# Research in Management Accounting

# Research in Management Accounting: Malaysian Environment

Edited by

Ruhanita Maelah

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# PREFACE

This book aims to provide evidence concerning the discussions about the nature of management accounting practices in Malaysia based on the research conducted in recent years. Very little is known about these practices at the present time. Most information is contained either in academic theses submitted to the academic institutions, or in the relatively few articles published in academic journals or presented at conferences.

The articles included in this book are written based on the research findings of studies conducted in Malaysia concerning the management accounting area. The articles are collected from a pool of active researchers in the area of management accounting. These articles are expected to have high academic value, as each is complete with a literature review, methodology, data analysis and references. Nevertheless, the articles have been carefully chosen and edited for mass readers.

This book is intended as a reference on Management Accounting for the following readers:

- Researchers and academicians
- Students doing research at PhD and Masters level
- Businesses, including managers and accountants
- Policymakers, including government agencies and accounting bodies

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# CHAPTER ONE

# INTRODUCTION: RESEARCH IN MANAGEMENT ACCOUNTING

RUHANITA MAELAH

According to Kasanen, Lukka and Siitonenet (1993), management accounting is an applied science to produce theoretically grounded solutions for practical purposes (Mattessich, 1995; Labro and Tuomela, 2003). The rate of change in the practice of and research on management accounting appears to be increasing. Many organizations in today's competitive environment are attempting to change their existing, or implement new innovative management accounting practices based on new management accounting ideas, practices, structures, processes, systems, and information.

A number of new challenging objects of measurement and control have recently emerged, including intellectual capital and networks of organizations. Much of this innovation and implementation concentrates on new costing or performance measurement systems. However, there is also change related to the roles of management accountants in organizations. These current developments provide many new opportunities for innovative management accounting research, and fruitful integration of existing accounting knowledge and the currently emerging practice issues.

Many reviews on research in management accounting are more focused on specific areas such as organization and sociology-based research (Covaleski and Dirsmith, 1996), benchmarking research (Elnathan et al.,1996), research by North Americans (Shields, 1997), agency theory research (Demski and Sappington, 1999), performance measurement research (Ittner and Larcker, 1998), and value-based management research (Ittner and Larker, 2001). Selto and Widener (2002), however, conducted a study that analysed attributes of nearly 2,000 research and professional articles published during the years 1996-2000 and found numerous, relatively unexamined research questions that can expand the scope of current management accounting research. The study analysed each journal's past publication practices regarding underlying theory, sources of

data, and methods of analysis. The study also described publication opportunities in major research journals.

One of the main issues in accounting research is data collection. Most studies in management accounting and taxation areas use primary data. Primary data is data that is non-existent until gathered through studies by researchers while secondary data is data that has already existed in a certain form (Crowther and Lancaster, 2009). Research in financial accounting and auditing normally uses secondary data. Crowther and Lancaster (2009) also emphasized the issue of qualitative and quantitative data. The research strategy for qualitative data focuses on the wording while for quantitative data the strategy focuses on quantity in data collection and analysis (Bryman and Bell, 2003). Qualitative data is inductive in nature, that is, towards developing theory using mainly case studies and observation, whereas, quantitative data is deductive, that is, to test existing theory.

In management accounting research, the survey method is used to collect quantitative data. According to Cooper and Schindler (2006), surveys can be performed through interviews (face-to-face or telephone) or questionnaire (self-administered, mail and electronic questionnaires). Survey questionnaires provide better understanding in management accounting studies compared to other methods (Cooper 1983).According to Trochim and Donnelly (2007), researchers should take into account many factors such as population, sampling, research issues, research content, administrative issues, cost, time frame, and respondents' interest, as the selection of research and data collection method is critical for social science studies.

This book focuses on research in management accounting that uses the Malaysian business environment as the scope of study. Malaysia is a country in South East Asia, with a population, as of 2010, of over 28 million. In the 1970s, the predominantly mining and agricultural based Malaysian economy began a transition towards a more export-based manufacturing sector. While manufacturing has a large influence in the country's economy, Malaysia has also ventured successfully into the service sector. Malaysia has developed itself in banking, hospitality, education and healthcare, to name a few.

