et al., 2002).

2.4.1 CPMS AND ORGANISATIONAL COMMITMENT

Review of psychology and accounting research identified that information from MAS can provide internal indication for managers to make judgments and decisions. Similarly, since PMS is one component of MAS, information or feedback from MAS and PMS would be able to provide managers with information and feedback which can enhance individual intrinsic motivation (Ilgen et al., 1979; Luckett & Eggleton, 1991). Recent research in PMS found that particularly, decision facilitating role of PMS was significantly associated with positive behavioural consequences. Behavioural PMS-related research provides evidence showing CPMS provides managers with performance information that can enhance role clarity, goal clarity, process clarity and psychological empowerment (Hall, 2008). Additionally, research also indicates CPMS to enhance job-relevant information leads to reduce role conflict and role ambiguity (Burney & Widener, 2007) and enhanced creativity (Webster, 2006).

Based on prior evidences, this research proposes that the use of CPMS may lead to positive managerial behaviour. CPMS may provide relevant information leads to clarity in the managers’ role expectations and appropriate managerial behaviour (Burney &
Widener, 2007). On the other hand, research examining determinants and antecedents of organisational commitment revealed the association of these behaviour variables and employees’ commitment. Prior researches identified certain factors or variables as determinants and antecedents of organisational commitment. Findings from the research suggest that organisational commitment was not only influenced by role characteristics (Addae et al., 2008; Chong et al., 2006) but also by individual intrinsic motivation (Moon, 2000), sense of competence (Allen & Meyer, 1990; Ketchand & Strawser, 2001; Morris & Sherman, 1981), employees’ feeling of comfort (Ketchand & Strawser, 2001) and information adequacy (Addae & Parboteeah, 2006; De Ridder, 2004).

Research by Addae and Parboteeah (2006) is the first research to examine the link between organisational information and organisational commitment. Organisation information is the information employees receive from organisations that can help employees to be aware of their job. This information has implications on the level of employees’ organisational commitment. Findings of the research indicate that organisational information provided to employees has a positive relationship with affective commitment and job satisfaction and has a negative effect on turnover intentions. As employees receive information regarding the organisation, such as their job and working conditions, this information helps them to identify with the organisation, cope and adjust within the organisation. The information helps to enhance the level of employees’ commitment to the organisation as well as job satisfaction. The more the information received by employees, the higher the level of organisational commitment, thus the less likely that employee would have the intention of leaving the organisation. Similarly, since CPMS is part of the information system within the organisation, the more comprehensive the PMS, the more information provided to the employees that can enhance the level of employees commitment.
Additionally, Allen and Meyer (1990) describe the distinctions between the three conceptualisations of attitudinal commitment construct. Additionally, their study also examined whether each commitment component is differentially linked to antecedent variables of commitment identified in prior studies. As suggested by prior literature, the antecedents of affective attachments fall into four categories: personal characteristics, job characteristics, work experiences and structural characteristics. Focusing on antecedents related to work experience, variables were grouped into those variables that make employees felt comfortable in their roles (i.e. role clarity, goal clarity) and felt competent in the job (i.e. goal difficulty, feedback). Based on canonical correlation analysis, findings provide evidence that each affective antecedent variable correlated significantly with affective commitment. This finding implies employees who experience the feel of comfort in their role and competent in the job will have greater affective attachment to the organisation (Allen & Meyer, 1990).

Allen and Meyer (1990) also found evidence that indicates some overlap between affective and normative commitment, as some of the antecedents such as goal clarity and role clarity are also correlated with normative commitment. These antecedents which are not identified to be antecedents of normative commitment were found to be significantly associated with normative commitment. Finally, for the continuance commitment, the strength of employees’ need to remain with the organisation is related to perceptions of availability of alternatives and magnitude of investment. Since CPMS is positively associated with goal clarity (Hall, 2008), it is expected that there is a link between CPMS with affective and normative commitment. In addition, Hall (2008) had also found strong positive relation between CPMS and goal clarity, whereby
informational characteristic of CPMS will lead to clarity of goals or sub-unit objectives, which is anticipated to be able to enhance the level of employees’ commitment.

Morris and Sherman (1981) further examined antecedents of organisational commitment proposed by Steer (1977). Antecedents were categorised into personal characteristics, role-related characteristics and work experiences. In their study, sense of competence was included in addition to age and education to represent a personal characteristic category. On the other hand, role conflict and role ambiguity were chosen to represent a role characteristics category. The third characteristic, work experience, constitutes phenomenon influencing individual accumulation of normative information regarding social context in working environment.

Based on a correlation analysis, the result of the research shows that all the seven predictor variables yield significant zero-order correlations with organisational commitment. In addition, variance shared among predictor variables was not significant. Thus for further analysis, stepwise multiple regression was conducted on each predictor. Sense of competence from the personal characteristics category emerged as a highly significant predictor of commitment. This result implies that work circumstances that fulfill individual growth and achievement needs may yield organisationally positive employee attitudes and levels of involvement (Morris & Sherman, 1981).

Gist and Mitchell (1992) suggest that information would enhance managers’ sense of competence. They argue that information is able to improve understanding of their job requirement, difficulties (complexities) and work environment. In their research, they theoretically review the antecedent processes and information cues involved in the formation of self-efficacy. In addition, a model of the determinants of self-efficacy is
also developed which highlights the importance of judgments and information categories preceding efficacy assessment. The model shows that there are three types of assessment processes: analysis of task requirement, analysis of experience and assessment of personal and situational resources/constraint that involve forming self-efficacy. For the task requirement analysis, individual will rely more heavily on prior performance which will produce inferences for individual to perform at various levels.

Additionally, intrinsic motivation was also associated with organisational commitment (Moon, 2000). Moon (2000) examined the link between motivation dimension (intrinsic motivation and extrinsic motivation) and organisational commitment using a sample from public and private organisations. Other organisational factors also examined as determinant to organisational commitment in his research are organisational culture (goal clarity and empowerment), sector (public vs private organisation) and managerial level (top managers vs middle managers). Results show that both variables for perceived intrinsic motivation (the sense of work importance and sense of achievement) are positively associated with organisational commitment.

Consistent with classical motivation theories is expectancy theory, which assumes positive association between intrinsic and extrinsic expectancy with organisational outcome and commitment (Moon, 2000). Findings indicate that the relations were found significant for both private and public organisations. The relation between intrinsic motivation and organisational commitment was found significantly positive in the results of the combined model and each sector model. The finding implies the importance of intrinsic motivation factor to enhance perceived organisational commitment. Additionally, other factors, goal clarity and empowerment were also found to have significant positive association with organisational commitment.
Using a cross-validational framework, Steers (1977) examined the model concerning antecedents and outcomes of employee commitment to organisations. Based on a study carried out on 382 hospital employees and 119 scientists and engineers, the result of the study shows that personal characteristics (age, education and need for achievement), job characteristics (task identity, optional interaction and feedback) and work experiences (group attitude, organisation dependability and personal importance) influenced commitment. Out of all the categories of antecedents, work experience appears to be the most significant antecedent to influence employee commitment. Particularly, six antecedent variables: need for achievement, group attitudes towards the organisation, education, organisation dependability, personal importance and task identity were significantly associated with commitment in both samples. However, optional interaction, age, met expectations, and feedback are antecedents variables found to be significantly associated with commitment only for one sample.

Information adequacy can also influence employee’s organisational commitment. Trombetta and Rogers (1988) examine the role of three communication variables: participation in decision making, communication openness and information adequacy as predictors of OC. In their research, personal demographic characteristics: age, tenure, position and shift were also examined in the study to determine the influence towards organisational commitment. Organisational commitment was measured using an instrument by Alutto et al. (1973). Results indicate that the three communication variables including information adequacy are related to organisational commitment. Particularly, their research found that information adequacy was found to be a good predictor of organisational commitment. Bruning and Snyder (1983) identifying information from supervisors and performance evaluation information were similar to
information adequacy. Managers who focus on increasing job related information will have a higher commitment towards the organisation.

Using meta-analysis, Mathieu and Zajac (1990) summarise previous empirical studies that examined antecedents, correlates, and/or consequences of organisational commitment. In the study, 48 meta-analyses were conducted, including 26 variables categorised as antecedents, 8 as consequences, and 14 as correlates. For the antecedents of commitment, variables are classified into personal characteristics, job characteristics, group-leader relations, organisational characteristics and role states (Mathieu & Zajac, 1990; Steers, 1977). Under the personal characteristics, perceived competence exhibited a significant positive correlation with commitment which was assessed as attitudinal commitment. Other personal variables showing significant association with commitment include age and ethic.

However these variables are mostly included as descriptive rather than explanatory variables. Results of the study also identified role states: role conflict, role ambiguity and role overload to be antecedents of organisational commitment. In this, findings are consistent with prior-conducted meta-analyses by Fisher and Gitelson (1983) and Jackson and Schuler (1985). Under the job characteristics category, there are positive correlations between organisational commitment and autonomy and job scope respectively with job scope showing higher correlation. This implies the job perceived to be complex and enriched would yield higher commitment levels (Mathieu & Zajac, 1990). For the consequence of organisational commitment, a link was identified between commitment and performance; however the relation was found to be a weak relation (Mathieu & Zajac, 1990).
Ketchand and Strawser (2001) summarise prior research relating to OC and the relationship of OC with important antecedents, correlates and organisational consequences. Based on the meta analyses conducted, Ketchand and Strawser (2001) identified two broad types of factors or antecedents that have influence on organisational commitment. Antecedents of OC are factors which preceded the development of OC and had included in their comprehensive model individual’s personal factors and situational factors as antecedents of OC. Personal factors are individual experiences and characteristics prior to their entry into the organisation, whilst situational factors are work environment and nature of experience encountered by an individual during the employment.

From the meta-analysis conducted, situational factors identified by prior researches to influence employees’ commitment are role ambiguity, role conflict and extent of leader communication (Cohen, 1992; Mathieu & Zajac, 1990). Ketchand and Strawser (2001) highlighted that prior research seems to suggest that organisational commitment is not only influenced by role characteristic but also other situational antecedents that reflect employees’ comfort and competence in their role are more related to OC, particularly affective commitment. There is limited evidence from prior accounting studies that examined the effect of antecedents on affective commitment (Ketchand & Strawser, 2001). Based on their meta-analyses, Ketchand and Strawser (2001) identified an accounting study by Colarelli et al. (1987) which examined personal and situational factors and had identified AC of the professional accountant was primarily influenced by situational factors, mainly job autonomy and job feedback.

De Ridder (2004) in his research had also revealed that task-related information can influence employee commitment. The higher the quality of the employees’ task-related
information, the more commitment they will feel towards the organisation (De Ridder, 2004). Prior PMS related research highlight the importance of PMS in providing information leads to enhance role clarity and empowerment (Hall, 2008) and may lead to high level of JRI, reduce role ambiguity and role conflict (Burney & Widener, 2007). These research imply that PMS that is CPMS can provide comprehensive feedback and information (Burney & Widener, 2007) which may enhance self-competence or intrinsic motivation of the SBU manager (Hall, 2008; Luckett & Eggleton, 1991). Furthermore management accounting and control research also indicate how MAS information can provide feedback which may lead to enhance an individual’s sense of competence (Ilgen et al., 1979).

Since prior PMS related research highlight the importance of PMS on providing information, thus it is anticipated that feedback from CPMS can enhance organisational commitment and in turn lead to improved in job performance. Furthermore prior research was unable to show direct relation between role conflict and managerial performance (Burney & Widener, 2007), which imply possibility of indirect relation between role stressor and performance through organisational commitment.

2.4.2 ORGANISATIONAL COMMITMENT AND ROLE STRESS

For the relation between organisational commitment and role stress, prior literatures argue that those who perceived lower role stress: low level of role ambiguity and role conflict, would tend to be more committed to the organisation (Addae et al., 2008; Glazer & Beehr, 2005; Mathieu & Zajac, 1990; Meyer et al., 2002; Morris & Sherman, 1981; Yousef, 2002).
Multivariate study of organisational commitment by Morris and Sherman (1981) examined antecedents of organisational commitment proposed by Steers (1977) in three categories: personal characteristic, role-related characteristic and work experiences. Role ambiguity and role conflict represent the role-related characteristics which were measured with items from Rizzo et al. (1970). Similar to prior empirical behaviour-related studies, Morris and Sherman (1981) used Porter’s measure to measure organisational commitment. In the category of role characteristics, role conflict emerged as a significant independent predictor of organisational commitment. Results however indicate role ambiguity is the only variable out of the seven predictor variables that failed to make a significant, unique contribution to the variation explained in organisational commitment. However, findings by Morris and Sherman (1981) were inconsistent with meta-analyses conducted by Mathieu and Zajac (1990) which revealed the relation between role characteristics and commitment. Role ambiguity and role conflict were found to be antecedents of organisational commitment.

Yousef (2002) examined the mediating role of job satisfaction between role stressors, namely role conflict and role ambiguity, and various dimensions of organisational commitment: affective commitment, normative commitment and continuance commitment. Study was conducted on a sample of 361 employees of the organisations in the United Arab Emirates. The result of the study through path analysis shows that there is an association between the role stressor dimension and organisational commitment. It was also identified that job satisfaction mediates the influence of role conflict and role ambiguity on organisational commitment dimensions. Particularly, the result indicates role ambiguity has direct and negative influences towards both affective and normative commitments. Instead of treating organisational commitment as a unidimensional construct, Yousef (2002) considers organisational commitment as a
multidimensional construct. The result indicates although statistically significant, there is weak relation between role conflict and affective commitment and normative commitment. However, role ambiguity was found to be directly and negatively influenced by affective and normative commitments.

Different from Mathieu and Zajac (1990) who differentiate commitment into two forms; attitudinal commitment (Mowday et al., 1979) and calculative commitment (Becker, 1960), Meyer et al. (2002) conducted a meta-analytic investigation to assess the relations among the Three-Component model of organisational commitment: affective, continuance and normative commitment in the organisation. Additionally, their research also examined the relations between the three forms of commitment and variables identified as their antecedents, correlates and consequences in research by Allen and Meyer (1990) and Meyer and Allen (1991). Correlation between affective and normative commitment was significant, which suggests considerable overlap in the two constructs. Overall, correlation involving continuance commitment was opposite to affective and normative commitment, which implies continuance commitment is unrelated to other organisational commitment dimensions. Antecedent variables analysed are divided into four groups: demographic variables, individual differences, work experiences and alternatives/investment.

Correlations with demographic variables are generally low. For the individual difference variables, external locus of control is correlated negatively with affective commitment, whereas weak positive correlation with task self-efficacy. Correlation with work experience variables correlated stronger than personal characteristic. Role ambiguity and role conflict are negatively correlated with affective commitment. Role conflict was also found to be stronger with continuance commitment. Alternatives and
investment variables correlate more strongly with continuance commitment than affective or normative commitment. For the correlate variables, the strongest correlation is between overall job satisfaction and affective commitment. For the consequence variable, AC and NC correlated positively and continuance commitment correlated negatively with job performance (Meyer et al., 2002).

Findings of research by Glazer and Beerh (2005) are also consistent with prior research showing negative relation between affective commitment and both role ambiguity and role conflict. High level of role ambiguity and role conflict would result in employees to perceive lack of clear directions for the managers to perform their job leads to reduce their commitment towards the organisation. Glazer and Beerh (2005) examine the relationship between the three dimensions of role stressor (ambiguity, overload and conflict) and the two components of organisational commitment (affective and continuance commitment). Based on a survey of 1396 employees, role stressors were found to correlate positively with continuance commitment but negatively correlated with affective commitment.

A cross-sectional study by Addae et al. (2008) provides evidence for the relation among role conflict, role ambiguity and the three dimensions of organisational commitment. Data is based on a total of 226 usable questionnaires obtained from public sector employees of a developing country. Findings show that role ambiguity and conflict were negatively associated with affective and normative commitment. Results also suggest that the sector should reduce role ambiguity and role conflict to enhance employees’ commitment. This finding is consistent with prior research (Meyer et al., 2002; Yousef, 2002) which individuals with higher role ambiguity and role conflict will
result in less commitment towards their organisation. They are less likely to identify with goals and values or feel a sense of obligation to remain in the public sector.

### 2.4.3 ORGANISATIONAL COMMITMENT AND JOB PERFORMANCE

Prior researches suggest that organisational commitment may have influence on job performance (Mottaz, 1988; Steers, 1977). Steers (1977), examining a model concerning outcomes of employee commitment to organisation, found that no direct or consistent association exists between commitment and subsequent job performance.

Meyer et al. (1989) examined relations between the performance of first-level managers in a large food service company and their affective commitment (emotional attachment to, identification with, and involvement in the organisation), continuance commitment (perceived costs associated with leaving the company), and job satisfaction. Commitment and satisfaction scores were correlated with three indexes of performance obtained from the managers’ immediate supervisors. Results found the direction of link between commitment and performance in relation to the nature of the commitment. As anticipated, affective commitment correlated positively with all three measures of performance (job satisfaction, composite performance and overall performance). However, the correlations of affective commitment were found significant only with overall performance and promotability ratings.

Alternatively, significantly negative correlation was found between continuance commitments with all the measures of performance. Thus, an increase in employees’ affective commitment and decrease in continuance commitment may lead to an increase in supervisor ratings of performance and promotability. Additionally, the result also indicates no significant correlation between job satisfaction and performance ratings.
Findings of Meyer’s et al. (1989) study highlight the importance of distinguishing between nature of commitment based on desire and commitment based on need, as supporting organisational efforts to promote affective commitment in their employees. Explicitly, findings suggest employees’ continued commitment may not necessarily infuse them with the desire to contribute to organisational effectiveness; conversely, affective commitment could be associated with intrinsic value in employees to work more towards organisational success.

Meta-analysis by Randall (1990) has supported the work by Meyer et al. (1989) in terms of work performance. Randall (1990) summarises empirical evidence about the relationship between OC and work outcomes and examines the effect of methodological decisions on the OC-work outcome relationship. Results from the meta-analysis of 35 studies of the OC-work outcome relationship indicate overall empirical relations between OC and outcome variable (job performance, job effort, attendance, coming to work on time and remaining with an organisation) is generally weak but has positive association. Results indicate three of the work outcomes, effort, coming to work on time, and remaining with the organisation are shown to be more highly correlated with organisational commitment levels than the others.

When the regression equation includes the type of work outcome and five methodological decisions made by commitment researchers (conceptualisation, research design, sampling, operationalisation and observation technique), it provides the explanation for the variation of the organisational commitment and work outcome relationship. Additionally, conceptualisation decision (conceptualisation of OC based on calculative or attitudinal approach) is more associated to the explained variation. Results show that work outcomes have significant relationships with attitudinal

Using meta-analysis, Mathieu and Zajac (1990) summarised previous empirical studies that examined antecedents, correlates, and/or consequences of organisational commitment. For the consequence of organisational commitment, a weak positive relation was found between commitment and job performance (Mathieu & Zajac, 1990). These findings were supported by an analysis conducted by Meyer et al. (2002). Meyer et al. (2002) had also examined the relations between the three forms of commitment (affective commitment, normative commitment and continuance commitment), and variables identified as their antecedents, correlates and consequences in Allen and Meyer (1990) and Meyer and Allen (1991). With regard to the consequences of commitment, the result of analysis indicates withdrawal cognition, turnover intention and turnover correlate negatively with all the three forms of organisational commitment.

However, these forms of OC correlate differently with other work behaviours. Affective commitment indicates stronger positive correlation with the other work behaviours than normative commitment. Conversely, the research found that continuance commitment is unrelated or negatively related to these behaviours. Particularly, one of the work behaviour variables, job performance, correlated positively with affective and normative commitment; in contrast continuance commitment correlated negatively with job performance. Interestingly, affective commitment was found to be correlated stronger with supervisor ratings than with self-ratings of performance.
2.5 LOCUS OF CONTROL (LOC)

According to Rotter (1990), locus of control construct classifies individuals into two types: externals and internals. Internals are individuals who perceive that they have a large degree of control over their destiny. These individuals would feel that they have control over the reinforcements which may occur relative to their behaviour. Externals are those individuals who perceive their destinies are controlled by luck, chance or fate. Externals would have the perception that the occurrence of reinforcement is influenced by forces beyond their control. This personality variable is important in psychological research. Locus of control is also one of the personality traits that is commonly examined in personality and applied psychology (Judge & Bono, 2001).

Analogous in psychological research, prior accounting research had also examined the moderating role of this locus of control personality on managerial outcomes (Brownell, 1981; Brownell, 1982; Chong & Eggleton, 2003; Frucot & Shearon, 1991). This is because prior researches assert that decision-making behaviour is subject to task characteristics, decision-maker characteristics and the interaction among these characteristics (Chong & Eggleton, 2003; Hogarth, 1993; Peters, 1993). Thus, in order to anticipate effective human behaviour on accounting tasks, accounting decision-making theories are expected to include both decision-maker and task characteristics and their interactions (Peters, 1993). Locus of control is also a personality variable that is frequently studied in prior accounting researches (Brownell, 1981; Brownell, 1982; Chong & Eggleton, 2003; Fisher, 1996; Frucot & Shearon, 1991).

2.5.1 MAS/CPMS, LOC AND PERFORMANCE

Prior researches in traditional PMS literature found evidence on how individual differences influence the way individual managers make use of information (Brownell,
1981; Brownell, 1982; Frucot & Shearon, 1991). These studies identified that a personality trait of locus of control is associated with the difference in how managers use information. In particular, other accounting research also demonstrates how personality trait of locus of control leads to differences in the way which managers perceived and processed the information (Fisher, 1996). Additionally, there is considerable prior psychology researches that found the difference between internal and external locus of control personality with regard to how information is perceived and used.

Previous budgeting literature suggests that individual differences affect how managers use information to improve their performance (Brownell, 1981; Brownell, 1982; Frucot & Shearon, 1991). Brownell (1981) examined the moderating effect of locus of control in the relationship between budgetary participation and managerial performance. The laboratory study employs two separate populations (undergraduate accounting students and managers from a large manufacturing company) and identified significant interaction between participation and locus of control affecting managerial performance. There is positive effect of budgetary participation on internals whilst the effect was negative with externals. Generally, results of the field study by Brownell (1982) are consistent with prior laboratory experiment. Locus of control showed to moderate the relationship between budget participation and performance. Under high participation, internals appear to result in more job satisfaction and perform better, whereas externals are more satisfied and show better performance under conditions of low participation.

In budgeting literature, research by Frucot and Shearon (1991) examines the influence of locus of control in the relation between traditional PM, managerial performance and satisfaction. Based on survey responses by 83 Mexican managers, results show
consistent findings for the impact of locus of control and the system on managerial performance. In their research, the type of manager (locus of control), managerial level and the percentage of foreign ownership are practical in delineating the effectiveness of the system. Frucot and Shearon (1991) identified that internal locus of control managers were found to be more positively affected by the system. The effect of locus of control for high-level managers was significantly stronger than the lower level manager. Additionally, it is also found that managers employed by locally-owned firms increase their performance with the system, but the performance of the managers employed by foreign owned firms was not significantly influenced by the personality variable and the system. However, findings were inconsistent for the impact on managerial satisfaction, which was claimed to be influenced by the presence of cultural differences.

Empirical evidence by Fisher (1996) provides support that individual differences may influence how managers perceive the information. Fisher (1996) examined the moderating role of locus of control personality in dealing with information under conditions of uncertainty. Even though it is expected that internal LOC will perceive timely and wider scope of information to be more useful than does the external locus of control manager, but results were shown to be not as expected. Overall, based on a survey from 98 managers from 9 different industry groups in Australia, the interaction is significant, however not in the hypothesised directions. Findings show respondents with higher locus of control scores or externals, not internals, perceive information to be more useful when faced with higher uncertainty. In addition, findings also reveal externals to have higher perception of the wider scope and timely information to be useful when uncertainty increases.
Considerable prior psychological researches also provide significant evidence showing the difference in how information is perceived and utilised by internal and external locus of control personalities. Prior psychological studies also suggest that internals managers have a tendency to search aggressively for task-relevant information as compared to their external counterparts (Davis & Phares, 1967; Organ & Greene, 1974; Pines & Julian, 1972; Seeman, 1963).

Seeman (1963) examined a reformatory of inmates and their retention of information related to parole, reformatory setting and career prospect. His study found that internals managed to gather important information relevant to a particular goal, which showed their superiority in processing relevant information. Based on the study, he suggested two explanations with regard to the characteristics of internal managers. The first is in relation to recognising relevant information for goal attainment. Internals are better or faster in identifying required information for goal attainment. Secondly, internals are more responsive to opportunities to fulfil their own objective and more efficient in information utilisation compared to externals. Furthermore, internals have a better sense of their own objectives and values than external.

Subsequent to the findings from research by Seeman (1963) that internals to a greater extent engage in behaviours yielding more information, is supported by later study. Davis and Phares (1967), who examined the difference in individual differences as a determinant of information-seeking in a social influence situation. In the context of social learning theory, this refers to the degree to which individuals believe that the occurrence of reinforcement is contingent upon their own behaviour. External control refers to the belief that reinforcement is controlled by forces independent of behaviour, such as chance, luck, fate or powerful others whereas internal refers to the belief that
reinforcements follow as a consequence of one’s own behaviour. In real life situations, it is expected that an individual will exert certain potential control over the amount and kind of information they receive regarding to an object or event.

Davis and Phares (1967) found that the internal and external control dimension is one factor which may influence differences in information seeking. As anticipated, Davis and Phares (1967) found that internals with a higher generalised expectancy that reinforcements is contingent upon their own behaviour, tend to make attempts to control their environment more effectively through actively engaging in information seeking. Externals tend to have less need to acquire information, as they perceive the outcomes would be less independent of their own actions. Davis and Phares (1967) also conclude that internals have more knowledge, which is important for later outcomes, remember more of this information and on the basis of the present study, actively seek information that will be useful in the future.

Pines and Julian (1972) identified that the differences in performance between internal and external locus of control are due to the responsiveness to the informational task requirement and the social demands of the performance situation. Based on two basic analyses, two aspects of laboratory situation; first is the nature of the experimental task and the informational demands, and secondly is the nature of social situation. Both analyses demonstrated important determinants of the performance differences. From the experiment, internals are able to discover quickly the cue for performing the task and immediately they start to adopt an efficient mode of response. Results indicate that internals are shown to be more responsive to the informational requirements of the task, whereby internals’ pre decisional activity varied directly with complexity or difficulty of the task.
This finding is also similar to Davis and Phares (1967), who also found internals more actively seek relevant information to solve problems than the externals. Internals were actively searching and processing task-relevant information, as they believe that control over their outcome resides in them to determine their task outcomes. On the other hand, external is less concerned with the informational requirements of task but would be more responsive to social demands of the performance situation. Overall, Pines and Julian (1972) conclude that internals and externals have different orientations to seek control over reinforcement, whereby they may seek different kinds of information and may engage in strategies for both to ensure performance.

Another research is by Organ and Greene (1974) who also identified important characteristics about locus of control personality. Data was based on questionnaire survey data from sample of 94 senior scientists and engineers of a larger manufacturer of electronics equipment, components and supplies. Results show significant correlation between role ambiguity and work satisfaction for individuals with internal locus of control personality; however the relationship was non-significant for externals. This finding implies that role ambiguity is aversive primarily to those who are frustrated in the active attempts to secure job-related information, such as individuals with external locus of control personality.

The results also suggest that internals have more knowledge of work thus support Rotter’s (1966) hypothesis that individuals with strong belief of outcomes are shaped by their own actions (internal locus of control) will be more alert towards their environment, which can provide useful information for future behaviour. Based on these literatures, findings imply that internals are more active than externals in their search for task-relevant information (Davis & Phares, 1967; Organ & Greene, 1974; Pines &
Julian, 1972; Seeman, 1963), thus internals are capable of undertaking managerial tasks better compare to their external counterparts. Spector (1982) also contributes to the same finding in the literature.

According to Spector (1982), locus of control is an important variable to explain human behaviour in organisations. Based on evidences from prior studies, locus of control was primarily described related to effort, motivation, performance and satisfaction. Spector (1982) also discussed how the different characteristics between internals and externals would have significant effect on organisations. Since internals believe in personal control, internals would attempt to exert more control than would externals when it involves required outcomes or rewards. Another difference between internals and externals identified is their capability to deal with complex information. Internals seems to have a better ability at collecting, processing information and performing complex tasks compare to externals.

It was also claimed that internals exert more effort in gathering relevant information and better use of information. Internals are also expected to have better performance in carrying out tasks that necessitate the use of information. The nature of the job can also determine which type of locus of control is suitable. Internals are said to perform better for jobs that requires complex information processing and frequent complex learning (Spector, 1982, p. 486). Based on Spector (1982), it is concluded that internals tend to seek for information more actively than externals and they are also more efficient in the utilisation of information than externals.

As internals believe in their own effort, they exhibit high job motivation and are more suitable for jobs requiring high motivation. Furthermore, internals are also claimed to
exhibit more task-oriented and goal-oriented behaviour. Thus, highly-skilled jobs, professional jobs and managerial jobs are also claimed better suited to internals (Spector, 1982). In relation to job performance, Spector (1982) suggests two main reasons why internals are predicted to perform better in jobs than externals. Firstly, internals have greater expectancies, thus would exert greater effort when rewards are tied to performance. More importantly, in task relevant situations i.e. tasks involving complex information and learning, internals would seek more relevant information and perform better than externals. Internals are also found to have greater job satisfaction than externals.

In terms of information utilisation, the evidence from these prior psychological researches also demonstrate that the use of memorised information for problem solving is more efficient by internals rather than externals (Lefcourt, 1982; Phares, 1968; Spector, 1982; Wolk & Ducette, 1974). Findings from the research by Wolk and Ducette (1974) also identified the difference between internals and externals in terms of information utilisation. Internals are more efficient in the use of information than externals. This finding is based on two studies involving 211 undergraduates who were presented with verbal material and the subjects were asked to scan the material for typographical errors. Results indicate that internals were superior to the externals on both intentional performance and incidental learning, as internals were able to find significantly more errors than externals (intentional performance). Intentional tasks require fast, efficient scanning which would differentiate between internals and externals in terms of pre-attentive processes.

Whilst incidental learning depends on the acquisition of less prominent aspects of a stimulus array, its acquisition is through an attentive and organised cognitive system.
Thus, this finding also implied that internals are different from the externals due to how the information is being organised and used by them. In conclusion, the different characteristics between internals and externals with regards to intentional and incidental tasks is associated to the internals’ ability to use their cognitive system to extract information (intentional task) and to use the information more efficiently (incidental learning) (Wolk & DuCette, 1974, p. 98). Thus, Wolk and DuCette (1974) conclude that internals have a better utilisation of information than externals.

A study by Phares (1968) further elucidates findings by Seeman (1963) to demonstrate that internals are more effective in the utilisation of information. His research hypothesised that internals, having a greater generalised expectancy that their own efforts should better utilise information, since they would likely foresee correct utilisation as a pathway towards reinforcement. On the other hand, externals would have relatively less effort in information utilisation as they believe that their own efforts are not fundamental in the attainment of reward. An experiment involving I-E scale and a three-step procedure was administered to 214 male students. Based on the measures of utilisation of information including: number of reasons, correct reasons and ratio of correct reasons, results provided significant evidence that internals perform better than externals. Consistent with prior study, the findings provide further evident which imply internals are better than externals in the utilisation of information.

Lefcourt (1982) identified the difference between the two types of managers. His study found internal managers are more efficient in processing information as they have a higher level of inquisitiveness or curiosity than externals (Chong & Eggleton, 2003). Since internals have a better sense of opportunities, it helps them in realisation of their goal and thus they are able to recognise relevant information for its intended purpose.
Findings by Lefcourt (1982) are consistent with Phares (1968) who identified that for complex problem-solving, an internal manager is a better user of memorised information compared to an external manager (Chong & Eggleton, 2003).

Considerable prior accounting research has examined the relation between the role of broad scope MAS information and individual performance (Chong, 1996; Mia & Chenhall, 1994). Mia and Chenhall (1994) examined the role of broad-scope MAS information in enhancing managerial performance. A study of 75 managers shows that the use of broad-scope MAS information is useful in enhancing managerial performance. Chong (1996) examined the interactive effects of MAS design, particularly focusing on broad-scope MAS information and task uncertainty on managerial performance. Under a high task-uncertainty situation, the use of broad-scope MAS information led to effective managerial decision and enhanced managerial performance. It is concluded that managers need more information thus broad-scope information is useful when uncertainty is high. However, broad-scope information led to information overload and would be dysfunctional under low uncertainty.

Chong and Eggleton (2003) also examined decision-facilitating role of sophisticated MAS such as CPMS i.e. BSC on managerial performance. Broad-scope MAS such as BSC information is useful in high task uncertainty situation. Similar to Chong (1996), sophisticated MAS or broad-scope MAS information was also found to be useful under high uncertainty situation. Managers require less broad-scope of MAS information when there is low uncertainty. In addition, finding in research by Chong (1998) is consistent with his prior research which suggests the importance of broad-scope MAS information to improve managerial performance. Additionally, personality trait was found to affect information needs for managerial decisions. Broad-scope MAS
information was found useful for low levels of tolerance for ambiguity as the information helps to overcome their lack of confident in managerial decisions.

Generally, considerable prior MAS literatures suggest the importance of MAS information to enhance individual performance (Chong, 1996, 1998; Chong & Eggleton, 2003; Mia & Chenhall, 1994). Thus, it is expected that sophisticated MAS or broad-scope MAS information such as CPMS would also plays an important role led to improve in individual performance. In addition, findings from psychology and accounting researches demonstrate the difference in the use of information by locus of control personality; internals and externals. Based on these literatures, this research proposes that the use of CPMS information by the business unit manager is also being influenced by the managers’ locus of control personality to improve their performance.

Chong and Eggleton (2003) examined the decision-facilitating role of MAS on managerial performance. Particularly, the research focuses on the three-way interaction between task uncertainty, locus of control and MAS information affecting managerial performance. Data was collected from a total of 176 Australian manufacturing companies and 147 senior managers. Consistent with prior empirical studies, the result suggests that when the degree of task uncertainty is high, managers will require more broad-scope MAS information for managerial decision-making to cope with the complexity of the task environment.

On the contrary, managers will require less broad-scope MAS information for managerial decision-making when the task uncertainty is low. Furthermore, managers need more information as a managerial position requires manager to deal with high responsibility and a high level of task uncertainty. In terms of the managers’
personality, results reveal that the use of broad-scope MAS information by internal managers would be detrimental under a low task uncertainty situation. Broad-scope MAS information was also referred to the CPMS as indicated by Chong and Eggleton (2003, p.168), “Often assemblages of this broad-scope information are presented in integrated reporting format, such as balanced scorecards (Kaplan & Norton, 1992; Kaplan & Norton, 1996)”. Only under high task uncertainty, the broad-scope of MAS information would improve internal manager performance. In contrast, the use of broad-scope MAS information is insensitive to external managers.

Feather (1968) in an experimental study, investigated how individual differences, internal and external locus of control would influence feedback and performance. Subjects of the study were undergraduate students from a university of New England. In the study, 12 male and 18 female undergraduate students were designated into internal and external through the I-E scale. For the experimental session, the students took part in 15 anagram tasks. The experiment was conducted in two separate sections; firstly, students were given the first five anagrams to determine the initial success or failure. Secondly, students were given the remaining ten anagrams.

Results show that students who succeeded on the first five items of the test tended to obtain higher subsequent performance scores than those students who failed. Students were also assessed for any typical change in confidence rating. Typical change was defined as a rise in confidence rating following a success or failure. Additionally, results indicated internals tend to make a greater number of typical changes than external. In other words, research identified an additional characteristic of internals who are more open to feedback than the externals. They are also able to adjust their expectation more appropriately compared to externals.
Additionally, Luckett and Eggleton (1991) reviewed research conducted in psychology and accounting. Based on the review of research, there are four factors identified to influence behavioural consequences of feedback, which are presented in Figure 2.2. Factors identified include: source identity, source attributes, nature of message and individual differences of locus of control and self-esteem. Additionally, under high task uncertainty, internals would react differently compared to externals (Chong & Eggleton, 2003; Luckett & Eggleton, 1991). Luckett and Eggleton (1991) further suggest that an individual’s locus of control would interact with task and environmental uncertainty to affect response. Remedial action would be more likely to be initiated by internals rather than externals under conditions of high environmental uncertainty.

Based on these accounting and psychology researches, locus of control personality variable has shown to be significant in an organisational context. Prior research identified the difference in the characteristics between internals and externals locus of control personality. These important findings suggest the possibility of its influence in the use of MAS information, such as PMS information, to improve the business managers’ performance.
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Figure 2.2: Factors Related to the Behavioural Consequences of Feedback and Their Dimensions
2.5.2 CPMS, LOC AND ROLE STRESS

Role theory asserts that organisational context is the most influential factor to determine role ambiguity and role conflict experienced by employees (Kahn et al., 1964). However, several researchers argue that personal characteristics may lead to differences in the way individuals perceive or react with certain situation. Locus of control is the most common of the personality variables examined by prior research, particularly in psychological and social sciences (Hyatt & Prawitt, 2001; Rotter, 1990).

Jackson and Schuler (1985) analysed 29 correlates of role ambiguity and role conflict, which included five individual characteristics. The result of the study shows correlations exist between locus of control and both role ambiguity and role conflict. However, positive correlations indicate that high ambiguity and conflict scores are associated with only an external locus of control. This result is consistent with Organ and Greene (1974) which provides an explanation of the finding. Since internals tend to be better informed about their occupations than externals, they should experience less role ambiguity.

Anderson (1977), based on his research had also concluded that internal locus of control managers have more ability to exercise control over their environment compared to externals. His research examined the relationship between managerial locus of control, perceived stress, coping behaviours and performance. Based on two data collection phases over a 2½ year interval of a major disaster, internals were found to perceive less stress, employ more task-centered coping behaviours and employ fewer emotion-centered coping behaviours than externals. Anderson’s study had also firmed findings by prior research which reported externals perceive higher stress than internals in a particular situation. Indeed, this finding is also consistent with prior study, which
identified externals as responding with much more defensiveness and much less task-oriented coping behaviour than internals. Internal locus of control orientation is also proposed to be an important moderator of successful use of achievement.

Empirical evidence with regard to the relation between locus of control personality and work-related behavioural measures was also explored in a non-western culture such as Taiwan in a recent study by Chen and Silverthorne (2008). Their research examined the relation between locus of control variable and the work-related behavioural measures of job stress, job satisfaction and job performance in Taiwan. In the study, a sample was drawn from a pool of accounting professionals of CPA firms in Taiwan. Findings indicate that one aspect of an accountants’ personality, as measured by locus of control, plays an important role in predicting the level of job satisfaction, stress and performance. Based on the study, Chen and Silverthorne (2008) conclude that individuals with higher internal locus of control are more likely to have lower job stress (job ambiguity, job conflict, workload and resources) since they have a more positive view of their work role and find it easy to cope with job stress.

Thomas et al. (2006) meta-analysed the relation between locus of control and work outcomes. In their study, work outcomes were categorised into three theoretical perspectives: LOC and well-being, LOC and motivation and LOC and behavioural orientation. Findings of their research found a positive link between internal locus of control and favourable work outcomes, such as positive task and social experiences and greater work motivation. Thomas et al. (2006) indicate that LOC is related to attitudinal and behavioural outcomes, particularly through three cognitive processes: self-evaluation of well being, internal motivation and a cognitive orientation of behavioural intent to control.
For the relation between LOC and behavioural orientation, the result identified internal LOC is negatively related to task experiences, including: work role problems, work-family conflict, job stress and job experience. Specifically, an internal LOC was found related to less role overload, role ambiguity, role conflict and family conflict. Further, internal LOC was also identified to have negative relation with job stress and lack of personal accomplishment. A strong sense of personal control of internals leads them to be more proactive to manage negative task experience (Thomas et al., 2006).

2.5.3 CPMS, LOC AND ORGANISATIONAL COMMITMENT

The meta-analyses conducted by Thomas et al. (2006) categorised one of the work outcome variables, variables of well-being, into two groups: general well-being and job-related affective reactions. The job-related affective reactions encompass variables representing employees’ job satisfaction, variable directly (affective commitment, turnover intention) and indirectly (hour worked, attendance) reflecting employees’ commitment to their organisations. Results indicate locus of control would be associated with general well-being, which includes job-related affective reactions that can be explained by individual self-evaluation, one of the three cognitive processes.

Additionally, internal locus of control was related to variables reflecting commitment, such as affective organisational commitment, hours worked, company record attendance and turnover intention. Individuals with a positive evaluation of work roles should be associated with more positive affective reaction to work environment, such as being more satisfied with job and demonstrating attitude and behaviour representing dedication to the organisation or greater affective commitment (Thomas et al., 2006). Since internals are more sensitive to information relevant to self worth, Thomas et al.
(2006) identified internal LOC to have a positive association with variables reflecting commitment, such as affective organisational commitment.

Luthans et al. (1987) developed a model to examine empirically antecedents of organisational commitment: personal demographic, organisational relationship and person-organisation fit. Based on a sample of 406 employees from a wide variety of organisations, their study revealed previously unknown implications that attitudinal processes such as locus of control have on organisational commitment. Results of the study found that personal attribution process of locus of control is found in this study to be related to organisational commitment. Particularly, there is a direct significant relationship between internality and organisational commitment. Internals are committed to their organisation as they are more satisfied with the work situation (Spector, 1982).

Meta-analytic work by Meyer et al. (2002) assessed the relations between the three forms of commitment and their antecedents, correlates and consequences as identified in research by Allen and Meyer (1990) and Meyer and Allen (1991). There are four groups of antecedent variables being analysed in the research, which include demographic variables, individual differences, work experiences and alternatives/investment. For the individual difference variables, LOC, external LOC was found to be negatively correlated with affective commitment. This finding is consistent with prior meta-analyses literature by Luthan et al. (1987), who found internal and not external LOC to have a direct relation with organisational commitment. This finding was also supported by Thomas et al., (2006) who suggested the link between LOC and attitudinal and behavioural outcomes exist via three types of cognitive processes. Specifically, they suggest that LOC is related to organisational commitment mainly via self-evaluation of
well-being. External is less sensitive to information to self-worth, thus they have lower commitment.

2.5.4 RELEVANT THEORIES

Social learning theory describes individual managers as internal managers and external managers (Rotter, 1960; Rotter, 1966). Internal locus of control refers to the level to which attribution of causality of behaviour is caused by the individual himself, and external locus of control by sources external to the particular individual. Accordingly, this means external locus of control refers to individuals who believe that they have no control over their destinies. The fate of the external managers is controlled by luck or chance; on the contrary, the internals believe that they are able to control their own destinies (Rotter, 1960; Rotter, 1966).

Prior research in PMS seems to suggest that more comprehensive PMS would provide more relevant information that may reduce the level of individual manager’s role stress, particularly the level of role ambiguity and role conflict. In addition, meta-analyses and researches conducted in prior studies suggest that a negative relation exists between role stress and organisational commitment. These researches also suggest that the lower the level of role stress the higher the level of commitment. Higher organisational commitment is also linked with better performance.

Thus, the question remains: do cognitive and motivational roles of CPMS have any effect on role stress dimensions (role ambiguity and role conflict) and organisational commitment, and ultimately enhance job performance? Additionally, do role ambiguity and role conflict affect organisational commitment and lead to enhanced job performance in the context of CPMS?
2.6 JOB PERFORMANCE

Measurement of performance can be divided into three types (Chen & Silverthorne, 2008); the first measure of performance is based on measures of output rates, amount of sales over a given period of time and production made by a group of employees reporting to manager etc. The second type of job performance refers to ratings of individuals by someone other than a person who is being assessed.