In Malaysia, management accounting has received increasing interest from various organizations including the government, businesses and educators. However, published documents that report findings from research in management accounting undertaken in Malaysia are still limited. Most of these research findings were reported in local or printed publications with limited accessibility.

This book addresses the gap by providing the readers with five research oriented chapters on management accounting issues including performance measurement systems; management accounting and control systems in the service sector; activity based costing (ABC); intellectual capital and management accounting practices; customer focused manufacturing strategy and performance measurement systems.

In chapter 2, Mohd Amir highlights the importance of the service industry and its contribution to the economies of nations all over the world. The study stresses that the tremendous growth in the service industry needs to be guided through an effective control system including performance measurement systems (PMS). The literature review section not only discusses PMS in the service industries but also looks into PMS design, PMS attributes, PMS use and PMS mechanisms. With three research questions in mind, Mohd Amir examines the influences of the contextual variables (service process type, business strategy and perceived environmental uncertainty) on PMS design and, subsequently, the performance of service organizations. The study found that the design of performance measurement systems (PMS) focuses on the match with the organizational objectives rather than on the uniqueness of the service businesses. The study confirms the importance of differentiation strategy and intensity of competition in designing PMS for service organizations. The study found that service process type has insignificant influence on PMS design.

In chapter 3, Auzair reviewed prior management accounting and control system (MACS) research that has been undertaken in the service sector. Based on literature reviews, the study categorized MACS dimensions into Action/Results Controls, Formal/Informal Controls, Tight/Loose Controls, Restricted/Flexible Controls, Impersonal/Interpersonal Controls, and Financial/Non-Financial Information. The definition for each MACS dimension is also discussed. The literature review was also used to identify the research design (industry, country, MACS aspect, and methodology) of MACS studies in service organizations. In addition, the previous studies reviewed in the management control style section demonstrate several features of the management control style practiced in service organizations. The study also reported findings from two studies on the MACS practices in Malaysian service organizations. The first study is a preliminary study that was undertaken by Auzair and Wan Ibrahim (2007) to understand the practice of MACS in Transportation, Health Care and Professional Services industries located in the Klang Valley, the central part of Malaysia. This study utilizes a survey questionnaire in which36 firms participated. The second study had 59 participants and was

undertaken to understand the MACS design and use in the hotel industry. Future MACS research in service organizations was also highlighted.

The popularity of activity based costing (ABC) can be traced to a few U.S. organizations in the mid-1980s. The experience of these organizations was made known through the publication of a series of case studies by Professor Cooper and Professor Kaplan of Harvard Business School (Cooper 1988, Cooper 1989, Cooper & Kaplan, 1988). Research on ABC was undertaken from various aspects and in many countries around the world. Even though it is argued that ABC benefits organizations, its adoption is still considered low. Most organizations still use traditional methods in the costing of overheads. Chapter 4discussesthe ABC implementation process factors on ABC adoption and implementation. Data were collected using a mail questionnaire directed at accountants of the public-listed manufacturing industry in Malaysia. A total of 108 responses were analysed. The findings from the survey show that most manufacturing organizations in Malaysia have not adopted ABC for their overhead costing. Among those who have adopted the system, most are at the analysis stage of adoption. Although that is the case, the increase in the capital-intensive production environment and the growing overhead costs, it is anticipated that ABC will be more prevalent in the future.

The knowledge-based economy has produced intangible assets (IC), which are not quantifiable and are difficult to incorporate into management accounting. This situation is seen as challenging because in order to have a competitive advantage, firms with a high IC have got to adopt appropriate and relevant management accounting practices to ensure that IC contribution, performance, value, costs, and benefits are suitably captured. In chapter 5, Sofian discusses issues in IC and management accounting practices using a literature review as her source of reference. The study elaborates on IC conceptualization, IC management, IC reporting, and IC management in general before proceeding into areas of accounting. IC is described as intangible assets and accounting for intangibles is described. Furthermore, IC and management accounting areas include strategic management accounting, performance measurement, and budgeting.

Finally, in chapter 6, Amir discusses a study that aims to examine the match between customer focused manufacturing strategy and performance measurement systems (PMS) in the electronics and electrical industry. Several contingency analytical approaches (selection, interaction, and system) were used in this study. The literature review section includes a discussion on Customer Focused Manufacturing Strategy (CFMS), Advanced Manufacturing Practices (AMP), Advanced Manufacturing

Techniques (AMT), contingency approach and analytical approaches. This study is expected to contribute to the present body of knowledge in several areas including performance measurement systems and strategy, management control systems, and management practices.

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# CHAPTER TWO

# PERFORMANCE MEASUREMENT DESIGN IN SERVICE ORGANIZATIONS

AMIZAWATI MOHD AMIR

## Introduction

Service sectors around the world are experiencing substantial transformation due to the rapid development and requirements of the service-based economy. The change in governments' attitudes towards services, trade and investments along with the establishment of statutory bodies enforcing internationalizing services, such as the World Trade Organization (WTO), have intensified the growth and significance of the service sector. Undeniably, customers changing demographics are also creating more demands for services, and technological advancement has created more opportunities for a broader range of services (Javalgi and White, 2002). In most countries, the significance of the service economy is reflected in the favourable relationships between GDP and employment opportunities. The impact is not only experienced by developed economies, such as the USA and Japan, but also in developing countries like Malaysia (OECD, 2006/2007; EPU, 2008). Thus, services can no longer be viewed as secondary activities supporting the manufacturing sector. Instead, they have become the dominant economic force across the globe.

The increased service business opportunities and the opening up of local markets are making the service sector more and more competitive. Thus, customers are becoming less loyal, more price sensitive and discerning. In order to address such challenges and satisfy the dynamically changing requirements, business strategy is certainly becoming even more important (Fleming, Chow and Chen, 2009). However, the strategic objectives may not be achievable without the support and commitment from the organizational members. Therefore, in facing the considerable

impact of the organizational and environmental changes, service firms need to have an effective control system to facilitate managers in managing the internal and external factors (Abdel-Kader and Luther, 2008). Most importantly, the system should be tailored to the service requirements and constantly monitor business performance. In spite of the economic significance of the service sector, not much has been done on the study of management accounting in the service sector (Sharma, 2002; Chenhall, 2003; Md. Auzair and Langfield-Smith, 2005).

Certainly, the tremendous growth needs to be guided. For that reason, service firms require a sophisticated control system that can help them in monitoring, controlling and making decisions pertaining to business operations. The control system provides a broader scope of information that is pertinent for the managers to monitor and control their organizational activities, with the aim of enhancing performance (Abdel-Kader and Luther, 2008). Such systems are required as the traditional feedback information largely reports on the comparison between the actual performance and preset targets/standards where a deviation signals the need for corrective action. However, management needs feed-forward information that can guide organizational decisions and actions prior to any adverse performance consequences (Otley, 1999; Hall, 2010). Thus, by focusing on performance measurement systems (PMS) in service organizations this study examines the design of the system as a means of maintaining service organizational control.

The uniqueness of services should also be a factor to be considered in managing businesses. Their intangible nature, the inseparability of production and consumption, heterogeneity and perishability make them different from tangible products. Moreover, the lack of inventory to buffer during peak and trough periods increases business uncertainty. Consequently, in view of all the possible implications a PMS may help the service manager to closely monitor the internal and external factors, thereby ensuring that the organization pursues its strategic emphasis and leads to the achievement of its organizational objectives (Nanni, Dixon and Vollmann, 1992). Besides evaluating organizational success, PMS is also an instrument to assist an organization's communication and learning processes and to motivate individuals to perform at their best (Simons, 2000; Gimbert, Bisbe and Mendoza, 2010). Considering the significance of PMS, to some practitioners and researchers PMS is the key to change (Brignall, 1997).