2.6.1 EMPIRICAL EVIDENCES

Self appraisal and self ratings techniques constitute the third type of performance which is commonly used to measure by prior study. Despite being criticised for being an unreliable measure of performance due to its leniency bias, self-reported measures of performance had been used by considerable prior literatures (Chenhall & Brownell, 1988; Kren, 1992; Nouri & Parker, 1998). However, research claimed that leniency bias is not consequential when no systematic relation is expected to exist with the independent variables (Chenhall & Brownell, 1988; Kren, 1992; Nouri & Parker, 1998) and evidence of this effect is seemed to be equivocal (Nealey & Owen, 1970). Self-rating is also utilised in most prior management accounting research so as to preserve anonymity of the respondent, which may not be guaranteed by using alternative measures, for instance superior ratings (Chenhall & Brownell, 1988; Nouri & Parker, 1998).
CHAPTER THREE
RESEARCH FRAMEWORK:
AN INTEGRATIVE MODEL OF CPMS AND JOB PERFORMANCE

This section provides the discussion on the development of the research frameworks. The theory underlying the current research is described in the earlier part of this section, which is then followed by a detailed review of prior empirical studies by Hall (2008), Burney and Widener (2007) and Chong and Eggleton (2003) in the next part of the section. The integrated model of the current study is developed based on the research models of these prior studies.

3.1 UNDERLYING THEORIES

3.1.1 COGNITIVE MOTIVATIONAL THEORY

Management accounting-related research began to use cognitive psychology theory only in the 1970s, particularly to examine the extent of how well individuals subjectively process accounting information for planning and control judgements and decisions (Birnberg et al., 2006). Psychology theory has been adopted in much research in an organisational context to describe and predict the extent to which budgeting (Chenhall & Brownell, 1988; Chong & Chong, 2002; Chong et al., 2006) and performance evaluation influences individual minds and behaviour, particularly, decisions, judgments (Banker et al., 2004; Lipe & Salterio, 2002; Lipe & Salterio, 2000), satisfaction (Burney & Swanson, 2010) and stress (Burney & Widener, 2007; Hall, 2008).

Psychology is described as the science of human behaviour and human mind that includes attitudes, cognition and motivation. In management accounting research,
psychology theories are used rather than other social science theories as they focus on individual and subjective phenomena, such as mental representation. Psychology theory also assumes that individual behaviour is subject to individual mental representations. Out of all psychology theory subfields, most management accounting research mainly relies on three subfields of psychology theories: cognitive, motivation and social psychology (Birnberg et al., 2006).

Cognitive psychology describes the psychological processes that relate to human thinking, attention, knowledge, judgments, decisions and learning. Motivation psychology is the study of four psychological processes that includes the arousal, direction, intensity and persistence of effort that influence behaviour. Social psychology relates to how other people influence individuals’ minds and behaviour, understanding people, attitudes, social influence, social interaction and relationships. Based on these three subfields, the effect of management accounting practices is associated with motivation and informational effects (Birnberg et al., 2006).

Motivational effects of management accounting practices describe the extent to which practices influence objectively-measured outcomes and rewards through psychological processes (goal setting, aspiration, stress and fairness). The informational effect of management accounting practices relate to the influence of information provided by the practices and also how individuals use heuristics to seek and process information (Birnberg et al., 2006). Cognitive psychology theory can be used to explain how individuals subjectively process management accounting information in making, planning and controlling decisions and judgments (Birnberg, Luft and Shield, 2007).
Luckett and Eggleton (1991) reviewed research conducted in psychology and accounting. According to Luckett and Eggleton (1991), feedback has been viewed as a central component of an organisation's MACS and much of the research on system design has not explicitly considered the behavioural consequences of providing organisational members with feedback. Based on the review of research, four factors were identified to influence behavioural consequences of feedback, including: source identity, source attributes, nature of message and individual differences of locus of control and self-esteem. With regard to source of feedback, focus is paid to the interpersonal relationships between superiors and subordinates and between managers and accountants.

Outcome feedbacks help individuals to learn and to perform tasks more effectively. Task intrinsic motivation would be enhanced when delivering outcome feedback. Luckett and Eggleton (1991, p.388) argued that performing a task with no knowledge about the level of performance achieved, will give no indication about the amount of effort required and as a result performance will suffer (Luckett & Eggleton, 1991). Ilgen et al. (1979) had also claimed that feedback can increase the task intrinsic motivation. Perceptions about an individual response capability are closely related with psychological state such as feeling of competence. In order to feel the sense of competence, an individual must be able to judge his own performance.

Feedback is necessary as it can provide indications both from task and from others about competence. Feedback enhances subordinates' decision-making processes and provides incremental increase in task-relevant knowledge. Feedback represents three types of information to the individual: sense of competence, sense of personal control and distribution of extrinsic reward. To experience the sense of competence, individuals
must receive some feedback from other individuals or from the job. The feedback that is provided by individuals, the quality of performance judgement, depends upon individual characteristics, such as past experience with the job (Ilgen et al., 1979).

Collins (1982) examined the link between MAS and organisational control and revealed the existence of a role system in an organisational control system: he had suggested the importance of MAS to enhance organisation social control. Particularly, MAS is important in providing information relevant to individual role expectation in the organisation or business unit. Similarly, more comprehensive PMS will be able to provide relevant information useful for an individual to perform his job. Thus, in relation to the psychological theories, the link between CPMS and performance is likely to be explained by the cognitive and motivational mechanism (Collins, 1982; Ilgen et al., 1979; Luckett & Eggleton, 1991).

According to Atkinson et al. (1997), CPMS plays three important purposes in an organization: coordination, monitoring and diagnostic. Feedback from CPMS can play a monitoring role providing assessment of improvement in meeting strategic business objectives. The diagnostic role of CPMS is associated with feedback information that permits the assessment and refinements made to the causal links to achieve firm strategic objectives. In this study, cognitive motivational psychology theory is used to explain the relationship between CPMS and organisational commitment. Based on the theory, it is argued the information or feedback from the CPMS may influence individual cognition. The theory explains how individual cognitive processing of management accounting information influences individual behaviour. The information has positive influence on the managers’ motivation and may lead to enhanced managers’ commitment towards their organisation.
3.1.2 ROLE THEORY

In management accounting research, role theory is the first social psychology to be used in the research field. Based on the theory, individual behaviour is assumed to be influenced by role expectation and norms held by others. Role theory describes two concepts associated to management accounting research that are role conflict and role ambiguity (Birnberg et al., 2006). Role conflict is faced by individuals in the situation of conflicting inter- or intra-role expectations, which make it impossible to comply with the expectation placed on them. On the other hand, role ambiguity exists when there is uncertainty on the expected individual behaviour. Role ambiguity is analogous to job-relevant information, however the latter reflects the amount of information available to managers, whilst the former is the extent of managers’ understanding of their duties and responsibilities (Kren, 1992).

According to Khan et al. (1964), role conflict and role ambiguity are linked to the increase in stress, tension, and anxiety due to cognitive inconsistency that can result in negative implication such as aggressive action and communication, hostile feeling towards others, social withdrawal, job dissatisfaction, loss of self-confidence, self esteem, interpersonal and respect for others and psychological problems. Recent management accounting research investigates how role ambiguity and role conflict mediate the effects of management accounting information such as budgeting (Chenhall & Brownell, 1988; Chong & Chong, 2002; Chong et al., 2006; Marginson, 2006), performance evaluation systems and PMS (Burney & Widener, 2007; Hall, 2008) on job satisfaction and performance. In this research, using role theory as the basis of the research framework, the model describes how CPMS would influence managers’ role ambiguity and role conflict. This theory describes how feedback from PMS may
provide clear information about job expectation which may result in reduced role ambiguity and role conflict.

**3.1.3 SOCIAL LEARNING THEORY**

Rotter (1966) describes the locus of control dimension of personality based on social learning theory into internal and external locus of control. The dimensions are described based on the degree to which attribution of causality of behaviour is made either to one’s own actions or unrelated to one’s own actions. Internal locus of control is individuals who believe their destinies are under personal control. Whereas, external locus of control are individuals who believe their destinies are controlled by luck or chance or beyond personal control.

Social learning theory also describes internals as having a higher generalised expectancy such that attainment of targets are due to individual own efforts (Phares, 1968). On the other hand, externals possess lower generalised expectancy such that their own efforts are not fundamental for goal attainment. Based on prior psychology research, internals would search aggressively for task relevant information as compared to their external counterparts (Davis & Phares, 1967; Organ & Greene, 1974; Pines & Julian, 1972). In terms of information utilisation, internals are also found to be more efficient than externals (Lefcourt, 1982; Phares, 1968; Spector, 1982; Wolk & DuCette, 1974).

Incorporating the social learning theory into the research model, the model predicts how locus of control personality: internals and externals would influence the relationship between the use of CPMS information and managerial behaviour. CPMS is associated with positive managerial behaviour for internals rather than external. Internals having
higher generalised expectancy believe that own effort is crucial for reinforcement. Thus, internals may perceive that more task relevant information are important and the pathways towards reinforcement.

3.2 THE RESEARCH MODEL OF THE STUDY

The theoretical framework for this study is developed based on the cognitive motivational theory that is applicable to the context of the management accounting environment. Prior accounting literatures suggest that MAS information, individual cognitive ability and personality traits/decision maker characteristics may have an influence on individual performance (Chong, 1998; Chong & Eggleton, 2003; Gul, 1984). Thus, in the context of individual managers, information provided to an individual may lead to certain behavioural implications that can affect individual performance.

In this study, the relationship between MAS information is being further examined in the context of information from CPMS to include role stress dimensions (role ambiguity and role conflict), organisational commitment, locus of control and job performance. The research models developed in the research by Hall (2008), Burney and Widener (2007) and Chong and Eggleton (2003) will be integrated in developing the framework of current research.

3.3 PREVIOUS RESEARCH

Michelli and Manzoni’s (2009) argued that the evidence of benefits and limit of SPMS is still inconclusive. Research has also indicated contradicting research findings with further research investigating behavioural implications of SPMS (Micheli & Manzoni, 2009). Furthermore, there is lack of empirical research examining behavioural
consequences of SPMS (Burney & Widener, 2007; Hall, 2008; Webb, 2004). SPMS literatures have developed into a few streams of researches. The link between SPMS and organisational performance form one of the research streams. Based on the studies, most of the research findings indicate a positive link between SPMS and organisational performance. However, some research identified ambiguous findings.

Based on organisational theory, individual action is significant for the long-term success of the organisation (de Haas & Kleingeld, 1999; Otley, 1999). Furthermore research examining the link between SPMS and individual behaviour is still lacking, which has opened up another stream of research related to SPMS. This stream of research explored the behavioural implication of SPMS particularly related to the evaluative style. Research in this area focuses on the effect of SPMS on the managers as well as the superior. Despite the importance of SPMS identified to be associated with organisational performance, lack of empirical research investigates the effect of how the informational effect of SPMS influences managerial behaviour.

Behavioural consequences of CPMS have been explored in a few prior studies (Burney & Widener, 2007; Hall, 2008; Webb, 2004). The findings from these researches reveal that there is indirect relationship between PMS and managerial performance. The relationship is mediated by role clarity, empowerment, role ambiguity and job-relevant information. Thus, this study provides an extension of prior study to examine whether role stress dimensions (role ambiguity and role conflict) and organisational commitment mediate CPMS and performance relationship. Hall (2008) studied the relation between CPMS, role clarity, psychological empowerment and managerial performance. Based on PMS literature, Hall (2008, p.144), concludes that important characteristics of CPMS that provides “broad set of measures related to the most important parts of the SBU’s
operations and integrates measures with strategy and valued organisational outcomes, integration of measures across functional boundaries and the value chain.”

Specifically, Hall (2008) focuses on the decision-facilitating role of PMS and highlights the definition of CPMS on its informational basis. For his study, he uses that a definition of CPMS is “performance measures that provide more comprehensive performance information to managers, i.e. measures that describe the important parts of the SBU’s operations and link measures to strategy and across the value chain” (p.144). The managerial performance was self-rated and measured on SBU managers’ overall performance based on eight performance dimensions related to planning, investigating, coordinating, evaluating, supervising, staffing, negotiating and representing. The study focuses only on one sector of company, in which data was gathered from 83 SBU managers within Australian manufacturing organisations and had only managed to achieve 22.5% response rate.

As other variables in his study were measured using established instruments from prior studies, only CPMS was newly developed for his study to ensure the measure can capture the comprehensive PMS construct as the instrument by Hoque and James (2000), which was argued as unable to capture strategic linkages of more comprehensive PMS. Research models and hypotheses were tested using Partial Least Squares (PLS) regression. The result of the study shows that most of research hypotheses were supported by the analyses. Although the results identified positive correlation between CPMS and managerial performance, the findings revealed that CPMS was not significantly associated with managerial performance. This finding indicates no direct effect between CPMS and managerial performance, which had suggested the presence of a mediator between the two variables. The results also
indicate that the association between role clarity and psychological empowerment is partially supported.

For the mediator variable, role clarity, CPMS has a positive association with only goal clarity and has a weak positive association with process clarity. For the psychological empowerment, there is positive association of CPMS only with the meaning and impact dimensions of psychological empowerment. Only meaning has a positive association with performance, where the association between role clarity and empowerment is only partially supported. Thus, specifically, Hall (2008) concluded that CPMS is related to performance indirectly only through meaning dimension of psychological empowerment and goal clarity. In other words, the research suggests other intervening variables could have influenced on the relation between CPMS and performance. Hall (2008) had also suggested the newly developed measurement of CPMS construct to be validated further.

Another similar behavioural PMS-related research was by Burney and Widener (2007) and had examined the relation between SPMS and managerial performance. In the research they had also included the two mediating variable in the study: role stress and job relevant information. Findings find support for the relation between SPMS and both of the role stress dimensions: role ambiguity and role conflict. There is also a link identified between SPMS and JRI. Informative content of the CPMS, such as SPMS, lead to significant association between the two variables. His research reveals role ambiguity to have a mediating effect between SPMS and performance relationship. However, the results did not find any support in direct relations between JRI and role conflict on performance. This result suggests that other factors could have an influence in the relation between this role stress dimension and performance. Furthermore, a
considerable number of prior researches had found the link between role stress
dimension and employee commitment (Addae et al., 2008; Chong et al., 2006; Yousef,
2002).

Based on in-depth review of 76 empirical studies, Franco-Santos et al. (2012) developed
a conceptual framework for further understanding on the consequences of contemporary
performance measurement (PMS) systems and the theories underlying the research. As
depicted by the framework in Figure 3.1, the consequences of CPM are classified into
three categories: people’s behaviour, organisational capabilities and performance
consequences. The framework implies that CPM systems significantly affect people’s
behaviour. Particularly, consequences for people’s behaviour are comprised of people’s
specific actions and underlying cognitive mechanisms, such as motivation, perceptions
and cooperation. Their research also claimed that the extent to which the system
positively influences people’s behaviour is directly associated with how the system is
designed, developed, used and fits in the context it is operated (Franco-Santos et al.,
2012).
The conceptual framework developed by Franco-Santos et al. (2012) is as shown below:

![Conceptual Framework Diagram](image)

**Figure 3.1: Conceptual Framework developed by Franco Santos et al. (2012)**

Exploratory studies were also carried out by Burney and Widener (2007) to examine moderating effect of evaluation, complexity and experience in the relation between SPMS, JRI, role ambiguity and role conflict. Results show that managers are unable to fulfill job expectations due to incompatible demands with a high complexity of SPMS. This finding highlights the possibility of individual psychological differences, particularly; that personality of traits may influence the use of information from CPMS. As in research by Gul (1984), he implies that personality traits and cognitive style may influence the relationship between the use of accounting information and managers’ behaviour. Recent MAS research by Chong and Eggleton (2003) examine the three-way interaction between task uncertainty, personality variable, locus of control and decision facilitating role of management accounting system (MAS) affecting managerial performance. Their results suggest that "internal" managers improve their performance when they make more use of broad-scope MAS information for managerial decisions,
while "external" managers are insensitive to the degree of use of broad-scope MAS information for managerial decisions.

Hence, this research will extend the framework by Chong and Eggleton (2003), examining how individual differences, locus of control personality, would affect the link between broad-scope MAS information, such as CPMS, and individual performance. Particularly, this research examines how individual managers’ behaviour influences the use of information from PMS in managing the business unit. Furthermore, other traditional PM literatures as well as MAS information-related researches provide evidence that individual differences influence how managers use management accounting information (Brownell, 1981; Brownell, 1982; Chong, 1998; Fisher, 1996; Frucot & Shearon, 1991).

Extant research in this area has examined the link between SPMS and managerial performance based on role theory and goal-setting theory. This research will contribute to the literature of cognitive psychology theory and further the study of Hall (2008) and Burney and Widener (2007), examining the effect of CPMS on role stress and employee commitment. The study will also examine the effect of CPMS on these behavioural factors and will also identify how it affects job performance. The research model in Figure 3.2 shows the conceptual framework of the study. The framework is an extension of framework developed by Chong and Eggleton (2003) in prior studies on the MAS information and in strategic PMS (Burney & Widener, 2007; Hall, 2008). Recent in-depth reviews of prior literature on the consequences of contemporary performance measurement (CPM) systems also provide basis for the current study (Franco-Santos et al., 2012).
3.4 THE CURRENT STUDY

This research proposes that informational influence of one component of MAS: PMS, enhances job performance directly and indirectly via role stress and organisational commitment. Additionally, the study will also investigate the influence of individual differences in the relationships between CPMS and each of the variables, including role stress, organisational commitment and job performance.

Generally, this research aims to explore further the behavioural implications of CPMS, which includes factors such as role stress and organisational commitment, and how these behavioural factors influence job performance. Additionally, research will also determine whether personality variable, locus of control, has any influence in the relationship. Thus, this study proposes to fill the gaps in the existing literature on PMS:

1. This study examines the relationships between CPMS and another behavioural variable, organisational commitment, in addition to role stress which had been examined in prior empirical research on performance. Webb (2004) studied the behavioural implication of SPMS, which was then followed by Hall (2008), to provide empirical evidence on how informational characteristics of SPMS can influence goal commitment in the former research and role clarity and psychological empowerment in the latter research. This study will extend these research carried out by Hall (2008) and Burney and Widener (2007) by examining the effect of CPMS on two behavioural variables: manager’s role stress and commitment, on job performance. In these prior studies, Hall (2008) examined the mediating effect of role clarity and psychological empowerment on the relation between CPMS and managerial performance, while Burney and Widener (2007) examined both
dimensions of role stress (role ambiguity and role conflict) and job-relevant information (JRI) as intervening variables.

2. This study will also add significant knowledge to our understanding on the role of behavior variables such as commitment in the context of informational characteristics of PMS. Since prior researches on organisational commitment indicate information can enhance employees’ commitment, this research will extend prior study; it will examine the influence of CPMS informational characteristics towards employee commitment. In addition, research will also examine the relation between multidimensional constructs of role stress and unidimensional construct of commitment.

3. The current research will also extend prior research by examining moderating roles of personality variable, locus of control, in the relation between CPMS and each of the two behaviour variables: role stress and organisational commitment. Additionally, research will also examine the influence of locus of control in the relation between CPMS and job performance. Particularly, in prior MAS related research, personality variables such as tolerance of ambiguity and locus of control were identified to influence the relation between MAS or accounting information and individual performance (Chong, 1998; Chong & Eggleton, 2003; Gul, 1984). So far, the influence of locus of control personality has not been addressed in the context of the decision-facilitating role of PMS.

Based on the review of the literature, research on the behavioural consequences of PMS in the Malaysian context has yet to be published. Thus, this research would provide significant implications to extant empirical evidence on PMS research in Malaysia.
Additionally, this research is also important to suggest behavioural significance of adopting CPMS among the Malaysian companies.

3.5 DEVELOPMENT OF RESEARCH HYPOTHESES

The following model in Figure 3.2 represents the framework of the study:

![Diagram](image)

**Figure 3.2: Integrative Model of Comprehensive PMS and Job Performance**

Based on the research model, the links between independent, dependent, mediating and moderating variables are examined. The independent variable (IV) in this research is the comprehensiveness of PMS implemented by the company selected for the research and job performance is the dependent variable (DV). This research also includes two mediating variables: role stress and organisational commitment. According to Baron and Kenny (1986), moderator is a qualitative or quantitative variable that affects the direction and/or strength of the relation between and independent or predictor variable and a dependent or criterion variable.
On the other hand, mediator variable is described as a variable which explains how external physical events take on internal psychological significance and the variable explains how or why effects occur. Moderator will also specify when certain effects will hold (Baron & Kenny, 1986). This study intends to identify whether locus of control strengthens the relationship between CPMS, the mediators (role stress and organisational commitment) and job performance. The research will also investigate the relation between CPMS and job performance.

Prior PMS behavioural research has shown that through cognitive and motivational mechanism, CPMS can influence role clarity and psychological empowerment. Also Burney and Widener (2007) identified that job-relevant information (JRI) mediates the relation between CPMS, such as SPMS, and performance. These findings are consistent with prior studies which had highlighted the usefulness of feedback information, particularly the information provided by MAS. Prior researches suggest that PMS provides feedback information to SBU managers as well as the information result of the business operation-related performance (Collins, 1982; Hall, 2008; Ilgen et al., 1979; Luckett & Eggleton, 1991). Based on these studies, informational aspects of PMS or MAS would lead to higher motivation and performance.

Meta-review analysis researches related to organisational commitment had also indicated that organisational commitments are not only influenced by role characteristics but also an individual sense of competence (Morris & Sherman, 1981), goal clarity and intrinsic motivation (Moon, 2000). Thus, research predicts that more comprehensive PMS would be able to enhance individual commitment towards the organisation. In fact, Webb (2004) in his research had presented how SPMS can enhance goal commitment. She highlighted that the SPMS feature would be able to
enhance managers’ beliefs in their ability to achieve the PMS goals. As organisational commitment is defined as the acceptance of organisational goals and willingness to exert effort on behalf of the organisation (Angle & Perry, 1981; Porter et al., 1974), thus these motivational effects of PMS suggest that there is an association between CPMS and organisational commitment.

The following are the equations relating to the mediating and interaction effects based on the research model:

**Mediating effects:**

**Equation 1:**

\[
\text{PERF} = \text{CPMS} + [\text{RA} + \text{OC} + \text{RC}]
\]

= Direct influence + [indirect influence]

**Moderating effects:**

**Equation 1:**

\[
\text{PERF} = b_0 + b_1\text{LOC} + b_2\text{CPMS} + b_3\text{LOC} \times \text{CPMS} + e
\]

**Equation 2:**

\[
\text{RA} = b_0 + b_1\text{LOC} + b_2\text{CPMS} + b_3\text{LOC} \times \text{CPMS} + e
\]

\[
\text{RC} = b_0 + b_1\text{LOC} + b_2\text{CPMS} + b_3\text{LOC} \times \text{CPMS} + e
\]
**Equation 3:**

\[
OC = b_0 + b_1LOC + b_2CPMS + b_3LOC \times CPMS + e
\]

Where,

- RA = Role ambiguity
- RC = Role conflict
- OC = Organisational commitment
- PERF = Job performance
- CPMS = Comprehensive PMS
- LOC = Locus of control
- e = error term

### 3.5.1 DEFINITIONS AND OPERATIONALISATIONS OF CONSTRUCTS

This section includes definitions and operationalisations of the constructs adopted for this study. Further discussion regarding the details of the measurements of constructs will be in Chapter 4, the Research Methodology chapter.

**a. COMPREHENSIVE PMS (Independent variable)**

Prior studied examined the comprehensiveness of PMS based on measurement diversity (Ittner et al., 2003b; Van der Stede et al., 2006). However, these prior researches have not taken into consideration the strategic linkages of the PMS in measuring the comprehensiveness of the PMS. Based on his review of prior studies, Hall (2008, p.144) concluded that CPMS can be characterised as having a broad set of measures related to the important parts of the organisation, the integration of measures with strategy and valued organisational outcomes, and the integration of measures across functional
boundaries and the value chain (Chenhall, 2005; Henri, 2006; Ittner et al., 2003b; Malina & Selto, 2001; Malmi, 2001; Neely et al., 1995; Webb, 2004).

Recent research by Van der Stede (2006) had also advanced the understanding on the PMS design and had looked at CPMS as an extensive PMS that includes objective and subjective non-financial measures. In this study, definition of CPMS will follow a definition proposed by Hall (2008) which states that a CPMS is one that provides more comprehensive performance information to managers, i.e. measures that fully describe the SBU’s operations and links to strategy and across the value chain. Conversely, less comprehensive PMS is one that provides less comprehensive performance information to managers, i.e., measures that only partially describe the SBU’s operations and contain few (if any) links to strategy and across the value chain.

b. Role stress (Mediating variable)

According to role theory, role stressor comprises primarily of role ambiguity and role conflict. Numerous prior researchers have used the Rizzo et al. (1970) scale to measure role conflict and role ambiguity and also the combination of both measures to form one operationalisation of role stress (Addae et al., 2008; Burney & Widener, 2007; Dale & Fox, 2008; Yousef, 2002).

Role ambiguity

Role ambiguity is the degree to which there is lack of clarity regarding the expectations associated with a role, methods for fulfilling known role expectations, and/or the consequences of role performance (Dale & Fox, 2008; Rizzo et al., 1970). It occurs when employees perceive lack of information available in the behavioural requirement to perform their responsibilities. This research will adopt the definition of role
ambiguity introduced by Rizzo et al. (1970), who defined role ambiguity as a lack of clear information and consistent information available to a person in a given organisational position showing what they are supposed to do.

**Role conflict**

In this study role conflict is defined as a degree of incompatibility or incongruity (between job tasks, resources, rules or policies and other persons) resulting in inconsistent behavioural expectations of an individual (Dale & Fox, 2008; Rizzo et al., 1970). Role conflict occurs due to incompatible demands that can result in inability of the employee to carry out duties that are expected of them (Rizzo et al., 1970; Van Sell et al., 1981).

c. **Organisational commitment (Mediating variable)**

There are a few conceptualisations and measurements of the commitment construct. Indeed, a substantial number of prior researches identified significant antecedents and correlates variables of organisational commitment. Based on a review of prior researches, the antecedents seems to be varied and inconsistent which is believed to stem from a different way commitment was defined and operationalised (Reichers, 1985) p.468. The first definition is based on the idea of side bets from Becker’s (1960) work whereby individuals relate to irrelevant aspects of their lives to continue membership with an organisation. Secondly, definition focuses on behaviours that lead to attribution of commitment made to maintain consistency between one’s behaviour and attitudes. Thirdly, definition is concerned with processes of identification and the dedication of one’s own energies to the organisation’s goals and values.
Organisational Commitment Questionnaire (OCQ) developed by Porter et al. (1974) is the most popular measures of organisational commitment. The instrument reflects an individual willingness to work towards and accept organisational goals (Reichers, 1985). According to Porter et al. (1974), commitment can be characterised by 3 factors; a belief in and acceptance of organisational goals and values, the willingness to exert effort towards organisational goals accomplishment and strong desire to maintain organisational membership. Mowday et al. (1982) then distinguished commitment into attitudinal commitment and behavioural commitment. Attitudinal commitment reflects the individual’s identification with organisational goals and his or her willingness to work towards them while behavioural commitment represents attributional that bind individual to behavioural acts.

Organisational commitment measured by OCQ is synonymous with attitudinal commitment (Reichers, 1985). Further, the concept most commonly adopted has been the affective or attitudinal commitment (Mathieu & Zajac, 1990). This concept will be the one adopted in this study. According to Meyer and Allen (1984) the organisational commitment questionnaire (OCQ) is closely referred to as affective commitment. Dunham et al. (1994) had also reported both the scale developed by Mowday et al. (1979) and affective commitment scale by Allen and Meyer (1990) provide the same information (Meyer & Allen, 1984). However, Reichers (1985) claimed some problems with the measurement and meaning of a construct as such six negatively-worded items in OCQ relating to the “intention to quit”. Thus, the measures developed by Mowday et al. (1979) are shorter and more appropriate to measure affective commitment (Dale & Fox, 2008; Reichers, 1985).
d. Job performance (Dependent variable)

Blumberg and Pringle (1982) claimed that since the important dimension of performance has been ignored by prior studies, they suggested a different approach to the understanding of job performance and proposed a three-dimensional interactive model of work performance. Furthermore, the motivation and ability concepts were argued to be inadequate and unable to account for the elements of the external environment. Based on the model, they describe a probable form of the interactions. The broad range of variables posited to be related to work performance was divided into three general dimensions: capacity to perform, willingness to perform and opportunity to perform (Blumberg & Pringle, 1982).

The model suggests that individuals will engage in certain behaviour depending on the capacity and willingness to act in a certain way. Capacity refers to the psychological and cognitive capabilities which enable an individual to carry out the job efficiently. Willingness represents the effect on behaviour of job satisfaction, personality, attitudes, norms, values, status, anxiety, task characteristics, job involvement, perceived role expectations, self-image, need states and closely related concepts. Opportunity has a broad definition which comprises forces which surround an individual and the task that enables or constrains the task performance, and the forces are beyond personal direct control.

As a consequence of the approach suggested and discussed by Blumberg and Pringle (1982) regarding the dimension of work performance, this study anticipates few factors which include the informational characteristics of PMS, role stress, organisational commitment and personality variable locus of control, would have some implication on job performance. In this research, job performance is measured using a modified eight-
item scale from Govindarajan and Gupta (1985) and Nouri and Parker (1998). This scale requires the respondent to assess their performance based on eight performance dimensions, which include personnel development, product quality and cost reduction. Respondents will have to indicate on a seven-point Likert scale ranging from one (well below average) to seven (well above average) the individual’s perceived performance on each item. Since different business units have different strategic missions, therefore to evaluate a business unit’s performance, hence employee’s performance, actual performance is compared with the expectations being incorporated in the subunit’s strategic objectives.

e. Locus of control (Moderating variable)

Locus of control theory differentiates individuals into two types: internal LOC and external LOC. Internals are those individuals who believe that their destinies are under their personal control. Thus, they perceive there is a strong link between their own actions and efforts and the consequences (Thomas et al., 2006). Since internals believe that they determine or are the master of their fate, thus they have more confidence, are alert and directive, in attempting to control their external environment or events that occur in their lives.

In contrast, externals are those who believe that their destinies are controlled by luck or chance or beyond personal control (Rotter, 1966). Particularly, externals are those who perceive that they do not have control of their fate and perceive themselves in a passive role with regard to the external environment (Thomas et al., 2006). These definitions of LOC will be adopted for the current study. Furthermore, Judge and Bono (2001) in their research, conclude that LOC plays a main function in working environment and has a
strong link with work outcomes. Further, their research also suggests LOC is among the important predictors of job satisfaction and job performance.

3.5.2 DEVELOPMENT OF RESEARCH HYPOTHESES

This research relies on the theory drawn from cognitive and motivation psychology theory. The theory describes how individual cognitive processing of management accounting information influences individual behaviour. Luckett and Eggleton (1991) claim that the feedback phenomenon is complex, whereby the behavioural implications of providing feedback to organisational members are influenced by source of feedback, nature of message and individual differences. Role theory and social learning theory will also be used to support the relationship exists among the constructs in the study.

From these bases, this study will limit itself to consideration of CPMS, role stress, organisational commitment and job performance. Additionally, a personality variable from social learning theory will also be part of the construct examined in this research. Based on the theoretical framework developed in Figure 3.2, it proposes hypotheses to support the research model. The hypotheses are sectioned into three parts: firstly, to propose the direct effect between constructs followed by indirect effect, and finally the interaction effects between constructs.

3.5.2.1 DIRECT EFFECTS BETWEEN CONSTRUCTS

a. Comprehensive PMS and role stress (Link 1)

The model proposed in Figure 3.2 suggests that CPMS is associated with reduced level of role stress, particularly CPMS is expected to reduce the managers’ level of role stress. Role theory states role stressors comprise of role ambiguity and role conflict (Burney & Widener, 2007; Dale & Fox, 2008; Yousef, 2002). Role ambiguity exists
when an individual perceives that there is lack of clarity in the behavioural requirement in their job (Rizzo et al., 1970). Role conflict occurs when behaviors expected of an individual are inconsistent (Rizzo et al., 1970).

According to Atkinson et al. (1997), CPMS plays an important role in coordinating, monitoring and diagnostic in an organisation. Particularly, the monitoring role of CPMS would be able to provide feedback on assessment of progress in achieving organisational goals. Ilgen et al. (1979) suggest that feedback from MAS (internal source) can provide comprehensive information that can clarify the role of managers. Since PMS is part of MAS, more comprehensive PMS would provide comprehensive information to clarify role expectation of the managers. Thus, this research anticipates more comprehensive PMS would provide more information to the managers to reduce both role conflict and role ambiguity which will result in a reduction of role stress.

Additionally, Ilgen et al. (1979) argue that feedback would affect individual behaviour as it is necessary for effective role performance. It is also highlighted that feedback can help individuals to learn and to perform their tasks more effectively. Similarly, psychology research by Colin (1982) in the context of role theory contends that MAS can provide information on the role expectation of an individual and has a motivational effect to influence performance. Further, Burney and Widener (2007) conducted PMS-related research which provided evidence of the link between CPMS/SPMS and JRI. Particularly, findings of their research indicate positive direct and indirect association between SPMS and role stress (role ambiguity and role conflict).

SPMS has a direct negative relationship with role ambiguity and role conflict. Additionally, their findings also indicate the relations between SPMS and each
dimension of role stress via enhanced JRI. SPMS enhances JRI and subsequently leads to reduced role ambiguity and role conflict (Burney & Widener, 2007). Sprinkle (2003) also highlighted the two functions of performance measurement as decision influencing and decision facilitating roles. A decision-facilitating role refers to the function of performance measurement for providing relevant information to guide managers in decision-making (Kren, 1992; Sharma, 2009; Sprinkle, 2003).

Another PMS-related research by Hall (2008) provides evidence that revealed the importance of CPMS for role clarity. His research finds support for the relation between CPMS and managerial performance through goal clarity and process clarity. Furthermore, Rizzo et al. (1970) provide empirical evidence that formalisation of goals was negatively related to role conflict and role ambiguity. In fact, their research had also identified goal clarity is negatively related to role conflict. This finding is also supported by Roger and Molnar (1976) who also identified a negative relation between measure of formalisation (goal clarity and formalisation index) and role ambiguity; however, no relation was identified with role conflict. Since more comprehensive PMS provides formal goals which are set in advance and in a written format, thus research proposes more comprehensive PMS would reduce role ambiguity and role conflict.

In traditional PM literature, Chong and Eggleton (2006) found role ambiguity to mediate the relation between budget participation and job performance. Thus, research proposes that the cognitive role of CPMS is expected to reduce subordinates’ levels of role stress, particularly, role ambiguity and role conflict, and consequently lead to enhanced job performance. Accordingly, the following hypothesis is proposed:

**H1:** There is negative relation between CPMS and role ambiguity

**H2:** There is negative relation between CPMS and role conflict
b. Role stress and job performance (Link 4)

As mentioned before, major concepts from role theory are the two primary role stressors: role conflict and role ambiguity (Burney & Widener, 2007; Schuler et al., 1977). In relation to these concepts, since organisational theory was first introduced, extensive studies have been conducted focusing on the relationship between role ambiguity, role conflict and ranges of their antecedents, consequences and correlates (Kahn et al., 1964). For the correlates of role ambiguity and role conflict, significant meta-review analyses examined the relationship between both constructs and the job satisfaction and job performance.

Earlier research identified inconsistent findings between these role constructs and individual performance (Schuler et al., 1977). However, recent meta-review researches generally found that there is negative relation existing between job performance and each of role ambiguity and role conflict (Jackson & Schuler, 1985; Tubre & Collins, 2000). Meta-analysis investigation by Fisher and Gitelson (1983) managed to clarify confusion of prior findings. Based on the results of 43 past studies, it was observed that role ambiguity and role conflict are negatively and consistently related to job satisfactions.

Jackson and Schuler (1985) meta-analysed role constructs and their correlates, including behavioural reaction (performance). Overall their study concludes that both role constructs are negatively related to performance. Results show both constructs were negatively related to job performance for performance rating by superiors or peers. However, only role ambiguity was found to have a strong relation with self-ratings performance. A more comprehensive meta-analysis was by Tubre and Collin (2000),
who also supported findings by Jackson and Schuler (1985). The result reported role ambiguity to have a stronger relation with performance than role conflict.

Cognitive and motivational theories may provide explanation for the relation between both role constructs and performance (Tubre & Collins, 2000). Cognitive perspective suggests the negative relation between role constructs and performance is related to lack of information and information overload experienced by an individual. On the other hand, motivational perspective views both role constructs will result in reduced performance, because role stressors may reduce effort-to-performance and performance to reward expectancies (Tubre & Collins, 2000).

Additionally, PMS-related researches provide consistent findings to the link between role constructs and performance (Burney & Widener, 2007; Hall, 2008). According to Sawyer (1992), role ambiguity is conceptually similar to role clarity. Hall (2008) found role clarity fully mediates the relation between CPMS and managerial performance. However, between the two dimensions of role clarity, only goal clarity has a positive association with performance but not process clarity. Similarly, the research by Hall (2008), Burney and Widener (2007) also found role ambiguity to have a negative relationship with managerial performance, yet no support was found for the link between role conflict and performance.

Budgeting literature which examined the cognitive effect of participative budgeting on role ambiguity, also found a negative relation between role ambiguity and job performance (Chong et al., 2006). Since there appears to be strong theoretical and empirical evidence pertaining to the negative effect that role constructs have on job performance, the following hypothesis is proposed:
H3: There is negative relation between role ambiguity and job performance

H4: There is negative relation between role conflict and job performance

c. Comprehensive PMS and organisational commitment (Link 2)

The objective of implementing CPMS is to motivate managers to engage in actions which are consistent or align with the strategy of the organisation (Kaplan & Norton, 1996). Porter et al. (1974) and Mowday et al. (1979) defined organisational commitment as the strength of an individual’s identification with and involvement in a particular organisation. However, the conceptualisation of organisational commitment has developed and is argued to be comprised of three components: continuance commitment, normative commitment and affective commitment (Allen & Meyer, 1990; Jaros et al., 1993). Continuance commitment suggests that employees remain with their organisation because they need to. With normative commitment, employees stay because they feel they are obligated to. The third concept is affective commitment and the most widely adopted concept (Cohen, 1993). This concept is the one being adopted in current study which suggest that employees will remain in the organisation because they want to.

Prior PMS related research suggests positive implication of CPMS. According to Burney and Widener (2007) the measures contained in SPMS provide useful job-relevant information to a manager. Job relevant information is related to decision-facilitating information which is useful to aid managers in decision making (Kren, 1992). Recent researches indicate cognitive influence has certain implications on employees’ commitment toward the organisation. Task-relevant information available to employees can influence their commitment. Additionally, Addae and Parboteeah (2006) examined mediating effect of organisational commitment in the relation between
organisational information and job satisfaction. According to Addae and Parboteeah (2006), providing task-relevant information can actually enhance employee organisational commitment. As employees receive information concerning the organisation, such as their job and working conditions, this information helps them to identify with the organisation, cope and adjust within the organisation (Addae & Parboteeah, 2006; De Ridder, 2004; Trombetta & Rogers, 1988).

An SPMS also provides managers with feedback information on progress relative to objectives (Atkinson et al., 1997; Kaplan & Norton, 1996). According to prior literature, feedback from MAS can enhance intrinsic motivation, as the information will provide a sense of capability, which is associated with a feeling or judgement of competence (Ilgen et al., 1979; Luckett & Eggleton, 1991). Prior literature also asserts that affective commitment is strengthened by work experiences that contribute to employees’ comfort in the organisation (i.e. role clarity) in addition to a sense of competence and self-worth (i.e. feedback) (Allen & Meyer, 1990; Meyer & Allen, 1997; Meyer et al., 1998). PMS-related research by Hall (2008) has also identified positive behavioural implication of CPMS. More comprehensive PMS will provide adequate performance information to the managers, which will result in higher intrinsic motivation and enhance the development of psychological empowerment.

Additionally, those who have high intrinsic motivation are likely to have high level of organisational commitment (Moon, 2000). Gist and Mitchell (1992) contend that information would enhance manager sense of competence as the information is able to improve understanding of their job, the convolution and the work environment. Particularly, CPMS was also found to enhance the sense of competence as CPMS was able to provide better information to the managers about their task and their work.
environment. Sense of competence is a significant predictor of organisational commitment (Morris & Sherman, 1981). Thus, based on the above discussion, the following hypothesis is proposed:

**H5: There is positive relation between CPMS and organisational commitment**

d. Organisational commitment and job performance (Link 5)

Organisational commitment is described as a strong belief in and acceptance of organisational goals and values, as well as being willing to contribute effort on behalf of the organisation (Angle & Perry, 1981; Porter et al., 1974). Although several prior literatures documented a positive relation between organisational commitment and job performance (Meyer et al., 2002; Randall, 1990), other research found inconsistent findings. Steers (1977) found no direct or consistent relation between commitment and job performance. In recent years, employees’ commitment to the organisation was found to exist in many forms.

Organisational commitment was conceptualised by Meyer and his colleagues into three different psychological states: affective, normative and continuance commitment. Each nature of commitment leads to different implication on employees’ work behaviour, mainly in terms of job satisfaction and performance (Meyer et al., 2002). Affective commitment correlated positively with all three measures of performance, job satisfaction, composite performance and overall performance as affective commitment could be associated with intrinsic values in employees to work towards organisational success (Meyer et al., 1989).

Also claimed by Randall (1990) was that inconsistencies identified by prior research between job performance and organisational commitment are due to different
conceptualisations of organisational commitment. She found a positive relation between organisational commitment and job performance. Additionally, conceptualisation based on “attitudinal” or affective commitment has significant relation with work outcomes (Randall, 1990). Meta-analytic investigation by Mathieu and Zajac (1990) who distinguished between commitment into attitudinal commitment and calculative commitment, identified a positive relation between commitment and job performance.

Prior budgeting literatures had also provided evidence of a positive link between commitment and performance (Chong et al., 2006; Nouri & Parker, 1998), providing empirical evidence that organisational commitment is associated with performance. PMS-related researches identified organisational commitment positively associated with job satisfaction (Lau et al., 2008; Sholihin & Pike, 2009). In addition, Lau and Moser (2008) also found an association between organisational commitment and job performance. Thus, based on the above discussion, the following hypothesis is proposed:

**H6: There is positive relation between organisational commitment and job performance**

e. **Role stress and organisational commitment (Link 3)**
Considerable prior studies have established a direct and negative link between role stress and organisational commitment. Further, recent researches that used Rizzo’s scale have also combined role conflict and role ambiguity to form one operationalisation of role stress (Addae et al., 2008; Dale & Fox, 2008; Yousef, 2002). Addae et al. (2008) found that role stress (role ambiguity and conflict) were negatively associated with the two components of organisational commitment: affective and normative commitment. On the other hand, Dale and Fox (2008), who had used the short item commitment
scale, had also concluded to the same finding. Although, Yousef (2002) found role ambiguity to directly and negatively influence affective and normative commitment, the relation was weak with role conflict.