PMS denotes a change in the business environment and consistently provides ways to meet organizational targets. Knowledge, innovative ideas, competence and intangible assets, including a firm's reputation and

customer satisfaction, have become the key success factors. Unfortunately, traditional performance measures are unable to support the changing requirements. Since most of these factors cannot be financially measured, they are not often included and may even be ignored by the system. Instead, over concern on a business's past performance and overreliance on short-term financial measures often drives decisions and actions that can be immediately reflected on the financial bottom line. Even worse, the conservative and "play safe" attitude inherent in accounting measures, often hinder efforts towards excellence (Azofra, Prieto and Santidrian 2003; Gomes, Mahmoud, Yasin and Lisboa, 2004; Henri, 2006).

The limitations clearly show that the system needs to progress in the same direction as business, technology and market advancement to ensure that it remains valid. In fact, Anthony and Govindarajan (2007) highlighted that the soundness of the system is pertinent to ensure its success in translating the organizational goals and targets into the right set of behaviour. For that reason, the design aspect becomes an important topic in PMS studies (Malina and Selto, 2004; Chenhall, 2005; Ferreira and Otley, 2009). However, the issue has been extensively explored in the manufacturing sector. In recognition of the limited discussion pertaining to the service sector, this study explores the requirements on PMS design from the service organization perspective.

## Performance Measurement Studies In Service Organizations

A number of PMS studies have been undertaken to observe the relevance of PMS in service organizations. One of the earliest studies was conducted in 1996 when Moon and Fitzgerald (1996) studied the characteristics of PMS at TNT Express Delivery Services. The researchers evaluated the practices against Otley's (1987) performance management framework which encapsulates three basic questions on measuring performance, i.e., (a) what dimensions of performance to measure, (b) how to set the standards to those measures, and (c) what rewards are to be associated with the achievement of those standards. Using a case study approach, five properties of TNT's PMS that had facilitated the translation of strategies into actions were identified. Three of the properties were related to Otley's (1987) framework, while the other two factors were mainly associated with commitment and support from all the employees. The findings indicate that before a PMS can be operationalized for translating strategies into action plans, the focus should be on the system design and characteristics, together with the involvement from the whole range of

organizational members. Without a well-designed and companywide-accepted system, PMS will not be an effective management tool.

Ballantine, Brignall and Modell (1998) further explored the importance of linking strategy and action by studying the health services environment. By conducting a 'gap analysis', they compared and contrasted the performance measurement and management practices of two public health service organizations. They found that both public health services experience poorly integrated PMS. The interconnections between financial and non-financial measures were inadequately regulated, thus, causing communication barriers among the staff. Another gap identified in the study is compartmentalization of the measurement information, which often leads to a duplication of effort and insufficient access to some information. In fact, a lack of integration of performance measures causes information overload at the operational level. To promote better communication (i.e., between managers and clinicians) and effective control, PMS needs to be more focused, integrated and systematic. The findings, consistent with Moon and Fitzgerald's (1996) study, emphasize the requirement to have a well-structured PMS to link the strategies and actions.

Prior literature (Moon and Fitzgerald, 1996; Kaplan and Norton, 2001(a) (b); Davis and Albright, 2004) emphasizes the role of performance measures to translate strategies into operationalized actions. Hence, to investigate the association between operational measures and financial performance, Wouters, Kokke, Theeuwes and Donselaar (1999) conducted a survey of approximately 150 medium sized firms in the transportation and distribution sector. Guided by the relationship models, the findings demonstrate the likelihood of identifying measures that are significantly associated with a firm's performance suggesting the possibility of distinguishing the critical measures of each operational activity. However, the drawbacks of the study are that it focuses on a particular service sector and does not investigate more complex relationships between the operational measures and the financial performance.

Ittner, Larcker and Randall (2003) conducted a comprehensive study on the performance implications of strategic performance measurement in U.S. financial service firms. Survey information from 140 firms was used to specifically examine the relative ability of various strategic performance measurement approaches to explain the performance of firms. The study found that the level of satisfaction increases as the measurement system combines both financial and non-financial measures. The reason for high satisfaction is that such a combination improves the links between the

strategies and performance by measuring the specific factors, or value drivers. Having similar strategies and value drivers, firms with diversified measures have a relatively stronger relationship with stock market performance. However, the relationship between strategic performance measurement and economic performance is weak, i.e., there is no strong relationship with financial accounting measures. Explanations for the inconsistent results are that the strength of the systems is more likely to be captured in the long-term stock market measures and not the short-term historical accounting indicators.

Derivation of a performance measurement model, consisting of key success factors and their interaction, is a later issue put forward by Abernethy, Horne, Lillis, Malina and Selto (2005). Looking into PMS issues from a different perspective, the researchers highlight the necessity to identify key operational measures in designing an effective performance measurement system. Unlike other performance measurement models, which are the results of top management views and data mining of existing archival sources, the proposed model is drawn from the knowledge of the experts who control the core operation activities. Unfortunately, such knowledge is highly personal and hard to communicate and share with others (Takeuchi and Nonaka, 2004).

Except for Wouters et al. (1999) and Abernethy et al. (2005), all the above reviewed studies (Moon and Fitzgerald, 1996; Ballantine et al., 1998; Ittner et al., 2003) explicitly stressed the role of firms' strategies in their PMS. Ballantine et al. (1998) also added that the effectiveness of PMS in health care organizations also depends on the information systems infrastructure in place and the degree of integration between the information systems used at various organizational levels. Notably, all five studies reviewed above demonstrate the use of multidimensional PMS. Illustrations from other case studies (for example, Brignall Fitzgerald, Silvestro and Johnston, 1996; Ahrens and Chapman, 2002) also support these findings. Hence, it is highly likely that the practice of PMS in service organizations has already incorporated the need for the contemporary business environment frequently mentioned in the literature. It is a task for the researcher, therefore, to codify the practice and consider the relevant factors that might influence the effectiveness of the PMS in their attempts to understand the systems in service organizations.

One thing worth considering, however, is the generalizability of the research findings to the service sector. With respect to sampling issues, data drawn from single organization/industry samples will be exposed to possible firm/industry effects (Dunk 2001). Except for Brignall et al. (1996), all the other studies focused on a single industry or even on a

particular service organization. These industries include transportation (Moon and Fitzgerald, 1996; Wouters et al., 1999), professional services (Nachum, 1999), hotels (Mia and Partiar, 2001; Atkinson and Brown, 2001), health services (Ballantine et al., 1998; Abernethy et al., 2005), telecommunications (Bonnici and Sarkis, 2001) and financial services (Ittner et al., 2003; Davis and Albright, 2004). This implicitly suggests that some researchers regard each organization/industry as unique and the findings may not be applicable to other organizations in the same industry, or to other service industries. However, when each organization/industry continues to be perceived as unique, little communication or learning can take place between service businesses (Perrow, 1970).

Taking a different approach, Brignall et al. (1996) adopted the service process type model as proposed by Fitzgerald et al. (1991) to classify service organizations from various industries according to the business or process type (refer to Figure 1). Classifying the three service organizations (a major U.K. high street bank, a hotel chain and a home electronics rental service) as service shops, Brignall et al. (1996) briefly evaluated the PMS practice in each organization. The researchers recognized that the development of a set of performance measures is contingent upon their business competitive environments, their chosen strategies and the type of service business in which they are involved. This will be the basis for the present study. Considering the unlikelihood of a case survey to achieve theoretical and statistical generalization, this study extends Brignall et al.'s (1996) preliminary work looking at the implications on a wider range of service industries.

Concerning the points discussed, the present study is a contingency theory study, as services PMS will vary according to a wide range of variables in which the service process type, perceived environmental uncertainty and business strategy should largely determine how the service PMS should be designed. While numerous PMS studies in service organizations have investigated the relationships between strategy and PMS, performance and PMS, research on the combination of service business type, strategy, PEU and PMS is sparse. Such concentration may be suitable for studying issues related to PMS and service organizations in a wider and more focused manner. Since the deregulation of the service sector is affecting the sector as a whole, the dynamics of the business environment should be considered from a broader perspective. Given that there is a paucity of empirical investigations involving a wider spectrum of the service sector, this study aims to add to the limited knowledge in this area by associating PMS design to a broader range of service industries,

which may contribute to more comparative research (Modell, 1996; Anthony and Govindarajan, 2007).