Review of meta-analysis literatures, particularly analysing prior research related to role stress, generally found that that there is negative relation between role stress dimensions and commitment (Fisher & Gitelson, 1983; Jackson & Schuler, 1985). However, consistent with Rizzo et al. (1970) and Van Sell et al. (1981), both analyses found that the negative relation is stronger with role ambiguity than role conflict. Similarly, prior meta-analysis related to organisational commitment has also concluded similar findings (Mathieu & Zajac, 1990; Meyer et al., 2002). Interestingly, Morris and Sherman (1981) found somewhat contradictory findings, whereby role conflict emerged as a significant predictor of organisational commitment. In contrast, role ambiguity failed to make a significant contribution to the variation explained in organisational commitment.

Budgeting research by Chong, Eggleton and Leong (2006) identified a negative association between role ambiguity and organisational commitment. When subordinates experience low ambiguity, the level of organisational commitment will increase. Analysis of antecedent of organisational commitment by Ketchand and Strawser (2001) shows that role states (role ambiguity/clarity and role conflict) have influence on organisational commitment. The following hypothesis is proposed:

**H7: There is negative relation between role ambiguity and organisational commitment**

**H8: There is negative relation between role conflict and organisational commitment**
f. Comprehensive PMS and job performance

Prior literatures suggest that more comprehensive PMS provides SBU managers with richer and more complete feedback about SBU operations and results (Chenhall, 2005; Hall, 2008; Malina & Selto, 2001). Managers who obtain richer and more complete feedback should be able to make better decisions. SPMS enhances managerial performance through JRI, which reduces levels of both role ambiguity and role conflict (Burney & Widener, 2007). Managers who use BSC (two characteristics: perspective framework and strategy link) establish strong connections with strategy and are better informed about action-desired results with less ambiguity. Additionally, inclusion of non-financial measures in BSC categories positively related to job satisfaction (Burney & Swanson, 2010).

Broad-scope MAS information is associated with perceived environmental uncertainty (PEU), whereby there is increase in usefulness of broad-scope MAS information when environmental uncertainty increases (Chenhall & Morris, 1986). Gul and Chia (1994) and Chong (1996), showed that under high uncertainty, broad-scope of MAS information (include financial, non-financial and future management accounting information) is effective for managerial decisions and hence enhance managerial performance. Blumberg and Pringle (1982) developed an interactive model of work performance which suggests work performance is being influenced by capacity, willingness and opportunity to perform. Blumberg and Pringle (1982) describe a capacity to perform as a physiological and cognitive capabilities that enable an individual to perform a task effectively. Specifically, capacity includes the effects of individual's knowledge that help an individual in performing the task. Opportunity consists of field of forces surrounding a person and his or her task and that are beyond the person's direct control that enables the person's task performance.
According to Blumberg and Pringle (1982), information is one of the variables comprised in the opportunity to perform a dimension that interacts with capacity and willingness to make individual performance more probable. But, like willingness and capacity, opportunity alone cannot ensure performance. Based on this finding, the research proposes that managers will perform better when information is available to them to perform their job. Thus, the more comprehensive the PMS, the more information is provided to managers that leads to enhancing their job performance. Accordingly, the following hypothesis is proposed:

**H9: There is positive relation between CPMS and job performance**

### 3.5.2.2 INDIRECT EFFECTS BETWEEN CONSTRUCTS

Preceding sections have provided discussions which propose the following: First, hypothesis indicated by Link 1 suggests that CPMS could be related to reduction in role stress (role ambiguity and role conflict) which subsequently could lead to enhancing organisational commitment and job performance (Link 3 and 4). Secondly, Link 2 proposes CPMS may be related to organisational commitment. Thirdly, organisational commitment may influence job performance (Link 5). These links propose that the relationship between CPMS and job performance could be indirect via mediating variables of role stress dimensions (role ambiguity and role conflict) (Link 1 and Link 4) and organisational commitment (Link 2 and Link 5).
The links between variables are as shown in Figure 3.3 as follows:

![Integrative Model Showing Proposed Indirect Effects between Constructs](image)

**Figure 3.3: Integrative Model Showing Proposed Indirect Effects between Constructs**

### 3.5.2.3 INTERACTION EFFECTS BETWEEN CONSTRUCTS

The relations between a CPMS and each of role stress dimensions, job performance and organisational performance may be moderated by personality of traits: LOC. According to social learning theory, individual managers can be distinguished into internal and external managers.

**g. Moderating effect of LOC (CPMS and role stress)**

Organisational factors have a significant influence on individual role ambiguity and role conflict. Apart from this factor, personal characteristics may also contribute to the differences in the way individuals act in different situations. Particularly, LOC is the most common personality variable examined in psychology and social science research.
(Hyatt & Prawitt, 2001; Rotter, 1990). A meta-analytic review by Jackson and Schuler (1985) found there are correlations between LOC and each role construct: role ambiguity and role conflict. Positive correlations indicate that high ambiguity and conflict scores are associated with external locus of control.

This finding is justified by Organ and Greene (1974), who suggest internals experience less role ambiguity as they tend to be better informed about their occupation than externals. Internals experience less role conflict as they rely more upon self-generated role definitions to bring clarity and consistency to a particular situation. Internal locus of control managers are also described as having more ability to exercise control over their environment (Anderson, 1977). Thus, they were found to perceive less stress, employ more task-centered coping behaviours and employ fewer emotion-centered coping behaviours than externals (Anderson, 1977).

Research in a non-western culture like Taiwan indicates LOC plays an important role in predicting levels of stress. Findings indicate individuals with higher internal LOC are more likely to have lower job stress (ambiguity and conflict) as they have a more positive view of their work role and perceive it as easy to cope with stress (Chen & Silverthorne, 2008). Thomas et al. (2006) argued that LOC is related to attitudinal and behavioural actions mainly through cognitive processes. Internals were found to have less stress as they have strong sense of personal control. Hence, the following hypothesis is proposed:

**H10: LOC moderates the relation between CPMS and role ambiguity**

**H11: LOC moderates the relation between CPMS and role conflict**
h. Moderating effect of LOC (CPMS and organisational commitment)

Cognitive process related to self-evaluation suggested by Thomas, et al. (2006) strongly suggests a moderating effect of LOC in the link between CPMS and organisational commitment. It is also argued that internals are more sensitive to information relevant to self-worth. Positive self-worth or evaluation of work roles is associated to more positive affective reaction such as satisfaction with job and greater affective commitment. Thomas, et. al. (2006) found that internal LOC is related to variable reflecting commitment includes affective organisational commitment. Internal is positively associated with affective organisational commitment. The link between LOC and attitudinal and behavioural outcomes exist mainly via cognitive processes of self-evaluation. Externals have lower commitment as they are insensitive to information of self-worth compared to internals, who are sensitive to evaluation of self-worth.

Meta-analysis research by Luthan, et al. (1987) also concludes to similar finding. The study examined the relation between the three components of commitment and antecedent variables (individual differences variables), which indicates external locus of control correlated negatively with affective commitment (Meyer et al., 2002). This finding is consistent with Luthan, et al. (1987), who found internal and not external LOC to have a direct relation with organisational commitment. Internal LOC is associated with affective commitment as internals have more satisfaction with the work situation (Spector, 1982) and they perceive that they have greater control over their environment (Rotter, 1990). Thus, the following hypothesis is proposed:

**H12: LOC moderates the relation between CPMS and organisational commitment**
i. Moderating effect of LOC (CPMS and job performance)

Prior accounting literature suggests that individual differences affect how managers use information (Brownell, 1981; Chong & Eggleton, 2003). Particularly, in budgeting literature, Brownell (1981) found this personality variable significantly interacts between the traditional PMS and performance. Internals tend to respond differently towards information compared to externals. There is significant positive effect of traditional PMS on managerial performance for internals, however the effect was negative to externals. Review of research in psychology and accounting by Luckett and Eggleton (1991) identified locus of control as one of the four factors influencing behavioural consequences of feedback. Internals would be more likely to initiate remedial action rather than externals under high environmental uncertainty. Thus, it is proposed that individual differences such as LOC, internals and externals would influence feedback from CPMS differently to affect individual outcomes.

Furthermore, as compared to externals, psychological studies had also found internals to be more insistent in searching for task-relevant information (Davis & Phares, 1967; Organ & Greene, 1974; Pines & Julian, 1972). Internals are also more superior in processing relevant information as they are better at identifying relevant information for goal attainment and more efficient in utilising information (Phares, 1968; Seeman, 1963; Spector, 1982; Wolk & DuCette, 1974). This is due to the sense of objectives and value by internals, which is better than externals (Seeman, 1963). Further, similar to Phares (1968), Lefcourt (1982) also suggest the internal manager is a better user of memorised information to solve complex problems than externals.

Feather (1968) investigated how individual differences, internal and external, influence feedback and performance. Particularly, internals were argued to be more likely to
initiate remedial action due to feedback. Furthermore, internals are more open to feedback than externals. Thus, they tend to make more changes and adjust their expectation more appropriately than externals. Hence, it is anticipated that the implementation of CPMS would benefit the internal manager more than external, as such research proposes that feedback or information from CPMS will result in better performance for the internal managers rather than external managers.

Chong and Eggleton (2003) examined the decision-facilitating role of MAS and managerial performance. According to Chong and Eggleton (2003, p. 168), integrated reporting such as BSC is an assemblage of a broad scope of information. The use of broad-scope MAS information would improve internal manager performance. However, the use of the information is insensitive to external managers. This evidence strongly suggests LOC to moderate the relation between broad scope of information, such as CPMS, and job performance. Hence, consistent with prior study, the relationship between CPMS and managerial performance is anticipated to be more significant for internal managers than external managers (Chong & Eggleton, 2003). Thus research proposes the following hypothesis:

**H13: LOC moderates the relation between CPMS and job performance**
CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter will provide the detailed description and justification of the research methodology employed in the research. This chapter will begin with the research design which discusses the purpose of the study (descriptive research or survey, research approach and hypotheses testing), the selection of sample, sampling design (type of sample used) and unit of analysis (level at which data will be analysed) employed in current study. This explanation is followed by detailed explanation of the data collection, measurement of variables and finally, description on the type of data analysis relevant to the current research.

Cavana, Delahaye and Sekaran (2001) provide detailed definition of a research as an organised, systematic, data-based, critical, objective, scientific inquiry or investigation into a specific problem or issue, with the purpose of finding solutions to it or clarifying it. Thus the main objective of a research is to collect relevant information to enable investigation to be conducted to find solution to the problem. This objective would be accomplished if an appropriate research method is engaged to ensure the information is accurate and relevant to the problem examined. Methodology is defined in detail by Kerlinger (1986) as the ways of stating the research problem, hypotheses, method of observation, data collection, variables measurement and techniques of analysing data.

4.2 DATA COLLECTION METHODS

This research adopts mixed method as the research design. Hence, the data utilised in this study consists of both quantitative and qualitative data which was gathered using a
questionnaire survey and semi-structured interviews respectively. The data collection process was conducted in two phases: firstly, data for this study was collected using a questionnaire survey as the main data collection method. The quantitative data was collected using a self-administered questionnaire survey for the purpose of hypotheses testing to examine the relation between CPMS and behavioural implications: role stress dimensions (role ambiguity and role conflict), organisational commitment and individual outcomes.

The second phase of the data collection process was to gather the qualitative data. The post-survey semi-structured interviews were conducted to obtain further insights and understanding into the hypothesised relationship, particularly regarding the issues related to the behavioural consequences of CPMS towards managerial outcome. Additionally, the data gathered from the interview can also supplement the survey findings and can provide explanation on any unanticipated results.

4.3 MIXED METHODS

Mixed method research strategies refer to combining qualitative and quantitative methods. This method has a useful purpose to maximise the strengths and minimise the weaknesses of qualitative and quantitative research strategies. This method is regarded as more practical and applicable in conducting a study in social sciences rather than employing a single approach (Bahari, 2010). According to Creswell (2003), there are a few criteria in choosing a mixed method approach as shown in Table 4.1. The following matrix indicates four decisions considered in determining a mixed method strategy of enquiry:
Firstly, the implementation points out either both quantitative data and qualitative data is collected in phases (sequentially) or data is gathered at the same time (concurrently). Secondly is the priority in the choice of strategy. This involves whether greater priority is allocated to the quantitative or the qualitative approach. Next is the integration which represents the phases where the data is mixed. Integration of the two types of data might take place at several phases in the research process: the data collection, the data analysis, interpretation or combination of places. Finally, the researcher needs to consider whether larger, theoretical perspective guides the entire research design implicitly or explicitly.

The strategy of inquiry for this research is sequential explanatory strategy, which is known as the most straightforward out of the other five mixed method approaches (others are: Sequential exploratory strategy, sequential transformative strategy, concurrent triangulation strategy, concurrent nested strategy and concurrent transformative strategy). This strategy is characterised by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. Additionally, this strategy gives priority typically to the quantitative data, however the methods are integrated during the interpretation phase of the study. Using this strategy,
the qualitative results will assist in explaining and interpreting the findings of a primarily quantitative study. Additionally, this strategy is useful when unexpected results arise from a quantitative study (Creswell, 2003; Morse, 1991). Furthermore, the subsequent qualitative data can be used to examine the unanticipated result in more detail.

Hence for this study, based on sequential explanatory strategy, quantitative data will be the main priority of the research and qualitative data will be gathered to support findings from the initial quantitative results. The integration of both methods occurs during the interpretation phase of the study.

4.4 QUESTIONNAIRE SURVEY

Descriptive research is a type of quantitative research that has become one of the most commonly-used scientific research methodologies, mostly to examine the characteristics and the interrelationship of sociological and psychological variables in social science research (Roberts, 1999). This type of research is also called survey research, as a survey method is employed to collect data. In prior PMS related research, many different approaches were utilised by researchers including descriptive research and experimental research. Most of prior researches related to the BSC and performance measurements for performance evaluation employed experimental research design (Banker et al., 2004; Dilla & Steinbart, 2005; Libby et al., 2004; Lipe & Salterio, 2000; Roberts et al., 2004).

Nevertheless, past researches examining behavioural implications of performance measurement commonly used a quantitative research approach (Burney et al., 2009; Burney & Swanson, 2010; Burney & Widener, 2007; Hall, 2008; Hartmann &
Slapnicar, 2009; Lau & Moser, 2008; Lau & Sholihin, 2005; Sholihin et al., 2010; Webster, 2006). Thus, this study will also employ a quantitative research approach and hence, use a survey method for data collection. A questionnaire survey method is being proposed for the study in order to test the hypotheses outlined in the study. Questionnaire survey method is being proposed for the data collection, which allows distribution to a wider number of companies, enabling a more indicative view of the selected variable chosen in the study.

According to Burney and Swanson (2010), the survey method for data collection has a few advantages. Survey methods allowed information to be collected directly from individuals who use the PMS, thus enhancing external validity of the results (Brownell et al., 1995). Furthermore, survey will preserve anonymity of respondents, which allows respondents to be more truthful in their response than if they are being pre-identified by the researcher. Krumwiede (1998) also argued that survey method is a cost-effective way of gathering large amounts of information in a cross-sectional study. The following section will provide justification for the mail survey used in the present study.

**4.4.1 MAIL QUESTIONNAIRES**

A mail survey is a self-administered questionnaire sent to respondents through the mail. According to Zikmund (2003), there are a few advantages of using mail survey. Firstly, in terms of geographic flexibility, mail questionnaires are able to reach a geographically-dispersed sample simultaneously and at a relatively low cost because interviewers are not required. Furthermore, self-administered questionnaires can be widely distributed directly to individual employees, thus permit any issues to be assessed quickly and at a lower cost. Secondly, mail surveys and administered questionnaires are really convenient to the respondents. Respondents can fill in the
survey whenever they have time as they may need some time to think about the answers to the survey questions.

In addition, many respondents difficult to reach place a high value on responding to surveys at their own convenience and prefer to get hold of them by mail. The mail questionnaires are also highly standardised and the questions included are quite structured which can reduce any bias in the answers given by all the respondents. Although mail questionnaire was being criticised to result in low response rate and lack of ability to verify the responses (Kerlinger & Lee, 2000), this method of data collection is widely adopted in prior researches (Dillman et al., 2008). Additionally, Van der Stede, Young and Chen (2005) claimed that mail survey method is the most frequently used in management accounting research. Thus, mail questionnaire is the main data collection technique used in this study.

4.4.2 RESPONDENTS OF THE QUESTIONNAIRE SURVEY

The focus of the research will be on the manufacturing industry in Malaysia. The unit of analysis is the business unit (BU) manager. BU was defined as either an organisation or a segment of an organisation, which is comprised of the usual business activities such as marketing, production, finance, personnel, distribution, customer services and research and development (R&D) (Mia & Clarke, 1999). BU manager is a suitable unit of analysis because responsibility for business strategy is located in individual business unit (Simons, 1991). The researcher collected data by a questionnaires survey administered to the business unit (BU) managers. The companies were selected from the list of companies in the Federation of Malaysian Manufacturer (FMM) directory of Malaysian industries 2011, in which these companies are members of the FMM. From the list of companies, a simple random sampling method is used to select only 600 large
manufacturing companies in the list. 600 BU managers from the selected companies form the sampling frame of the study as research uses single informant for each company. This sampling design has the least bias (every element in the population has an equal and independent chance of being selected as a subject) and is the most appropriate if generalisability of the findings to the whole is the main concern of a particular study (Cavana et al., 2001, p. 265).

The data was gathered from a single type of industry sector to ensure the level of environmental uncertainty is to be effectively controlled and to minimise its possible implication. This industry is a significant contributor to the Malaysian economy at large and specifically to the national gross domestic product (GDP). Furthermore, it is forecasted that the manufacturing sector is among the highest contribution to the Malaysian total GDP (Bank Negara Report, 2011). This industry sector is one of the high technology industries in Malaysia, thus is expected to be more receptive to the use contemporary PMS (Ong & Teh, 2008). Furthermore, the selection of manufacturing organisations provides some degree of control for the industry. In this research, the size of companies is determined based on the number of employees. However, according to Hoque and James (2000) sales turnover and total assets can also be used to determine company size.

Thus, for the sample selection, only those companies with at least 150 employees are included in the target sample. Moreover, prior researches suggest that accounting and control procedures tend to become more sophisticated and specialised with increasing firm size (Bruns & Waterhouse, 1975; Ezzamel, 1990). Recent PMS-related research also found that larger organisations tend to make use of more comprehensive PMS that incorporates much broader measures of performance to support their strategic decision
making (Hoque & James, 2000). Further, the development and implementation of PMS may be a relatively complex and time consuming process. For this reason, it is probable that only large organisations with significant managerial expertise and resources will have the need and means to implement such systems (Chenhall, 2003). Apparently, literatures indicate development of strategic PMS is mostly linked to the manufacturing environment (Hall, 2008; Nanni et al., 1992; Neely et al., 1995).

4.4.2.1 PILOT TESTING

Questionnaire survey method is the main data collection method adopted in this research. Thus, a pilot test survey was carried out prior to the distribution of the actual questionnaire survey. This is mainly to ensure that the constructed survey instrument is sufficiently clear and understandable and that a realistic estimate of the survey completion can also be monitored. The draft survey questionnaire was sent to five academicians from other universities and five managers or practitioners. All of the instruments used in this study are adopted and modified from previous study. Sekaran (2000) had also mentioned the importance of pilot testing to ensure reliability and validity of research instrument. A few practitioners and academicians were appointed to be part of the panel of experts for the pilot study. According to Cavana et al. (2001), pilot study is among the most important types of pre-tests that can be carried out before questionnaire is used to gather data. Others are face validity and content validity.

A pilot study provides the researcher with a trial run of the questionnaire. The trial run involves testing the wording of the questions, identifying ambiguous questions and testing data collection techniques, to assess effectiveness of a standard invitation to respondents and time taken to complete the survey. In addition, the information gathered from the pilot testing has provided a useful feedback if the questionnaire needs
to be modified (Babbie, 2004). The decision for modification of the survey instrument was based on discussions arranged with the panel of experts after pilot study was conducted. Subsequent to the panel review, some minor alterations were made to the questionnaire. The data collected from the pilot was then analysed using SPSS (Statistical Package for Social Science). Since validated instruments were used in the study, result from the pilot test survey was only tested for the reliability. Results show that all the main constructs have high reliability (result is presented in Appendix A).

4.4.2.2 ADMINISTRATION OF THE QUESTIONNAIRE SURVEY

A mail survey questionnaire has several advantages and disadvantages (Zikmund, 2003). It is well known that this method of data collection can lead to the problem of low rate of response from the respondents. Thus, several efforts have been made in this study following guidelines suggested by several authors (Babbie, 2004; Cooper & Schindler, 2001; Zikmund, 2003) to increase the response rate during the data collection process. Some of the efforts taken include personalising the cover letter, reply paid and self-addressed envelopes, follow-up calls, preliminary notification and promised confidentiality. Preliminary notifications were made a week after sending the questionnaires. In addition, follow-ups were made through emails and telephone calls prior to the deadline and after the deadline given to the respondents.

The distribution of the survey was conducted in stages, starting from September 2011 to November 2011. This was to enable preliminary notification and follow-up processes to be done during the data collection process. Thus, a total of 200 questionnaires were mailed out at the beginning of every month starting from September, followed by October and November. The questionnaires were also re-sent to any respondents who were willing to help but had informed us of the loss of the survey during mailing. At the
end of December 2011, a total of 134 questionnaires were received, however out of this number, 14 surveys were identified to be incomplete. This left a total useable response of 120 yielding a response rate of 20%. The complete analysis of the response rate is presented in the following table, Table 5.1.

4.4.2.3 QUESTIONNAIRE DESIGN

The cover letter and the questionnaire survey for the study are presented in Appendix B. The questionnaire design of the study is presented in Table 4.2 which indicates the link between research objectives, questions and hypotheses of the research.
Table 4.2: Summary of the Research Questions, Research Objectives, Hypotheses and Source of Instruments.

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Research Objectives</th>
<th>Hypotheses</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do role stress dimensions mediate the relation between CPMS and job performance?</td>
<td>1. To examine mediating effect of role stress dimensions between CPMS and job performance.</td>
<td>H1: There is negative association between CPMS and role ambiguity</td>
<td>Section A: To measure comprehensiveness of PMS (based on Hall (2008) - the extent to which PMS provides performance information related to important parts of SBU operations and Chenhall (2005) - to measure the extent to which measures integrate with strategy and value chain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H2: There is negative association between CPMS and role conflict</td>
<td>Section B: To measure managers’ role stress (based on measure of role ambiguity and role conflict by Rizzo et al., 1970)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H3: There is negative association between role ambiguity and job performance</td>
<td>Section E: To measure managers’ performance considering different strategic mission incorporated (based on Nouri &amp; Parker, 1998)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H4: There is negative association between role conflict and job performance</td>
<td>Section C:</td>
</tr>
<tr>
<td>2. Does organisational commitment mediate the relation between CPMS and job performance?</td>
<td>2. To examine mediating effect of organisational commitment in the relation between CPMS and job performance</td>
<td>H5: There is positive association between CPMS and organisational commitment</td>
<td>as above</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H6: There is positive association between organisational commitment and job performance</td>
<td>Section E: as above</td>
</tr>
</tbody>
</table>

<p>| Section C: |
| To measure perceived commitment of the manager towards the organisation (based on Mowday et al., 1979) |</p>
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Hypothesis</th>
<th>Section</th>
</tr>
</thead>
</table>
| 3 | Is there any association between role stress dimensions and organisational commitment? | H7: There is negative association between the role ambiguity and organisational commitment  
H8: There is negative association between the role conflict and organisational commitment | B: as above  
C: as above |
| 4 | Is there any relation between CPMS and job performance?                  | H9: There is positive association between CPMS and job performance         | A: as above  
E: as above |
| 5 | Does locus of control moderate the relation between CPMS and each of role stress dimensions, organisational commitment and job performance? | H10: Locus of control moderates the relation between CPMS and role ambiguity  
H11: Locus of control moderates the relation between CPMS and role conflict  
H12: Locus of control moderates the relation between CPMS and organisational commitment  
H13: Locus of control moderates the relation between CPMS and job performance | D:  
To differentiate individual into two types; internal and external locus of control (based on Lavenson, 1973) |
4.4.2.4 INSTRUMENTATION OR MEASUREMENT OF VARIABLES

The entire survey instrument will be constructed and adapted from the instruments used in past research. Table 4.3 states the constructs used in the study and the measurement used for each construct and the source of instrument:

Table 4.3 Measurements of Variables

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Dimensions</th>
<th>Items</th>
<th>Instruments</th>
</tr>
</thead>
</table>
| Comprehensive PMS           | • Provide information  
                             • Integrate strategy and value chain | 5 item-scale  
                             4 item-scale (seven-point Likert scale) | Hall (2008); Chenhall (2005)                     |
| Role stress                 | • Role ambiguity  
                             • Role conflict                | 6 item-scale  
                             6 item-scale (seven-point Likert scale) | Rizzo, et al. (1970)                             |
| Organisational commitment   | • Affective commitment                                                      | 9 item-scale (seven-point Likert scale)    | Mowday et al. (1979)                             |
| Locus of control            | • Internal manager  
                             • External manager             | 8 item-scale (seven-point Likert scale)    | Lavenson (1973); Presson, Clark, & Benassi (1997); Chong & Eggleton (2003) |
| Job performance             | • Product quality  
                             • Product quantity  
                             • Product timeliness  
                             • New product development  
                             • Personnel development  
                             • Budget achievement  
                             • Cost reduction programs  
                             • Political affairs          | 8 item-scale (seven-point Likert scale)    | Govindarajan & Gupta (1985); Nouri & Parker (1998) |
SECTION A: COMPREHENSIVE PERFORMANCE MEASUREMENT SYSTEM

In order to measure comprehensiveness of PMS, this study will adopt an instrument developed by Hall (2008). Even though previous research related to performance measures have commonly used an instrument by Hoque and James (2000) Using this measurement, the comprehensiveness is based on the extent to which the PMS of particular organisations consist of certain ranges of performance measures. This instrument has a few limitations whereby firstly, it assumes the measures included in the instruments represent the form of measures particularly implemented by the organisation in the sample (Hall, 2008). In fact, organisations would have similar types of financial measures. However, they would have different types of non-financial measures as superiors or managers tend to focus only on certain information in the PMS, as such they rely more on common measures rather than measures unique to particular business unit (Banker et al., 2004; Lipe & Salterio, 2000).

Secondly, instruments used to measure the extent of comprehensiveness of performance measures by Hoque and James (2000) failed to pick up strategic linkages of a BSC in reality or in practice. This instrument concerns on diversity of measures and seems to be insufficient to represent the actual condition of BSC usage (Hall, 2008; Hoque & James, 2000). This research use instrument was developed by Hall (2008) which would capture better representatives of PMS comprehensiveness. The instrument consists of nine items. Five items represent the extent to which PMS provides performance information related to important parts of SBU operations. In study by Hall (2008), the other four items in the instrument were adopted from Chenhall (2005) to measure the extent to which measures integrate with strategy and value chain. For the nine items, respondents were asked to indicate on a 7-point Likert scale (1 = not at all to 7 = to a great extent).
the extent to which the characteristics mentioned may describe the PMS of their BU. Thus, the instrument used should be able to measure the level of PMS comprehensiveness so as to examine its influence towards role stress, organisational commitment and job performance.

SECTION B: ROLE STRESS

In this study, role stress is measured using both role ambiguity and role conflict scales developed by Rizzo et al. (1970). Furthermore, past literature shows that considerable researchers have generally combined role ambiguity and role conflict to form one of the operationalisations of role stress (Addae et al., 2008; Dale & Fox, 2008; Yousef, 2002). There are eight items used to measure role conflict and role ambiguity consisting of six items. Rizzo’s scale is selected for this research based on its high reliability in prior studies. Furthermore, this eight-item scale is the most extensively used instrument to measure role conflict in many prior researches (Jackson & Schuler, 1985; Van Sell et al., 1981). Additionally, all accounting research, particularly in budgeting and PMS, was also used Rizzo’s scale to examine role conflict and role ambiguity (Burney & Widener, 2007; Chenhall & Brownell, 1988; Chong et al., 2006).

Even though Rizzo’s measures have come under criticism (Sawyer, 1992), however, prior psychometric evaluation of this instrument suggests its continued use appears to be warranted (Schuler et al., 1977). This scale employs a seven-point Likert scale which ranges from 1 (strongly disagree) to 7 (strongly agree). In prior research, scores were summed and averaged by 14 to yield a summary indicator to reflect role stress (Dale & Fox, 2008; Yousef, 2002). Similar to Burney and Widener (2007), as current research also examines the use of information, two items from the scale measuring role conflict
will be removed. These items are excluded as they are irrelevant and relate to the use of tangible and physical resources.

SECTION C: ORGANISATIONAL COMMITMENT

Organisational commitment is measured using the Organisational Commitment Questionnaire (OCQ) developed by Mowday et al. (1979). This instrument measures commitment by a nine-item scale and is the most widely used unidimensional measure of organisational commitment (Meyer et al., 2002). OCQ employs a response format that utilises a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Additionally, this instrument has been used by numerous prior accounting researches (Chong et al., 2006; Lau & Moser, 2008; Nouri & Parker, 1998). Scores are summed and averaged to arrive at a summary indicator reflecting employee commitment. Even though the Porter et al. (1974) 15-items OCQ scale has also been used by numerous studies to measure commitment, prior researchers show concern on the suitability of the items to measure affective commitment (Allen & Meyer, 1990; Angle & Perry, 1981; Reichers, 1985).

Reichers (1985, p. 472) the OCQ excluding the “intention to quit/stay” items could perhaps be adapted to reflect identifications with the goals of these specific groups, and the scores of these multiple commitments correlated with global commitment as it is usually measured. Thus, only six items could be excluded since they relate to intention to quit. The shorter, nine-item measure by Mowday et al. (1979) seems to be more appropriate for measuring affective commitment (Dale & Fox, 2008; Reichers, 1985). Prior research had also reported high reliability for the nine-item scale (Nouri & Parker, 1998). A sample of items in the scale include: “I really care about the fate of this
organisation” and “I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful.”

SECTION D: LOCUS OF CONTROL

As in Chong and Eggleton (2003), in this research locus of control is measured using Chance scale developed by Levenson (1973). Chance scale within the Lavenson measure consists eight items is selected based on the scale being a more factorially stable construct and possessed of a higher internal consistency than Rotter’s (1966) original Internal-External scale (Blau, 1984). Based on the eight items, respondent is required to indicate the extent to which they agree with the personality description on 7 point Likert scale (1 = Strongly disagree to 7 = strongly agree). Blau (1984) investigates the comparison between Rotter and Levenson measures of locus of control in terms of factor stability and reliability. Based upon a sample of 497 business undergraduates, he found that Chance scale within the Levenson measure is more factorially stable.

He also suggests that Chance scale is an expedient way to measure locus of control. Additionally, this scale is selected based on prior evidence of its factorial independence in recent accounting research, which confirms its unidimensional nature and satisfactory reliability (Chong & Eggleton, 2003). Lavenson’s Chance scale was also selected for the current research because Rotters’ scale used in prior budgeting research (Brownell, 1981; Brownell, 1982) was criticised for its inapplicability due to its unidimensional nature when there is cultural differences in the group (Frucot & Shearon, 1991). Samples used in the current research consist of foreign and locally-owned companies which may be subject to the influence of cultural differences.
Internal and external were identified by a median split of scores obtained on the 8 items (Hyatt & Prawitt, 2001; Pines & Julian, 1972). High scores indicate stronger external tendencies (externals) and lower scores indicate stronger internal tendencies (internals).

**SECTION E: JOB PERFORMANCE**

Job performance is measured using an eight-item scale from Govindarajan and Gupta (1985) and Nouri and Parker (1998). This measure is selected for this study as it provides better evaluation of employee performance, taking into consideration different strategic missions incorporated by different sub-units. Similar to both studies, this study requires respondents to evaluate their actual performance in relation to the superior expectations that had incorporated the sub-unit’s strategic objectives. Subsequently, job performance is assessed as a weighted average of the eight performance dimensions (product quality, product quantity, product timeliness, new product development, personnel development, budget achievement, cost reduction programs and political/public affairs) in which the weight assigned for each dimension is based on how the individual perceives the importance a superior attaches to each dimension (Govindarajan & Gupta, 1985; Nouri & Parker, 1998). Thus, this scale is more comprehensive as it evaluates multiple performance dimensions (Govindarajan & Gupta, 1985).

A seven point Likert scale is used which ranges from 1 (of little importance) to 7 (extremely important). Thus, the formula representing the computation of the job performance is as follows:

$$JP = \frac{\sum (JP_i \times IMP_i)}{\sum IMP_i}$$

Whereby,

- $JP$ = Job performance
\[ JPi \] = job performance for dimension \( i \)

\[ \text{IMP}_i \] = the importance that individual perceives attached to dimension \( i \) by superiors

Further, the scale would also be able to consider the differences in the importance of performance dimension among different business units. Nouri and Parker (1998) also highlighted the significance of two components of the weighting system: performance ratings and importance ratings. The system indicates significant positive correlation between these two components of the system which clearly indicate that employees will put effort and perform well in a performance dimension considered important by the superiors (Nouri & Parker, 1998).

### 4.5 SEMI-STRUCTURED INTERVIEW

For the qualitative data gathering, a post-survey interview was conducted in the study. Interviewing is the most common research strategy adopted in qualitative social research. There are different kinds of interview varying depending on the amount of control exerted by the researcher during the interview and the degree of structure (Esterberg, 2002). Each type has a different purpose and technique. The three types of interview include structured, semi structured and unstructured interview. Structured interviews are the most formal and most rigidly controlled type (Cavanaugh et al., 2001; Esterberg, 2002). This type of interview has pre-established sequence of questions and interview pace.

Thus, the interviewer is not normally allowed to deviate from a rigid protocol or interview schedule. The questions may be closed-ended, which will force interviewees to choose between fixed responses. However, sometimes some of the questions may be
open-ended that permit the respondents to answer in their own words. Unstructured interviews are the least structured type of interview. The interview would tend to be more spontaneous and free-flowing (Cavana et al., 2001; Esterberg, 2002). Since they tend to be unplanned, there is no question of being prepared in advance by the interviewer and questions would normally arise naturally.

Structured and unstructured interview are the poles of a continuum between the infinite degrees of being structured and unstructured. Their extremity has certain disadvantages and limitations. Thus, semi-structured interviews were adopted in this study. The semi-structured interviews are also called as in-depth interviews (Esterberg, 2002). This approach is less rigid than structured interviews and particularly suitable to explore a topic more openly. This approach would also allow respondents to express their ideas and opinion freely. According to Hoepfl (1997), using this approach the interviewer is free to probe and explore within the predetermined inquiry area, which would create a more comfortable environment between interviewer and interviewee.

In this study, the semi-structured interview was conducted to obtain further understanding from the respondents relating to the implementation of PMS and behavioural issues of the Malaysian manufacturing companies. In addition, the information is also useful as a method to confirm the validity of the responses given by respondents through the questionnaire survey method. Data gathered from the interview would also provide additional insights about the focused area of study concerning issues relating to the behavioural consequences of PMS implementation in the company. The interview would also provide in-depth understanding on the influence of the personality variables on the PMS implementation and managerial performance. Another purpose of
the interview was also to gather information to provide an explanation for the unexpected results produced from the quantitative data analysis.

According to Zikmund (2003), business researchers find that gathering qualitative data using interview offers many advantages. This method of data gathering would allow researchers to obtain complete and precise information, gain prompt feedback, probing for clearer or comprehensive answers, high participation rates and improve completion of the questionnaire. In this study, interview guide was prepared and used for the interview. The interview guide or schedule consists of a list of questions or general topics for the interviewer to explore during the interview. This is also to ensure basically same information is obtained and limited interview time is being efficiently used. The interview guide would also ensure interviewing multiple subjects to be more systematic, comprehensive and interaction-focused. The interview guide used in this study is as presented in Appendix C.

4.5.1 RESPONDENTS TO THE SEMI-STRUCTURED INTERVIEW
The purpose of conducting the interview is to obtain further explanation on the research findings from the quantitative data analysis. Particularly the interview will provide further information which is obtained directly from the respondents. For the interview, respondents are selected from those managers who have previously participated in completing and returning back the questionnaires. Out of 120 survey responses completed and returned, 36 respondents stated in the survey their willingness to be interviewed for the post-survey interviews. Additionally, as there are limitations on the time and cost, the respondents for the interview are selected from those who are attached to those companies which are based in the Southern region of West Malaysia.
In this study, a non-probability sampling method, purposive sampling or judgmental sampling is adopted to select the participants (Marshall, 1996). Purposeful sampling is a dominant strategy in qualitative research, as the technique can be used to seek more information and for in-depth study (Hoepfl, 1997). Using this technique, the researcher selects the most productive sample to answer the research question (Marshall, 1996). Purposeful sample has advantages as the researcher will be able to find a subject or participant with specific experience or subject with special expertise (key informant sample) (Marshall, 1996). The subject chosen will best help the researcher understand the problem and the research question (Creswell, 2003). Hence, in this study, ten managers were chosen to be the participants of the interview. Selection of the participant is based on their willingness to participate, their current work position (middle or top management level) and the location of their firms.

4.5.2 DESIGN OF THE INTERVIEW GUIDE

In this study, an interview guide was prepared prior to the interview session. The interview guide serves primarily to help the researcher prepare for the interview and assists the interviewer to focus when conducting the interview (Esterberg, 2002). According to Lillis (1999) the interview guide was designed with the objective to ensure complete and consistent coverage in each interview of themes under study as well as minimising researcher intrusion through the pre-specification of neutral questions and probes. The interview guide was also mentioned to have two main purposes; first is to avoid bias and second is to ensure adequate reporting within the frame reference of the study (Lillis, 1999). It provides a list of the main topics and questions to be asked during the interview. In addition, the detailed guide also includes some ideas on how to probe the interviewees and to create follow-up questions (Esterberg, 2002).
Probing is a technique used in interviewing to solicit a more complete answer to a question or to request an elaboration (Babbie, 2004). It is also a technique to stimulate interviewees to give more full and relevant information (Cooper & Schindler, 2001). Additionally, it is necessary in two situations: the first is to motivate respondents to enlarge, clarify or explain their answers, the second is to ensure respondents are still within the issue of discussion and does not lose track (Zikmund, 2003). Thus each of the sections of the interview guide which consist of a series of general questions to explore the themes, the section also has potential probes to be used during the interview to explore the theme. The sample of interview guide and the cover letter used in this research are as presented in Appendix C. The interview guide is divided into four parts, which is constructed to be aligned with the research questions.

For the introductory part, the interviewee is briefly informed on the background of the researcher, followed by objective of the research, data collection method, particular purpose of the open-ended question and finally requesting permission from interviewee to record the conversation during the interview session. Part 1 in the interview guide asks the interviewee a few questions pertinent to the PMS, including the PMS implemented in their organisation (whether the system is formal, established and automated), perception on CPMS, perspective use in the PMS, benefit and use of PMS and problem encountered by managers with the firm’s PMS. In Part 2 the question relates to the behavioural implication of the PMS, particularly requesting the manager to explain the reason for the scenario to occur. Part 3 of the interview guide includes questions to find out any personality influence on the use of PMS. Finally, Part 4 provides a few questions on the background of the respondents, the respondent’s firm and business unit.
4.6 MODE OF DATA ANALYSIS

Primary data in this research was gathered using a questionnaire survey and semi-structured interview. The subsequent section will provide an explanation for the data analysis method for each type of data gathered.

4.6.1 DATA FROM THE QUESTIONNAIRE SURVEY

In this study, data collected using the questionnaire survey was analysed using two types of statistical techniques; Statistical Package for Social Science (SPSS) and Partial Least Squares analysis. SPSS is being used for the preliminary analysis of data and also the test of moderation (Moderated Regression Analysis for comparative purposes). Test was carried out to assess normality of data before conducting MRA. The result of normality indicates the data meets normality assumption. The result is as attached in Appendix A. For the hypotheses testing, analysis of data was conducted using the PLS technique to test the mediating and moderating effect. Furthermore, PLS has been used by numbers of PMS-related research, such as research by Sholihin, Pike and Mangena (2010), Hartmann and Slapnicar (2009), Hall (2008), Webster (2006), Chenhall (2005) and Hartmann (2005). PLS will be used to analyse the data for two reasons: first is that the analysis is appropriate for small sample sizes (< 300) and secondly, the analysis can be used to analyse non-normal multivariate data (Webster, 2006). For this study, total of the survey useable samples are 120.

4.6.1.1 PARTIAL LEAST SQUARES (PLS) METHOD

PLS is well known as a powerful method of analysis, as the method has minimal requirements on measurement scales, sample size and residual distributions (Chin et al., 2003). PLS is one of the SEM techniques. The PLS approach was being introduced by Herman Wold with his main references published in 1982 and 1985, which compared
the two approaches Structural Equation Modelling by means of maximum likelihood (SEM-ML) “Hard modelling” to PLS “soft modelling”. The hard modelling asserts to have heavy distribution assumption and requires several hundred cases. On the contrary, the soft modelling needs very few distribution assumptions and requires only few cases (Tenenhaus et al., 2005). According to Fornell and Bookstein (1982) and Chin, Marcolin and Newsted (2003), PLS is suitable to explain complex relationships.

In addition, PLS also provides a general and flexible technique for testing causal predictive inferences (Hulland, 1999). The approach also assumes that all the measured variance is useful variance to be explained. Apart from its useful purpose for predictive applications, the method can also be used for theory confirmation (Chin et al., 2003). Additionally, as an alternative to the covariance-based approach, the component-based approach PLS is able to avoid the two critical problems: inadmissible solutions and factor indeterminacy (Chin et al., 2003; Fornell & Bookstein, 1982). PLS has also been used in many accounting researches (Chenhall, 2004, 2005; Hall, 2008; Hartmann, 2005; Hartmann & Slapnicar, 2009; Ittner et al., 1997; Sholihin et al., 2010; Van Rinsum & Verbeeten, 2010; Webster, 2006).

It is an established technique that is used in many studies to estimate path coefficient in a structural model method (Chin et al., 2003). In this study PLS is the statistical technique used, as the technique has the ability to accommodate non-normal data, requires less stringent assumptions about distributional characteristics of the data and is suitable for a study with a small sample size (Chin, 2000; Hulland, 1999; Vandenbosch, 1999). According to Hulland (1999), in management research generally there are three sets of methodological concern relevant to PLS application: first is assessing the reliability and validity of measures; second is identifying the nature of the measures and
constructs relation, and finally to explain the path coefficients, determining adequacy of
the model and selection of the final model among the alternatives.

4.6.1.2 PLS PATH MODELLING

According to Henseler et al (2009), PLS path models are defined into two linear
equations: inner model and the outer model. Inner model indicates the relationship
between unobserved or latent variables whereas outer model denotes the link between a
latent variable and observed or manifest variables. Literatures normally refer to the
measurement model or (observed) indicator variable and structural model in covariance-
based SEM. However in a component-based PLS approach, terms such as outer model
or manifest variables and inner models are being used (Henseler et al., 2009; Tenenhaus
et al., 2005). Using such terms Tenenhaus, et al. (2005, p.161) describes PLS path
model to include two models: (1) a measurement model relating the manifest variables
(MV) to their own latent variable (LV) and (2) a structural model relating some
endogenous LVs to other LVs.