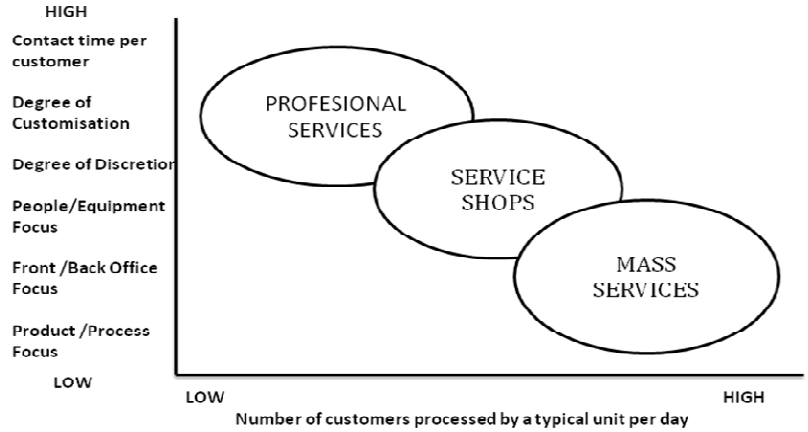


Figure 1: Service Classification Model. Adapted from Fitzgerald et al. (1991)

## PMS Design

The design attributes and uses of PMS have started to receive attention in recent years. Firms redesign their systems to ensure that the systems constantly reflect their current environment and strategies. Organizational theorists, however, have stressed the importance of designing a control system that links organizational behaviour to strategic objectives. Without a proper match, the system may lead to dysfunctional behaviour, which may have an adverse effect on organizational effectiveness (de Haas and Kleingeld, 1999; Broadbent and Laughlin; 2009).

Some researchers, for example, Fitzgerald et al. (1991), Kaplan and Norton (1996), and Magretta (2002), argued that tying organizational insights into a comprehensive set of measures may yield superior performance. Comprehensive measurement refers to the attempts of PMS "*…to give a broader business set of measures of success than the more traditional financial and market share. It wraps a set of things together that makes sense for managing the business*" (Malina and Selto, 2001:70). Said, Hassan Elnaby and Wier (2003), in examining the effect of non-financial measures in compensation contracts on performance, found that the normative theory is supported when firms with a balanced set of measures do report a higher level of market returns and mean levels of returns on assets.

Although previous studies have explored other aspects of PMS characteristics (for example, Chenhall and Langfield-Smith, 1998(a)(b); Lillis, 2002; Abdel-Maksoud, Dugdale and Luther, 2005), the focus has generally been on the impact, owing to the use of comprehensive measurement (i.e., financial/non-financial measures, ex-ante/post-ante measures, quantitative/qualitative measures) on the individual, group or organizational performance. Only recently, have a few empirical studies (Hoque and James, 2000; Malina and Selto, 2004; Chenhall, 2005; Henri, 2006) attempted to explore the contingency formulation of PMS design.

Extending the PMS design concept, the present study explores the effects of business organizational contextual variables on the PMS, focusing on the design of the systems:

a. attributes, i.e., the underlying features of PMS information,
b. style of use, i.e., the ways of using the PMS generated information,
c. measurement mechanisms, i.e., the methods of measuring an activity.

The essence is to ensure that the elements of design (i.e., PMS attributes, use and mechanisms) do not exist in isolation from the environment or from each other. Matching the PMS characteristics to the environment permits the design of a more effective system (Olsen, 2003; Chapman and Kihn, 2009).

## PMS Attributes

The dissatisfaction with the traditional performance measures triggers significant discussions on PMS attributes. Today, managers require a comprehensive set of measures, which not only involves a combination of financial and non-financial measures, but, also, a broad set of measures. It incorporates both organisational internal and external factors. The broader scope of measures allows managers to consider a wider range of alternatives as the available information enables managers to understand the situation better. Besides measurement diversity, the measures also need to integrate, providing a causal map between actions and strategies, along with information pertaining to customers, suppliers and competitors (Guilding 1999; Kaplan and Norton, 2001(a) (b)). PMS can only be used effectively when the system integrates all the dimensions (Chapman and Kihn, 2009). Additionally, owing to today's business condition, timeliness of the information is another important attribute, as it allows managers to be responsive to the market change (Mia and Partiar, 2001, Ittner et al., 2003; Chenhall, 2005).