The PLS model does not have any goodness-of-fit criterion, thus the assessment of
validity and reliability would provide sufficient evidence to indicate model fit
(Hartmann & Slapnicar, 2009; Henseler et al., 2009; Vandenbosch, 1999). Not as in
covariance structure analysis modelling such as LISREL or AMOS, overall goodness-
of-fit measures is inappropriate as there is no specific distributional assumptions in PLS
(Chin, 1998). The path model can be validated at three levels: (1) the quality of
measurement model, (2) the quality of structural model, and (3) each structural
regression equation (Tenenhaus et al., 2005). Even though measurement and structural
model are estimated together when using PLS, the PLS models were analysed and
interpreted in two stages: (1) assessment of the reliability and validity of the
measurement model, (2) assessment of the structural model (Fornell & Larcker, 1981; Henseler et al., 2009; Hulland, 1999; Vandenbosch, 1999).

4.6.1.3 REFLECTIVE MEASUREMENT MODEL

The measurement model or outer model indicates the relation between latent variables and observed variables. Depending on the causality direction of the path relationship between the latent variables and its indicators in each measurement model, the outer model will be described as either a relative or formative approach. In this study, the measurement model specifies the direction of causality from the construct/LV to indicator/MV, which represents a reflective measurement model (Henseler et al., 2009). In reflective mode, each observed measures/MV is assumed to reflect latent variable and variation in the latent variable (Henseler et al., 2009; Tenenhaus et al., 2005).

Thus, any change in the construct/LV will lead to changes in all of its indicators/MV or observed variables. On the other hand, the formative measurement model has the opposite causality direction, and the latent construct is reflected by a combination of several of its indicators. Jarvis, MacKenzie, and Podsakof (2003) discuss distinction between formative and reflective measurement models and assert that misspecification of a measurement model may cause bias to the parameter estimation and may lead to incorrect model assessment (Henseler et al., 2009; Jarvis et al., 2003).

4.6.1.4 ASSESSMENT OF REFLECTIVE MEASUREMENT MODEL

The reflective measurement models should be assessed in terms of their reliability and validity (Henseler et al., 2009). According to Hulland (1999), to ensure adequacy of the measurement model, the model needs to be assessed based on the following: (a) reliability of each individual item, (b) the convergent validity of individual construct,
and (c) discriminant validity. Table 4.4 shows assessment of reflective measurement model adopted from Henseler (2009):

### Table 4.4: Assessing Reflective Measurement Models

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite reliability ($\rho_c$)</td>
<td>The composite reliability is a measure of internal consistency and must not be lower than 0.6</td>
</tr>
<tr>
<td>Indicator reliability</td>
<td>Absolute standardised outer (component) loadings should be higher than 0.7</td>
</tr>
<tr>
<td>Average variance extracted (AVE)</td>
<td>The average variance extracted should be higher than 0.5</td>
</tr>
<tr>
<td>Fornell-Larcker criterion</td>
<td>In order to ensure discriminant validity, the AVE of each latent variable should be higher than the squared correlations with all other latent variables. Thereby, each latent variable shares more variance with its own block of indicators than with another latent variable representing a different block of indicators</td>
</tr>
<tr>
<td>Cross loadings</td>
<td>Cross-loadings offer another check for discriminant validity. If an indicator has a higher correlation with another latent variable than with its respective latent variable, the appropriateness of the model should be reconsidered</td>
</tr>
</tbody>
</table>

Source: The use of partial least squares path modelling in international marketing (Henseler et al., 2009) p. 300.

#### 4.6.1.4.1 INTERNAL CONSISTENCY AND RELIABILITY

Internal consistency reliability is the first criterion to be assessed on the measurement model. Cronbach’s $\alpha$ is the traditional criterion for internal consistency which assumes all indicators are equally reliable. However PLS analysis estimates indicators based on its reliable composite. In PLS path models, the internal consistency or reliability is measured using composite reliability, $\rho_c$ preferable to Cronbach’s $\alpha$ (Hartmann & Slapnicar, 2009; Henseler et al., 2009; Tenenhaus et al., 2005). Regardless of which reliability coefficient is used, value above 0.7 (Hartmann & Slapnicar, 2009; Henseler et
al., 2009) indicates satisfactory reliability, and lack of reliability if the value is below 0.6 (Henseler et al., 2009, p. 198).

Another criterion to assess internal consistency reliability is by examining reliability of each indicator. According to Hulland (1999), individual item reliability is assessed by examining the loadings (simple correlation) of the manifest/observed variables with their respective latent variables. Furthermore latent variable should explain at least 50% of each indicator’s variance (Henseler et al., 2009). Thus, the absolute correlation between a latent variable and manifest variables should be higher than 0.7 and suggest to eliminate reflective indicators from measurement model if outer standardised loading is less than 0.4 (Henseler et al., 2009). Consistent with Hulland (1999) who had also suggested to drop items with loading less than 0.4 or 0.5 as low reliabilities can attenuate the estimated relationships between constructs. However, it is common in practice to have several item with loading below threshold 0.7 when new item or scales are employed (Hulland, 1999).

4.6.1.4.2 VALIDITY

Validity is assessed into two types: convergent and discriminant validity. Average variance extracted (AVE), which represents the average variance shared between a construct and its indicators, is used to assess both validity subtypes (Fornell & Larcker, 1981; Hartmann & Slapnicar, 2009). Convergent validity denotes a set of indicators to represent one and the same underlying construct. AVE is used to measure convergent validity and the value of at least 0.5 will indicate sufficient convergent validity (Fornell & Larcker, 1981; Henseler et al., 2009), which means latent variable is able to explain on average more than half of the variance of its indicator (Henseler et al., 2009).
Discriminant validity represents the extent to which measures of a given construct differ from measures of other constructs in the same model (Hulland, 1999). In PLS path modelling, discriminant validity is measured based on a Fornell-Larcker criterion at the construct level and the cross loading at the indicator level. Fornell-Larcker criterion proposes that a latent variable shares more variance with its indicators than other latent variables. Statistically, discriminant validity is achieved if AVE of each latent variable is greater than the latent variable’s highest squared correlation with other variables (Henseler et al., 2009; Hulland, 1999). For the second criterion, there is sufficient discriminant validity if cross-loadings of indicators on other constructs are at the minimal (Fornell & Larcker, 1981; Hartmann & Slapnicar, 2009; Henseler et al., 2009).

4.6.1.5 EVALUATION OF STRUCTURAL MODEL

The evaluation of the structural or inner path model estimates is the second step in the PLS analysis after reliability and validity criterion of the measurement are met. Fundamental criterion for the structural model assessment is the coefficient of determination ($R^2$) of the endogenous variables. The $R^2$ value also indicates the extent to how well endogenous construct is explained by the model. In the PLS path models, values of the coefficient of determination of 0.67, 0.33 and 0.19 indicate substantial, moderate and weak respectively (Chin, 1998; Henseler et al., 2009). However, if an endogenous latent variable is being explained in a certain inner path model by only a few (e.g. one or two) exogenous latent variables, moderate $R^2$ would be acceptable.

On the other hand, if an endogenous variable relies on several exogenous latent variables, substantial level of $R^2$ should be achieved (Henseler et al., 2009). Lower $R^2$ value would cast doubt concerning the theoretical underpinnings and indicate that endogenous variables not able to be explained by the model. The next criterion of
structural model evaluation is the path relationship coefficient estimates. The individual path coefficient of the PLS structural model can be interpreted as standardised beta coefficients ($\beta$) as in ordinary least squares (OLS) regression (Chenhall, 2004; Henseler et al., 2009). This value is evaluated in terms of sign, magnitude and significance. The latter is evaluated via a bootstrapping technique. Bootstrap samples are built by resampling with a replacement from the original sample to determine confidence intervals of the path coefficients and statistical inference (Henseler et al., 2009; Tenenhaus et al., 2005). Table 4.5 shows assessment of structural model adopted from Henseler (2009):

Table 4.5: Assessing Structural Models

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R² of endogenous latent variables</td>
<td>R² values of 0.67, 0.33 or 0.19 for endogenous latent variables in inner path model are described as substantial, moderate or weak</td>
</tr>
<tr>
<td>Estimates for path coefficient</td>
<td>The estimated values for path relationships in the structural model should be evaluated in terms of sign, magnitude and significance</td>
</tr>
<tr>
<td>Effect size $f^2$</td>
<td>Values of 0.02, 0.15 and 0.35 can be viewed as a gauge for whether a predictor latent variable has a weak, medium or large effect at the structural level.</td>
</tr>
<tr>
<td>Prediction relevance ($Q^2$ and $q^2$)</td>
<td>$Q^2$ values above zero give evidence that the observed values are well reconstructed and that the model has predictive relevance. $Q^2$ values below zero indicate a lack of predictive relevance. In correspondence to $f^2$, the relative impact of the structural model on the observed measures for latent dependent variables can be assessed by $q^2$.</td>
</tr>
</tbody>
</table>

Source: The use of partial least squares path modelling in international marketing (Henseler et al., 2009) p. 303.

4.6.2 DATA FROM THE SEMI-STRUCTURED INTERVIEW

During the interview, data was gathered using a tape-recorder and was also supplemented by data gathered with hand-written notes. There are seven phases of analytic procedures described by Marshall and Rossman (2006, p. 156) which include: organising the data, immersion in the data, generating categories and themes, coding the
data, offering interpretations through analytic memos, searching for alternative understandings and writing the report or other format for presenting the study. In this study, the interview is coded into categories. This information was transcribed immediately after each of the interviews to ensure the loss of data could be minimised.

According to Kvale (2004), there are five main approaches to qualitative data analysis: meaning condensation, meaning categorisation, narrative structuring, meaning interpretation and generating meaning through ad hoc methods. In this study, a meaning categorisation approach is being adopted whereby using this approach transcribed data was analysed by classifying the data into similar categories. For the long statements given by respondents during the interview, they were condensed into simple categories to produce a few tables, figures that represent categories frequencies. Some of the categories were developed in advance according to review of literature and variables tested in the quantitative phase. Although there are computer programmes such as the NUD*IST and NVivo programmes that can be used to analysed qualitative data, data in this research is being analysed manually as there is only a small number of interview conducted in the research.

4.7 CHAPTER SUMMARY

This chapter provides discussions on the research methodology utilised in this research. The section begins with an introduction and is followed by a discussion on the types of data collection methods utilised in this research. As the research methodology also involves mixed methods, a brief explanation on the method has also been included in the section. A subsequent section provides detailed explanation on the questionnaire survey method, the main data collection method employed in this research.
The questionnaire survey method is being explained in detail in this section and there is a detailed explanation on the advantages and disadvantages of the method, survey respondents, pilot testing, administration of the survey, questionnaire design and survey instruments. The following section provides discussion for the semi-structured interview, the second data collection method used and the design of the interview guide. Finally, the chapter ends with a discussion on the mode of analysis for both data collection methods.
CHAPTER 5
RESULTS AND DISCUSSION

5.1 INTRODUCTION
This chapter presents an analysis of the results from the data collected using the questionnaire survey and the semi-structured interview. The results from the questionnaire survey analysis are discussed in the earlier section of this chapter (section 5.2) which are organised as follows: first, section 5.2.1 presents the analysis of respondents, section 5.2.2 discusses the analysis of response bias, section 5.2.3 provides a discussion on the preliminary analysis of the data, which includes data cleaning and screening in section 5.2.3.1, and discussion on the descriptive analysis of demographic data in section 5.2.3.2. Section 5.2.4 discusses the result of the analysis of variances across the various demographic variables, followed by discussion on the hypotheses testing and findings in section 5.2.5. Results and findings from the semi-structured interview are discussed in the subsequent part of this chapter (section 5.3). This is followed by a discussion of the chapter summary in section 5.4.

5.2 RESULTS OF THE QUESTIONNAIRE SURVEY
5.2.1 ANALYSIS OF RESPONDENTS
In this research data was collected using questionnaire surveys administered to the business unit managers within Malaysian manufacturing organisations. Beginning in September 2011, a total of 600 surveys were mailed out to 600 managers through a random sample of companies selected from the Federation of Malaysian Manufacturers (FMM) directory of Malaysian industries 2011. The number also forms the sampling frame of the study. Only companies with more than 150 employees were included in the sample. A total of 134 responses were returned. However 14 were found to be
incomplete, thus leaving 120 useable responses yielding a response rate of 20%. The analysis of respondents is as shown in Table 5.1 below.

Table 5.1: Analysis of Response Rate

<table>
<thead>
<tr>
<th>Surveys details</th>
<th>Total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total surveys mailed out</td>
<td>600</td>
<td>100</td>
</tr>
<tr>
<td>Surveys not returned</td>
<td>466</td>
<td>77.7</td>
</tr>
<tr>
<td>Surveys returned</td>
<td>134</td>
<td>22.3</td>
</tr>
<tr>
<td>Less incomplete surveys</td>
<td>14</td>
<td>2.3</td>
</tr>
<tr>
<td>Total useable surveys</td>
<td>120</td>
<td>20</td>
</tr>
</tbody>
</table>

5.2.2 ANALYSIS OF RESPONSE BIAS

The problem of non-response bias is one of the main concerns in a survey-based research. Particularly, non-response bias is an important issue that needs to be considered by the researcher to reduce the likelihood of sampling bias, systematic error or non sampling error (Zikmund, 2003). Thus, an independent t-test was conducted to determine whether the data was subject to non-response bias problems in the present study. As in research by William and Seaman (2001), the final samples of respondents were divided into early respondents and late respondents.
Table 5.2: Test of Non-Response Bias

<table>
<thead>
<tr>
<th>Variables</th>
<th>Early responses n = 67</th>
<th>Late responses n = 53</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std Deviation</td>
<td>Mean</td>
<td>Std Deviation</td>
</tr>
<tr>
<td>CPMS</td>
<td>5.13</td>
<td>0.94</td>
<td>5.11</td>
<td>0.88</td>
</tr>
<tr>
<td>ROLEAMB</td>
<td>2.70</td>
<td>0.88</td>
<td>2.80</td>
<td>0.83</td>
</tr>
<tr>
<td>ROLECON</td>
<td>4.34</td>
<td>0.96</td>
<td>4.27</td>
<td>0.92</td>
</tr>
<tr>
<td>ORGCOM</td>
<td>5.21</td>
<td>0.92</td>
<td>5.06</td>
<td>0.81</td>
</tr>
<tr>
<td>JPERF</td>
<td>5.21</td>
<td>0.92</td>
<td>5.03</td>
<td>0.76</td>
</tr>
<tr>
<td>LOC</td>
<td>3.18</td>
<td>1.16</td>
<td>3.10</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note: CPMS = comprehensive PMS; ROLEAMB = role ambiguity; ROLECON = role conflict; ORGCOM = organisational commitment; JPERF = overall performance; LOC = locus of control

The sample was dichotomised into two groups based on the response dates: early and late respondents. There are 67 early responses of those who replied within a month and 53 late responses are those who replied after one month. Table 5.2 presents t-test result of the non-response bias analysis. Based on the result, most of the significant value of the Lavene’s test is not significant at p>0.05. Additionally, this is also consistent with the result of the t-test for equality of means, which indicate the two-tailed significance of all the main variables is not significant at p>0.05. Results show that there is no significant difference between the means, indicating there is no difference between answer from late respondents and early respondents. Thus, non-response bias does not appear to be problematic and can be ignored in the present study.
5.2.3 PRELIMINARY ANALYSIS OF DATA

5.2.3.1 DATA CLEANING AND SCREENING

Initially, data gathered was transcribed from the survey by coding before keying into the computer. Each item representing demographic variables and main variables (dependent, independent, mediator and moderator variables) in the questionnaire survey were numerically coded. According to Kerlinger and Lee (2000), coding is the term used to describe the translation of question responses and respondent information to specific categories for the purposes of data analysis. This coding process is required to assist in the recording of data before data was being keyed in and analysed. In this research, data was coded using numeral and abbreviation. However, some data, particularly demographic information, clearly indicates the actual information such as gender, age, education, experience, position, industry and ownership.

Subsequent to the coding process, all of the survey responses received was checked for their completeness before the process of keying in the data and during the stage of keying in the data. After data entry, the completeness of the data was confirmed by using descriptive statistics in the SPSS. Using the analysis, each variable data item was screened to identify any items scores that were out of range. This was identified by checking the frequency, maximum, minimum, mean and standard deviation. Whenever an error was detected, there was a need to refer back to the survey before any changes or amendments were made to the earlier entered data. After the cleaning, coding and screening process, data was then prepared to be analysed.

In multivariate analysis, missing data commonly occurs (Hair et al., 2010) where valid values on one or more variables are not available for the analysis. The missing data issues need to be addressed by the researcher as it can affect the generalisability of the
results. According to Hair (2010), there are two reasons which can cause missing data: firstly this problem could be due to any systematic event external to the respondent, i.e. data entry errors or data collection problems. Secondly, missing values can also occur as a result of any action on the part of the respondent, i.e. refusal to answer. There are two ways to deal with missing values (Hair et al., 2010). Researcher may delete the cases or variables which consist of excessive levels of missing data. However, this action will result in the reduction of sample size available for analysis. Another option is to consider applying a remedy to the missing values, i.e. using imputation methods such as complete case approach or all-available approach.

Additionally, during the process of entering the data, one of the cases or variables is reversed scored. The role ambiguity variable, which has a total of six items in Section B (1) of the survey, was a negatively worded questions. These steps were made initially for the variable to reduce response bias. According to Dale and Fox (2008, p. 116), using scales developed by Rizzo et al. (1970) to measure role stress, several items are negatively phrased and reversed-scored in an effort to reduce response bias. Furthermore, according to Cavana (2001) a good questionnaire should include both positively and negatively worded questions to avoid the tendency of respondents to circle the points mechanically towards one end of the scale. Test was also carried out to assess normality of data before conducting further analysis. The result of normality indicates the data meets normality assumption. The result is as attached in Appendix A.

5.2.3.2 DESCRIPTIVE ANALYSIS OF DEMOGRAPHIC DATA

5.2.3.2.1 DESCRIPTIVE ANALYSIS: INDIVIDUAL ANALYSIS

Table 5.3 presents the profile of the respondent in this study. It can be seen that almost all of the managers are males. The male respondents are 85% and only small proportion,
15% is female. The results also revealed that more than 80% of the respondents are in the range of a 30 to 50 years age group. Another 12.5% is in the range of age 51 to 60 years. Only one manager is above 60 years of age and five are below 30 years old. From the table, it shows that the business unit managers are most likely to be in the range of age 30 to 60 years of age. Almost half of the managers have a Bachelors degree qualification.

Quite a big percentage of the managers hold Diplomas and Masters qualifications. In terms of working experience, the majority of the managers have above ten years working experience with the percentage shown from the table 50.8%. Results also indicate that more than 70% of the respondents have at least five years working experience. Almost 90% of the respondents are middle managers. Middle management made up the largest number of respondents, the next bigger percentage was the number of managers from the top management level. For the duration in the current position, 58.3% of the respondents have less than five years of experience, 25.8% have between five and ten years experience and 15.8% have above ten years experience.
### Table 5.3: Profile of Respondents (N = 120)

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Categories</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender distribution</strong></td>
<td>Male</td>
<td>102</td>
<td>85.0</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>18</td>
<td>15.0</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>Below 30 years</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>30 to 40 years</td>
<td>48</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>41 to 50 years</td>
<td>51</td>
<td>42.5</td>
</tr>
<tr>
<td></td>
<td>51 to 60 years</td>
<td>15</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>Above 60 years</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>SPM/STPM</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>Diploma</td>
<td>18</td>
<td>15.0</td>
</tr>
<tr>
<td></td>
<td>Bachelor degree</td>
<td>63</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td>Master or above</td>
<td>24</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>Professional certificate</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>No information</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Work experience</strong></td>
<td>Below 5 years</td>
<td>33</td>
<td>27.5</td>
</tr>
<tr>
<td></td>
<td>5 to 10 years</td>
<td>26</td>
<td>21.7</td>
</tr>
<tr>
<td></td>
<td>Above 10 years</td>
<td>61</td>
<td>50.8</td>
</tr>
<tr>
<td><strong>Current position</strong></td>
<td>Top management</td>
<td>44</td>
<td>36.7</td>
</tr>
<tr>
<td></td>
<td>Middle management</td>
<td>61</td>
<td>50.8</td>
</tr>
<tr>
<td></td>
<td>Low management</td>
<td>11</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
<td>Supervisor</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Experience in current position</strong></td>
<td>Below 5 years</td>
<td>70</td>
<td>58.3</td>
</tr>
<tr>
<td></td>
<td>5 to 10 years</td>
<td>31</td>
<td>25.8</td>
</tr>
<tr>
<td></td>
<td>Above 10 years</td>
<td>19</td>
<td>15.8</td>
</tr>
</tbody>
</table>
5.2.3.2.2 DESCRIPTIVE ANALYSIS: BUSINESS UNIT

Table 5.4: Main Activity of the Business Unit (N = 120)

<table>
<thead>
<tr>
<th>Main Activity</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>78</td>
<td>65.0</td>
</tr>
<tr>
<td>Quality assurance</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Logistics</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Finance</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Selling/Marketing</td>
<td>30</td>
<td>25.0</td>
</tr>
<tr>
<td>Human resources and administration</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>No information</td>
<td>5</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Table 5.4 shows the largest percentage of respondents, 65%, participated in the survey, belongs to business unit or departments with production as the main activity, followed by 25% Selling/Marketing, 2.5% Human resources and administration, and 1.7% Quality assurance. However, 4.2% of the respondents do not indicate the main activity of their business unit.

5.2.3.2.3 DESCRIPTIVE ANALYSIS: ORGANISATION

The profile of firms is as presented in Table 5.5. The largest number of firms that participated in the survey are include two that are involved in food and chemical industries. Each industry category shows 18.3% and 19.2% respectively. Other industry categories which also indicate a high percentage are Electrical and electronics machinery & appliances and Metallurgical or metal goods with 16.7% and 13.3% respectively. The proportion of locally owned and foreign owned firms is almost equal, 47% and 48% respectively.
Table 5.5: Profile of Firms (N = 120)

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Categories</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry Category</td>
<td>Electrical and electronics machinery and appliances</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td></td>
<td>Food, beverage and tobacco</td>
<td>22</td>
<td>18.3</td>
</tr>
<tr>
<td></td>
<td>Textiles, clothing and footwear</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Transport and automotive</td>
<td>8</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Wood and timber products/Furniture manufacturing</td>
<td>7</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>Chemical, gas and petroleum</td>
<td>23</td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td>Metallurgical or metal goods</td>
<td>16</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>21</td>
<td>17.5</td>
</tr>
<tr>
<td></td>
<td>No information</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Ownership structure</td>
<td>Local (&gt;50% local equity)</td>
<td>56</td>
<td>46.7</td>
</tr>
<tr>
<td></td>
<td>Joint-venture (50% local and 50% foreign equity)</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Foreign (&gt;50% foreign equity)</td>
<td>58</td>
<td>48.3</td>
</tr>
<tr>
<td>Number of employees</td>
<td>Below 301</td>
<td>44</td>
<td>36.7</td>
</tr>
<tr>
<td></td>
<td>Between 301-450</td>
<td>26</td>
<td>21.7</td>
</tr>
<tr>
<td></td>
<td>Above 450</td>
<td>50</td>
<td>41.7</td>
</tr>
<tr>
<td>Total assets</td>
<td>Less than RM2.5 million</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Between RM2.5 - RM50 million</td>
<td>45</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>Between RM51 - RM100 million</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td></td>
<td>Above RM100 million</td>
<td>47</td>
<td>39.2</td>
</tr>
<tr>
<td></td>
<td>No information</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Sales revenue</td>
<td>Less than RM5 million</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Between RM5 - RM10 million</td>
<td>7</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>Between RM11 - RM25 million</td>
<td>10</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>Between RM26 - RM50 million</td>
<td>12</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Between RM51- RM100 million</td>
<td>21</td>
<td>17.5</td>
</tr>
<tr>
<td></td>
<td>Above RM100 million</td>
<td>68</td>
<td>56.7</td>
</tr>
</tbody>
</table>

The result also indicates a majority of the samples are large firms. This is based on the number of employees, which indicates all the firm samples have more than 150 employees. Almost 50% of the respondents’ firm have above 450 employees.
Additionally, the percentage of respondents firms holding total assets above RM100 million is the highest with a percentage of 39.2%. Respondents firm with sales revenues above RM100 million is the highest at 56.7%.

### 5.2.3.3 DESCRIPTIVE STATISTICS OF THE MAIN VARIABLES

Table 5.6 presents a descriptive statistic for the main variables in the study. This table outlines managers’ general perception on the comprehensiveness of PMS implemented in their firm, their perception on role ambiguity, organisation commitment, job performance role conflict and locus of control personality. Results presented include the mean value, median, standard deviation, minimum and maximum value of actual or observed and theoretical value range. Since the instruments use a seven-point Likert scale, all the variables have theoretical range from one to seven.

The results show that the observed means for CPMS, role conflict, organisational commitment and job performance all lie a little above the theoretical means. The observed mean for CPMS is 5.12 and is among high mean value of all the variables. For CPMS, the result is as expected, since the samples used in the study consist of large manufacturing companies. Large-sized organisations are expected to have more sophisticated and specialised accounting and control procedures (Bruns & Waterhouse, 1975; Ezzamel, 1990; Hoque & James, 2000; Lau & Moser, 2008; Ong & Teh, 2008).

For the role stress dimensions, the observed mean for role ambiguity is below the theoretical mean and indicates managers perceive that they have a low role ambiguity level. However, they perceive that they have high role conflict, as the mean is quite high at 4.31. This may indicate that the managers have high level of organisational commitment based on the mean value that is above the theoretical mean at 5.14. The
observed mean value for organisational commitment is the highest among all the main variables in this study. The managers also have high level of job performance as indicated by the result, showing the observed mean value for job performance is at 5.13.

For the locus of control personality variable, the observed mean is a little bit below theoretical means, which indicates internal locus of control personality. This is as anticipated, since the sample of respondents consists of managers who hold higher positions in the organisation. Prior literature indicates individuals with internal locus of control personality are considered to be more suitable of holding managerial positions, as they have a better ability to exercise control over their environment to take appropriate information-seeking and utilisation behaviour (Anderson, 1977; Hyatt & Prawitt, 2001).

Table 5.6: Descriptive Statistics of the Main Variables (n=120)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Actual Range</th>
<th>Theoretical Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>CPMS</td>
<td>5.12</td>
<td>5.111</td>
<td>0.91</td>
<td>1.78</td>
<td>7.00</td>
</tr>
<tr>
<td>ROLEAMB</td>
<td>2.74</td>
<td>2.833</td>
<td>0.86</td>
<td>1.00</td>
<td>5.67</td>
</tr>
<tr>
<td>ROLECON</td>
<td>4.31</td>
<td>4.333</td>
<td>0.94</td>
<td>2.00</td>
<td>6.00</td>
</tr>
<tr>
<td>ORGCOM</td>
<td>5.14</td>
<td>5.056</td>
<td>0.88</td>
<td>2.89</td>
<td>7.00</td>
</tr>
<tr>
<td>JPERF</td>
<td>5.13</td>
<td>5.125</td>
<td>0.85</td>
<td>3.13</td>
<td>6.75</td>
</tr>
<tr>
<td>LOC</td>
<td>3.14</td>
<td>3.125</td>
<td>1.04</td>
<td>1.00</td>
<td>5.88</td>
</tr>
</tbody>
</table>

Note: CPMS = comprehensive PMS; ROLEAMB = role ambiguity; ROLECON = role conflict; ORGCOM = organisational commitment; JPERF = overall performance; LOC = locus of control

5.2.3.4 DESCRIPTIVE STATISTIC OF THE INDEPENDENT VARIABLE (CPMS)

In this study the extent of comprehensiveness of PMS is generally measured in two ways: first is the use of PMS in providing performance information, and second is the use of PMS to integrate with the strategy and value chain (Chenhall, 2005; Hall, 2008).
Based on the descriptive analysis result in Table 5.7, the PMS used by the manufacturing companies is comprehensive, which is shown by the overall mean of both PMS use, 5.13 and 5.10. Additionally, these mean values also signify that Malaysian manufacturing firms mostly use PMS as a tool to implement strategy and integrate measure used with strategy and value chain. As shown in the analysis of result in Table 5.7, overall mean score for the first use of PMS is 5.13, is higher than 5.10 the overall mean score for the use of PMS for providing performance information.

This is consistent with Malmi (2001), who found firms that use CPMS such as BSC at the business unit level, mainly use the PMS for two purposes: as a tool to implement strategy, and for pure information systems. For the first use of PMS, the result also signifies that the PMS is comprehensive, whereby the system is shown to be formal as it is being documented and used for performance evaluation purposes with the highest mean score of 5.30. The PMS provides a link between the business unit activities and organisational objectives, with mean of 5.27. The mean is moderate, 4.88, for the measure to provide an indication of how business unit activities would have an effect on other business units. For the use of PMS as an information system, the PMS is perceived to be comprehensive, as the system provides broad measures showing important areas of the business unit operations and the mean for this characteristic is 5.20.
Table 5.7: Descriptive Statistics for CPMS

<table>
<thead>
<tr>
<th>Code</th>
<th>Variables</th>
<th>Mean</th>
<th>S.D.</th>
<th>Actual range</th>
<th>Theoretical range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Measure integrates with strategy and value chain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPMS2</td>
<td>The performance measurement system is produced in a fully documented form, which provides a record for evaluating performance</td>
<td>5.30</td>
<td>1.14</td>
<td>2.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td>CPMS4</td>
<td>It provides consistent and mutually reinforcing links between the current operating performance of your business unit and the long term strategies of the organization</td>
<td>5.08</td>
<td>1.16</td>
<td>1.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td>CPMS6</td>
<td>It links together the activities of your business unit to the achievement of the goals and objectives of the organization</td>
<td>5.27</td>
<td>1.13</td>
<td>1.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td>CPMS8</td>
<td>It shows how the activities of your business unit affect the activities of other units within the organization</td>
<td>4.88</td>
<td>1.20</td>
<td>1.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>5.13</td>
<td>0.95</td>
<td>2.50 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td></td>
<td>Measure provides performance information related to important part of BU operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPMS1</td>
<td>The performance measurement system provides a broad range of performance information about different areas of the business unit</td>
<td>5.11</td>
<td>1.07</td>
<td>2.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td>CPMS3</td>
<td>It provides a diverse set of measures related to the key performance areas of the business unit</td>
<td>5.12</td>
<td>1.10</td>
<td>1.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td>CPMS5</td>
<td>The performance measurement system provides information on different dimensions of the business unit’s performance</td>
<td>4.92</td>
<td>1.13</td>
<td>1.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td>CPMS7</td>
<td>It provides a variety of information about important aspects of the business unit’s operations</td>
<td>5.13</td>
<td>0.99</td>
<td>1.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td>CPMS9</td>
<td>The performance measurement system provides a range of measures that cover the critical areas of the business unit’s operations</td>
<td>5.20</td>
<td>1.17</td>
<td>1.00 7.00</td>
<td>1.00 7.00</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>5.10</td>
<td>0.92</td>
<td>1.20 7.00</td>
<td>1.00 7.00</td>
</tr>
</tbody>
</table>
5.2.4 PRELIMINARY ANALYSIS

T-test and one-way between-groups analysis of variance (ANOVA) are the techniques used for the additional preliminary analysis in this study. T-test is a technique used to assess the statistical significance of the difference between two samples or group means for a single dependent variables (Hair et al., 2010; Malhotra, 2010). On the other hand, ANOVA is a statistical technique used to test if there is any difference in the means of two or more populations (Hair et al., 2010).

5.2.4.1 T-TEST

In this study, preliminary analysis was conducted to explore the influence of demographic variables on the comprehensiveness of PMS. Thus, t-test was conducted to determine the difference in the comprehensive of PMS (CPMSMEAN) between gender (male and female), ownership structure (local and foreign), experience (<10 years and >10 years), number of employees (=<450 and >450), sales revenue (=< RM100m and > RM100m) and locus of control (internal and external).
Table 5.8: T-test Results

<table>
<thead>
<tr>
<th>CPMSMEAN</th>
<th>Mean</th>
<th>F</th>
<th>Levene’s test for equality of variance (sig)</th>
<th>t-test for equality of means (sig)</th>
<th>p-value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (n = 102)</td>
<td>5.16</td>
<td>4.484</td>
<td>0.036</td>
<td>0.933</td>
<td>0.362</td>
<td>ns</td>
</tr>
<tr>
<td>Female (n = 18)</td>
<td>4.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ownership structure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local (n = 56)</td>
<td>4.81</td>
<td>0.000</td>
<td>0.993</td>
<td>-3.167</td>
<td>0.002</td>
<td>s***</td>
</tr>
<tr>
<td>Foreign (n = 57)</td>
<td>5.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Work experience</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;10 years (n=59)</td>
<td>4.95</td>
<td>2.578</td>
<td>0.111</td>
<td>-1.964</td>
<td>0.052</td>
<td>s*</td>
</tr>
<tr>
<td>&gt;10 years (n=61)</td>
<td>5.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No of employees</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;=450 (n=70)</td>
<td>4.96</td>
<td>0.026</td>
<td>0.873</td>
<td>-2.259</td>
<td>0.026</td>
<td>s*</td>
</tr>
<tr>
<td>&gt;450 (n=49)</td>
<td>5.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sales revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;= RM100 m (n=52)</td>
<td>4.96</td>
<td>0.709</td>
<td>0.401</td>
<td>-1.689</td>
<td>0.094</td>
<td>s*</td>
</tr>
<tr>
<td>&gt; RM100 m (n=68)</td>
<td>5.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Locus of control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal (n=62)</td>
<td>5.09</td>
<td>0.908</td>
<td>0.343</td>
<td>-0.327</td>
<td>0.744</td>
<td>ns</td>
</tr>
<tr>
<td>External (n=56)</td>
<td>5.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: CPMS = comprehensive PMS; RA = role ambiguity; RC = role conflict; ORGCOM = organisational commitment; JPERF = overall performance; LOC = locus of control
*** The mean difference is significant at the 0.01 level.
** The mean difference is significant at the 0.05 level.
* The mean difference is significant at the 0.10 level.

GENDER

Based on the result in Table 5.8 above, Levene’s test (test for equality of variances) and t-test value (test for equality of mean) show insignificant results for CPMS. The p-values for CPMS all the variables are more than significance level of 0.05 and insignificant. Thus, equal variance and means are assumed. This result indicates that there is no significant difference in how the male or female respondents perceive the comprehensiveness of PMS. Hence, the result suggests that there is no difference on the respondents’ perception towards the comprehensiveness of PMS.
OWNERSHIP STRUCTURE

T-test analysis was also conducted to identify the difference in mean of CPMS between the two types of ownership structure. Furthermore, the group sizes are almost equal with 56 locally-owned companies and 57 foreign companies. As shown in Table 5.8 above, the p-value for CPMSMEAN is significant at 0.002 which is less than the 1% significant level. This result signifies that there is significant difference in the comprehensiveness of PMS implemented between locally-owned companies and foreign-owned companies.

WORK EXPERIENCE

The results presented in Table 5.8 indicate that there are significant differences in mean for CPMS. More experienced managers, managers with more than 10 years experience, shows that their PMS is more comprehensive, with CPMSMEAN 5.28 higher than 4.96, the mean for managers with less than 10 years experience. This result signifies that managers with longer experience with their firm perceive their PMS to be more comprehensive, which may enhance their commitment towards their present employer. Furthermore, according to Burney and Widener (2007) more experienced managers find CPMS is useful to provide more job relevant information (JRI).

NUMBER OF EMPLOYEES

The result of the T-test is reported in Table 5.8. The data indicates that there are differences in the means for CPMSMEAN between the two groups with t-statistic value -2.259. The p-values are also significant at 5% significant level 0.026 for CPMSMEAN. The CPMSMEAN for firms with number of employee more than 450 is 5.34, indicating more comprehensive PMS. In contrast, firms with number of employees < 450 shows a mean value of 4.96, showing these firms implement less comprehensive PMS.
According to Hoque and James (2000), organisation size can be measured using sales turnover, total assets and number of employees. Thus, the results of this study suggest that companies with number of employees more than 450 are large companies which adopt more comprehensive PMS. The more comprehensive the PMS adopted by the firm, the more it can provide relevant information to the managers that can reduce their role ambiguity (Burney & Widener, 2007; Hall, 2008).

**SALES REVENUE**

Following the analysis between groups based on the measures of firm size, number of employees and total assets (Hoque & James, 2000), a t-test analysis was also performed between the main variables and the two (groups) of sales revenue. The sales revenue was categorised into firms with total sales revenue equal and less than RM100 million (≤ RM100 million) and sales revenue more than RM100 million (> RM100 million) as indicated in Table 5.8 above. Consistent to prior analysis results for the number of employees, results also indicate significant variations between groups for the value of CPMSMEAN. In other words, there are significant differences in the value of mean for CPMS between the two categories of firms.

The result of the t-test indicates that firms with sales revenue more than RM100 million have more comprehensive PMS than firms with lower sales revenue. According to the mean scores of the CPMSMEAN, the mean is higher for the firm with higher sales revenue. The result implies that firms with larger total sales revenue are large firms that would implement more comprehensive PMS. On the other hand, the CPMSMEAN is lower for firms with lower sales revenue, indicating smaller firms implement less comprehensive PMS.
LOCUS OF CONTROL (LOC)

The t-test analysis was also performed to determine any differences of mean for each of the main variables (as the dependent variables) between the two types of managers’ personalities, internal locus of control and external locus of control. The results of the t-test refer to significant variations (p<0.01, two-tailed test) between groups in terms of the firms’ levels of PMS comprehensiveness, manager’s level of role ambiguity, role conflict, organisational commitment and job performance. Results of the t-test analysis as presented in Table 5.17 shows that there is no significant difference in the mean of all the main variables between internal and external LOC.

5.2.4.2 ANOVA

ANOVA was also conducted to identify the difference between more than two groups such as between three categories of ownership structure (local, joint-venture and foreign), experiences (< 5years, 5-10 years and >10 years), number of employees (<150, 150-300, 301-450 and >450 employees) and total assets (=<RM50m, RM51-100m and >RM100m).
Table 5.9: One way ANOVA Test Results

<table>
<thead>
<tr>
<th>CPMSMEAN</th>
<th>Mean</th>
<th>F</th>
<th>p-value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local (n=56)</td>
<td>4.81</td>
<td>8.476</td>
<td>0.000</td>
<td>s***</td>
</tr>
<tr>
<td>Joint-venture (n=6)</td>
<td>6.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign (n=57)</td>
<td>5.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5 years (n=33)</td>
<td>4.95</td>
<td>1.912</td>
<td>0.152</td>
<td>ns</td>
</tr>
<tr>
<td>5 - 10 years (n=26)</td>
<td>4.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;10 years (n=61)</td>
<td>5.28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 301 (n=44)</td>
<td>5.02</td>
<td>2.741</td>
<td>0.069</td>
<td>s*</td>
</tr>
<tr>
<td>301 - 450 (n=26)</td>
<td>4.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;450 (n=50)</td>
<td>5.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>=&lt; RM50 m (n=48)</td>
<td>5.00</td>
<td>1.234</td>
<td>0.295</td>
<td>ns</td>
</tr>
<tr>
<td>RM51 - 100 m (n=20)</td>
<td>4.95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; RM100 m (n=47)</td>
<td>5.26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: CPMS = comprehensive PMS
*** The mean difference is significant at the 0.01 level.
** The mean difference is significant at the 0.05 level.
* The mean difference is significant at the 0.10 level.

Table 5.9 (A): Ownership structure Scheffe’s Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Ownership structure</th>
<th>Scheffe’s test (diff)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPMSMEAN</td>
<td>Foreign &gt; Local</td>
<td>0.520</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>Joint venture &gt; Local</td>
<td>1.188</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>Joint venture &gt; Foreign</td>
<td>0.669</td>
<td>0.198</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.01 level.

Table 5.9 (B): No of employees Scheffe’s Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>No of employees</th>
<th>Scheffe’s test (diff)</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPMSMEAN</td>
<td>&gt; 450 -- &lt; 301 employees</td>
<td>-0.324</td>
<td>0.225</td>
</tr>
<tr>
<td></td>
<td>301 - 450 -- &lt; 301 employees</td>
<td>-0.142</td>
<td>0.817</td>
</tr>
<tr>
<td></td>
<td>301 - 450 -- &gt; 450 employees</td>
<td>-0.466</td>
<td>0.106</td>
</tr>
</tbody>
</table>
Based on Table 5.9, the results of the one-way ANOVA test is significant for CPMSMEAN. The result is significant as the p-value = 0.000 < significance level of 0.001, F= 8.476 at df=2,116. This result suggests that ownership structure may exert an influence on the comprehensiveness of the PMS used in the respondents’ company. From the mean values of all the three types of ownership structure groups, local ownership structure is identified to have the lowest value of CPMSMEAN, 4.81, representing less comprehensive PMS implemented by the local ownership company.

CPMSMEAN shows highest for the company with a joint-venture ownership structure, followed by foreign-owned companies: means of these types of ownership structures are 6.00 and 5.33 respectively. These results imply that foreign and joint-venture companies have more comprehensive PMS than locally-owned companies. The joint venture companies indicates comprehensive PMS as these companies are most likely being influenced by foreign culture which is partly own the companies.

Consistent with the multiple comparison test, Scheffe’s test result as shown in Table 5.9(A), there is a significant difference in the value of mean which is 0.52 between foreign and locally-owned companies at 5% significant level. This result is also similar, where there is significant difference in the value of mean 1.19 between joint-venture and locally-owned companies. This finding is consistent with prior empirical study in a Malaysian context, which identified that organisational ownership is associated with traditional and balanced or contemporary PMS (Burgess, 2007; Ong & Teh, 2008).

Their studies conclude that locally-owned companies are more likely to rely on less comprehensive PMS, more traditional and financially-oriented PMS. Whereas foreign-owned companies such as Japanese or Western rely more on balanced PMS, thus their
PMS is more comprehensive. Since such countries are developed countries, typically, the foreign-owned companies tend to adopt more innovative and CPMS (Ong & Teh, 2008). Companies that venture abroad are normally successful and would also incline to promote more innovative approach and implement more comprehensive PMS (Ong & Teh, 2008).

**WORK EXPERIENCE**

The result in Table 5.9 shows that there are no differences in the CPMSMEAN between all the three ranges of experience. Inconsistent with the study by Burney and Widener (2007), who found managers’ experience moderates the relation between SPMS or CPMS. The association between CPMS and job relevant information (JRI) is stronger for low and high experienced managers, than managers with moderate experience. Their result signifies that low and high experienced managers know how to use information effectively. However, the finding of this prior literature is not shown in the result of this study. There is no difference in the mean of the main variables in this study, particularly CPMS, role ambiguity, role conflict and organisation commitment between all the three ranges of experience. The inconsistent result may be due to the unequal group size for each range of experience used in the analysis of result.

**NUMBER OF EMPLOYEES**

Table 5.9 indicates significant result for CPMSMEAN among the three groups of employees. However, the Scheffe’s test suggests no difference in the CPMSMEAN between the three groups of employee size. The insignificant result may be due to the unequal number of employees in each group. The result is more significant when the number of employees was classified into two groups: 70 firms with number of employees <= 450 and 49 firms with number of employees > 450 as in Table 5.8.
TOTAL ASSETS

Based on the result in Table 5.9, there are insignificant results for CPMSMEAN. The results indicate that there is no difference in the CPMSMEAN between the three ranges of total assets. Number of employees and total assets are indicators of organisation size. Firm size is represented by three measures: number of employees, total assets and total sales turnover. These three measures were highly correlated with organisation size (Hoque & James, 2000).