Past studies have been narrowly focused on a single attribute of PMS, with a bias towards manufacturers. Thus, in view of the paucity of research on the service sector's PMS attributes, the purpose of the present study is to identify desirable PMS attributes that are perceived to be important for the service sector.

## PMS Use

According to Govindarajan (1984), the effectiveness of organizational control systems depends on the technical sophistication of their design as well as the way generated information is used. Following Simon's (1987) framework on interactive-versus-diagnostic control to describe the management control system style of use, the present study looks at the frequency of the PMS information in assessing the ways of using PMS. Traditionally, PMS has been synonymous with diagnostic controls where the diagnostic approach intends to track employees' performance and align their actions according to the preset standards. The aim is to attain or correct the deviation from the preset targets where achievement of the target is rewarded (Simons, 1995; Tuomela, 2005).

However, as an organization grows and personal contact throughout the organization becomes less and less, there exists an emerging requirement for a system to facilitate the sharing of information (Ezzamel, 1990; Hoque and James, 2000). At the same time, stringent market competition demands a system that can stimulate creativity. Hence, managers require information exchange processes that are interactive and dynamic. The interactive approach forces organizations to monitor their changing market conditions, motivates debate on the action plans, and, ultimately, stimulates emerging strategies.

Nonetheless, interactive use is not without cost, as it inevitably requires extensive attention, and increased workload (Tuomela, 2005). The approach is only effective when the level of change and risk is relatively high, but not when the change is minor. However, Amaratunga, Baldry and Sarshar (2001) argued that even a diagnostic approach is sufficient in a competitive environment, and that an interactive system may not be necessary. The arguments seem to suggest that there is a possibility that diagnostic control and/or interactive control will be adopted to face today's competitive environment. Regardless of the views, the style of PMS use is a tool to reconcile between control and creativity.

## PMS Mechanisms

A number of multidimensional PMS models have been developed in response to the growing dissatisfaction with traditional PMS, for example, the Results and Determinants Framework (RDF) for Performance Measurement in Service Businesses (Fitzgerald et al., 1991), Balanced Scorecard (Kaplan and Norton, 1992), and Kanji's Business Scorecard (2002). Even though these frameworks are undoubtedly valuable, their adoption is often constrained by the fact that they are simply a framework, proposing the areas to be measured, but offer very little guidance on how to measure them (Neely, Mills, Platts, Richards, Gregory, Bourne and Kennerly, 2000).

Having the right set of measures, without taking into consideration suitable mechanisms to operationalize them, is insufficient in designing a PMS. Considering the limited discussion relating to operationalize the framework, the present study attempts to explore the area by looking at the variation in services PMS mechanisms. According to Brignall and Ballantine (1996), the PMS mechanisms in the service sectors vary depending on the type of service process. Meanwhile, Fitzgerald et al. (1991), using the RDF framework, added that the measurement mechanisms will differ significantly in measuring the determinants. Based on the arguments, the present study will empirically test the effect of service types on PMS mechanisms, focusing on the four RDF determinants, i.e., service quality, flexibility, resource utilization and innovation (Mohd Amir, Nik Ahmad and Mohamad, 2010b).

## Theoretical Framework

The concept underpinning this study is based on Fitzgerald et al.'s (1991) proposition that the design of services PMS is contingent upon the influence of three main factors – service process type, business strategy and PEU. Assuming that the variations within these contextual variables may influence the characteristics of PMS to a certain extent, the present study is undertaken to explore their relevance in determining the attributes and use of PMS and, therefore, provide the link between the normative theory and the positive theory.