The higher the number of employees and total assets owned by a firm, the larger the firm size. Inconsistent with the preceding result in Table 5.8, which suggest larger firms with higher number of employees implement more comprehensive PMS (higher CPMSMEAN). The analysis result for total asset in Table 5.9 is inconsistent with the preceding result in Table 5.8. For each of the main variable, the mean is not significantly different among the three ranges of total assets.

5.2.5 HYPOTHESES TESTING AND FINDINGS

In this study, PLS is used to test the mediating effect between the variables. Moderation effect was first tested using PLS and followed by moderated regression analysis (MRA) for comparative purposes.

5.2.5.1 PLS DIRECT AND INDIRECT RELATION

In this study the PLS method and Baron and Kenny’s (1986) mediation analyses are utilised to test the hypotheses. Prior to the assessment of the structural model, the quality of the measurement model was assessed with regards to its reliability and validity of the multi-item scales. Particularly the assessment addressed individual item reliability, construct reliability and the convergent and discriminant validity of the
reflective constructs. In the first stage, individual reliabilities under investigation were assessed (Hulland, 1999).

Thus, factor loadings for each variable were examined. All items loaded on their respective constructs except four items which have poor factor loading below 0.5 (item RA1=0.477, RC4=0.418, RC5=0.373 and JP8=0.406) (Hartmann & Slapnicar, 2009; Hulland, 1999). These items were removed from the scale and were not used in subsequent analyses to avoid potential biasing in the estimation of the parameters linked to the construct (Hulland, 1999). In the second stage of PLS analysis, results showed satisfactory reliability, convergent validity and discriminant validity. Results are as presented in Table 5.9, 5.10 and 5.11.

**5.2.5.2 PLS MEASUREMENT MODEL**

The properties of the measurement model are as presented in Table 5.9. Individual item reliability suggests satisfactory item reliability as all factor loadings are higher than 0.6, which implies that more than 50% of the variance observed variable is shared with the construct (Chin, 1998). According to Tenenhaus et al. (2005), in PLS, the measure of internal consistency or construct reliability is Dillon-Goldstein ρ (Werts et al., 1974) which is more preferred than Cronbach’s α (Hartmann & Slapnicar, 2009; Henseler et al., 2009) as Cronbach’s α tends to give severe underestimation of the internal consistency reliability of latents variables in PLS path models.
Table 5.9: Properties of Measurement Model

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Indicators</th>
<th>Factor loadings</th>
<th>Composite reliability</th>
<th>Average variance extracted</th>
<th>Cronbach alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive PMS</td>
<td>CPMS1</td>
<td>0.823</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS2</td>
<td>0.644</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS3</td>
<td>0.840</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS4</td>
<td>0.847</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS5</td>
<td>0.824</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS6</td>
<td>0.891</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS7</td>
<td>0.846</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS8</td>
<td>0.805</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS9</td>
<td>0.752</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role Ambiguity</td>
<td>RA2</td>
<td>0.797</td>
<td></td>
<td></td>
<td>0.927</td>
</tr>
<tr>
<td></td>
<td>RA3</td>
<td>0.800</td>
<td></td>
<td></td>
<td>0.719</td>
</tr>
<tr>
<td></td>
<td>RA4</td>
<td>0.837</td>
<td></td>
<td></td>
<td>0.901</td>
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<tr>
<td></td>
<td>RA5</td>
<td>0.911</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RA6</td>
<td>0.886</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role Conflict</td>
<td>RC1</td>
<td>0.801</td>
<td></td>
<td></td>
<td>0.829</td>
</tr>
<tr>
<td></td>
<td>RC2</td>
<td>0.657</td>
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<td>0.550</td>
</tr>
<tr>
<td></td>
<td>RC3</td>
<td>0.723</td>
<td></td>
<td></td>
<td>0.752</td>
</tr>
<tr>
<td></td>
<td>RC6</td>
<td>0.776</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisational Commitment</td>
<td>OC1</td>
<td>0.702</td>
<td></td>
<td></td>
<td>0.935</td>
</tr>
<tr>
<td></td>
<td>OC2</td>
<td>0.823</td>
<td></td>
<td></td>
<td>0.617</td>
</tr>
<tr>
<td></td>
<td>OC3</td>
<td>0.638</td>
<td></td>
<td></td>
<td>0.921</td>
</tr>
<tr>
<td></td>
<td>OC4</td>
<td>0.759</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OC5</td>
<td>0.884</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OC6</td>
<td>0.840</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OC7</td>
<td>0.872</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OC8</td>
<td>0.774</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OC9</td>
<td>0.741</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Performance</td>
<td>JP1</td>
<td>0.768</td>
<td></td>
<td></td>
<td>0.912</td>
</tr>
<tr>
<td></td>
<td>JP2</td>
<td>0.796</td>
<td></td>
<td></td>
<td>0.598</td>
</tr>
<tr>
<td></td>
<td>JP3</td>
<td>0.767</td>
<td></td>
<td></td>
<td>0.888</td>
</tr>
<tr>
<td></td>
<td>JP4</td>
<td>0.644</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>JP5</td>
<td>0.834</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JP6</td>
<td>0.817</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JP7</td>
<td>0.773</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alternatively, PLS prioritised indicators according to their reliability, resulting in a more reliable composite thus are more appropriate to use a different measure, composite reliability (Henseler et al., 2009; Werts et al., 1974). As indicated in Table 5.9, all composite reliability indicators are above 0.7, indicating satisfactory construct reliability. For the assessment of validity, two validity subtypes were examined:
convergent validity and discriminant validity. Convergent validity appeared acceptable for all reflective constructs included in this study. In Table 5.9, the average variance extracted (AVE) was at least 0.55, meaning that on average more variance was explained than unexplained in the variables associated with a given construct (Fornell & Larcker, 1981).

Discriminant validity has a complementary concept which can be determined in two ways: (1) The Fornell-Larcker criterion, and (2) the cross loadings. The former assesses discriminant validity on the construct level, whereas the latter allows evaluation made on the indicator level (Henseler et al., 2009). According to Henseler et al. (2009), the Fornell-Larcker criterion postulates that a latent variable shares more variance with its assigned indicators than with any other latent variable. Statistically, the correlation of a construct with its indicators (the square root of the AVE) should exceed the correlation between the construct and any other construct (Fornell & Larcker, 1981).

Results in Table 5.10 suggest sufficient discriminant validity of constructs, as all diagonal elements exceed the off-diagonal elements in the corresponding rows and columns. The second criterion of discriminant validity is a bit liberal, whereby discriminant validity is met if the loading of each indicator is greater than all of its cross-loadings (Chin, 1998; Henseler et al., 2009). Based on the result in Table 5.11, all indicators were found to load higher on the intended measured construct than on any other constructs (Chin, 1998; Henseler et al., 2009), thus fulfilling another criterion of sufficient discriminant validity. Overall, the evaluation of the measurement model shows satisfactory results and indicates the constructs are all valid and reliable and appropriate to proceed with the evaluation of the structural model.
Table 5.10: Construct Means, Standard Deviations, Square Root of AVE and Correlations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPMS</td>
</tr>
<tr>
<td>CPMS</td>
<td>5.12</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td>JOBPERF</td>
<td>5.13</td>
<td>0.85</td>
<td>0.556</td>
</tr>
<tr>
<td>ORGCOM</td>
<td>5.14</td>
<td>0.87</td>
<td>0.508</td>
</tr>
<tr>
<td>ROLEAMB</td>
<td>2.74</td>
<td>0.85</td>
<td>-0.592</td>
</tr>
<tr>
<td>ROLECON</td>
<td>4.30</td>
<td>0.94</td>
<td>0.211</td>
</tr>
</tbody>
</table>

Note: CPMS = comprehensive PMS; ROLEAMB = role ambiguity; ROLECON = role conflict; ORGCOM = organisational commitment; JOBPERF = overall performance; LOC = locus of control
Table 5.11: Cross Loading (Full sample, n=120)

<table>
<thead>
<tr>
<th></th>
<th>CPMS</th>
<th>JOBPERF</th>
<th>ORGCOM</th>
<th>ROLEAMB</th>
<th>ROLECON</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPMS1</td>
<td>0.823</td>
<td>0.404</td>
<td>0.414</td>
<td>-0.493</td>
<td>0.202</td>
</tr>
<tr>
<td>CPMS2</td>
<td>0.644</td>
<td>0.499</td>
<td>0.481</td>
<td>-0.468</td>
<td>0.169</td>
</tr>
<tr>
<td>CPMS3</td>
<td>0.840</td>
<td>0.445</td>
<td>0.405</td>
<td>-0.471</td>
<td>0.150</td>
</tr>
<tr>
<td>CPMS4</td>
<td>0.847</td>
<td>0.504</td>
<td>0.464</td>
<td>-0.448</td>
<td>0.148</td>
</tr>
<tr>
<td>CPMS5</td>
<td>0.824</td>
<td>0.472</td>
<td>0.309</td>
<td>-0.410</td>
<td>0.203</td>
</tr>
<tr>
<td>CPMS6</td>
<td>0.891</td>
<td>0.494</td>
<td>0.478</td>
<td>-0.564</td>
<td>0.104</td>
</tr>
<tr>
<td>CPMS7</td>
<td>0.846</td>
<td>0.386</td>
<td>0.374</td>
<td>-0.473</td>
<td>0.208</td>
</tr>
<tr>
<td>CPMS8</td>
<td>0.805</td>
<td>0.472</td>
<td>0.377</td>
<td>-0.475</td>
<td>0.195</td>
</tr>
<tr>
<td>CPMS9</td>
<td>0.752</td>
<td>0.346</td>
<td>0.362</td>
<td>-0.488</td>
<td>0.168</td>
</tr>
<tr>
<td>JP1</td>
<td>0.298</td>
<td>0.768</td>
<td>0.494</td>
<td>-0.522</td>
<td>0.026</td>
</tr>
<tr>
<td>JP2</td>
<td>0.444</td>
<td>0.796</td>
<td>0.446</td>
<td>-0.568</td>
<td>0.066</td>
</tr>
<tr>
<td>JP3</td>
<td>0.384</td>
<td>0.767</td>
<td>0.409</td>
<td>-0.433</td>
<td>0.137</td>
</tr>
<tr>
<td>JP4</td>
<td>0.238</td>
<td>0.644</td>
<td>0.282</td>
<td>-0.222</td>
<td>0.068</td>
</tr>
<tr>
<td>JP5</td>
<td>0.544</td>
<td>0.834</td>
<td>0.533</td>
<td>-0.510</td>
<td>0.095</td>
</tr>
<tr>
<td>JP6</td>
<td>0.498</td>
<td>0.817</td>
<td>0.479</td>
<td>-0.388</td>
<td>0.061</td>
</tr>
<tr>
<td>JP7</td>
<td>0.523</td>
<td>0.773</td>
<td>0.404</td>
<td>-0.448</td>
<td>0.008</td>
</tr>
<tr>
<td>OC1</td>
<td>0.461</td>
<td>0.430</td>
<td>0.702</td>
<td>-0.569</td>
<td>0.282</td>
</tr>
<tr>
<td>OC2</td>
<td>0.358</td>
<td>0.423</td>
<td>0.823</td>
<td>-0.378</td>
<td>0.166</td>
</tr>
<tr>
<td>OC3</td>
<td>0.325</td>
<td>0.270</td>
<td>0.638</td>
<td>-0.323</td>
<td>0.455</td>
</tr>
<tr>
<td>OC4</td>
<td>0.448</td>
<td>0.424</td>
<td>0.759</td>
<td>-0.374</td>
<td>0.204</td>
</tr>
<tr>
<td>OC5</td>
<td>0.335</td>
<td>0.431</td>
<td>0.884</td>
<td>-0.397</td>
<td>0.122</td>
</tr>
<tr>
<td>OC6</td>
<td>0.410</td>
<td>0.536</td>
<td>0.840</td>
<td>-0.468</td>
<td>0.136</td>
</tr>
<tr>
<td>OC7</td>
<td>0.337</td>
<td>0.504</td>
<td>0.872</td>
<td>-0.455</td>
<td>0.070</td>
</tr>
<tr>
<td>OC8</td>
<td>0.490</td>
<td>0.468</td>
<td>0.774</td>
<td>-0.357</td>
<td>0.019</td>
</tr>
<tr>
<td>OC9</td>
<td>0.390</td>
<td>0.506</td>
<td>0.741</td>
<td>-0.401</td>
<td>0.080</td>
</tr>
<tr>
<td>RA2</td>
<td>-0.461</td>
<td>-0.404</td>
<td>-0.503</td>
<td>0.797</td>
<td>-0.107</td>
</tr>
<tr>
<td>RA3</td>
<td>-0.432</td>
<td>-0.480</td>
<td>-0.467</td>
<td>0.800</td>
<td>-0.144</td>
</tr>
<tr>
<td>RA4</td>
<td>-0.503</td>
<td>-0.509</td>
<td>-0.409</td>
<td>0.837</td>
<td>-0.086</td>
</tr>
<tr>
<td>RA5</td>
<td>-0.568</td>
<td>-0.554</td>
<td>-0.469</td>
<td>0.911</td>
<td>-0.137</td>
</tr>
<tr>
<td>RA6</td>
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<td>-0.536</td>
<td>-0.428</td>
<td>0.886</td>
<td>-0.153</td>
</tr>
<tr>
<td>RC1</td>
<td>0.242</td>
<td>0.065</td>
<td>0.140</td>
<td>-0.228</td>
<td>0.801</td>
</tr>
<tr>
<td>RC2</td>
<td>0.095</td>
<td>0.037</td>
<td>0.006</td>
<td>-0.087</td>
<td>0.657</td>
</tr>
<tr>
<td>RC3</td>
<td>0.020</td>
<td>0.055</td>
<td>0.162</td>
<td>0.029</td>
<td>0.723</td>
</tr>
<tr>
<td>RC6</td>
<td>0.169</td>
<td>0.075</td>
<td>0.219</td>
<td>-0.077</td>
<td>0.776</td>
</tr>
</tbody>
</table>

5.2.5.3 PLS STRUCTURAL MODEL

The second stage of the PLS analysis is the evaluation of the structural model for hypotheses testing. The hypotheses were examined based on the path coefficients (β), t-statistics, significant value and the variance explained (R²). The path coefficients indicate the strength and direction of the relationships among the latent variables which
are explained similarly as in Ordinary Least Squares (OLS) regression. In addition, the statistical significance of the parameter was assessed using a bootstrap simulation with 500 replacements, as there is no specific distribution assumption in PLS (Chin, 1998). Since the PLS approach assumes all measured variance is useful variance to be explained (Chin et al., 2003). $R^2$, a more prediction-oriented measure being used to assess PLS structural models (Hall, 2008). Additionally, the predictive validity of the parameter estimates can be assessed via a cross-validated redundancy index or also called as Stone-Geisser $Q^2$-test (Geisser, 1974; Stone, 1974). The Stone-Geisser criterion postulates that the model must be able to provide a prediction of the endogenous latent’s indicators (Henseler et al., 2009). The result in Table 5.13 indicates $Q^2$ for all latent variables is greater than 0 which suggest that the model has predictive relevance (Stone-Geisser test criterion is shown in Appendix A).

**Figure 5.1:** PLS Output Presents Standardised Path Coefficient

CPMS=Comprehensive PMS; ORGCOM=Organisational commitment; ROLEAMB=Role ambiguity; ROLECON=Role conflict; JP=Job performance
Table 5.12 reports the results from the structural model as shown in Figure 5.1. The t values confirm the significance of hypotheses H1 ($\beta=-0.592$), H2 ($\beta=0.211$), H3 ($\beta=-0.289$), H5 ($\beta=0.276$), H6 ($\beta=0.312$), H7 ($\beta=-0.358$) and H9 ($\beta=0.243$). For the first role stress dimension, role ambiguity, there is negative association between CPMS and role ambiguity ($t=7.359, p<0.01$) (H1). In contrast, there is a weak negative relation between CPMS and role conflict ($t=1.649, p<0.10$) (H2). For the relation between these role stress dimensions and job performance, there is negative association between role ambiguity and job performance ($t=3.185, p<0.01$) (H3) and no association identified with role conflict (H4). Thus hypotheses H1 and H3 are supported at 1% significance level.

For the path between CPMS and organisational commitment, there is positive association ($t=2.041, p<0.05$) (H5) and there is also positive association between organisational commitment and job performance ($t=3.476, p<0.01$) (H6), hence, provide support for hypotheses H5 and H6. For the proposed association between role stress dimension and organisational commitment, results in Table 5.12 indicate negative and significant association between role ambiguity and organisational commitment ($t=2.977, p<0.01$). This result supports H7. However, there is no association identified between role conflict and organisational commitment ($t=0.852, p>0.10$) (H8). H9 is also supported, as there is a significant relation between CPMS and job performance ($t=2.457, p<0.01$).

The variance explained ($R^2$) of the key endogenous construct is as shown in Table 5.13; job performance, 0.477; organisational commitment 0.352 and role ambiguity 0.350, which indicate predictive power in the structural model. Based on each $R^2$ values,
results indicate endogenous construct variance was largely explained by the model, except for role conflict with $R^2$ value 0.044.

Table 5.12: Path Coefficient and PLS Structural Model Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Path</th>
<th>Path coefficient</th>
<th>t value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>CPMS -&gt; ROLEAMB</td>
<td>-0.592</td>
<td>7.359***</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>CPMS -&gt; ROLECON</td>
<td>0.211</td>
<td>1.649*</td>
<td>Not supported</td>
</tr>
<tr>
<td>H3</td>
<td>ROLEAMB -&gt; JPERF</td>
<td>-0.289</td>
<td>3.185***</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>ROLECON -&gt; JPERF</td>
<td>-0.076</td>
<td>0.930</td>
<td>Not supported</td>
</tr>
<tr>
<td>H5</td>
<td>CPMS -&gt; ORGCOM</td>
<td>0.276</td>
<td>2.041**</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>ORGCOM -&gt; JPERF</td>
<td>0.312</td>
<td>3.476***</td>
<td>Supported</td>
</tr>
<tr>
<td>H7</td>
<td>ROLEAMB -&gt; ORGCOM</td>
<td>-0.358</td>
<td>2.977***</td>
<td>Supported</td>
</tr>
<tr>
<td>H8</td>
<td>ROLECON -&gt; ORGCOM</td>
<td>0.097</td>
<td>0.852</td>
<td>Not supported</td>
</tr>
<tr>
<td>H9</td>
<td>CPMS -&gt; JPERF</td>
<td>0.243</td>
<td>2.457***</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Note: CPMS = comprehensive PMS; ROLEAMB = role ambiguity; ROLECON = role conflict; ORGCOM = organisational commitment; JPERF = overall performance; LOC = locus of control

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ (one-tailed)

As the whole analysis was conducted in a stepwise approach, Table 5.13 provides the detail results of direct and indirect relation between CPMS and job performance. This procedure was conducted following the test of mediation suggested by Baron and Kenny (1986) and James and Brett (1984). According to Baron and Kenny (1986), there is mediation effect when the following conditions are met: (1) the independent variable significantly predicts mediator, (2) the mediator variable significantly predicts dependent variable, and (3) if the link between independent and dependent variable are also significant they indicate partial mediation, whilst suggest full mediation if the link is insignificant.
The result in Table 5.13 may explain how initial direct relation (CPMS and job performance) was altered by the subsequent introduction of the two mediators (Role stress dimensions and organisational commitment). The path coefficient from CPMS and JP shows direct positive and statistically significant effect on JP ($\beta=0.572$, $p<0.01$, $t=9.595$). When **Mediator 1**, organisational commitment, is introduced into the model (second column), the direct effect between CPMS and JP is reduced ($\beta=0.365$, $p<0.01$, $t=4.336$) and becomes less significant. However, the relation between CPMS and OC ($\beta=0.512$, $p<0.01$, $t=7.632$) and between OC and JP ($\beta=0.387$, $p<0.01$) are significant. Based on this result, evidence of partial mediation is identified whereby OC partially mediates the relationship between CPMS and JP (Baron & Kenny, 1986).
Direct relationship between CPMS and JP is further reduced and becomes less significant ($\beta=0.243$, $p<0.01$, $t=2.457$) when Mediator 2, role stress dimensions (third column), role ambiguity and role conflict are being introduced into the model. The results also indicate evidence of partial mediation of role stress dimensions in the relation between CPMS and JP (Baron & Kenny, 1986). The path coefficient from CPMS to RA is negative ($\beta=-0.592$, $p<0.01$, $t=7.359$) and RA to JP is negative and also significant ($\beta=-0.289$, $p<0.01$, $t=3.185$). For RC, the path coefficient to JP is insignificant ($\beta=-0.076$, $p>0.01$, $t=0.930$) and there is weak relation between CPMS and RC ($\beta=0.211$, $p<0.10$, $t=1.649$). Only RA not RC also mediate the relation between CPMS and OC as the path coefficient between RA and OC is significant ($\beta=-0.358$, $p<0.01$, $t=2.977$).

The indirect effect between CPMS and job performance consist of the following paths:

(1) CPMS – ROLEAMB – JPERF
(2) CPMS – ROLEAMB – ORGCOM – JOBPERF
(3) CPMS – ORGCOM – JOBPERF

Path (1) indicates the indirect effect exclusively via role ambiguity whilst Path (2) and (3) show indirect effect through organisational commitment. The significance of indirect effect was also assessed using Sobel test (Sobel, 1982) and for the estimation of standard deviation. From the estimation of standard deviation using the technique of Sobel, the $T$-values related to the indirect effect were statistically significance at 1% significance level which is presented in Table 5.14 as follows. Thus, the result confirms the mediating effect of role ambiguity and organisational commitment between CPMS and job performance.
Table 5.14: Analysis of Indirect Effects (n = 120)

<table>
<thead>
<tr>
<th>Indirect effect</th>
<th>Indirect effect coefficient</th>
<th>Standard deviation of coefficient</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPMS on JPERF through</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROLEAMB</td>
<td>0.3260</td>
<td>0.0591</td>
<td>5.5146</td>
</tr>
<tr>
<td>ORGCOM</td>
<td>0.2653</td>
<td>0.0558</td>
<td>4.7556</td>
</tr>
</tbody>
</table>

Note: CPMS = comprehensive PMS; ROLEAMB = role ambiguity; ORGCOM = organisational commitment; JPERF = overall performance. All t-values are statistically significant at the 1% level (one-tail test). Formula for the standard deviation of coefficient is presented in Appendix A. Indirect effect coefficients were calculated using unstandardised path coefficients.

Figure 5.2: Empirical Model with Standardised PLS Path Coefficient

Figure 5.2 above shows the final model which confirms the hypotheses in the link between CPMS and job performance. As shown in the figure, the link is mediated through role stress dimension, role ambiguity and organisational commitment. In particular, the result signifies that CPMS could provide feedback and information required by managers to perform their task. The information obtained by managers from CPMS may then reduce role ambiguity of the manager that leads to enhanced...
organisational commitment and in turn improves their job performance. The finding of the research is consistent with prior studies which identified that the informational effect of CPMS may provide positive effects on managerial behaviour (Burney & Widener, 2007; Hall, 2008; Webb, 2004).

For the relation between CPMS and role conflict, the result is not in line with the hypothesis and indicates a positive relation. This result is however consistent with prior studies by Roger and Molnar (1976) and Jackson and Schuler (1985), who had also found formalisation of objectives to have a negative association only with role ambiguity, and no association identified with role conflict. According to Jackson and Schuler (1985), the presence of professional norms may influence the relationship between formalisation and role conflict. Organ and Greene (1974) found that employees who possess professional norms, such as managers, are associated with increased role conflict in existence of formalisation.

Upper level managers are individuals who have sufficient personal or/and organisational power, thus formalisation appears unnecessary or not really helpful for them to reduce role conflict (Jackson & Schuler, 1985; Rizzo et al., 1970; Rogers & Molnar, 1976). Consistent with the finding of current research, these literatures signify that CPMS which provides formalisation of objectives and relevant job information for managers is not helpful to reduce role conflict among the managers but instead may lead to an increase in role conflict. As shown in Figure 5.2, results also indicate insignificant relations between role conflict and organisational commitment, also between role conflict and job performance.
This finding is somehow consistent with prior research (Rizzo et al., 1970; Van Sell et al., 1981; Yousef, 2002) which indicates a strong negative association between organisational commitment and role ambiguity, but has a weak relation with role conflict. For the relation between role conflict and job performance, the finding is consistent with research by Burney and Widener (2007), who had also found no association to exist between the constructs. Additionally, meta-analysis by Jackson and Schuler (1985) also identified role ambiguity to have a stronger relation with performance and found a weak relation with role conflict. Similar evidence was also reported through a more comprehensive meta-analysis conducted by Tubre and Collin (2000).

5.2.5.5 TEST OF MODERATION

In this research, a moderating effect is first tested using PLS analysis. According to Chin et al. (2003), an interaction or moderation effect involves a moderator variable which can be qualitative (i.e. gender, race, class) or quantitative (i.e. age, income). Additionally, a moderator variable can provide information such as in which condition certain anticipated relation between two (2) variables would exist (Chin et al., 2003). If a variable is a moderator variable, it can affect the direction and/or strength of the relation between an independent or predictor variable and dependent or criterion variable.

In this study, the PLS multi-group analysis is performed to test the moderating effect of a personality variable, locus of control, in each relation between CPMS and each of the following variables: role ambiguity, organisational commitment, role conflict and job performance. This analysis is adopted as it is useful to analyse discrete or categorical moderators (Chin, 2000; Ghozali, 2006). Discrete or categorical moderator variables
can be explained by separating data into two subsample groups (Chin, 2000; Ghozali, 2006).

Furthermore, according to Chin et al. (2003), other traditional techniques to test moderation effect have certain limitations. Techniques such as ANOVA and Moderated regression analysis (MRA) may be subject to measurement error and low statistical power resulting from such an error. Thus these analyses may not be able to detect such interaction effects. When detected, due to measurement error, the estimate of the true effect may be biased downwards.

5.2.5.5.1 PLS - MULTIGROUP ANALYSIS

Thus, in this study, locus of control samples is divided into two sub-sample groups; internal LOC and external LOC. The following table provides descriptive statistics for the full range of the LOC variable. As in Hyatt and Prawit (2001) and Pines and Julian (1972) based on the LOC median scores, LOC is dichotomised into internal and external LOC subgroups as shown in Table 5.15. Higher LOC scores indicate external LOC and internal LOC with lower LOC scores. Additionally, this classification leads to the most equal split possible between the two types of LOC and besides, the median score (25) is below the mean score (25.14).

<table>
<thead>
<tr>
<th>Research construct</th>
<th>Theoretical Range (Observed Range)</th>
<th>Median (n°)</th>
<th>Mean (Std Deviation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus of Control</td>
<td>0-56 (8-47)</td>
<td>25 (118)</td>
<td>25.14 (8.36)</td>
</tr>
<tr>
<td>Internal</td>
<td>0-25 (8-25)</td>
<td>19 (62)</td>
<td>18.85 (4.10)</td>
</tr>
<tr>
<td>External</td>
<td>26-56 (26-47)</td>
<td>31 (56)</td>
<td>32.11 (6.01)</td>
</tr>
</tbody>
</table>

Table 5.15: Descriptive Statistics for LOC Variable
Path coefficient for each subsample was then compared and tested for its significance using a pair-wise test (Chin, 2000; Ghozali, 2006). In a condition whereby standard error of both subgroups is not the same, the t-statistic value is calculated with the following formula:

\[
t = \frac{\text{Paths sample 1} - \text{Paths sample 2}}{\sqrt{(\text{se}^2 \text{ sample 1}) + (\text{se}^2 \text{ sample 2})}}
\]

Path sample = Path coefficient
se = Standard error

The result in Table 5.16 shows that the moderation effect of locus of control between CPMS and role ambiguity is significant at t=2.053, p<0.05. Thus, H10 is supported. For the moderation effect of locus of control in the relation between CPMS and role conflict, the t-value is not significant at t=1.016. Hence, H11 is not supported and there is no moderation effect of locus of control in the relationship between CPMS and role conflict. Moderation effects of locus of control between CPMS and organisational commitment and between CPMS and job performance shows t-statistic values of -1.011 and 0.026 respectively. Thus, these results suggest that H12 and H13 are not supported.
Table 5.16: PLS Result for Testing Moderating Effects of LOC

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable</th>
<th>Moderator variable</th>
<th>R square</th>
<th>Path coefficient</th>
<th>Standard error</th>
<th>t-statistic</th>
<th>t (formula Chin, 2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPMS</td>
<td>ROLEAMB</td>
<td>Internal</td>
<td>0.267</td>
<td>-0.517</td>
<td>0.106</td>
<td>4.869</td>
<td>H10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External</td>
<td>0.567</td>
<td>-0.753</td>
<td>0.044</td>
<td>16.984</td>
<td>2.053 **(s)</td>
</tr>
<tr>
<td>CPMS</td>
<td>ROLECON</td>
<td>Internal</td>
<td>0.035</td>
<td>0.188</td>
<td>0.224</td>
<td>0.839</td>
<td>H11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External</td>
<td>0.185</td>
<td>0.430</td>
<td>0.081</td>
<td>5.283</td>
<td>1.016 (ns)</td>
</tr>
<tr>
<td>CPMS</td>
<td>ORGCOM</td>
<td>Internal</td>
<td>0.249</td>
<td>0.499</td>
<td>0.093</td>
<td>5.375</td>
<td>H12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External</td>
<td>0.374</td>
<td>0.611</td>
<td>0.062</td>
<td>9.838</td>
<td>-1.011 (ns)</td>
</tr>
<tr>
<td>CPMS</td>
<td>JOBPERF</td>
<td>Internal</td>
<td>0.345</td>
<td>0.587</td>
<td>0.074</td>
<td>7.948</td>
<td>H13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External</td>
<td>0.341</td>
<td>0.584</td>
<td>0.092</td>
<td>6.333</td>
<td>0.026 (ns)</td>
</tr>
</tbody>
</table>

Internal = 62; External = 56
* p<0.10, ** p<0.05, ***p<0.01 (two-tailed)
Note: CPMS=Comprehensive PMS; OC=Organisational commitment; ROLEAMB=Role ambiguity; ROLECON=Role conflict; JOBPERF=Job performance
5.2.5.2 MODERATED REGRESSION ANALYSIS (MRA)

For comparative purposes, MRA was also carried out to test moderation effects of LOC in the relationship between CPMS and each of the following variables: role ambiguity, organisational commitment, role conflict and job performance. Hulland (1999, p. 293) defined Moderated Regression Analysis (MRA) as a specific application of multiple-linear regression analysis, in which the regression equation contains an 'interaction term'. According to Shields and Shields (1998), a moderator variable is defined as a variable which affects the relationship between an independent and dependent variable. However, the moderator variable theoretically has no significant bivariate relationships with the independent and dependent variables, but the variable affects the relationship between an independent and dependent variable (Hartmann & Moers, 1999; Hulland, 1999; Shields & Shields, 1998).

Multiple regression equation of a dependent variable (Y) on two independent variables (X₁ and X₂) is presented as follows:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon \]  

Eq. 1

Hartmann and Moers (1999) and Sholihin et al. (2010) suggest that MRA using a hierarchical regression analysis method can be applied to establish the existence of a statistically significant interaction effect. This method requires performing two regressions: first is as presented in Eq. (1), with the main effects only and second in Eq. (2) with both main effects and the interaction term (Sholihin et al., 2010). This interaction is commonly called two-way interaction as there are two variables and their interaction (Hartmann & Moers, 1999).

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 \times X_2 + \epsilon \]  

Eq. 2
As in Dean and Snell (1991), during the analysis, the variable was entered into the regression analysis in stages as follows: first, independent variable, CPMS, was entered into the equation, followed by moderator variable, LOC which was next entered into the equation. Finally, the cross product of the IV and moderator variable were entered into the equation as a set for each dependent variable (DV) role ambiguity, role conflict, organisational commitment and job performance. With reference to the model of this study, $X_1$ is CPMS; $X_2$ is LOC and $Y$ is role ambiguity, role conflict, organisational commitment and job performance.

Evidence of moderation exists when interaction terms account for significant incremental variance in a DV. Individually this incremental value is signified by the beta value, or collectively it is signified by the values of the incremental F-statistic (Dean & Snell, 1991). The interaction studied in this research is called a two-way interaction since the equation contains two variables and their interaction. The MRA equation is as in Eq. (2). According to Hartmann and Moers (1999), it is called positive interaction between $X_1$ and $X_2$ when the relationship between $X_1$ and $Y$ is more positive for higher values of $X_2$. A negative interaction is signified when the relationship between $X_1$ and $Y$ is more negative for higher values of $X_2$.

Table 5.17 presents the results of the moderated regression analysis (MRA) to test interaction effects of CPMS and LOC on each of the DV, role ambiguity, role conflict, organisational commitment and job performance. Based on the result, the inclusion of interaction term between CPMS and LOC on role ambiguity has significantly improved the model. The result indicates statistically significant evidence of moderation ($F = 20.312, p < 0.01$) when LOC interacted with CPMS on role ambiguity ($b = -1.437, p < 0.01$). The result also indicates the interaction is negative, which means the relationship...
Table 5.17: Hierarchical Regression Results for Testing Moderating Effects of LOC between CPMS and Role Ambiguity, Organisational Commitment, Role Conflict and Job Performance (n = 120)

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable &amp; moderator variable</th>
<th>Standardised beta</th>
<th>p-value</th>
<th>R²</th>
<th>R² change</th>
<th>F</th>
<th>Sig F change</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROLEAMB</td>
<td>CPMS</td>
<td>0.036</td>
<td>0.858</td>
<td>0.294</td>
<td>0.294</td>
<td>47.847</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>1.230</td>
<td>0.002</td>
<td>0.295</td>
<td>0.001</td>
<td>23.812</td>
<td>0.714</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS*LOC</td>
<td>-1.437</td>
<td>0.002</td>
<td>0.350</td>
<td>0.056</td>
<td>20.312</td>
<td>0.002 (s)***</td>
<td></td>
</tr>
<tr>
<td>ROLECON</td>
<td>CPMS</td>
<td>-0.090</td>
<td>0.704</td>
<td>0.012</td>
<td>0.012</td>
<td>1.382</td>
<td>0.242</td>
<td>H11 Not supported</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>0.042</td>
<td>0.927</td>
<td>0.124</td>
<td>0.112</td>
<td>8.005</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS*LOC</td>
<td>0.356</td>
<td>0.508</td>
<td>0.128</td>
<td>0.003</td>
<td>5.457</td>
<td>0.508 (ns)</td>
<td></td>
</tr>
<tr>
<td>ORGCOM</td>
<td>CPMS</td>
<td>0.142</td>
<td>0.508</td>
<td>0.248</td>
<td>0.248</td>
<td>37.894</td>
<td>0.000</td>
<td>H12 Not supported</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>-0.775</td>
<td>0.066</td>
<td>0.249</td>
<td>0.001</td>
<td>0.156</td>
<td>0.693</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS*LOC</td>
<td>0.889</td>
<td>0.072</td>
<td>0.270</td>
<td>0.021</td>
<td>3.300</td>
<td>0.072 (ns)</td>
<td></td>
</tr>
<tr>
<td>JOBPERF</td>
<td>CPMS</td>
<td>0.266</td>
<td>0.210</td>
<td>0.285</td>
<td>0.285</td>
<td>45.379</td>
<td>0.000</td>
<td>H13 Not supported</td>
</tr>
<tr>
<td></td>
<td>LOC</td>
<td>-0.469</td>
<td>0.254</td>
<td>0.288</td>
<td>0.003</td>
<td>22.873</td>
<td>0.461</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CPMS*LOC</td>
<td>0.635</td>
<td>0.191</td>
<td>0.299</td>
<td>0.011</td>
<td>15.926</td>
<td>0.191 (ns)</td>
<td></td>
</tr>
</tbody>
</table>

* p<0.10, ** p<0.05, ***p<0.01 (two-tailed)
Note: CPMS=Comprehensive PMS; OC=Organisational commitment; ROLEAMB=Role ambiguity; ROLECON=Role conflict; JOBPERF=Job performance
between CPMS and role ambiguity is more negative for lower values of LOC (Hartmann & Moers, 1999; Sholihin et al., 2010). Thus, H10 that proposes LOC moderates the relationship between CPMS and role ambiguity is supported.

For the rest of the hypotheses, the inclusion of interaction terms between CPMS and LOC has not significantly improved the model, as the F change shows insignificant values (p>0.1). The result for the MRA with role conflict as the DV, shows no evidence of moderation (F = 5.457, p > 0.10) when CPMS interacted with LOC on role conflict. There is also no evidence of moderation (F = 3.300, p > 0.10) when CPMS interacts with LOC on organisational commitment. With job performance as DV, no evidence of moderation effect appears (F = 15.926, p > 0.10) when CPMS interacts with LOC on job performance. Based on these results, it can be concluded that LOC does not moderate the relation between CPMS and each organisational commitment, role conflict and job performance, hence H11, H12 and H13 are not supported. This result is consistent with the findings based on the moderation test performed using PLS multi-group analysis, thus confirming the support for H10 and also confirming the lack of support for H11, H12 and H13.

The first MRA conducted earlier is to identify the moderating effect of LOC in each relationship between CPMS and job performance, CPMS and role ambiguity, CPMS and role conflict, and CPMS and organisational commitment. For the second MRA, data was dichotomised into two groups: Internal LOC and External LOC. Additionally, the MRA was conducted to further identify which type of locus of control significantly moderates only in the relationship between CPMS and role ambiguity. Mathematically, proposed interactions may be expressed as follows:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 \times X_2 + \epsilon \]
Where

\[ Y = \text{role ambiguity} \]

\[ \beta_0 = \text{the constant} \]

\[ X_1 = \text{CPMS} \]

\[ X_2 = \text{LOC} \]

\[ X_1 \times X_2 = \text{CPMS} \times \text{LOC} \text{ (the interaction term)} \]

\[ \varepsilon = \text{error term} \]

Based on the equation, it is predicted that as the comprehensiveness of PMS (CPMS) increases, internal LOC, respondents with lower LOC score, perceive their role ambiguity will be reduced. Thus the interaction coefficient will be negative.

The following Table 5.18 shows the result of the second MRA. The result shows that the moderation effect is significant at the 5% level only for internal LOC (\( F = 6.948, p < 0.10 \)). The result shows standardised beta coefficient \( \beta_3 = -1.758 \) (\( p < 0.10 \)) indicates the interaction is negative. The relationship between CPMS and role ambiguity is more negative for the internal LOC. On the other hand, result shows insignificant evidence of moderation for external LOC in the relation between CPMS and role ambiguity.
Table 5.18: Hierarchical Regression Results for Testing Moderating Effects of LOC (Internal LOC and External LOC Subgroups) between CPMS and Role Ambiguity

| Dependent variable | Independent variable and moderator variable | Standardised beta | p-value | R² | R² change | F  | Sig F change | Findings                        |
|--------------------|---------------------------------------------|-------------------|---------|----------------|--------|-------------|---------------------------------|
| ROLEAMB            | CPMS                                        | 0.591             | 0.224   | 0.170          | 0.170  | 12.272      | 0.001 Significant moderation effect. |
|                    | LOC (Internal)                              | 1.400             | 0.015   | 0.202          | 0.032  | 7.457       | 0.130                           |
|                    | CPMS*LOC                                    | -1.758            | 0.030   | 0.264          | 0.063  | 6.948       | 0.030                           |
| ROLEAMB            | CPMS                                        | -1.123            | 0.012   | 0.558          | 0.558  | 66.925      | 0.000 Insignificant moderation effect |
|                    | LOC (External)                              | -0.777            | 0.141   | 0.609          | 0.051  | 40.479      | 0.012                           |
|                    | CPMS*LOC                                    | -0.798            | 0.296   | 0.617          | 0.008  | 27.419      | 0.296                           |

Note: CPMS=Comprehensive PMS; ROLEAMB=Role ambiguity; ROLECON=Role conflict; LOC=Locus of Control
This result is consistent with prior study that shows the difference in the use of MAS information between internal and external locus of control personality (Chong & Eggleton, 2003). Internal locus of control managers would be able to perform more effectively than their 'external' counterparts, in high task uncertainty situations, through greater utilisation of broad-scope MAS information such as Balanced Scorecard (BSC) in their decision-making processes.

The finding is also consistent with traditional PM research which identified the positive effect of such as budget on performance for individuals who have large degree of control over their destiny (i.e. internal locus of control) than external locus of control managers (Brownell, 1981; Brownell, 1982). Thus, findings of the research suggest that behavioural implication of CPMS could be influenced by managers’ locus of control personality. Particularly, behavioural implication of CPMS is different between managers who have a large degree of control over their destiny (internal) or managers who perceive their destinies are controlled by luck, chance or fate (external). Managers with internal and external locus of control personality perceive, process, utilise and react to information differently (Davis & Phares, 1967; Organ & Greene, 1974; Phares, 1968; Pines & Julian, 1972; Seeman, 1963).

Frucot and Shearon (1991), who also indicate inconsistent findings in their research, claimed culture may influence individual internality. Since respondents’ firms of current study consist of locally- and foreign-owned firms, there exist cognitive dissimilarities which may influence individual internality (Frucot & Shearon, 1991). Furthermore, Hamid (1994) also suggests that culture may influence locus of control personality; collectivist society is more external and high individualism society is more internal.
The following Table 5.19 provides a summary of the findings based on the result from all of the analyses of data gathered through the questionnaire survey method.

**Table 5.19: Summary of the Hypotheses Testing Results and Findings**

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: There is negative association between CPMS and role ambiguity</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: There is negative association between CPMS and role conflict</td>
<td>Not supported</td>
</tr>
<tr>
<td>H3: There is negative association between role ambiguity and job performance</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: There is negative association between role conflict and job performance</td>
<td>Not supported</td>
</tr>
<tr>
<td>H5: There is positive association between CPMS and organisational commitment</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: There is positive association between organisational commitment and job performance</td>
<td>Supported</td>
</tr>
<tr>
<td>H7: There is negative association between the role ambiguity and organisational commitment</td>
<td>Supported</td>
</tr>
<tr>
<td>H8: There is negative association between the role conflict and organisational commitment</td>
<td>Supported</td>
</tr>
<tr>
<td>H9: There is positive association between CPMS and job performance</td>
<td>Supported</td>
</tr>
<tr>
<td>H10: Locus of control moderates the relation between CPMS and role ambiguity</td>
<td>Supported</td>
</tr>
<tr>
<td>H11: Locus of control moderates the relation between CPMS and role conflict</td>
<td>Not supported</td>
</tr>
<tr>
<td>H12: Locus of control moderates the relation between CPMS and organisational commitment</td>
<td>Not supported</td>
</tr>
<tr>
<td>H13: Locus of control moderates the relation between CPMS and job performance</td>
<td>Not supported</td>
</tr>
</tbody>
</table>
5.3 RESULTS OF THE SEMI-STRUCTURED INTERVIEW

This section provides discussion on the result of the post-survey, semi-structured interviews. The interviews were conducted in the period from April 2012 until August 2012, after analysing and finalising the result of the survey data. Analysis results of the survey data collected indicate a significant negative relation between CPMS and ROLEAMB. There is significant positive relation between CPMS and ORGCOM. However, contrary to expectation, the survey result indicates that there is positive relation between CPMS and ROLECON. For the moderating role of personality, results show no effect in each relation between CPMS and ORGCOM, ROLECON and JOBPERF. Nevertheless, a test of moderation using moderated regression analysis (MRA) and PLS provides evidence of moderating effect of personality, LOC, only in the relation between CPMS and ROLEAMB.

The main purpose of the post-survey interview is to gather relevant and in-depth information directly from the survey respondents regarding the research issues. Particularly, the information will provide further insight for further understanding the PMS implemented and behavioural implication of the PMS among the Malaysian manufacturing companies. The interview was also conducted to gather further explanation on the consistent, inconsistent and contradictory findings of the analysis results based on managers’ actual experience. Mainly, the interview is aimed to find justification and explanation for the positive relation between CPMS and role conflict, pitfalls in PMS implementation, managers’ perception on the comprehensiveness of PMS and personality influence on the use of PMS.
5.3.1 BACKGROUND INFORMATION

Interviewees for the semi-structured interview are chosen from the respondents of the mail surveys. A formal letter requesting the managers’ participation in the interview was first emailed to the prospective interviewees. Secondly, a telephone call was made to confirm their participation. Subsequent to the managers’ confirmation of their participation, interview arrangements were made with regard to the interview date, venue and time. A total of ten managers were selected for the semi-structured interview. These managers were those who had previously answered and returned the survey questionnaire and were from selected manufacturing firms listed in the FMM directory. A copy of the covering letter and interview guide is presented in Appendix C.

All of the interviews were conducted at the managers’ offices and took about one hour for each interview. The interview was conducted in English with all the interview participants. The questions directed to the interviewees were based on the interview guide to ensure consistency of the relevant issues and information gathered during the time of the interview. Interviewees were briefed on the background of the study and objectives of the interview at the beginning of the interview. Interviewees’ consent to tape-record the interview was also asked at the beginning of the interview. All the interviewees agreed for the interviews to be tape-recorded, thus each interview was able to be transcribed after each interview session.
5.3.1.1 PROFILE OF THE SEMI-STRUCTURED INTERVIEW PARTICIPANT

Table 5.20 presents the background of the interviewees. Four of the interviewees hold top management positions, while six hold middle management positions. All of the managers have at least four years of experience working with their company, and the majority of them have been working for the same company for more than ten years. Three of the managers even have more than 15 years of experience in their respective firms. Their long duration of service and position in their firms indicated that they are knowledgeable with the operations, systems and procedures implemented in their firms. All of the managers interviewed are male and are between 33 to 55 years old. Five of the interviewees are Chinese, three Indian and two are Malays.

5.3.1.2 BACKGROUND OF RESPONDENTS’ FIRMS

Table 5.21 provides the background information of the interviewees’ firms. All of the interviewees’ firms are manufacturing firms: with some of the main activities of the firms are food packagings, producing food, automotive, chemical, and metallurgical products. All of these firms have been operating in Malaysia for more than ten years. Five of the firms have even operated for more than 40 years. Six of the firms have annual sales turnover of more than RM100 million and there is one firm which exceeds RM500 million. In terms of the number of employees, all of the firms have more than 150 employees. For the ownership structure, more than half of the firms are foreign-owned firms and only four firms are locally-owned.
Table 5.20: Background of the Semi-Structured Interview Respondents

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Position</th>
<th>Post level</th>
<th>Work experience (Years)</th>
<th>Experience in current position (Years)</th>
<th>Gender</th>
<th>Race</th>
<th>Age (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Senior General Manager</td>
<td>Top management</td>
<td>6</td>
<td>3</td>
<td>Male</td>
<td>Chinese</td>
<td>41</td>
</tr>
<tr>
<td>2</td>
<td>Manufacturing Manager</td>
<td>Middle management</td>
<td>4</td>
<td>3</td>
<td>Male</td>
<td>Chinese</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>Production Manager</td>
<td>Middle management</td>
<td>11</td>
<td>5</td>
<td>Male</td>
<td>Malay</td>
<td>38</td>
</tr>
<tr>
<td>4</td>
<td>Production Manager</td>
<td>Middle management</td>
<td>20</td>
<td>7</td>
<td>Male</td>
<td>Malay</td>
<td>44</td>
</tr>
<tr>
<td>5</td>
<td>Production Manager</td>
<td>Middle management</td>
<td>18</td>
<td>11</td>
<td>Male</td>
<td>Indian</td>
<td>44</td>
</tr>
<tr>
<td>6</td>
<td>General Manager of Production</td>
<td>Top management</td>
<td>10</td>
<td>1</td>
<td>Male</td>
<td>Indian</td>
<td>33</td>
</tr>
<tr>
<td>7</td>
<td>Assistant General Manager</td>
<td>Top management</td>
<td>4</td>
<td>4</td>
<td>Male</td>
<td>Chinese</td>
<td>38</td>
</tr>
<tr>
<td>8</td>
<td>Assistant General Manager</td>
<td>Top management</td>
<td>4</td>
<td>4</td>
<td>Male</td>
<td>Chinese</td>
<td>52</td>
</tr>
<tr>
<td>9</td>
<td>General Manager</td>
<td>Middle management</td>
<td>16</td>
<td>3</td>
<td>Female</td>
<td>Indian</td>
<td>46</td>
</tr>
<tr>
<td>10</td>
<td>Senior Production Manager</td>
<td>Middle management</td>
<td>11</td>
<td>11</td>
<td>Male</td>
<td>Chinese</td>
<td>55</td>
</tr>
</tbody>
</table>
## Table 5.21: Background of the Respondents’ Firm

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Type of Products Manufactured</th>
<th>Years of Operations (years)</th>
<th>Annual Sales Turnover (RM)</th>
<th>No of Employees</th>
<th>Firm Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disposable plastic</td>
<td>22</td>
<td>60 M</td>
<td>400</td>
<td>Local</td>
</tr>
<tr>
<td>2</td>
<td>Automotive parts</td>
<td>40</td>
<td>50 M</td>
<td>200</td>
<td>Foreign (US and Germany)</td>
</tr>
<tr>
<td>3</td>
<td>Encapsulated moulding compound</td>
<td>20</td>
<td>96 M</td>
<td>540</td>
<td>Foreign (Japan)</td>
</tr>
<tr>
<td>4</td>
<td>Motor vehicle</td>
<td>10</td>
<td>230 M</td>
<td>356</td>
<td>Local</td>
</tr>
<tr>
<td>5</td>
<td>Food seasoning</td>
<td>52</td>
<td>316 M</td>
<td>500</td>
<td>Foreign (Japan)</td>
</tr>
<tr>
<td>6</td>
<td>Food and beverage</td>
<td>18</td>
<td>400 M</td>
<td>720</td>
<td>Foreign (Hong Kong)</td>
</tr>
<tr>
<td>7</td>
<td>Industrial paints</td>
<td>46</td>
<td>600 M</td>
<td>850</td>
<td>Foreign (Singapore)</td>
</tr>
<tr>
<td>8</td>
<td>Metallurgical</td>
<td>62</td>
<td>150 M</td>
<td>400</td>
<td>Local</td>
</tr>
<tr>
<td>9</td>
<td>Medical examination gloves</td>
<td>25</td>
<td>25 M</td>
<td>850</td>
<td>Foreign (US)</td>
</tr>
<tr>
<td>10</td>
<td>Plastic packaging</td>
<td>42</td>
<td>300 M</td>
<td>500</td>
<td>Local</td>
</tr>
</tbody>
</table>
5.3.2 ISSUES RELATED TO PMS IMPLEMENTED IN MALAYSIA

5.3.2.1 IMPLEMENTATION OF THE PMS

Based on the interviews conducted with the ten interviewees from ten different companies, each interviewee claimed that their company implements a certain type of PMS. Nine out of ten of the interviewees also assert that the PMS implemented in their companies is formal and established system; however the system implemented is not fully online and it is not yet an integrated system. The data is recorded and kept in a standard format, which is developed in an Excel program in which the report will only be generated and printed as and when required. Even though the respondents claimed to have established systems, most of the companies are yet to have an automated and online PMS system.

*Interviewee 5*, a production department manager, describes the PMS of the company as formal in a sense that there is a PMS guide book used for performance appraisal or evaluation, “*The PMS implemented in the company is very formal and we even have a guide book and also evaluation guide criteria. The system that we have now is continuously being improved in two years bases*”. Additionally, the interviewee has also indicated that the implementation of PMS is being influenced by the parent company. In addition, quality standard awards also require firms to prepare comprehensive self-assessment data which can be obtained from the measurement system data. This is based on the claim made by *Interviewee 2*, a manufacturing manager, “*It is quite an established PMS system for ABC as it is one of the requirements for ISO and under a group of company in the worldwide so we have to go in line with that strategy*”. 
Interviewees 4 and 5 indicate that their companies have already planned to have an automated PMS and will have the PMS to be online in which reports can be automatically generated from the online system soon. Automated or online PMS is when the performance data can be keyed in by manager into the scorecards and then the system can automatically aggregate the data to the higher-level scorecard to show the whole performance of the company. Out of ten interviewees, only these two interviewees indicated that their firms are going to have an automated PMS soon this year. Another three interviewees say that their firms have already automated and integrated PMS, whereas seven of them still have manual PMS.

Interviewee 6, one of the three respondents who has an automated PMS claimed that his firm has a structured PMS and the automated system which allows managers to distribute and analyse reports easily,

“Structured PMS means what needs to be covered in the PMS, how many percentages of the measures which will be financial-based and how many percentages will be non-financial based. The PMS is automated in a sense that it is online and web-based. The system can be assessed anytime, we call it intranet, we can share a lot of things because operation in 42 countries, we can share among senior managers, we do communicate a lot and for people work under us they can always log in the intranet and check what is their appraisal and ratings. Only supervisor and above that can get access to the intranet. Automated PMS is like a living document as the information in the system can continuously being updated and can be assessed by individual employees at anytime”.

Based on the interview data, almost all respondents claimed that the implementation of PMS is at various levels in the firm and includes group level, organisational level or corporate level, business unit level, which is also called functional and departmental
level, and finally at the individual level. The system is somehow identified to be unique from one company to another company. Overall, all of the respondents interviewed have their PMS implemented in their firm to be divided into executive and non-executive level. As mentioned by Interviewee 2,

“The use of PMS is implemented at various hierarchical levels in the company, which includes organisational or corporate level, business unit level, departmental level and individual level. However, at individual level, the key performance indicators (KPI) are applicable to the department head only. For the individual level, the PMS is different between the executive group and the non-executive group. The format of the PMS at individual level is the same for all individuals in the executive groups which consist of the top management, middle management and the lower management. The non-executive group would have a simpler PMS and normally the measures are based on attendance, volume etc”.

Similarly, as mentioned by Interviewee 3, the ITL (Individual Team List) is applicable for all the executive levels and manager levels only. According to Interviewee 4,

“PMS is divided into two groups consisting of executive/all level and non-executive (supervisors and operators). For the non-executive level, the PMS is very direct, such as measures related to completion of work, number of jobs done, attendance and contribution to the company”.

All of these companies claimed to have formal and established PMS in place. Regardless of the system used by the companies, all of these companies use KPI to assess their performance. For Interviewee 6, the General Manager of Production, claimed that his firm has three types of PMS for three employee group levels,

“The PMS is in three types; for the operators, supervisors and senior supervisor and managers above”: he had also mentioned that, “The only supervisors are not evaluated
Based on the earlier part of the interview, in general most of the interviewees indicate that their firms have a PMS that is established, formal and structured. The implementation of PMS is also at various levels from the organisation level down to the individual level. A few of them had also claimed that the implementation of PMS is somehow being influenced by the parent company and assessment requirement related to the firm’s quality award. Based on the interview, adequate information technology (IT) plays a role for the effective use of the PMS. IT technology supports better performance assessment, communication and exchange of information within the organisation and inter-organisations worldwide. This is consistent with Franco and Bourne (2003) that organisations are better able to manage through measures with an adequate information technology infrastructure which can provide easy data collection, analysis and interpretation process. Franco and Bourne (2003) also found that having a structured approach to the PMS facilitates its management and daily use.

5.3.2.2 THE USE/CONTENT OF PMS

All of the respondents interviewed have all the four balanced scorecard perspectives in their scorecard, which includes financial performance, customer relations, internal business processes and the organisation’s learning and innovation activities. Most of the interviewees claim that the measures derived in their firm’s PMS or scorecards are derived from strategy and also from cause-and-effect relationships. According to Interviewee 2, a manufacturing manager, measures derived are subject to the level of management and department head will determine the measures of the department,
“As I am the department head for manufacturing, so I will decide the KPI for my team. I have to make them agree with the KPI. In addition, I will also have to ensure the goal is in line with the organisation KPI. Depending on the level, my level is to look into revenue, factors that drive the revenue; product quality (cost that has direct impact on the product) and productivity (cost effective output)”. 

All of the interviewees are of the opinion that PMS at business unit level has a direct link with the system at individual level, thus individual level performance will result in business unit success. Even though each interviewee claimed the balanced performance measure perspectives were used in their firm’s scorecard, each departmental scorecard in the firm has a different weight age for each part. **Interviewee 5** made such claims, “We are using measures based on financial, learning, business process and customer. We are using the four in our departmental scorecard, in term of individual, not the same that we will cover, sometimes weight age change. At the departmental level, the total four perspectives are all in the departmental or business unit PMS. From this level, it will be cascaded down to individual target with different weight age as well. Normally, higher weight age will be on critical area of the company and smaller weight age on minor one”.

In terms of the content of the PMS of the company, most of the firms interviewed have all the four balanced scorecard perspectives in their PMS. At the business unit level, the scorecard also consists of balanced financial and non-financial measures. However, the weight age for each type of perspectives in the scorecard is different at the departmental levels, depending on the focus of the department, i.e. production department focus on internal efficiency.
5.3.2.3 COMPREHENSIVE PMS

Only four interviewees claimed that their firms have comprehensive PMS. When the respondents were asked what they consider as a comprehensive PMS, each interviewee had their own definition of comprehensive PMS. For Interviewee 1, comprehensive PMS is regarded as a well-discussed and agreed PMS with all the stakeholders. Interviewee 2 indicates comprehensive PMS is a measurement system that is applicable to the company’s needs, which need not be too detailed and measures should not be too many, as the system should be simple and achievable by individuals. According to him, unachievable targets or KPI can result in a negative impact for people or will become a demoralization factor. Interviewee 3 defined comprehensive PMS as a clear and well-communicated PMS that can provide sufficient feedback to employees. Comprehensive PMS is defined by Interviewee 4 as a requirement for everybody to commit and review consistently every quarter, at all levels and the system should include detail elements or measures.

For Interviewee 5, comprehensiveness is perceived as a system that is fair to everybody; it takes considerably longer time to develop a comprehensive system. According to him, the longer the system is being implemented, through continuous improvement, will help the firm to build CPMS. This is also agreed by Interviewee 6 who argued that PMS will never be comprehensive, as the business environment is so dynamic and is subjected to a lot of uncertainty or ambiguities. As such, PMS need to be dynamic as well. He says that,

“I don’t think any PMS can be comprehensive. It has to be continuous improvement and updated year by year. There is always something that can affect business operation or business need. PMS is supposed to define everything clearly to manage performance; it can give you feel about what is happening on the floor, business and people”.

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For Interviewee 9 and Interviewee 8, the term comprehensiveness is related to how the system can provide clear directions, target and motivation to the employees of the organisation. Additionally, a brief definition given by Interviewee 9, “comprehensive PMS is a measurement system that encompasses various aims of the organisation and influences the performance of an individual and motivates individual to achieve targets”. CPMS is also perceived as a system that provides clear direction to the organisation community. According to Interviewee 8, “Comprehensive PMS provides you vision, mission and strategic objectives as organisation needs strategic direction to steer everybody on the same pace to head towards certain objectives or to steer the business to where we want the business to be”.

Based on the interview, there are a few definitions given by the interviewees to described the term ‘comprehensive PMS’. Overall, CPMS is described by the managers as a PMS that is well-discussed and agreed by all stakeholders, clear and achievable, provides sufficient feedback, provides fair evaluation, is continuously improved and updated, provide an individual employee with clear & strategic direction and motivation (Franco & Bourne, 2003).

5.3.2.4 STRATEGY IMPLEMENTATION AND INFORMATION SYSTEM

For the question whether PMS provides a tool to implement strategy or is for pure information system or both, seven respondents indicated that the system serves both purposes. However three of the respondents perceived the function of the PMS mainly as a means of implementing strategy. According to Interviewee 3 who agreed on the two functions of PMS and similarly with Interviewee 6 who claimed that as a business
unit manager the system is particularly used for information systems. **Interviewee 3** says, 

“*Individual Team List (ITL) used in the company drives subordinate to achieve business unit target. Business unit manager will have discussion with subordinate regarding achievement of the targets before targets are being set. As a business unit manager, I really use the information from PMS to manage the business operation particularly using the ITL*”.

**Interviewee 6**, having similar opinion as **Interviewee 3**, he claims that there is an equal weight between the two functions of PMS. PMS will be used to drive down strategy as clearly indicated in the PMS.

Thus, employees on the floor who run the business will get the idea how these goals and strategies are going to be run. An analogy was used to describe the PMS. The system is like a medical card which provides as an indicator for him to monitor performance of the business unit activities. The information from the PMS is used for self-evaluation based on his claims during the interview,

“*PMS acts like a medical card, like today how’s my blood pressure, cholesterol level, am I good or not? I really use it to provide information to run my business unit particularly I am having one business unit to lead. As a general manager for production, I use the PMS to provide me the information. At the same time being an individual of the whole organisation, PMS is a good tool for the strategic management*”.

According to **Interviewee 5**, “*The use of PMS is more of a strategic management tool to drive people and need them to be focus*”. Similarly, **Interviewee 4** also claimed the same function of PMS which is specifically used in his firm only for performance evaluation.
Interviewees confirmed the comprehensive uses of the PMS are both as a strategic management tool and as an information system (Malmi, 2001). Additionally, PMS is also perceived to be a steering device or strategic management tool to the manager as an individual in the firm, but perceives PMS as a useful information system as a head of business unit of the firm.

5.3.3 PMS INTEGRATES WITH STRATEGY AND VALUE CHAIN

5.3.3.1 FORMAL PMS AND PERFORMANCE EVALUATION

Most interviewees stated that their firms have a certain type of bonus scheme implemented in their firms. As their PMS implemented is fully documented, thus the bonus performances of the firm are some tied fully and some tied partly to the firms’ measurement system, or to the four balanced PMS perspectives. Overall, most interviewees indicated that the performance review was conducted through monthly performance review meetings. However, for performance evaluation reviews, different companies would have it at different frequency of evaluation, such as monthly, quarterly, half- or full-year reviews for each individual. Interviewee 3 has two types of review implemented in his firm: Bonus review which is conducted half yearly and salary review, which is conducted once a year. The bonus evaluation is partly tied to the PMS, whereby 80% is based on measures in part of the firm’s PMS, called Individual Team List (ITL) and the rest, 20% is based on other criteria, such as skills, education and management capabilities.

Another respondent, Interviewee 4, also has a comprehensive reward system implemented in the firm. Performance appraisal is done quarterly either at the business unit level or organisational level. Bonus calculation is also partly based on PMS and partly based on the firm’s prerogative, where a high annual increment will subsequently
result in a higher bonus. **Interviewee 6** has three types of bonus: contractual bonus, performance bonus and profit-sharing bonus. Performance bonus and profit-sharing bonus are tied to the PMS measures in full. **Interviewee 9** also has the performance bonus fully based on the PMS measures. **Interviewee 5** has three types of bonus: contractual bonus, performance bonus and extra bonus. Except for the contractual bonus, other bonuses and promotions are also partly based on the PMS.

### 5.3.3.2 ORGANISATION LONG-TERM STRATEGIES

Most of the interviewees agree that the PMS implemented in their firm provides a link between business unit operating performance and organisational long-term strategies, or via the firm’s mission and vision statement. According to **Interviewee 5**, measures in the PMS are derived from strategies and based on cause-effect reasoning. Although financial measures are the most critical, other indicators or measures are also important, providing a platform to support the financial performance. Learning improvement and productivity improvements are activities which are not directly related to financial performance but these indicators are actually the platform in order to make company more profitable. Other measures, such as number of product return, customers’ complaints, and repair are the platforms to ensure that the company makes more profit.

**Interviewee 6** says that the organisation strategy is revised every three years and the business unit strategy is reviewed every year, depending on requirements of the period. If there is a need for the organisation strategy to change, the business unit strategy will be changed accordingly. **Interviewee 9** indicates that the measure in the firm’s PMS is partly based on strategy, just as the safety of the employee is the priority of the company. Thus, non-financial targets of the firm are on safety, i.e. lost time through
injury and medical time injury. As she mentioned, “*An unsafe environment is a threat to the employee and hence affects the firm productivity*”.

5.3.3.3 GOAL ACHIEVEMENT

Most of the interviewees also agree that the PMS provides a link between business unit activities towards goal achievement and objectives of the organisation. *Interviewee 4* says that although the development of the PMS is a top-down approach whereby it is cascaded down from the organisational level down to functional unit then individual level, this approach is also applicable to the target-setting process. However, for the performance evaluation review, the process is going from the individual level up to the organisation level to determine whether business unit activities contribute to the organisation’s goal achievement and objectives. He also says,

“*If it happens that everybody seems to achieve the target set, however, at the same time, the overall company performance is not better than the previous year, this never means that individual or the business unit achieves organisation goal set. Overall performance is still depending on how individual or business unit performance contributes to the organisational overall performance. So when individual target is achieved, it never means that organisation goal is achieved*”.

PMS will determine whether business unit achievement is aligned with the overall organisational performance. The interviewees also indicate that a monthly review is conducted to ensure business unit activities are aligned with the organisation objectives, and the performance review meeting is also part of the organisation’s PMS requirements.
5.3.3.4 CROSS FUNCTIONAL ACTIVITIES

According to Interviewee 1, as there are cross-functional activities within the firm; PMS implemented in his firm indicates how the activities of business unit affect the activities of other units (value chain). Thus, the PMS is designed in a group effort and receives feedback from all stakeholders. Additionally, according to Interviewee 3, when there are cross-functional activities occurring in a firm, a performance evaluation process of a particular department, such as a production department, will also require other division managers to be involved in the performance evaluation review, such as managers of the logistics, engineering, human resources and purchasing departments.

Another example how measures provide a link between different business units’ activities was mentioned by Interviewee 4, a production manager from an automotive manufacturer,

“One of the departments under manufacturing is Industrial Engineering Department (IED). IED’s function is to improve production line in terms of engineering, equipment and process. But the production department is the one which runs the process. So of course the PMS of one department will affect other department”.

Another example was also given by the production manager,

“IED is also responsible to prepare the inventory level standard for process improvement for the Production Planning Department (PPD). Thus IED has to make sure PPD follow the inventory standard and this requirement need to be followed by the department and an audit will be conducted. Thus PMS will indicate how the activities of business unit affect others”.

That conducting a review meeting is part of the PMS requirement of the firm as was claimed by Interviewee 6. Since business unit activities affect other units or the value
chain, during the meeting the exchange of information will occur whereby relevant information will be shared, such as those pertinent to project fulfillments, stock holding level, logistics, engineering, quality, financial health and working capital. As he mentioned,

“We emphasise so much on the operating profit centre (OPC), thus the OPC head (OPCH) will do the presentation. Other departments or the commercial department will feed in the required information or highlight whichever they think the OPCH needs to do”.

*Interviewee 7* also agrees that PMS provide an indication of how business unit activities affect other units. He mentioned that,

“In the PMS, we always do away with silo measures as we have cross functional strategic imperatives. As such, a few of the firm’s strategic imperatives (SI) are sourcing excellence, commercial excellence and operational excellence. Sourcing excellence indicates how cost-effective when the firm buys as it will affect product pricing. Commercial excellence is related to sales and delivery. Operational excellence determines how well we can deliver to the customers. So, these three strategic pillars are very much interrelated, which will result in cross-functional activities between business units. Each business unit may hook into three or four SI because the SI has direct effects on the business unit”.

Based on the interview data, most of the firms interviewed have an integrative PMS. PMS described by the interviewees indicate that their PMS provides integration between business operations and organisation strategy. In addition the PMS was also described to have integration between the value chains (Chenhall, 2005; Hall, 2008; Nanni et al., 1992).
5.3.4 PMS PROVIDES PERFORMANCE INFORMATION

5.3.4.1 BROAD RANGE OF INFORMATION OF BUSINESS UNIT OPERATION

Almost all managers say that PMS provides them with broad range of information about different areas of the business unit. However, only two interviewees think otherwise. According to Interviewee 6 who agrees that PMS provides broad range of information particularly to the higher level managers, as they have full feasibility on the business unit. He described how the automated PMS provides individual different ranges of information, depending on the managers’ feasibility within the firm,

“PMS covers everything but limits the things which they can’t see. The feasibility depends on individual grades and values. As such supervisor can see system efficiency; production manager can see production standards, i.e. labour cost. Operating Centre Profit Head (OPCH) like us has full feasibility. I have full responsibility what will happen to the finance, the company cash flow, logistic etc. So I’m able to see everything financial and non-financial information. PMS provides me information such as quality, labour cost, line efficiency, downtime etc.”

For Interviewee 5, having manual PMS requires business unit heads to present their unit performance in a weekly performance meeting in the presence of all other managers. This meeting will allow managers to get relevant feedback from other departments where relevant issues can be highlighted, i.e. launching a new product as described in the KPI. According to him,

“Other departments are also involved in launching a new product such as Development team (development schedule), marketing team (promotion of the product), production (manufacturing). The weekly meeting allows us to see and synchronise the gap. More can also be discussed during the quarterly meeting which is attended by managers from
eleven departments. Colour code is also used to highlight areas that need improvement; green indicates less concern required and red for more concern required as it is below the target”.

However, Interviewee 4 claimed that the PMS does provide information but only indicates work completion, as PMS only requires individuals to indicate minimum justification of the work done. Thus, additional effort is required to determine how certain activities are completed. As mentioned by the production manager of an automotive manufacturing company,

“Let’s say an engineer states that he has completed the design. The engineer will only indicate that he has completed the design but will not show what has been designed and the parameter used. Another example is on setting the inventory level. How the standard is set is not being detailed out. How the standard is calculated is not indicated in the performance evaluation document, as it is too detailed. Thus, other proof or evidence is required in case of justification. Only minimum justification is required to describe any work done in a performance evaluation document which is part of the whole PMS in the company”.

5.3.4.2 DIVERSE SET OF MEASURES
Almost all of the interviewees indicate that PMS provides diverse set of measures which are related to the key performance areas of the business unit. Interviewee 5, a production manager of a food manufacturing firm mentioned that PMS provides information on maximising operating profit, maintaining the market share and maximising sales volume. These elements are important for the key performance areas for his business unit and firm at large. He further explained by giving an example,
“If production is not enough, production department will be blamed for not getting the product ready on time. In addition, if sales are not pushing the product, the marketing department will be blamed of not doing proper promotion. Thus, it is always these three performance areas: sales, marketing and production that are critical and will be discussed if below average performance”.

Interviewee 2 also said that PMS implemented in his firm consists of a diverse set of measures related to production volume, productivity, quality performance and conversion cost, which are the business unit key performance areas. Similar to Interviewee 6, who leads a production department, also indicates

“Yes, PMS provides broad information. Key performance areas of the business: (1) cost quality, what we measure is complaint, positive quality performance like defects per million units; (2) labour cost, productivity per unit, utility cost, output per head count. These measures are very much direct to production people”.

According to Interviewee 9, the measures used in the business unit are determined after discussion with the team, measurements are conveyed to the superior, who will then give the approval.

5.3.4.3 INFORMATION ON DIFFERENT DIMENSIONS OF BUSINESS UNIT PERFORMANCE.

Almost all managers state that PMS provides them information on different dimensions of business unit performance. According to Interviewee 5,

“Normally, in the quarterly review meeting, we will have discussions on the critical areas and those with red indication in the scorecard. This information will be shared and discussed during the 40 minutes presentation with the presence of all the eleven department managers, Chief Executive Officer (CEO), Chief Operating Officer (COO),
Chief Financial Officer (CFO) and Chief Marketing Officer (CMO)”. Interviewee 7 also mentioned the used of PMS to provide information, such as the PMS would require firms to detail out: process of measurement, conduct review meeting at regional level, companywide level, functional team and project level. The reviewing process is a formal process in the firm as well as part of the firm’s PMS. He claimed, “From the review, information is exchanged, performance level is known and gap is identified for action plan to be produced for the particular business unit”.

5.3.4.4 A VARIETY OF INFORMATION ABOUT IMPORTANT ASPECTS OF THE BUSINESS UNIT’S OPERATIONS.

Most interviewees affirmed that PMS implemented in their firm provides a variety of information. As commented by Interviewee 6, who has an automated PMS implemented in the firm, says that the PMS allows him to get trend analysis. The report can be customised based on the information that is required by managers i.e. production line utilisation for the production manager to decide which production lines should have high production. As a food and beverage manufacturing firm, Interviewee 6 also states that the PMS allows him to make informed decisions particularly when freshness of material is important in a food manufacturing firm. The PMS helps managers to self-evaluate and identify the problem.

He also mentioned that,

“The production line utilisation planning is very important because priority is to maintain the freshness of the material and to avoid it becoming bad. So the thing that I measure is forecast accuracy. Other information that managers can identify through the PMS is the amount of material loss. End of the day the PMS will generate and coordinate the information to show the profit and detail performance of the department.
PMS is important and supposed to help people like me to see, to get better focus and can be used to self-evaluate. In some condition the problem identified through the system will give an indication that a task force team is needed. Then there will be an action plan, goal and target set for the team to solve the problem”.

5.3.4.5 RANGE OF MEASURES THAT COVERS THE CRITICAL AREAS OF THE BUSINESS UNIT OPERATION

Key performance indicators (KPI) are part of the firm PMS being used to assess performance and also indicate the firm’s critical areas. In a business unit, the subordinates’ KPI is in line with the business unit managers’ KPI. This is because the individual KPI has its own weight age which in combination forms the business unit KPI. According to *Interviewee 2*, his subordinates’ KPIs actually indicate the accountability in different areas of the business unit, which also represents critical areas of the business unit. *Interviewee 4* is a business unit head of Industrial Engineering Department (IED) in a car manufacturing firm. IED has a function of improving production efficiency by monitoring all the value stream of manufacturing. He claimed that PMS is used as a measure to eliminate waste, which is one of the critical areas of the business unit operation.

According to him, “Since the focus of his business unit is on internal process and learning and growth, so the KPI of the department is to ensure efficiency of the firm is at 80%. Thus, there are ranges of measures used in the PMS to cover the critical areas for all the business unit improvement initiatives, such as Total Productive Maintenance, Lean Manufacturing, Kanban, Just In Time (JIT) etc. So PMS is used to measure elimination of waste of the manufacturing internal processes”. *Interviewee 6*, one of the Operating Profit Centre Heads (OCH) of a food and beverages manufacturing firm,
claimed that ranges of measures are used in his department with information technology support. As he stated,

“This department has other ranges of measures used to cover important areas of the business unit’s operation, including material loss, production line utilisation, direct labour cost, equipment down time, production running etc. As the firm uses automated PMS, programmable logic controller (PLC) is also used to link up and to provide the manager with information on the business unit performance”.

Based on the interviews overall, it is agreed by the interviewees that PMS implemented in their firms provides a broad range of information, in a sense that their PMS consists of a broad and diverse set of measures, including financial and non-financial information related to the important areas of the business unit (Ittner et al., 2003b; Malina & Selto, 2001; Van der Stede et al., 2006). Communication is really important and identified to be one of the factors to better manage through measures. The measures need to be communicated and understood by all individuals. As mentioned by the interviewees, a review meeting is a means to communicate the measures to their teams. Thus, through regular formal communication and reporting i.e. performance review meetings and presentations, the PMS would provide managers with better management understanding (Franco & Bourne, 2003). Most interviewees also claimed that the PMS implemented provides a comprehensive view of the business unit’s performance (Malina & Selto, 2001).

5.3.5 BEHAVIORAL IMPLICATIONS OF PMS

Out of the ten interviewees, three of them say that PMS has both positive and negative implications on behaviour. Six of them claimed positive implication and only one interviewee indicated there is a negative implication. As indicated by Interviewee 1,
PMS has positive implication on managerial behaviour as the system provides the manager with better focus on either individuals or in a team. This is also agreed by Interviewee 2, who said that PMS helps managers to focus and become more organised, as he commented,

“Without KPI or PMS, managers will work in different directions. PMS is a tool to help the manager to focus. In addition, the PMS can also bring the team to focus as the task will become more organised and proper for them”.

On the other hand, according to Interviewee 9, PMS has positive behavioural implications, as the system can enhance individual motivation when they perceive the system provides a proper way to measure performance that can create a high level of justice and fairness. As he mentioned,

“PMS encourages people to improve and strive harder to achieve organisational objectives. Particularly, people are motivated as there is a proper system to measure performance as well as it reduces chances of biasness”.

For the interviewees who perceive PMS as providing both positive and negative behavioural implications, they indicate that PMS can be an adverse effect as well as motivator to an individual. As Interviewee 7 commented,

“Using PMS, people can be pressured up because they are being measured every step all the way. Thus, it can have adverse effect or can be a motivator”.

In addition, it is also commented by Interviewee 6 that PMS has positive implications on individual if the person is really motivated. As he stated, “PMS is positive for people who are really motivated, who are performance-oriented and goal-oriented”.

He also claimed that the PMS is perceived as a motivator for performers and was perceived to have adverse effects for non-performers. As commented by Interviewee 6, “I always take them as a very fair measurement. The system is good for performers,
definitely can give positive effect. For those who are a little bit late back especially those who are already on the job for many years, already in a very complacent situation, this probably pushes them down. First, you get everything documented, well defined, real time and then it becomes very transparent after that. Performers become clearer as they want things to be clear but non-performers become more negative”.

The interviewee also perceives the PMS to have negative implications, such a system was commented to increase workloads and may create managerial tension. As indicated by Interviewee 4,

“Managers have to prepare lengthy reports during performance appraisal and this will create people who claimed that they are done with their work but they haven’t”. Another negative perception described by the manager is regarding the imbalance of evaluation; if the PMS is too comprehensive that may include subjective measures. As he also commented,

“During the PMS exercise, subjective measures can also lead to unfairness perception. As this type of measure can lead to imbalanced evaluation and can demotivate an individual”.

As a conclusion, based on the interview data, PMS can have both negative and positive implications. However, most of the interviewees perceive PMS to have more positive effects rather than negative effects on managers. Other than providing strategic focus, interviewees also indicated the positive effect of PMS to enhance managers’ motivation. This is consistent with the article review by Franco-Santos et al. (2012) who identified that there are a number of ways PMS can affect behaviour of people. According to Franco-Santos (2012), PMS can enhance individual strategic focus as the system can
improve executives’ discussion about strategy and help managers or executives to concentrate efforts on what is important for their organisation.

The result is also consistent with Burney et al. (2009) and Lau and Sholihin (2005) who found that firms with well-defined performance measures produce a high level of fairness and justice, which subsequently result in satisfaction and higher performance. However, PMS is also perceived to have negative implications on managers as it can create tension and unfairness evaluation. This is consistent with Tuomela (2005) and Franco-Santos et al. (2012), who found how managers refuse to use PMS, as the measurement system may increase managers workload, as the system is a time-consuming exercises. Furthermore, if PMS is more comprehensive, the subjectivity of the measures may lead to unfairness perceptions.

5.3.5.1 CPMS AND ROLE AMBIGUITY

Based on the survey analysis result, one of the main findings shows that CPMS has a positive effect on managers’ role ambiguity. Thus, during the interview, managers were also asked to share their opinion on this finding. Consistent with the survey findings, most of the interviewees agree that PMS can actually reduce role ambiguity of the managers.

According to Interviewee 7, PMS can reduce a manager’s role ambiguity. PMS, through the business objective, can provide managers directions; however will not indicate which way to take to achieve the objective. With PMS implementation, a superior will set the business objectives and the subordinates will work out how to achieve the business objectives. These action plans will be discussed between the superior and subordinate during the target setting stage. PMS can actually reduce managers’ role
ambiguity either formally through the performance review meeting which is conducted monthly, quarterly, half-yearly or annually and performance appraisal, or through informal discussion. Particularly, targets and objectives are only set at the beginning of the year; however, through the year managers will be faced with lots of ambiguities in managing the business. Thus, for daily operations, the PMS process allows managers to receive feedback from their subordinates either through formal or informal discussion, which can actually reduce managers’ role ambiguity.

*Interviewee 9*, who also agrees that PMS may reduce role ambiguity, indicates how the measures are consistently being reviewed and revised,

“*KPIs are set up, reviewed and modified from time to time based on feedback from users. This helps to reduce ambiguity of the respective roles*.”

Similarly, *Interviewee 1* also agrees that the benefit of PMS is to reduce the role ambiguity, as PMS reinforces it whereby the system focuses managers’ responsibility.

For *Interviewee 6*, since the current business environment is so dynamic, managers are always in the condition of having role ambiguity. PMS can actually reduce the role ambiguity of the managers as he claimed: “*You cannot completely take out role ambiguity in a manager’s position as it will always be there. But with PMS in place, at least it will be defined to a certain level why this job exists first of all*”.

According to *Interviewee 10*, who has automated PMS implemented in the firm, claimed that the PMS provides the managers with information for them to make informed decisions, such as to accept orders under certain constraints and for urgent jobs.

“*PMS coordinates sales, production, marketing as well as technical and engineering department to decide on accepting orders brought in by the sales department. The*
measurement system provides information relevant to the productivity, machine efficiency, wastage level, quality to support our decisions”.

Interviewee 8 somehow agrees with Interviewee 6 that there is always role ambiguity faced by managers, as there is a lot of overlapping of work and job scopes. As he states “PMS objective is to achieve something which is in lined with strategic goal. It has to harness or foster teamwork. PMS should not be too individualistic which will lead managers to become more concerned on individual performance. Thus, PMS will not be able to help managers reduce their ambiguities”.

5.3.5.2 CPMS AND ROLE CONFLICT

Inconsistent with expectation, survey findings indicate that there is negative effect of more comprehensive PMS on role conflict. Thus, during the interview, managers were asked about their opinion on this relationship. Almost all interviewees agreed that there would be a higher role conflict when the PMS is comprehensive. According to Interviewee 1, CPMS can result in higher role conflict because when the PMS is more comprehensive, a manager will concern himself only with his own performance.

Similarly, Interviewee 6 also claimed that incompatible demands among commercial, production, quality and finance managers may result in managers having role conflict, as each of them has their own departmental target and objective to achieve. He also claimed that this happens because the managers tend to limit themselves based on the PMS. As he explained, “For production manager, productivity is his main concern while quality is the main priority for the quality manager. Conflict may arise as quality manager may put restriction on production so as the quality is met which may not be aligned with the production manager’s target to increase production”.

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He had also explained another situation where role conflict may arise between production and commercial managers due to demand and delivery dates that differ. He states “A Production Manager will have to sacrifice production efficiency to produce products of different sizes and incur more cost for cleaning and labour cost to meet orders. If otherwise, commercial team will fail to meet target of not meeting customers’ orders. Thus, sometimes role conflict may arise as managers have their own target to achieve. At this point, to reduce the conflict both may sit down to resolve the problem and to make a decision”.

Interviewee 8 indicates how well-defined PMS may lead role conflict to occur, as he commented,

“PMS draws very clear lines in terms of rationalising the things so that the targets are too individual. However, business cannot draw lines as of course there will be overlapping. Business activities are also cross-functional and certain KPIs need to be shared. The PMS implementation must be in a way to ensure strategic intent of the company is achieved; if not, everybody will focus on their own KPI or performance”. This is also agreed by Interviewee 1, who claimed CPMS tends to be individualistic and does not promote teamwork,

“CPMS only increases if it is not well managed, as by nature CPMS does not encourage teamwork. Hence the managers will be required to ensure that the team effort remains”.

And, according to Respondent 2, wrongly-designed PMS can also result in managers having higher role conflict. This is also agreed by Interviewee 5, as he stated,
“Role conflict will increase if PMS is wrongly managed. Everybody wants to focus on their own performance rather than the company performance. Every function thinks that they are doing their things”.

Interviewee 2 implied that communication and integration with other units within the organisation are essential in a way to reduce role conflict. Managers would want to achieve their target, but sometimes business unit activities would affect activity of other units. Thus, Interviewee 2 suggests the conflict between departments which may likely result in managers’ role conflict could be avoided by sitting down to discuss the conflict and to revise the PMS to improve the system. According to Interviewee 10, PMS will reduce role conflict if an individual manager receives instructions from other individuals within the department. All individuals within the departments will work towards achieving a common departmental goal or KPI. But PMS will increase role conflict if the demand or instruction received by the manager is from other departments, thus there will be role conflict as different departments would have different KPIs and departmental goal or targets.

5.3.5.3 CPMS AND ORGANISATIONAL COMMITMENT

Based on the interview, almost all of the managers agree that PMS plays an important role in enhancing managers’ organisational commitment, which leads to improved job performance. The perception of the manager based on the interview data supports the survey findings. According to the managers, PMS can provide them with clear targets that could enhance their commitment. As Interviewee 9 commented,

“Managers find it easier to work when there are clear and well-defined targets; as such they become more committed”.
It is also said that performance review meetings, which is a formal process of appraisal, is part of the PMS to ensure business unit objectives are in line with the organisational objectives. As indicated by Interviewee 7,

“During a review process, an individual can be inspired with the company core values. This formal process will deliver company performance and at the same time can improve individual level of engagement and retention of employees”.

The manager also perceived that the PMS can show company performance, thus making an individual feeling secure working in the company. Interviewee 10 claimed,

“PMS shows performance, thus will get people to become more motivated. If it indicates that we are doing well, individual manager will feel secure knowing the company’s performance”.

Additionally, the manager also perceives that PMS would create better communication and teamwork to work to achieve organisational goals. Interviewee 10 had also indicated,

“PMS reinforces teamwork, as when a job was identified to have a lot of wastage, productivity and quality problems, easy for us to call in engineering and technical departments, entire relevant departments to gather and find solution. Based on the data, it is easy to communicate with other team members to work towards the firm common goal”.

Managers perceive PMS can enhance organisational commitment as the measurement system was perceived to provide transparency in terms of the firm’s directions, performance and how individual evaluation is being made. Another comment given by Interviewee 6, a general manager of production,
“PMS enhances the managers’ commitment in a sense that a manager gets certain transparencies in terms of what the company wants to do, where it is heading, getting a level of comfort that things are a little bit more structured in terms of being evaluated. Furthermore, when there is a belief that this company is doing well, it will continue to do well and be fair to employees. In addition, everybody would like to work with the company, which can spell everything black and white”.

5.3.6 INFLUENCE OF MANAGER’S PERSONALITY

Finally, managers were asked about their opinion on the fourth main findings of the research. Based on survey results, LOC only moderates the relation between CPMS and role ambiguity. The result indicates that there is no evidence showing moderating effect of locus of control in the relation between CPMS and organisational commitment, CPMS and role conflict, and CPMS and job performance.