The few available studies confirm that the service production process does influence the nature of MCS (for example, Mia and Partiar, 2001; Md. Auzair and Langfield-Smith, 2005; Pierce and Sweeney, 2005). Extending the reasoning to PMS design, the influence of service process type will be explored. This study views service process type as a continuum

where people-based firms (i.e., professional services) are at one end and equipment-based firms (i.e., mass services) are at the other extreme. The expectation is that different process types will have different task characteristics. These, in turn, will have a different degree of routineness (Perrow, 1970), knowledge of transformation process and measurability of performance (Rockness and Shields, 1984), which may require a suitable means of control.

Meanwhile, the association between strategy and PEU in designing control systems is well established. The low cost strategy has been associated with stable business units compared to the differentiation strategy. Similarly, the more predictable an organization's external environment is the more certain will be the business environment. In the same way, service process type contributes an element of uncertainty where mass service type is considered to be a low uncertainty task compared to a professional service type (Modell, 1996; Silvestro, 1999). In essence, coping with the uncertainties is seen as a fundamental challenge to organizational design.

Uncertainty is defined as the difference between the amount of information required to perform a specific task and the amount of information already possessed by an organization (Galbraith, 1977). The availability of information reduces uncertainty by making one alternative more likely than the others in creating a sense of security (Dent, 1990). Likewise, Huber (1982) stressed the importance of information in the concept of organizational theory and design and insists that it is a key issue to be dealt with in analysing an organization's design. Meanwhile, Brignall (1997), Otley (1999) and Hall (2010) also acknowledged the importance of information systems in PMS as a tool to manage uncertainty.

In the present study, the dimensions of PMS design encapsulate the element of information. The availability and use of information is crucial to reduce the level of uncertainty. Hence, matching the contingency contextual variables with the attributes and use of PMS helps managers to cope with the uncertain conditions. Following the framework presented in Figure 2, the present study observes the effect of service type, strategy and external environment on the attributes and use of PMS. In view of Brignall and Ballantine's (1996) assertion that a competitive environment and competitive strategy may not vary between service businesses, while their process types will definitely differ, separate analyses were undertaken to observe the relationships between the contextual factors and PMS design. As there has been no published studies to date that have examined PMS design in service organizations, by segregating the sample according to process type (i.e., professional services and mass service), the

different emphasis on PMS attributes and use between the service types will be identified.

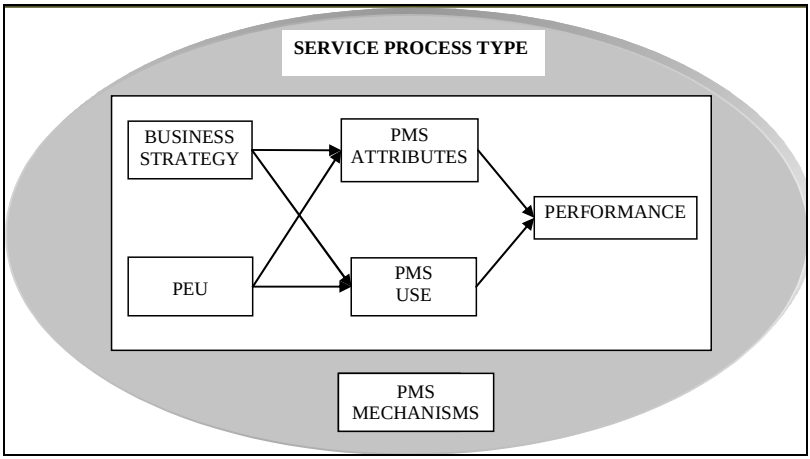


Figure 2 Research Framework

In addition, the significance of service process is further evaluated by exploring its role in determining the PMS mechanism. Brignall and Ballantine (1996) put forward that it is the organization's service process that determines how performance will be measured. Testing the proposition that the PMS mechanism is merely a function of service process, an exploratory investigation is undertaken to fill the gap in understanding the PMS design process.

The investigation answers the following research questions in examining the influences of the contextual variables on services PMS design and, subsequently, evaluates the implications on performance.

RQ1. How does the service type, strategy and perceived environmental uncertainties (PEU) influence the design of PMS attributes and style of use?

RQ2. Do the measurement mechanisms change according to service process type?

RQ3. Is the service firm's performance enhanced when there is a match between the contingency factors and PMS characteristics?