When the interviewees were asked whether personality can influence the use of PMS, all of the managers interviewed seem to agree that personality may influence the use of PMS by managers to improve their job performance. Interviewee 2 indicates that individual behaviour and personality can influence the performance of the individual himself or his team member. Managers’ personality should be able to drive their team for result or to achieve their unit KPI. According to Interviewee 6, the use of PMS is different between personalities as he perceived: “A manager who is very task-oriented, aggressive, result-oriented and has a goal kind of personality will be very easy to rule out the PMS with them, very easy to track and they receive it easily”. On the other hand, Interviewee 10 perceives that managers’ personality has influence on everything, and a manager with a positive personality will benefit from the PMS. He commented, “Managers with positive personality will use PMS as a tool to measure their
performance and then use the system to motivate the workers to get help, to get other departments to cooperate, coordinate and initiate team work to improve their job performance”.

Almost all of the managers perceive that they have internal locus of control personality. However, three of them claimed that they may have both external and internal locus of control personality. One of the managers, Interviewee 10 stated that an individual can have both internal and external locus of control personality, because age could influence internality of managers’ locus of control. As people age they will become less internal and more external. The higher the age the less internal LOC is the manager. This is because the higher the age of the manager, the less effort put by the manager to reduce his role ambiguity at the workplace, whereby managers become more external. As he commented,

“Young managers may have a high internal locus of control. Age plays an important role to shape managers personality. At a young age, they are more aggressive and ensure performance achieved”.

As indicated by Interviewee 7, individual managers would have both internal and external locus of control personality depending on the situation. As he stated,

“If I’m looking into more business related decision, more broad-based intuitive skill will come in. This skill will be measured with certain factual indicators. If I go to production and identify slack in certain indicator, this is more factual”.

All of the managers also strongly agree that PMS provides useful information and feedback for managers to perform their work and enhance their performance. Interviewee 4 stated that PMS provides information that allows the manager to self-
evaluate to run the department and the system also provides task relevant information.

As described by Interviewee 6,

“Since the PMS is web based and can be accessed anytime, it really helps me to manage my department. I can really witness how much impact it can make in any individual everyday job. It has impact up to individual daily job”.

Most of the managers admit PMS provides information for them to initiate any remedial action. Interviewee 5 commented,

“PMS initiates remedial action for those parts that are lacking, i.e. which area indicates red, thus needs more focus by the managers”.

Interviewee 6 also said,

“PMS highlighted something for managers to find a solution”.

For Interviewee 7, he indicated,

“PMS triggers points, particularly those things that fall below the indicator”.

All of the managers also agree that PMS provides information for the manager to make necessary changes. Interviewee 7 claimed that during the review, managers will identify problems and will propose changes to be made. The review process is normally conducted by firms half yearly, quarterly or yearly.

When managers were asked whether PMS would provide useful information under a high level of uncertainty situation, quite a number of the managers disagreed with the statement. As stated by Interviewee 7,

“PMS does not provide useful information under a high uncertainty situation. That is why senior management meet for emergency meetings to come out with corrective actions. The new actions and planning for the unforeseen circumstances will be input back into the system. These are the new KPIs to overcome the unforeseen circumstances
which are not set initially in order to push back production. Thus, PMS does not provide useful information under uncertainty situation”.

As a conclusion from the interviews, most of the managers perceived that they have internal locus of control personality. The interviewees also consist of managers who hold higher or senior positions in their firm and an internal has the ability to have better control over their environment (Anderson, 1977). They also claimed that the PMS provides them with useful information and feedback (Luckett & Eggleton, 1991). Consistent with prior research, managers with this type of personality actively tend to use task relevant information (Davis & Phares, 1967) to bring about remedial action (Luckett & Eggleton, 1991) and also to initiate relevant changes (Feather, 1968). According to the managers, since age and type of decision can influence managers’ locus of control personality, this could be a possible reason for the inconsistent result obtained from the survey findings for the moderation effect in the relationship.

Possible reasons that locus of control has no significant effect in the relation between PMS and OC, RC and JP are because a few of the managers claimed that they tend to have both internal and external locus of control personality, depending on the types of decision made by the manager. As indicated by the interviewee, age may also have some influence on the managers’ locus of control personality. This is consistent with Heckhausen and Schulz (1975) who suggests that locus of control increases in internality until middle age and decreases in internal control as individuals grow older. As individuals grow older and experience a decline in physical health, income and possible social status, there is a parallel reduction of mastery, competence and subsequently internal control (Lao, 1976; Ryckman & Malikiosi, 1975).
As agreed by most of the interviewees, PMS provides them information that can directly reduce their ambiguity but not to reduce role conflict, organisational commitment and job performance. This is consistent with Burney and Widener (2007) who show that CPMS can reduce role ambiguity, particularly incurring the greatest reduction in role ambiguity of the inexperienced managers. In addition, also consistent with Chong and Eggleton (2003), broad-scope MAS information (Integrated reporting format, i.e. Balanced scorecard) would make internal locus of control managers perform better but it is insensitive to the external locus of control manager to effect their managerial performance.

5.4 CHAPTER SUMMARY

This chapter provides discussion for the results from the questionnaire survey and semi-structured interviews. The result of the questionnaire survey data analysis is discussed in the earlier part of the chapter. The discussions include presentation of results for descriptive analysis of demographic data for individual analysis, business unit, respondents’ firms, the main variables and the independent variable. Following descriptive analysis, results of the t-test and analysis of variance (ANOVA) are also included to determine any significant difference in demographic data in relation to the main variables in the study. A few of the tests from the analysis showing significant results suggest proceeding with the following analysis.

For the hypotheses testing based on the conceptual framework proposed in preceding chapter, data is analysed using Partial Least Square (PLS) analysis and Moderated Regression Analysis (MRA - using hierarchical method). The results from the PLS regression analysis is divided into two parts: discussion on properties of the measurement model, followed by the result based on the PLS structural model. The test
of mediation is based on mediation condition by Baron and Kenny (1986). Test of moderations are conducted using both PLS and MRA. Using PLS, the locus of control sample was dichotomised into two subgroups. On the other hand, MRA using the hierarchical method was also conducted for comparative purposes. On the whole, results from the questionnaire survey indicate that Malaysian manufacturing firms have a CPMS in a sense that the system has broad sets of measures consisting of financial and non-financial measures, which are linked and aligned with the firms’ strategy.

The PMS was also found to have more positive behavioural implications. Results also indicate direct links between PMS and the two behaviour variables: role ambiguity and organisational commitment. However, inconsistent with the earlier expectation, there is no evidence showing a direct effect of PMS on role conflict. For the internal contingency variable, locus of control, results from the survey indicates that this variable only moderates the relationship between CPMS and role ambiguity. However, no moderation evidence was found in each relationship between CPMS and job performance, organisational commitment and role conflict.

The second part of the chapter provides discussion on the result from the semi-structured interview. From the semi-structured interview, findings are consistent with the survey. Managers confirmed the decision-facilitating role of the PMS. CPMS was also affirmed to provide information for managers to manage their business unit. CPMS was also described to provide managers with feedback, fair evaluation, clear direction and motivation. Most of the managers claim that PMS has a positive behavioural implication as PMS provides better focus and enhance individual motivation. Consistent with the survey findings, managers confirmed that role ambiguity and organisational
commitment play important roles in the use of PMS to improve the manager’s job performance.

However, the interviewees claimed that PMS will not reduce role conflict. Consistent with findings from the survey, managers claimed that PMS may result in an increase in role conflict. CPMS ensures individual and departmental targets are well-defined. Thus, role conflict may arise as managers are more concerned with their own performance and may not encourage teamwork. As expected, almost all of the interviewees perceived that they have internal locus of control personality, as all of the interviewee are high level managers. In addition, they also affirmed that PMS provides them with useful information to manage their business unit better. Role ambiguity was found to have a fundamental influence in the relationship between CPMS and job performance. Additionally, locus of control personality was also confirmed to have influence on the relationship.
CHAPTER 6
SUMMARY AND CONCLUSIONS

6.1 INTRODUCTION

This final chapter is comprised of six sections. As the earlier chapter has analysed the results, the objective of this chapter is to summarise the findings of the research. The chapter starts with section 6.2, a discussion on the summary of the key research findings from both questionnaire survey data and semi-structured interviews. This is followed by section 6.3, a discussion on the implications of the research, which is divided into three parts: theoretical implications, practical implications and methodological implications of the research. The following discussion in section 6.4 presents the limitations of the study and finally, future directions and suggestions for future research are discussed in section 6.5.

Prior literature in the area of PMS has highlighted the lack of research examining behavioural implications of PMS. In light of this concern, this research attempts to examine the implications or consequences of the performance measurement system (PMS) on managerial behaviour. This research also proposes an integrative model of the comprehensive performance measurement system (CPMS) to examine how the decision-facilitating role of CPMS may affect performance. The model proposes how the information from the CPMS can influence individual managers’ role stress dimensions (role ambiguity and role conflict) and organisation commitment, which in turn may influence job performance. Additionally, the study also proposes to identify the effect of an internal contingency variable, individual personality of traits locus of control, in the relation between the use of the system and performance and each of the behaviour variables.
In particular, this research examines mediating effects of role stress dimensions (role ambiguity and role conflict) and organisational commitment in the relation between CPMS and job performance. Direct relation between CPMS and job performance is also examined in the study. For the internal contingency variable, this study also examines the moderating effect of locus of control personality in each relation between CPMS and role ambiguity, role conflict, organisational commitment and job performance. The following Figure 6.1 presents the model of the research and is followed by hypotheses developed based on the model.

![Figure 6.1: The Research Model of the Study](image)

**Research hypotheses:**

1. **Mediating effect of each role stress dimension (role ambiguity and role conflict) in the relation between CPMS and job performance**

   H1: There is negative association between CPMS and role ambiguity
H2: There is negative association between CPMS and role conflict

H3: There is negative association between role ambiguity and job performance

H4: There is negative association between role conflict and job performance

2. **Mediating effect of organisational commitment in the relation between CPMS and job performance**

   H5: There is positive association between CPMS and organisational commitment

   H6: There is positive association between organisational commitment and job performance

3. **The relation between each role stress dimension (role ambiguity and role conflict) and organisational commitment**

   H7: There is negative association between the role ambiguity and organisational commitment

   H8: There is negative association between the role conflict and organisational commitment

4. **The relation between CPMS and job performance**

   H9: There is positive association between CPMS and job performance

5. **Moderating effect of locus of control in each relation between CPMS and role ambiguity, organisational commitment, job performance and role conflict**

   H10: Locus of control moderates the relation between CPMS and role ambiguity

   H11: Locus of control moderates the relation between CPMS and role conflict

   H12: Locus of control moderates the relation between CPMS and organisational commitment

   H13: Locus of control moderates the relation between CPMS and job performance
Earlier research in the field of PMS has evolved progressively from research focusing on the design of PMS to the implementation process of PMS and currently on how organisations are able to manage through measures (Bourne et al., 2000; Franco & Bourne, 2003; Neely et al., 1995). As prior researches draw attention to the importance of individual factors for long-term success in an organisation (Otley, 1999), research in this field has recently placed more interest and concern on how PMS may have influenced individual behaviour. However, recent research on behavioural implications of PMS is still lacking (Hall, 2008; Ittner & Larcker, 1998). In Malaysia, there is no published research that has examined how PMS may influence individual performance.

Earlier research integrating cognitive motivational theory in this research field provides empirical evidence on the behavioural implication of PMS implemented in Australia (Hall, 2008). The research was conducted among Australian manufacturing firms. Another research was conducted by Burney and Widener (2007). Both researches identified how CPMS affects role understanding and in turn affects individual performance and is identified with similar findings. Burney and Widener (2007) found that PMS facilitates provision of job relevant information, which leads to reduction in individual perception of role conflict and role ambiguity.

Hall (2008) found that PMS which provides manager with performance information may increase perceptions of role clarity. PMS can enhance individual knowledge on firms’ strategic goals and provide an understanding of firms’ value chain. Thus this study attempts to extend prior research by examining how these role stress dimensions, role ambiguity and role conflict play a role in the relation between PMS and individual performance. In addition, the research will also examine how organisational
commitment influences the relation between informational property of PMS and performance.

The research by Chong and Eggleton (2003) identified that the effect of managers’ use of management accounting information on their performance is affected by personal characteristics: personality variable of locus of control. As Burney and Widener (2007) have examined moderating effects of internal contingencies such as evaluative process, level of measure complexity and managerial experience in their research, thus this research extends the research to examine how individual differences, locus of control personality, moderates each relation between CPMS and role ambiguity, organisational commitment, job performance and role conflict.

6.2 SUMMARY OF RESEARCH FINDINGS

In this section, the summary of findings will be discussed in two subsections: firstly, research findings based on the questionnaire survey data which also include discussion on the research objectives. Secondly, a summary of research findings from the semi-structured interview data will be discussed in the second subsection.
6.2.1 SUMMARY OF RESEARCH FINDINGS FROM QUESTIONNAIRE SURVEY

There are five research objectives and thirteen hypotheses developed in this study. Data from the questionnaire survey is used to test the hypotheses. The following table shows the hypotheses for each of the research objectives. Mediating effects of role ambiguity and role conflict are examined by Hypotheses 1 to 4. Hypotheses 5 and 6 examine mediating effects of organisational commitment. Direct relation between role stress dimensions and organisational commitment, and between CPMS and job performance are examined in Hypotheses 7 to 9. Hypotheses 10 to 13 examined the moderating effects of the locus of control personality in the relation between the variables. Hypotheses 1 to 9 were tested using PLS regression analysis and Hypotheses 10 to 13 were examined using PLS method and the MRA hierarchical method was used for the test of moderation. It was found that eight hypotheses were accepted which are H1, H2, H5, H6, H7, H8, H9 and H10 while H3, H4, H11, H12 and H13 were rejected.

The following Table 6.1 presents the research objectives, research hypotheses and summary of result from the hypotheses testing:
<table>
<thead>
<tr>
<th>Research Objectives (RO)</th>
<th>Hypotheses</th>
<th>Findings</th>
<th>Conclusions</th>
</tr>
</thead>
</table>
| RO1: To examine the mediating effect of role stress dimensions (role ambiguity and role conflict) in the relation between CPMS and job performance | H1: There is negative association between CPMS and role ambiguity  
H2: There is negative association between CPMS and role conflict  
H3: There is negative association between role ambiguity and job performance  
H4: There is negative association between role conflict and job performance | Confirmed  
Not confirmed  
Confirmed  
Not confirmed | Evidence of mediating effect of role ambiguity but not role conflict |
| RO2: To examine the mediating effect of organisational commitment in the relation between CPMS and job performance | H5: There is positive association between CPMS and organisational commitment  
H6: There is positive association between organisational commitment and job performance | Confirmed  
Confirmed | Evidence indicates mediating effect of organisational commitment |
| RO3: To examine the association between role stress dimensions (role ambiguity and role conflict) and organisational commitment | H7: There is negative association between the role ambiguity and organisational commitment  
H8: There is negative association between the role conflict and organisational commitment | Confirmed  
Confirmed | Evidence shows lower role ambiguity is related to enhanced organisational commitment |
| RO4: To examine the association between CPMS and job performance | H9: There is positive association between CPMS and job performance | Confirmed | Evidence indicates more CPMS is related to higher job performance |
| RO5: To examine the moderating effect of locus of control in each relation between CPMS and each role stress dimensions (role ambiguity and role conflict), organisational commitment and job performance | H10: Locus of control moderates the relation between CPMS and role ambiguity  
H11: Locus of control moderates the relation between CPMS and role conflict  
H12: Locus of control moderates the relation between CPMS and organisational commitment  
H13: Locus of control moderates the relation between CPMS and job performance | Confirmed  
Not confirmed  
Not confirmed  
Not confirmed | Evidence indicates LOC only moderates the relation between CPMS and role ambiguity |
6.2.2 RESEARCH OBJECTIVES

6.2.2.1 RESEARCH OBJECTIVE 1

To examine the mediating effect of role stress dimensions (role ambiguity and role conflict) in the relation between CPMS and job performance

There are four hypotheses, H1 to H4, tested for research objective 1. **Hypothesis 1** proposes that there is negative relation between CPMS and role ambiguity. The result provides empirical support for the hypothesis with PLS regression analysis showing $\beta = -0.592$ ($t=7.359$, $p<0.01$). This result indicates there is negative association between CPMS and role ambiguity. This finding is consistent with prior studies investigating the relation between PMS and role understanding (Burney & Widener, 2007; Hall, 2008).

Burney and Widener (2007) argued that CPMS such as SPMS identified that role ambiguity is reduced as the system provides managers with the necessary information for them to have clear expectations of their job duties and to perform relevant tasks. Additionally, the research also identified SPMS that is more closely linked to strategy has informative content that promotes managers to seek out additional job relevant information (JRI) and in turn results in reduced role ambiguity (Burney & Matherly, 2007). Similar findings by Hall (2008), also identified CPMS to enhance role clarity [conceptually role clarity is no different from role ambiguity (Hall, 2008; Sawyer, 1992)].

**Hypothesis 2** examines the relation between CPMS and role conflict. It is proposed that there is a negative relation between CPMS and role conflict. However, inconsistent with the expectation, results from the PLS regression analysis does not provide support for this hypothesis as $\beta = 0.211$ ($t=1.649$, $p<0.10$). This result indicates the existence of a weak positive relation between CPMS and role conflict. The result is consistent with
Roger and Molnar (1976) as well as Jackson and Schuler (1985), whose research findings indicate no relationship between formalisation and role conflict.

However, this empirical evidence is not consistent with findings in prior study that implied a negative relation between PMS and role conflict (Burney & Widener, 2007; Rizzo et al., 1970). Burney and Widener (2007) found a negative relation between strategically-linked PMS and role conflict. The relation was found to be stronger with less complex PMS. Similarly, findings from this hypothesis are also not consistent with Rizzo et al. (1970), who actually found formalisation such as existence of written rules and procedures governing work activities can actually clarify employees, role perceptions such as role conflict.

For hypothesis 3, research proposes role ambiguity and job performance is negatively associated. The PLS regression analysis result provides support for this hypothesis as $\beta = -0.288$ ($t=3.185$, $p<0.01$), indicating that there is negative relation between role ambiguity and job performance. Thus, CPMS reduced managers’ role ambiguity and subsequently enhanced their performance when they were clear on their role. This relationship is consistent with considerable prior meta-analysis literatures (Fisher & Gitelson, 1983; Jackson & Schuler, 1985; Tubre & Collins, 2000).

In view of cognitive perspective, information is vital to an individual in a managerial job category. Lack of information may cause role ambiguity and result in ineffective behaviour and reduced performance. Information is important or otherwise managers’ efforts would become inefficient, misdirected or insufficient. Furthermore, in a motivational perspective, lack of information or role ambiguity may also abate the effort-to-performance. Consistent with research in strategic and traditional PMS,
findings of these prior researches also implied a negative relation between role ambiguity and performance (Burney & Widener, 2007; Chong et al., 2006; Hall, 2008).

**Hypothesis 4** examines the relation between role conflict and job performance. Research proposes a negative relation exists between the variables. However, current research failed to support H4. The hypothesis testing indicates insignificant results in the relation between role conflict and job performance, with a PLS regression analysis result showing $\beta = -0.076$ ($t=0.930$). This finding is not consistent with prior research, which found a negative relation between role conflict and performance (Jackson & Schuler, 1985; Tubre & Collins, 2000). However findings of the current research are consistent with prior research by Burney and Widener (2007), which indicated no relation between role conflict and performance.

In conclusion, based on the hypotheses testing for research objective 1, the result shows that role ambiguity mediates the relation between CPMS and job performance. In particular, based on the condition of mediator pointed out by Baron and Kenny (1986), role ambiguity partially mediates the relationship. Findings imply that CPMS provides managers with information required to perform their duties and responsibilities results in clear expectation of their job. Thus, role ambiguity is reduced, which in turn enhances the manager’s job performance. However, results from the hypotheses testing do not show a mediating effect of role conflict in the relation between CPMS and performance.
6.2.2.2 RESEARCH OBJECTIVE 2

To examine the mediating effect of organisational commitment in the relation between CPMS and job performance

There are two hypotheses tested in research objective 2: H5 and H6. **Hypothesis 5** examines the direct relation between CPMS and organisational commitment. The result from the PLS regression analysis provides support for the hypothesis, indicating a significant relationship between CPMS and organisational commitment, with $\beta= 0.276$ ($t=2.041, p<0.05$). This result indicates a positive relation between CPMS and organisational commitment. Thus, this finding is consistent with the expectation that there is positive direct relation between CPMS and organisational commitment. This result supports the research argument that CPMS provides managers with information and feedback which enhances the managers’ sense of competence, and in turn promotes the managers organisational commitment. This finding is consistent with Lau and Moser (2008) which found that the use of PMS for a performance evaluation function is associated with higher organisational commitment.

**Hypothesis 6** of this study examines the relation between managers’ perception of their organisational commitment and their job performance. The result provides support for the hypothesis, with $\beta= 0.312$ ($t=3.476, p<0.01$). This result shows that there is a significant positive relation between managers’ perception of organisational commitment and job performance. When managers perceive that PMS provides them with relevant performance information to manage their business unit, it enhances managers’ organisational commitment, this results in an improved job performance.

This finding is consistent with prior research (Meyer et al., 1989; Randall, 1990). Prior traditional PMS literature also confirmed the findings of this research which provide a
positive link between organisational commitment and performance (Chong et al., 2006; Nouri & Parker, 1998). Recent PMS-related research also identified positive association in relation between organisational commitment and job performance (Lau & Moser, 2008), and job satisfaction (Lau et al., 2008; Sholihin & Pike, 2009).

As a conclusion based on the result of the hypotheses testing for H5 and H6, it indicates the role of organisational commitment as a mediating variable in the relation between CPMS and organisational commitment. This finding suggests that more comprehensive PMS has an influence on job performance through enhancement in organisational commitment.

6.2.2.3 RESEARCH OBJECTIVE 3

To examine the association between role stress dimensions (role ambiguity and role conflict) and organisational commitment

The third objective of the research examines the direct relationship between each of the role stress dimensions (role ambiguity and role conflict) and organisational commitment. There are two hypotheses tested for this research objective, H7 and H8. Hypothesis 7 proposes that there is negative relation between role ambiguity and organisational commitment. This hypothesis also suggests that managers who experience less ambiguity in their role will have higher organisational commitment. The result provides support for the hypothesis, indicating a significant relationship with $\beta = -0.358$ ($t=2.977$, $p<0.01$). This result is consistent with considerable prior research which argued that those who perceived lower role ambiguity would tend to be more committed to the organisation (Mathieu & Zajac, 1990; Meyer et al., 2002; Yousef, 2002).
**Hypothesis 8** examines the direct relation between role conflict and organisational commitment. The hypothesis proposes that there is a negative relation between the managers’ perception of role conflict and organisational commitment. Results from the PLS regression analysis do not provide support for the hypothesis with $\beta = 0.097$ ($t = 0.852$). In this case, the result suggests no relationship exists between role conflict and organisational commitment. Again, this finding is not consistent with prior literature, which found role conflict has a negative relation with organisational commitment (Fisher & Gitelson, 1983; Jackson & Schuler, 1985; Mathieu & Zajac, 1990; Meyer et al., 2002; Van Sell et al., 1981; Yousef, 2002). This inconsistent finding could be explained by the weak relation identified between role conflict and organisational commitment by prior research (Yousef, 2002) and a negative relation with organisational commitment which was found only stronger for role ambiguity than role conflict (Rizzo et al., 1970; Van Sell et al., 1981).

### 6.2.2.4 RESEARCH OBJECTIVE 4

**To examine the association between CPMS and job performance**

Research objective four in this research investigates the direct relationship between CPMS and job performance, as stated in H9. The hypothesis proposes a positive relationship between CPMS and job performance. The result of the PLS regression analysis shows $\beta = 0.243$ ($t = 2.457, p < 0.01$) provides support for the hypothesis, which indicates the presence of a significant positive relationship between the comprehensiveness of PMS and managers’ job performance. This empirical evidence implies that more comprehensive PMS that integrates with strategy and value chain provides useful information for the managers to manage their business unit, resulting in improved job performance. This result is consistent with prior study (Burney & Swanson, 2010; Lau & Moser, 2008). Lau and Moser (2008) found a positive
relationship between PMS and managerial performance. Additionally, Burney and Swanson (2010) also argued that managers who use BSC and established strong connections with strategy are well informed about action required by their firm, thus faced less ambiguity resulting in a higher level of job satisfaction.

6.2.2.5 RESEARCH OBJECTIVE 5

To examine moderating effect of locus of control in each relation between CPMS and each role stress dimensions, organisational commitment and job performance

The fifth research objective is to examine the moderating role of locus of control in the relationship between CPMS and role ambiguity, role conflict, organisational commitment and job performance as indicated by H10, H11, H12 and H13. Tests of moderations were conducted using PLS analysis and Moderated Regression Analysis (MRA). Using PLS analysis, the sample was dichotomized into two subgroups following Hyatt and Prawitt (2001) and Pines and Julian (1972). The t-statistic value was calculated using pair-wise test (Chin, 2000; Ghozali, 2006). For the MRA, Hierarchical regression method was used for the test of moderation. These two types of analyses provide a consistent finding.

The results from the PLS analysis show a moderating effect of locus of control only in the relationship between CPMS and role ambiguity, with t = 2.053 (p < 0.05). However, there is no evidence of a moderating role of locus of control in each relationship between CPMS and role conflict, CPMS and organisational commitment, and CPMS and job performance. For the analysis conducted using MRA, the findings are consistent with the preceding PLS analysis result. The MRA results show b = -1.437 (F = 20.312, p < 0.01). The MRA result revealed that locus of control does moderate the relationship between CPMS and role ambiguity. Hence it provides support for H10.
However, similar to the PLS result, MRA revealed that no evidence of moderation of locus of control in each relationship between CPMS and role conflict, organisational commitment, and job performance exists. Based on this result, H11, H12 and H13 are not supported. The reason for the inconsistent findings in the current research may be due to the cultural differences, as the sample includes almost equal proportions of foreign and locally-owned companies (Table 5.5). In traditional PMS research, the result was also inconsistent when locus of control was examined as the moderating variable towards managerial performance and job satisfaction.

Frucot and Shearon (1991) claimed that cultural differences may cause cognitive dissimilarities. Particularly, when the company is controlled by local or foreign interest, the performance of the managers employed in foreign owned firms are not clearly shown to be influenced by the control system or locus of control. Frucot and Shearon (1991) suggest that managers employed by locally-owned firms increase their performance with the system, and internal managers were found to be more affected by the system. It is also claimed that the implementation of a management technique is more successful when introduced by a local rather than foreign manager.

Local managers may provide appropriate ways when introducing the technique and suggesting the way managers perceive or use the information that may influence the effectiveness of the system. Cultural differences due to the sample including foreign and locally-owned firms may lead to inconsistent findings in the effect of locus of control and CPMS towards individual behaviour and performance (Frucot & Shearon, 1991). Additionally, according to Hamid (1994), culture has an influence on personality. Collectivist society is more likely to have an external locus of control whereas high individualistic society would have internal locus of control personality.
Furthermore, developing countries such as Pakistan, Columbia, South Korea, Singapore and Malaysia were identified to be more of a collectivist society or having low individualism (Hofstede, 1983). Thus, culture may have influence on the internality of the managers causing cognitive dissimilarities which result in inconsistent findings in the current research (Frucot & Shearon, 1991).

For a further test of moderation in the relation between CPMS and role ambiguity, MRA is conducted to identify which type of locus of control provides a significant moderation effect. Internal locus of control significantly moderates the relation between CPMS and role ambiguity, with $b = -1.758$ ($F = 6.948, p < 0.01$). On the other hand, the result shows insignificant evidence of moderation for external locus of control in the relation between CPMS and role ambiguity.

Similar to the prior research findings by Chong and Eggleton (2003), internal locus of control managers would be able to perform more effectively than their 'external' counterparts, in high task uncertainty situations, through greater utilisation of broad-scope MAS information, such as Balanced Scorecard (BSC), in their decision-making processes. Also consistent with Brownell (1981), who identified the positive effect of traditional PM, such as budget, on performance for individuals who have a large degree of control over their destiny, (i.e. internal locus of control) than external locus of control managers.

**6.2.3 SUMMARY OF FINDINGS FROM SEMI STRUCTURED INTERVIEW**

Semi-structured interviews were conducted to attain further insights and in-depth understanding on the issues relevant to the comprehensiveness of PMS. Interviews were conducted with ten managers from the ten selected manufacturing firms located in
Selangor. The interviews were also aimed to provide support to the questionnaire survey findings and to find justification or explanation for those survey findings which are inconsistent with prior research. All of the interviewees are head of business units and have formal PMS implemented in their firms.

Most of the managers perceived that their firms have comprehensive PMS whereby the system consist of all the four balanced scorecard perspectives in their PMS, which include financial performance, customer relations, internal business processes and the organisation’s learning and innovation activities. Most of the interviewees claimed that the measures used in their firm’s PMS or scorecards were derived from strategy and also from the cause-and-effect relationships. CPMS was perceived by the interviewees as a well-discussed PMS that is agreed with all the stakeholders. The PMS was also perceived to be a well-communicated system able to provide clear and sufficient feedback to employees. The managers also state that CPMS may provide employees with strategic direction and motivation.

Most of the interviewees state that the PMS implemented in their firm provides both purposes as a tool to implement strategy and for a pure information system. In terms of its use for performance evaluation, CPMS was also perceived to have a comprehensive reward system that is formal, fully documented and fair to everybody whereby performance appraisal is based on the firm’s PMS. A bonus programme for employees is also tied partly or fully to the firm’s measurement system or to the four balanced PMS perspectives. The PMS implemented in their firm were also believed to provide a link between business unit operating performance and firm long-term strategies or mission and vision statements in which the measures used in the PMS are derived from strategies and based on cause-effect reasoning.
PMS was also stated to provide a link between business unit achievement and objective of the organisation. It was also commented by the interviewees that organisational goal is not necessarily reached even though individual target is achieved. The review meeting among the business unit managers and top management, which includes commercial and technical units, is part of the PMS requirement that will ensure business unit activities align with the organisation’s objectives. Interviewees also claimed that the PMS implemented by their firms provide an indication how business unit activities affect activities of other units. Interviewees assert that their PMS was designed in a way to avoid silo measures or non cross-functional measures, as firms may have cross-functional strategic imperatives or missions.

It is confirmed by the majority of the interviewees that PMS provides business unit managers with performance information to manage the business unit operation. The PMS provides a broad range of information, as it provides financial and non-financial information related to the operation and important or critical areas of the business units.

In terms of the behavioural implication, the majority of the interviewees agreed on the positive effect of PMS on managers’ behaviour. It was agreed by these employees that CPMS has a positive effect, as it provides managers with clear direction, better focus and proper ways of measuring performance, which results in enhanced individual motivation.

In terms of the relationship between CPMS and role ambiguity, information gathered from the interview is consistent with the survey findings. Most of the interviewees agree that CPMS may reduce managers’ role ambiguity. PMS provides clear business objectives and directions. During the target-setting stage, the action plans will be discussed between superiors and subordinates. Performance review meetings conducted
monthly, quarterly, half yearly or annually are part of the PMS process providing a platform for managers to discuss the business unit performance. PMS was also said to provide managers with feedback information to monitor daily business unit operations. However, managers claimed that PMS will not entirely take out role ambiguity from the manager, but is somehow able to define managers’ role to a certain extent.

Interview results show support for the survey findings which indicates a positive relation between CPMS and role conflict. This result indicates that more comprehensive PMS will result in higher role conflict. CPMS will draw clear lines resulting in targets becoming too individual, making the managers to feel concern only on their own performance. However, business activities are normally cross-functional and there are also shared KPIs. Due to this reason, there can be incompatible demand among the heads of department as they have their own target or objectives to achieve. Hence, managers will experience role conflict to fulfil the demand.

The interview data also confirmed findings from the survey that CPMS enhances managers’ commitment towards the organisation. PMS was agreed to provide them with clear and well-defined targets, thus ensuring business unit objectives and activities align with the organisation’s objectives. The PMS was also said to create better communication and teamwork to work towards a common goal. CPMS was also said to show transparencies in terms of firms’ directions, performance information and fair performance evaluation.

Almost all of the interviewees agreed that personality may influence the use of PMS on manager behaviour. It was commented that managers with a positive personality, such as task or goal oriented, result oriented and aggressive, will benefit from the PMS.
Majority of the interviewees perceived that they have internal locus of control personality. However, for those who perceive managers to have both internal and external locus of control personality, they believe age could have influence on these types of personality. Interviewees had further claimed that younger managers may have high internal locus of control personality, as younger managers are more aggressive and would ensure performance is achieved.

Managers claimed the use of PMS information for self-evaluation and to provide task-relevant information to manage the business unit. PMS was also stated to provide information for managers to initiate remedial action or to provide an indication to the area that requires managers’ attention. Since PMS was confirmed by the managers to provide relevant information, the system was also agreed to be able to reduce managers’ role ambiguity. Thus, the survey findings were supported by the interview result that locus of control personality may have influence only in the relation between CPMS and role ambiguity. Age influence on the locus of control personality may contribute to the insignificant moderating of locus of control in the relation between CPMS and organisational commitment, job performance and role conflict.

6.3 IMPLICATIONS ON THEORY AND PRACTICE

The study is expected to have both theoretical implications and practical relevance. The implications are discussed in the following sections.

6.3.1 THEORETICAL IMPLICATIONS

This research extends prior PMS literature investigating the influence of CPMS on managerial behaviour and performance. The study contributes to the existing literature by proposing an integrated model showing the link between CPMS and job
performance. Additionally, the model also indicates how this relationship is mediated by role stress dimensions (role ambiguity and role conflict) and organisational commitment. In addition to these mediating effects, the integrated model also suggests a moderating effect of a personality variable, locus of control in the relation between CPMS and each of the behaviour variables. In view of the fact that there is no published research in this area, this research will be the first to provide empirical evidence examining behavioural implications of PMS among the Malaysian manufacturing companies. Currently, there is no published research on the behavioural implication of PMS in Malaysia.

A range of theories had been applied in prior PMS-related researches examining behavioural implications of PMS. For research in this area, the focus of study is classified into investigating behavioural implication of PMS either as a decision-facilitating role or decision-influencing role. Prior research examined the influencing role of PMS and can be classified into economic-based and behavioural discipline research (Merchant et al., 2003). Agency theory was common for research in economic based disciplines (Burney et al., 2009; Marco Van et al., 2005; Moers, 2005), whilst expectancy theory, goal-setting theory (Webb, 2004), attribution theory (Hartmann & Slapnicar, 2009; Merchant et al., 2003), self-interest theory and organisational-fairness theory (Lau & Sholihin, 2005) are generally applied in behavioural research.

On the other hand, for research examining the decision-facilitating role of PMS, a range of psychology theories are adopted to examine behavioural consequences of PMS. These theories include motivation theories, social psychology theories and cognitive psychology theories (Birnberg et al., 2006). In recent PMS related research, cognitive and motivation theories were used to explain the behavioural consequences of PMS.
Thus, from a theoretical perspective, this study contributes to the existing literature to provide further understanding on the behavioural implication of CPMS as a decision-facilitating role. Additionally, this study adopts cognitive psychology theory to explain the relation between PMS and individual performance.

Prior MAS literatures have also emphasised the use of MAS information in a communicating role expectation and can influence individual motivation (Collins, 1982). MAS can provides an internal source of information which can provide useful information for managers and consequently improve their performance (Luckett & Eggleton, 1991). This implies that PMS information can also provide relevant information for managers to manage business unit operations. Current study provides additional empirical evidence to support findings found in prior research and the robustness of the theories which examine the cognitive role of MAS information and PMS. By integrating cognitive motivational theory and role theory, this research provides further understanding of the behavioural implication on the use of management accounting system (MAS) information, such as CPMS on job performance. This research will contribute to the existing literature on MAS, particularly, PMS design.

Particularly, the research provides further understanding on cognitive motivational theory in the context of PMS and managerial behaviour. The current study shows how comprehensiveness of PMS may influence job performance. The comprehensiveness of PMS is viewed as the extent to which the system provides performance information related to important parts of BU operations and the extent to which its measure integrate with strategy and value chain. Particularly, it provides an understanding of how the PMS provides information that leads to an improvement in job performance of the
manager. Prior literatures suggest the more comprehensive PMS provides relevant information that can enhance employees’ role expectation and intrinsic motivation (Hall, 2008). Recent PMS literatures also show that CPMS is associated with employees’ outcome through the mediating effect of job-relevant information (Burney & Matherly, 2007; Burney & Widener, 2007).

Furthermore, it was demonstrated by recent PMS researches that more comprehensive PMS may have implications on role understandings. More comprehensive PMS, PMS that is strategically linked, was able to reduce managers’ role ambiguity and role conflict (Burney & Widener, 2007), and another research also provides evidence that role clarity is also enhanced with more comprehensive PMS (Hall, 2008). On the other hand, in the context of performance-evaluation research, research also indicates how PMS can enhance organisational commitment (Lau & Moser, 2008; Sholihin & Pike, 2009).

Since considerable prior research established the relation between role stress dimensions and organisation commitment (Addae et al., 2008; Chong et al., 2006; Dale & Fox, 2008; Yousef, 2002), thus, this current study contributes to the PMS behavioural research which suggests a mediating role of role stress dimensions (role ambiguity and role conflict) and organisational commitment in the relation between PMS and job performance. Particularly, this research proposes that CPMS may influence managers’ role ambiguity and role conflict, which ultimately enhances managers’ commitment towards the organisation and leads to enhanced individual performance. Furthermore, no research has examined the influence of role stress and organisational commitment in the relation between PMS and individual performance. As noted earlier, prior researches
indicate an indirect relation between CPMS and managerial performance (Hall, 2008; Burney & Widener, 2007).

This research will be the first to provide evidence of the effect of CPMS on role stress and organisational commitment. Prior research by Lau and Moser (2008) also examine the role of organisation commitment as a mediating factor in the use of PMS as a performance evaluation-system and performance. However, there is no prior research that has examined how information or the decision-facilitating role of PMS may influence organisational commitment. Findings of this study are consistent with prior studies showing the influence of PMS on role ambiguity (Burney & Widener, 2007; Hall, 2008). Additionally, findings showed that CPMS can enhance organisational commitment, which is also consistent with prior study (Lau & Moser, 2008). However, inconsistent with prior literature, PMS was found to enhance role conflict.

Overall, research implies that more comprehensive PMS is PMS that can provide information or feedback for managers, as well as PMS that is strategically linked may help managers to perform their job. The feedback from CPMS is able to provide the manager with information that reduces managerial ambiguity. The PMS information can also enhance managers’ commitment towards the organisation, as CPMS ensure business unit activities are linked to the achievement of goals and objectives of the organisation. Thus, CPMS may provide relevant information that can influence managers’ commitment towards the organisation.

Another theoretical implication of the current research is to determine any moderation effect in the relation between CPMS and managerial behaviour. Drawing on social learning theory, the research contributes to further examining moderating effect of the
personality variable, LOC in the context of PMS. Prior research examined the moderating effects of the evaluative process, complexity, and managerial experience in the relation between PMS and performance (Burney & Widener, 2007). Findings from current research show a moderation effect is identified only in the relation between CPMS and role ambiguity. For the relationship between CPMS and role ambiguity, only internal locus of control demonstrates a significant moderation effect, which is consistent with Chong and Eggleton (2003) that broad-scope MAS such as CPMS, is useful only for internal LOC managers to enhance performance, but was found insensitive to external managers.

However, there is no moderation effect found in the relation between CPMS and role conflict. This is consistent with prior research, indicating the association between PMS and reduced role conflict is significant only when there is a low level of complexity in the PMS (Burney & Widener, 2007). Thus, a firm which has a CPMS would normally have cross-functional activities within the firm and strategic imperatives, which may result in the firm having high PMS complexity. Thus instead of PMS may being able to reduce managers’ role conflict, the system may result in managers having higher role conflict due to complexity in their PMS. For the moderation effect of LOC in each relation between CPMS and job performance and between CPMS and organisational commitment, the result shows insignificant results in both relationships.

Based on the data gathered from the semi-structured interview, managers indicate the influence of age on the managers’ LOC personality. Interviewees assert that age may play an important role to shape managers’ personality. Particularly, individual managers may change from being an internal LOC to external LOC personality over time. At young age, managers may have high internal LOC, whereby they are more aggressive
and more performance-oriented. They are more ambitious and will try to ensure performance is achieved. Additionally, even when certain performance is achieved, they will try to push for more, to ensure even higher performance. But as age increases, managers will become more external, less aggressive and work effort becomes more stabilised.

Consistent with Heckhausen and Schulz (1975), the researcher suggests that LOC increases in internality until middle age and decreases in internal control as an individual grows older. As individuals grow older and experience a decline in physical health, income and possible social status, there is a parallel reduction of mastery, competence and subsequently internal control (Lao, 1976; Ryckman & Malikiosi, 1975). Since age may influence managers’ personality, this influence may cause the insignificant findings for the moderating effect between CPMS and organisational commitment and job performance; furthermore the sample of managers in this study are in the age range from below 30 years to above 60 years. Particularly, age may have an influence on the use of information from CPMS, the managers’ personality, their commitment towards the organisation and their job performance.

6.3.2 PRACTICAL IMPLICATIONS

Practically, the main findings from this research may provide significant implications for departmental/divisional/business unit managers within the manufacturing companies in Malaysia. Additionally, the finding is also useful for the decision-maker of the company who is involved in the design of the PMS. A few practical implications can be derived by incorporating findings of the current research. The model proposed in the current study provides an understanding of the relation between the comprehensiveness of PMS and individual performance. The use of CPMS may reduce managers’ role
ambiguity resulting in enhancement in the managers’ commitment towards the organisation.

For the business unit managers in an organisation, CPMS would be able to provide relevant information for them to manage their business unit. This is because more comprehensive PMS would provide managers with relevant information related to important parts of the business unit operations. Thus, based on the research findings, more comprehensive PMS will ensure business unit activities are linked to the organisational goal and objectives. Furthermore, PMS will provide a link between operating performance of the business unit and organisational long-term strategies. As supported by the research findings, more comprehensive PMS has shown to improve managers’ job performance.

For the decision maker who is involved in the design of the company, PMS should be aware of the behavioural implication of the PMS. More comprehensive PMS should have a positive behavioural implication. The feedback obtained from the PMS will be able to reduce managers’ role ambiguity and will result in a better job performance. Findings of the current study also imply that when the managers perceive that they have a clear role, they will become more committed towards the organisation (Jackson & Schuler, 1985; Mathieu & Zajac, 1990; Mowday et al., 1982). When managers have clear direction, they will feel involved and emotionally attached to their organisation (Mowday et al., 1979; Porter et al., 1974). Individuals with high organisational commitment have a willingness to focus strong effort towards achievement of organisational goals and have strong attachment to the organisation (Porter et al., 1974). Thus, managers who are perceived to have a high level of commitment will perform well in their job (Mathieu & Zajac, 1990; Meyer et al., 1989).
For the PMS implementation and design, practically, findings from this research provide some contribution in terms of the policy-making internal to the company. This research explores PMS implementation by Malaysian companies and will provide evidence in terms of comprehensiveness, implementation and design of the PMS. Particularly, current research determines the comprehensiveness of the PMS implementation and the behavioural implication of its practice among the Malaysian companies. From the research, factors that could influence the relation between PMS and job performance are examined to aid in devising policy and procedure of PMS implementation to promote employees’ commitment to the organisation and to reduce role stress, particularly role ambiguity at the managerial level.

6.3.3 METHODOLOGICAL IMPLICATIONS

In terms of methodological implications, current research contributes to the behavioural research in PMS by adopting a mixed method. Even though prior studies on PMS have used many different approaches, lack of research employs both quantitative and qualitative approach for the research methodology. Past research examining behavioural implications of PMS commonly employs quantitative research, using a questionnaire survey approach (Burney et al., 2009; Burney & Swanson, 2010; Burney & Widener, 2007; Hall, 2008; Hartmann & Slapnicar, 2009; Lau & Moser, 2008; Lau & Sholihin, 2005; Sholihin et al., 2010; Webster, 2006). Thus this research will be the first research on behavioural implication of PMS to adopt both quantitative and qualitative approaches.

In terms of data analysis approach, very few researches actually use the Partial Least Square (PLS) regression technique for data analysis in PMS research. However, these few researches using this technique are researches by Webster (2006), Hartmann and
Slapnicar (2009) and Hall (2008). PLS is suitable to explain complex relationships (Chin et al., 2003; Fornell & Bookstein, 1982). Besides, PLS is a statistical technique that has the ability to accommodate non-normal data, requires less stringent assumptions about distributional characteristics of the data and is suitable for a study with small sample size (Chin, 2000; Hulland, 1999; Vandenbosch, 1999).

For the test of moderation, this research contributes to prior research examining moderation effect of locus of control personality using both PLS and Moderated Regression Analysis (MRA). For the PLS analysis, samples are divided into two subgroups: internal and external locus of control personality based on the median score, as in Hyatt and Prawitt (2001). For the MRA, the first analysis only determines any evidence of moderation for locus of control personality in the relationship investigated in this study. When the result indicated evidence of moderation exists, the second MRA was conducted to further determine which type of locus of control that has a significant effect in the relationship.

6.4 LIMITATIONS OF THE STUDY

Similar to most empirical studies, this research is also subject to a few potential limitations that are common across many quantitative studies. The following provides discussions on a few limitations associated with this current study. Firstly, the questionnaire survey is the main data collection method used in this study. Even though measures have been taken into consideration to reduce the limitation of this method, i.e. non-response bias analysis, there is still a possibility that bias may exist in the process of collecting the survey data. The relatively low response rate of this research, 20%, is a common limitation of a survey method that has resulted in a small sample size. Particularly, using this method, the survey may not reach target respondents who are
supposed to be managers from the top management positions. These managers may have a better knowledge of the PMS of their firm. Samples of the current research comprised the majority (50.8%) of managers holding middle management position and only 36.7% holding top management positions.

Secondly, for the research design, this research employs the cross-sectional research approach. This approach has a limitation whereby it will not be able to assess causality or development of the relationship. The cross-sectional nature of research design adopted in the study would only enable the researcher to examine relationships at a particular point in time. Thirdly, the sample used in this study is drawn from only a single firm type. Thus, samples of this study are drawn only from the manufacturing sector operating in Malaysia. Even though samples are randomly selected, results may not be generalised to other firms’ types. Additionally, since the PMS implemented among Malaysian companies could be different in other countries, findings obtained from this research may not be generalised with firms in other countries.

Next, the possibility of omitted variables is another potential limitation to this study. Based on Baron and Kenny (1986), findings from the research only show evidence of partial mediation of role ambiguity and organisational commitment in the relation between CPMS and job performance. This finding also suggests that other factors may have influence in the relation between the PMS and performance. Furthermore, PLS regression analysis is at a low level of variance explained as indicated by $R^2$ for job performance (0.477), organisational commitment (0.352) and role ambiguity (0.350). Finally, in this research PLS analysis is used for hypotheses testing. However, using PLS for data analysis may have some limitation. This statistical technique does not
provide a goodness-of-fit measure that would be desirable to assess how well the research data fits the theoretical model.

6.5 SUGGESTIONS FOR FUTURE RESEARCH

Future research may suggest a few ways of how to address limitations of the current study discussed in the preceding section. Some of the findings in this study are inconsistent with theoretical expectations and prior literature. This would suggest a need for future research to examine further this area of research to obtain further understanding of the relationship under investigation. For the data collection approach, there is a possibility that mailed surveys may not actually reach intended respondent. This limitation of a questionnaire survey may affect the final result. On the other hand, the combination of methods that incorporate both quantitative and qualitative approach should be able to provide more explanation on the research findings. Thus, future studies may consider examining the same topic but should also adopt an in-depth qualitative case study approach to obtain further insight into the relationship.

In terms of the research design, future research should consider using longitudinal data to examine the behavioural implication of PMS implementation over time. Furthermore, this approach will enable the researcher to assess causality or development of the relationship. Finally, the samples used in this study are from a single firm type, manufacturing sector, although samples are randomly selected, results may not be generalised to other firm types. Hence future studies could also examine whether the same evidence was also shown, such as among the firms from the service sector. Extending the study to other sectors may result in more meaningful findings as a larger sample size can be obtained. Additionally, conducting interview surveys could be more
appropriate at the initial earlier stage of conducting mail surveys, so as to ensure responses are obtained from the target respondents.

Since current research findings indicate a low level of variance explained ($R^2$), this would suggest other factors may also have some influence in the use of PMS and individual performance. These factors may have mediating or moderating effects. Prior research has examined the moderating effects of complexity, experience and evaluative processes linked in research examining PMS behavioural implication (Burney & Widener, 2007). Current research examines the moderating effect of locus of control personality in the relationship. Abernethy et al. (2010) examined the effect of leadership style on management control systems (performance measurement systems). Based on data collected from 128 profit centre managers the research indicates that leadership style is a significant predictor of senior management's use of the planning and control system and performance measurement system (Abernethy et al., 2010). Thus, future research may include the moderating effect of leadership style in the model.

The organisational commitment dimension is measured in this study using an instrument developed by Mowday (1979) as in Lau and Moser (2008). Organisational commitment has actually been conceptualised and measured into three components: affective component (AC), continuance component (CC) and normative component (NC) (Allen & Meyer, 1990; Meyer & Allen, 1991). According to Meyer and Allen (1984), Porter’s and Mowday’s measure of organisational commitment and affective commitment scale by Allen and Meyer (1990) provides the same information. Furthermore, both AC and NC are claimed to be related even though both dimensions are distinguishable (Allen & Meyer, 1990). Thus, future research may include all the organisational commitment dimensions to measure organisational commitment.
6.6 CONCLUSION

The current study provides empirical evidence for research examining behavioural implication of PMS. A theoretical framework is proposed in this study that examines how PMS may influence role ambiguity, organisational commitment and role conflict. Particularly, the research provides empirical evidence as to whether these behaviour variables mediate the relationship between PMS and job performance. The findings imply the importance of PMS to reduce role ambiguity experienced by the managers. In addition, it is also found that PMS may also enhance managers’ commitment towards the organisation. PMS provides managers with information and leads to employees to become more involved and emotionally attached to their organisation. Research also indicates the importance of role ambiguity and organisational commitment in the use of PMS to enhance job performance. For the personality variable, locus of control personality was also found to influence the use of PMS to reduce managers’ role ambiguity.
REFERENCES


APPENDIX A

1. RESULTS OF THE RELIABILITY ANALYSIS
2. NORMALITY TEST
3. SOBEL’S TEST
4. STONE-GEISSER Q² TEST
5. RESULTS FROM REGRESSION
1. RESULTS OF THE RELIABILITY ANALYSIS

Scale: CPMS

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<td>.885</td>
<td>9</td>
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</table>

#### Item-Total Statistics

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Squared Multiple Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>OC1</td>
<td>38.0000</td>
<td>74.667</td>
<td>.544</td>
<td>.976</td>
<td>.876</td>
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<tr>
<td>OC2</td>
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<td>.500</td>
<td>.764</td>
<td>.879</td>
</tr>
<tr>
<td>OC3</td>
<td>40.4000</td>
<td>82.933</td>
<td>.092</td>
<td>.825</td>
<td>.915</td>
</tr>
<tr>
<td>OC4</td>
<td>38.8000</td>
<td>64.178</td>
<td>.833</td>
<td>.969</td>
<td>.850</td>
</tr>
<tr>
<td>OC5</td>
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<td>66.044</td>
<td>.793</td>
<td>.985</td>
<td>.854</td>
</tr>
<tr>
<td>OC6</td>
<td>38.6000</td>
<td>68.267</td>
<td>.851</td>
<td>.803</td>
<td>.853</td>
</tr>
<tr>
<td>OC7</td>
<td>38.3000</td>
<td>62.900</td>
<td>.858</td>
<td>.943</td>
<td>.847</td>
</tr>
<tr>
<td>OC8</td>
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<td>.712</td>
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<td>.982</td>
<td>.872</td>
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### Scale: Job performance

#### Reliability Statistics

<table>
<thead>
<tr>
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<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of Items</th>
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<tbody>
<tr>
<td>.886</td>
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#### Item-Total Statistics

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<th>Squared Multiple Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
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</thead>
<tbody>
<tr>
<td>JP1</td>
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<td>32.500</td>
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<td>.856</td>
<td>.884</td>
</tr>
<tr>
<td>JP2</td>
<td>33.3750</td>
<td>35.982</td>
<td>.542</td>
<td>.872</td>
<td>.877</td>
</tr>
<tr>
<td>JP3</td>
<td>33.3750</td>
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<td>.695</td>
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<td>.888</td>
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<tr>
<td>JP4</td>
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<td>34.571</td>
<td>.610</td>
<td>.872</td>
<td>.888</td>
</tr>
<tr>
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<td>.837</td>
<td>.872</td>
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<tr>
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<td>.872</td>
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</table>
## Scale: Locus of control

### Reliability Statistics

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<th>N of Items</th>
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</thead>
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### Item-Total Statistics

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<th>Corrected Item-Total Correlation</th>
<th>Squared Multiple Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
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</thead>
<tbody>
<tr>
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<td>16.2000</td>
<td>70.622</td>
<td>.736</td>
<td>.938</td>
<td>.913</td>
</tr>
<tr>
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<td>.841</td>
<td>.992</td>
<td>.905</td>
</tr>
<tr>
<td>LO3</td>
<td>17.2000</td>
<td>68.178</td>
<td>.899</td>
<td>.989</td>
<td>.900</td>
</tr>
<tr>
<td>LO4</td>
<td>16.3000</td>
<td>74.900</td>
<td>.710</td>
<td>.994</td>
<td>.916</td>
</tr>
<tr>
<td>LO5</td>
<td>17.3000</td>
<td>75.344</td>
<td>.838</td>
<td>.978</td>
<td>.910</td>
</tr>
<tr>
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<td>72.622</td>
<td>.799</td>
<td>.999</td>
<td>.910</td>
</tr>
<tr>
<td>LO7</td>
<td>17.0000</td>
<td>70.444</td>
<td>.871</td>
<td>.999</td>
<td>.904</td>
</tr>
<tr>
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<td>.983</td>
<td>.946</td>
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</table>
2. NORMALITY TEST

<table>
<thead>
<tr>
<th>Variables</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
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<tr>
<td></td>
<td>Statistic</td>
<td>Std. Error</td>
</tr>
<tr>
<td>CPMS</td>
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<td>.222</td>
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<tr>
<td>Role Ambiguity</td>
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<td>.221</td>
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<tr>
<td>Role Conflict</td>
<td>-.392</td>
<td>.222</td>
</tr>
<tr>
<td>Organisational Commitment</td>
<td>-.159</td>
<td>.221</td>
</tr>
<tr>
<td>Job Performance</td>
<td>-.235</td>
<td>.222</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>.541</td>
<td>.223</td>
</tr>
</tbody>
</table>

Normality is the most fundamental assumption in multivariate analysis. It refers to the degree to which the distribution of sample data or an individual metric variable corresponds to a normal distribution (Hair et al., 2010). Normality test can be examined based on Skewness and Kurtosis value. Skewness is the measure of tendency of deviations from the mean to be larger in one direction than in the other (Malhotra, 2010). On the other hand, kurtosis is a measure of relative peakedness or flatness of curve defined by the frequency distribution. Normal distribution has a kurtosis value of zero. Similarly, for skewness value of zero will indicate a perfectly normal distribution. According to Hair et al. (2010), normality assumption will be rejected at the 0.01 probability level if the skewness and kurtosis values are $\pm 2.58$ and will be rejected at 0.05 error level if the values are $\pm 1.96$. With reference to the above table, the skewness and kurtosis values indicate normality assumptions are met for all the variables.
3. SOBEL’S TEST

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>5.547</td>
<td>.376</td>
<td>14.746</td>
</tr>
<tr>
<td></td>
<td>CPMS</td>
<td>-0.570</td>
<td>.072</td>
<td>-0.586</td>
</tr>
</tbody>
</table>

a. Dependent Variable: ROLEAMB

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>6.831</td>
<td>.207</td>
<td>32.971</td>
</tr>
<tr>
<td></td>
<td>ROLEAMB</td>
<td>-0.572</td>
<td>.075</td>
<td>-0.577</td>
</tr>
</tbody>
</table>

a. Dependent Variable: JOBPERF

<table>
<thead>
<tr>
<th>Path a</th>
<th>Path b</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPMS → ROLEAMB</td>
<td>ROLEAMB → JOBPERF</td>
</tr>
<tr>
<td>$\beta_a$</td>
<td>-0.570</td>
</tr>
<tr>
<td>$S_a$</td>
<td>0.072</td>
</tr>
</tbody>
</table>

\[ S_{ab} = \sqrt{\beta_a^2 S_a^2 + \beta_b^2 S_b^2 - \beta_a^2 S_b^2} = \sqrt{(-0.570)^2 (0.072)^2 + (-0.572)^2 (0.075)^2 - (0.072)^2 (0.075)^2} = 0.05912 \]

\[ t = \frac{\beta_a \beta_b}{S_{ab}} = \frac{(-0.570)(-0.572)}{0.05912} \]
\[ = \frac{0.32604}{0.05912} \]
\[ = 5.5146 > 2.33 \text{ (one-tail) at } \alpha = 0.01 \]

There is strong mediating role of role ambiguity in the relation between CPMS and JOBPERF.
There is strong mediating role of organisational commitment in the relation between CPMS and JOBPERF.
4. **STONE-GEISSER Q^2 TEST**

**PLS OUTPUT**

Calculation of Stone-Geisser criterion is the following:

\[
\text{Stone-Geisser-Test Criterion } Q^2 = 1 - \frac{\sum_d \text{SSE}_d}{\sum_d \text{SSE}_d} > 0
\]

\[
\sum_d \text{SSE}_d = \text{Square sum of prediction errors}
\]

\[
\sum_d \text{SSE}_d = \text{Square sum of observations}
\]

A value of \( Q^2 \) above zero predicts accuracy of the structural model and the criterion can be confirmed (Fornell & Bookstein, 1982; Chin, 1998)
5. RESULTS FROM REGRESSION: CPMS (IV) AND LOC (MV)

REGRESSION: ROLE AMBIGUITY (DV)

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CPMS\textsuperscript{a}</td>
<td>.</td>
<td>Enter</td>
</tr>
<tr>
<td>2</td>
<td>LOC\textsuperscript{a}</td>
<td>.</td>
<td>Enter</td>
</tr>
<tr>
<td>3</td>
<td>CPMSXLOC\textsuperscript{a}</td>
<td>.</td>
<td>Enter</td>
</tr>
</tbody>
</table>

a. All requested variables entered.
b. Dependent Variable: RAMEAN

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | |
|-------|---|----------|-------------------|---------------------------|-------------------|---|
|       |   |          |                   |                           |                    |   |
| 1     | .542\textsuperscript{a} | .294 | .288 | .72019 | 2.24 | 47.847 | 1 | 115 | .000 |
| 2     | .543\textsuperscript{a} | .295 | .282 | .72292 | .001 | .135 | 1 | 114 | .714 |
| 3     | .592\textsuperscript{a} | .350 | .333 | .69686 | .056 | 9.684 | 1 | 113 | .002 |

a. Predictors: (Constant), CPMS\textsuperscript{a}
b. Predictors: (Constant), CPMS\textsuperscript{a}, LOC\textsuperscript{a}
c. Predictors: (Constant), CPMS\textsuperscript{a}, LOC\textsuperscript{a}, CPMSXLOC\textsuperscript{a}

ANOVA\textsuperscript{c}

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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</thead>
<tbody>
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<td>1</td>
<td>24.818</td>
<td>47.847</td>
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<td></td>
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<td>115</td>
<td>.519</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>84.466</td>
<td>116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>24.888</td>
<td>2</td>
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</tr>
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<td>Residual</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>84.466</td>
<td>116</td>
<td></td>
<td></td>
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<tr>
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<tr>
<td></td>
<td>Total</td>
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<td>116</td>
<td></td>
<td></td>
</tr>
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</table>

a. Predictors: (Constant), CPMS\textsuperscript{a}
b. Predictors: (Constant), CPMS\textsuperscript{a}, LOC\textsuperscript{a}
c. Predictors: (Constant), CPMS\textsuperscript{a}, LOC\textsuperscript{a}, CPMSXLOC\textsuperscript{a}
d. Dependent Variable: RAMEAN
REGRESSION: ROLE CONFLICT (DV)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
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<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
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<td>5.319</td>
<td>.379</td>
<td>14.039</td>
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<tr>
<td></td>
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<td>-.504</td>
<td>.073</td>
<td>-.542</td>
</tr>
<tr>
<td>2</td>
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<td>-1.437</td>
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a. Dependent Variable: RAMEAN

REGRESSION: ROLE CONFLICT (DV)

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
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<tbody>
<tr>
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<tr>
<td>2</td>
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<td>.</td>
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<tr>
<td>3</td>
<td>CPMSXLOC</td>
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<td>Enter</td>
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</table>

a. All requested variables entered.
b. Dependent Variable: RCMEAN

Model Summary

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<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
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<th>df2</th>
<th>Sig. F Change</th>
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a. Predictors: (Constant), CPMSMEAN
b. Predictors: (Constant), CPMSMEAN, LOCMEAN
c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC

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**ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
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<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<td>1.238</td>
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<td>.896</td>
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<td></td>
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<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
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<td>6.414</td>
<td>8.005</td>
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<td>.801</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>.805</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>103.376</td>
<td>115</td>
<td></td>
<td></td>
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</table>

a. Predictors: (Constant), CPMSMEAN
b. Predictors: (Constant), CPMSMEAN, LOCMEAN
c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC
d. Dependent Variable: RCMEAN

**Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
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<tbody>
<tr>
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<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
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<td>(Constant)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>CPMSMEAN</td>
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<td>.096</td>
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<td></td>
<td></td>
<td>.109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
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a. Dependent Variable: RCMEAN

**REGRESSION: ORGANISATIONAL COMMITMENT (DV)**

**Variables Entered/Removed**

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a. All requested variables entered.
b. Dependent Variable: ORGCOMMEAN
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c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC  

d. Dependent Variable: ORGCOMMEAN

### ANOVA

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d. Dependent Variable: ORGCOMMEAN

d. Dependent Variable: ORGCOMMEAN

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a. Dependent Variable: ORGCOMMEAN
REGRESSION: JOB PERFORMANCE (DV)

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a. All requested variables entered.
b. Dependent Variable: JPERFMEAN

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a. Predictors: (Constant), CPMSMEAN
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c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC

### ANOVA

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a. Predictors: (Constant), CPMSMEAN
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c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC
d. Dependent Variable: JPERFMEAN
REGRESSION: SUBGROUP INTERNAL (MV) AND ROLE AMBIGUITY (DV)

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a. All requested variables entered.

b. Dependent Variable: RAMEAN

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c. Predictors: (Constant), CPMSMEAN, LOCMAN, CPMSXLOC
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- c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC
- d. Dependent Variable: RAMEAN

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- a. Dependent Variable: RAMEAN

### REGRESSION: SUBGROUP EXTERNAL (MV) AND ROLE AMBIGUITY (DV)

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- a. All requested variables entered.
- b. Dependent Variable: RAMEAN
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c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC  

d. ANOVA

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<td>Total</td>
<td>54</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>22.682</td>
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<td>7.561</td>
<td>27.419</td>
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<td></td>
<td>Residual</td>
<td>51</td>
<td>.276</td>
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<tr>
<td></td>
<td>Total</td>
<td>54</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), CPMSMEAN  
b. Predictors: (Constant), CPMSMEAN, LOCMEAN  
c. Predictors: (Constant), CPMSMEAN, LOCMEAN, CPMSXLOC  
d. Dependent Variable: RAMEAN

### Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.685</td>
<td>.481</td>
<td>-1.396</td>
<td>.000</td>
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<tr>
<td></td>
<td>CPMSMEAN</td>
<td>-.755</td>
<td>-.747</td>
<td>-8.181</td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.370</td>
<td>.527</td>
<td>-1.393</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>CPMSMEAN</td>
<td>-.686</td>
<td>-.679</td>
<td>-7.497</td>
</tr>
<tr>
<td></td>
<td>LOCMEAN</td>
<td>-.258</td>
<td>-.235</td>
<td>-2.600</td>
</tr>
<tr>
<td>3</td>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.814</td>
<td>2.372</td>
<td>-1.387</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>CPMSMEAN</td>
<td>-1.135</td>
<td>-1.123</td>
<td>-2.614</td>
</tr>
<tr>
<td></td>
<td>LOCMEAN</td>
<td>-.851</td>
<td>-.777</td>
<td>-1.494</td>
</tr>
<tr>
<td></td>
<td>CPMSXLOC</td>
<td>.108</td>
<td>.798</td>
<td>1.057</td>
</tr>
</tbody>
</table>

a. Dependent Variable: RAMEAN
APPENDIX B

1. COPY OF THE COVERING LETTERS (PILOT SURVEY)
2. COPY OF THE COVERING LETTERS
3. COPY OF THE QUESTIONNAIRE SURVEY
PhD Candidate
7 July, 2011
Email: zarinah371@salam.uitm.edu.my
Telephone: 0192801060

Dear Prof/ Dr/Sir/Madam,

SURVEY ON BEHAVIOURAL IMPLICATIONS OF PERFORMANCE MEASUREMENT SYSTEM (PMS) IN MALAYSIA

I am a lecturer in accounting at the Faculty of Accountancy, MARA University of Technology (UiTM). Currently, I am pursuing a PhD in accounting at the Faculty of Business and Accountancy, University of Malaya.

I am conducting a research examining behavioural implication of Performance Measurement System (PMS) on managers’ performance. Particularly, the research examines the effect of informational characteristic of PMS on role stress, organisational commitment and performance. Additionally, this research will also determine whether managers’ personality has any influence on the implementation of PMS as well as the managers’ performance.

This pilot study is a preliminary study to test whether questionnaire will be able to gather necessary and relevant information. Presently, I am still in the process of constructing the questionnaire survey. Before finalising and distributing them to all the respondents, I would appreciate comments and feedback from a few practitioners and academicians specifically with regard to the word clarity and timing to complete the survey. Thus, I would also like to seek your kind assistance to complete the attached questionnaire. All the information provided will be treated with confidentiality. The names of individuals and organisation involved in this survey will not be disclosed in the report or any subsequent publications.

Kindly please return completed questionnaire at your earliest convenience preferably by 18 July 2011. Your response is highly appreciated and provides valuable insights for the completion of this research.

Thank you for your time and cooperation.

Yours sincerely,

Zarinah AbdRasit

ZARINAH ABDUL RASIT
Dear Sir/Madam,

SURVEY ON BEHAVIOURAL IMPLICATIONS OF PERFORMANCE MEASUREMENT SYSTEM (PMS) IN MALAYSIA

I am an accounting lecturer in the Faculty of Accountancy, Universiti Teknologi MARA (UiTM). Currently, I am pursuing a PhD in Accounting at the Faculty of Business and Accountancy, University of Malaya (UM). I am conducting a survey of divisional/business unit managers of the top 1000 largest companies, based on Bursa Malaysia listing and 2011 Federation of Malaysian Manufacturers (FMM) directory.

The survey is part of the requirement of my PhD research to examine behavioural implication of Performance Measurement System (PMS) on managers’ performance. The objective of the research is to promote further understanding of the role of PMS in enhancing managerial behaviour. Additionally, this research will also determine whether managers’ personality has any influence on the implementation of PMS as well as the managers’ performance.

Thus, I would appreciate a business unit manager (Plant manager/ Head of department) to complete the attached questionnaire. All the information provided is strictly confidential and only used for the sole purpose of the research. The names of individuals and organisations involved in this survey will not be disclosed in the report or any subsequent publications. Kindly please return completed questionnaire at your earliest convenience or preferably by the due date stated on the questionnaire. Your response is highly appreciated and provides valuable insights for the completion of this research.

Thank you for your time and cooperation.

Yours sincerely,

Zarinah AbdRasit

ZARINAH ABDUL RASIT
PhD Candidate
University of Malaya (UM)
SURVEY: EFFECTS OF PERFORMANCE MEASUREMENT SYSTEM (PMS) ON ROLE STRESS, ORGANISATIONAL COMMITMENT AND JOB PERFORMANCE.

OVERVIEW
This survey investigates the role of PMS in reducing role stress (role ambiguity and role conflict) and enhancing employee commitment. This is the first national research of its kind that aims to bring insight to organisations relating to the behavioural consequences of PMS.

DEFINITION
a. **Comprehensive Performance Measurement System** is one that provides more comprehensive performance information to managers, i.e. measures that fully describe the strategic business unit (SBU) operations and link to strategy and across the value chain.

b. **Role Stress:**
   - **Role Ambiguity** refers to a lack of clear information and consistent information available to a person in a given organisational position is supposed to do.
   - **Role Conflict** refers to a degree of incompatibility or incongruity (between job tasks, resources, rules or policies and other person) resulting in inconsistent behavioural expectations of an individual.

c. **Organisational Commitment** is described as a strong belief in and acceptance of organisational goals and values, the willingness to contribute effort towards organizational goals and values and strong desire to maintain organizational membership.

d. **Locus of control (LOC):**
   - **Internals** are those individuals who believe that their destinies are under their personal control.
   - **Externals** are those who believe that their destinies are controlled by luck or chance or beyond personal control.

INSTRUCTIONS FOR COMPLETING THIS SURVEY
1. This questionnaire consists of 6 sections. Please answer all questions in all sections to the best interest of your ability.
2. Please return completed survey at your earliest convenience preferably latest by to the following email address

   zarinahar@gmail.com

Thank you for supporting this research project.

Confidentiality
The views expressed in the completed questionnaire will be treated in the strictest confidence. Any information identifying the respondents will not be disclosed.
Section A: Comprehensiveness of Performance Measurement System

1. We are interested in the extent to which your performance measurement system (PMS) provides information about the operations of your business unit. Please indicate the extent to which the following characteristics are provided by your business unit’s PMS. Please mark (X) in the relevant boxes for each statement to indicate the extent of your agreement.

<table>
<thead>
<tr>
<th>Items</th>
<th>Not at all</th>
<th>To a great extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 The performance measurement system provides a broad range of performance information about different areas of the business unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 The performance measurement system is produced in a fully documented form, which provides a record for evaluating performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 It provides a diverse set of measures related to the key performance areas of the business unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 It provides consistent and mutually reinforcing links between the current operating performance of your business unit and the long term strategies of the organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 The performance measurement system provides information on different dimensions of the business unit’s performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 It links together the activities of your business unit to the achievement of the goals and objectives of the organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 It provides a variety of information about important aspects of the business unit’s operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 It shows how the activities of your business unit affect the activities of other units within the organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 The performance measurement system provides a range of measures that cover the critical areas of the business unit’s operations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Please mark (X) in the box to indicate the type of performance measurement system (PMS) implemented in your company.

<table>
<thead>
<tr>
<th>Type of PMS</th>
<th>Description</th>
<th>Choose one (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive</td>
<td>The PMS consists of a diverse set of measures which capture the key performance areas of the business unit. It represents information about different aspects of the business unit’s operations, which provides a comprehensive and complete view of business unit’s performance</td>
<td></td>
</tr>
<tr>
<td>Partial</td>
<td>The PMS provides measures which cover some, but not all, of the key performance areas of the business unit. It represents information that focuses on a few aspects of the business unit’s operations, which provides a partial view of the business unit’s performance</td>
<td></td>
</tr>
</tbody>
</table>

**Section B: Role stress**

3. The following propositions relate to the perceived role stress due to the implementation of the PMS. Perceived role stress is mainly divided into role ambiguity and role conflict. Please mark (X) in the relevant boxes for each statement to indicate the extent of your agreement.

**Section B (1): Role ambiguity**

<table>
<thead>
<tr>
<th>In the implementation of the PMS, I ……</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Feel certain about how much authority I have</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Know what my responsibility are</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Know that I have divided my time properly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Receive explanations that make work clear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Have clear, planned goals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Know what is expected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section B (2): Role conflict

<table>
<thead>
<tr>
<th>In the implementation of the PMS, I ……</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Have to work on things that should be done differently</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Have to buck a rule in order to carry out assignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Receive incompatible requests from people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Work on unnecessary things</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Do things that are accepted by one (i.e. superior) but not by another</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Work with two or more groups that operate quite differently</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section C: Organisational commitment

4. The following questions relate to perceived commitment with the implementation of the PMS in your company. Please mark (X) in the relevant boxes for each statement to indicate the extent of your agreement.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In the implementation of the PMS, I feel that ……</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 I talk up this organization to my friends as a great organization to work for.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 I would accept almost any type of job assignment in order to keep working for this organization.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 I found that my values and the organization’s values are very similar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 I am proud to tell others that I am part of this firm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 This organization really inspires the very best in me in the way of job performance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. For me this is the best of all possible organizations for which to work.
9. I really care about the fate of this organization.

Section D: Locus of control

5. The following questions relate to your personality. Please mark (X) in the relevant boxes for each statement to indicate the extent of your agreement.

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To great extent, my life is controlled by accidental happenings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Often there is no chance of protecting my personal interests from bad luck happenings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. When I get what I want, it is usually because I am lucky</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I have often found that what is going to happen will happen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Whether or not I get into car accident is mostly a matter of luck</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. It is not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Whether or not I get to be leader depends on whether or not I am lucky enough to be in the right place at the right time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. It is a matter of fate whether or not I have a few friends or many friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Section E: Job performance

6. This section comprises two (2) parts: your perception of your performance and importance of each element of performance. Please rate your perceived performance and relative importance of each performance criteria.

Section E (1): Your perception
How do you evaluate your performance?
Please note that the word “product” could have different meanings for different departments. For example, production department could be quality and quantity of product, the product of the marketing department could be sales and customers; the product of the accounting department could be reports; the product of the purchasing department could be supplies and suppliers; the product of the R&D department could be new innovations; and so on. Please mark (X) in the relevant boxes for each statement to indicate the extent of your agreement.

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Quality of the product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Quantity of the product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Timeliness of the product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 New product development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Personnel development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Budget achievement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Cost reduction programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Political/public affairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section E (2): Relative importance

Please mark (X) in the relevant boxes for each statement to indicate the extent of your agreement to the most accurately describes the degree of importance attached by your superior to your performance with respect to the following work dimensions.

Please note that the word “product” could have different meanings for different departments as mentioned earlier. Please mark (X) for each statement to indicate the extent of your agreement.

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Quality of the product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Quantity of the product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Timeliness of the product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 New product development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Personnel development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Budget achievement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Cost reduction programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Political/public affairs</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section F: General Questions (Demographic information)

Please mark (X) in the appropriate answer.

1. Please state your gender and nationality:
   (a) Gender: [ ] Male [ ] Female

   (b) Nationality: __________________________

2. Which of the following age group represents you?
   [ ] Below 30 years [ ] 30 to 40 years [ ] 41 to 50 years [ ] Above 60 years

3. Please state your highest level of education:
   [ ] SPM / STPM [ ] Diploma [ ] Bachelor Degree [ ] Master or above
   [ ] Professional Certificate [ ] Others: Please state __________________
4. How long have you worked for this company?
   - Below 5 years
   - Above 10 years
   - 5 to 10 years

5. Please state your current position and your job title:
   - Top management
     - Job title: __________________
   - Middle management
     - Job title: __________________
   - Low management
     - Job title: __________________
   - Supervisor
     - Job title: __________________
   - Others: Please state: __________________

6. How long have you been in the current position in this company?
   - Below 5 years
   - Above 10 years
   - 5 to 10 years

7. Please state the main activity of your division/unit?
   - Production
   - Selling/Marketing
   - Quality Assurance
   - Human Resources and Administration
   - Logistics
   - Others: Please state: __________________
   - Finance

8. Please indicate the main type of industry is your company involved? (Choose one)
   - Electrical and electronics machinery and appliances
   - Food, beverage and tobacco
   - Textiles, clothing and footwear
   - Transport and automotive
   - Wood and timber products/Furniture manufacturing
   - Chemical, gas and petroleum
   - Metallurgical or metal goods
   - Others: Please state: __________________

9. Please indicate the ownership structure of your organisation:
   - Local (> 50% local equity)
   - Joint-venture (50% local and 50% foreign equity)
   - Foreign (> 50% foreign equity)
   - Country of Origin:
     - Anglo American (US, Europe, Australia)
     - Asian (Japan, Korea, China, Taiwan)
     - Others: Please state: __________________

10. Total number of full time employees in your organisation:
    - Between 0 – 150
    - Between 301 – 450
    - Between 151 - 300
    - Above 450
11. Total assets of your organisation:
- [ ] Less than RM2.5 million
- [ ] Between RM2.5 - RM50 million
- [ ] Between RM51 - RM100 million
- [ ] Above RM100 million

12. Annual sales revenue of your organisation:
- [ ] Less than RM5 million
- [ ] Between RM5 - RM10 million
- [ ] Between RM11 - RM25 million
- [ ] Between RM26 - RM50 million
- [ ] Between RM51 - RM100 million
- [ ] Above RM100 million

13. Would you agree to be interviewed as part of a follow-up study?
- [ ] Yes
- [ ] No

Thank you very much for taking the time to complete this questionnaire. Your help in providing this information is greatly appreciated. If there is anything else you would like to inform us, please do so in the space provided below.

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
Respondents are assured that all answers given in this questionnaire will be kept confidential.

Respondent information: It will be helpful to have your contact details for any further discussion or follow up. However, if you wish to remain anonymous, please leave this section blank.

Name _________________________________________________________________

Position/Organisation _______________________________________________________

Address _________________________________________________________________

_________________________________________________ Postcode _______________

Telephone no. ____________________________

Fax no. _________________________________

Email address ____________________________

Should you need further clarification, please do not hesitate to contact me at the following email and contact number. Thank you for your time and cooperation in completing this questionnaire.

ZARINAH ABDUL RASIT
Phone: 0192801060
Email: zarinahar@gmail.com.my

Confidentiality
The views expressed in the completed questionnaire will be treated in the strictest confidence. Any information identifying the respondents
APPENDIX C

1. COPY OF THE LETTER TO REQUEST FOR THE INTERVIEW
2. COPY OF THE INTERVIEW GUIDE
Dear Sir/Madam,

REQUEST FOR PARTICIPATION IN INTERVIEW FOR RESEARCH ENTITLED: BEHAVIOURAL IMPLICATIONS OF PERFORMANCE MEASUREMENT SYSTEM (PMS) IN MALAYSIA

I am an accounting lecturer in the Faculty of Accountancy, Universiti Teknologi MARA (UiTM). Currently, I am pursuing a PhD in Accounting at the Faculty of Business and Accountancy, University of Malaya (UM). I am conducting a research examining behavioural implication of Performance Measurement System (PMS) among the Malaysian manufacturing companies. The objective of the research is to promote further understanding on the role of PMS in enhancing managerial behaviour and to determine whether managers’ personality has any influence on the use of PMS as well as the managers’ performance.

Firstly, I would like to extend my appreciation for your kind participation and contribution in my previous survey. As indicated from your survey response, I would also like to thank you for your willingness to be interviewed for the follow-up study. The purpose of the interview is to gather more information on the use of PMS, implications, benefit and any other issues pertinent to the PMS implemented in your company. The interview will only take about 30 to 40 minutes. The information gathered is also important to provide support, explanation and justification to the survey findings.

Thus, I would appreciate your kind assistance for the successful completion of this research. All the information provided is strictly confidential and solely use for the research. The respondents are assured of their anonymity whereby the names of individuals and organisations involved in this interview will not be disclosed in the report or any subsequent publications.

Thank you in advance for your attention and cooperation. I would appreciate a reply from you soon.

Yours sincerely,

Zarinah AbdRasit

ZARINAH ABDUL RASIT
PhD Candidate
University of Malaya (UM)
OBJECTIVE

There are a few objectives of conducting the interview:

- The main objective is to gather further information on the area of research.
- The information gathered is required to add further insight to provide support, explanation and justification to the empirical survey findings. In particular, the information is important for the explanation on finding which is found to be inconsistent with the literature.

The interview may also allow respondents to discuss openly and enable them to express in their own opinion, ideas and words regarding the issue of the research.

INTRODUCTION

1. General introduction of the researcher and attachment
2. Brief and concise introduction on the objective of the research
   - Generally, the objective of the research is to examine behavioural implication of PMS on manager’s performance.
   - Particularly, research examines the relationship between comprehensive performance measurement system (CPMS) and job performance.
   - Research also examine whether CPMS would have any implication on manager’s role and commitment towards the organisation.
   - The influence of personality is also determined in the relationship between CPMS and job performance.
3. The data collection method in this research is conducted in two stages:
   - The first stage, questionnaire survey was distributed to provide empirical findings of the research. Certain results from the empirical data show
insignificant and contradictory findings which are inconsistent with prior literature. These are the main focus of the interview. Interviewee is briefly explained on the empirical finding.

- In the second stage, semi structured interview is conducted with respondent who responded to the mail survey. The selection of respondents for the interview was based on their willingness to participate and certain information needs (i.e. industry type, ownership structure) for the study.

4. Interviewee is informed of the open-ended questions which intended to allow them to express in their own opinions, ideas and words to obtain full insight of the behavioural implication of PMS.

5. Permission granted from the interviewee to have the interview session to be tape-recorded.
PART 1: PERCEPTION ON THE COMPREHENSIVENESS OF THE PMS (KPI)

INTRODUCTION

1. Does your company implement PMS? Or does the interviewee prefer to use the term KPI?

2. Is the implementation of PMS at the organisational/corporate level, business unit level, department level, individual level, activity level?

THE USE AND COMPREHENSIVENESS OF PMS

3. Is the PMS comprehensive?

   Probe: What do you consider as comprehensive PMS?

   Probe: PMS that use financial and non financial measure, broad, diverse?

4. What are the perspectives used in the PMS?

   Probe: Is the PMS includes all the four BSC perspective; financial performance, customer relations, internal business processes and the organisation’s learning and innovation activities?

   - PMS at the business unit level?
   - PMS at the individual level?

   Probe: Do you think there is any link between the systems at the business unit and individual level?

5. Comprehensive PMS consist of measures:

   - Use: To integrates with strategy and value chain
     - Is the PMS fully documented and used for evaluating performance?
     - Does the PMS provide link between business unit operating performance and organisational long term strategies?
- Does the PMS provide link between business unit activities to goal achievement and objectives of the organisation?
- Does the PMS indicate how the activities of your business unit affect the activities of other units (value chain) within the organisation?

*For each question, further ask how it is being implemented.*

- Use: To provides information related to important part of business unit operation
  - Does the PMS provide a broad range of performance information about different areas of the business unit?
  - Does the PMS provide a diverse set of measures related to the key performance areas of the business unit?
  - Does the PMS provide information on different dimension of business unit performance?
  - Does the business provide a variety of information about important aspects of the business unit’s operations?
  - Does the PMS provide a range of measures that covers the critical areas of the business unit’s operation?

*For each question, further ask how it is being implemented.*

Q5 is based on the survey question, to determine whether manager’s perception on PMS as what they think is comprehensive is consistent with the literature.

6. What is the objective of PMS adoption in the company?

*Probe: Does it provide a tool to implement strategy or for pure information system, or both?*

Q6 is to determine whether the manager’s perception on the PMS use is consistent with his answer in Q5, Q7 and Q8.

7. If the PMS is used for information system, what is the benefit?
Probe: If use for information system, is there any targets set for the measures?

Probe: Is it functioned as a tool to identify areas for improvement?

Probe: Is the function more of indicating the managers’ responsibility and providing information to the managers?

8. If the PMS use is more of for strategy implementation, what is the benefit?

Probe: Is the PMS used to provide accountabilities and to lead managerial focus on strategic relevance issues?

Probe: Is the PMS functioned as a tool to provide financial and non financial targets for the upper and lower management levels?

ADDITIONAL QUESTIONS

9. Is the PMS of one business unit different from other business unit?

10. Is there any problem encountered by the managers with the PMS implementation?

Probe: Is there any interference from top management causes middle management and lower management to lose focus?

- In what situation?
- How it happen?
- Why it happen?

PART 2: BEHAVIOURAL IMPLICATION OF PMS

INTRODUCTION

1. Brief introduction on behavioural implication:

- Literatures findings show that PMS affect managerial behaviour such as improve manager’s psychological empowerment, goal commitment, etc.

2. In practice, do you observe any behavioural implication on the implementation of PMS?

Probe: Is it positive or negative implication? How? Why?
JOB PERFORMANCE

3. Any implication of PMS on job performance?

ROLE AMBIGUITY, ORGANISATIONAL COMMITMENT AND ROLE CONFLICT

4. What do you understand about the following; role ambiguity, organisational commitment and role conflict. (If different, explain as follows)

- According to literature:
  
  **Role ambiguity**: Lack of clear information and consistent information available to a person in a given organisational position is supposed to do

  **Organisational commitment**: A belief in and acceptance of organisational goals and values, the willingness to exert effort towards organisational goals accomplishment and strong desire to maintain organisational membership

  **Role conflict**: A degree of incompatibility or incongruity (between job tasks, resources, rules, policies and other person) resulting in inconsistent behavioural expectations of an individual.

5. Based on the survey findings:

- CPMS will reduce manager’s role ambiguity?
  
  ✓ *Does it really occur in your company?*

  ✓ *Could you explain?*

- CPMS can also increase manager’s organisational commitment?
  
  ✓ *In your opinion, is this finding consistent with what actually happen in organisation?*

  ✓ *Explain.*

- However inconsistent with expectation, finding shows CPMS would increase instead of ease role conflict. What do you think about this?
  
  ✓ *Why is that so?*
From your observation in work place how it might happen?

How does your company train employees (professional) to be flexible/multitasking etc.?

PART 3: INFLUENCE OF MANAGER’S PERSONALITY

1. In your opinion does manager’s personality has any influence on the use of PMS by the managers and their job performance?

2. What do you understand about locus of control?
   - According to literature,
     - **Internal locus of control**: Individuals who feel that they have a large degree of control over their destiny.
     - **External locus of control**: Individuals who feel that their destinies are controlled by luck, chance and fate.
   - Which personality do you perceive yourself?
   - Do you agree that PMS provide useful information and feedback for managers to perform their work and enhance their performance?
     - **Probe: To what extent do you agree with the statement?**
   - Do you think that the more comprehensive the PMS, the more information provided by the system that can help you to improve your job performance?
     - **Probe: If yes, explain how?**
PART 4: DEMOGRAPHIC INFORMATION

1. DEMOGRAPHIC INFORMATION OF RESPONDENTS

   - Name:
   - Age:
   - Gender:
   - Position:
   - Department:
   - Period of service in the company:
   - Period of service in current position:
   - Education qualification (Local/Overseas): (specify)

2. DEMOGRAPHIC INFORMATION OF THE FIRM

   - Type of company:
   - Age of company:
   - Type of industry:
   - Type of product manufactured:
   - Ownership structure:
     - Local:
     - Foreign(Country of origin):
   - Size:
     - No of employees:
     - Sales turnover: