

CHAPTER ONE

INTRODUCTION

1.0 Introduction

In this era of globalisation, the business environment has changed tremendously. The introduction of new products, competitive prices offered by competitors, the increasing number of rivals in the market and rapid technological changes have intensified the competition in the market place (Mia and Clarke, 1999). Malaysia, as one of the countries that are practising an open economy, is also vulnerable to uncertainties in the external markets. Vital economic reforms and structural changes are being implemented by The Government of Malaysia to further enhance Malaysia as an investment destination in an increasingly competitive global environment. For example, the introduction of Economic Transformation Programme (ETP) in October 2010 is a comprehensive effort that aims to transform Malaysia into a high-income nation by 2020. Among the targeted key economic areas for growth and investment is in manufacturing sector such as oil and gas, palm oil, and electrical and electronics industries.

In view of the reforms mentioned above, the role of the manufacturing firms in enhancing the Malaysian economy is very pivotal. In order to compete successfully, Malaysian manufacturing firms need to be continuously alert of the challenges and changes in the global market. The increased competition in the market causes turbulence, stress, risk and uncertainty (Mia and Clarke, 1999). In this new environment

of intense competition, businesses need to adapt to be able to compete successfully with their rivals through the adoption of several strategies, one of which is the manufacturing (operational) strategy. This strategy focuses on how the different functions of the manufacturing firm contribute to the business strategy and competitiveness of the firm as a whole (Langfield-Smith, 1997). The success of Japanese firms in gaining competitive advantage in highly intensified markets, especially in the manufacturing industry, has motivated manufacturers all over the world to follow Japanese manufacturing practices. Since the 1970s, numerous articles have been published about Japanese manufacturing practices such as Just-in-Time (JIT) and Total Quality Management (TQM), often termed as components of 'world-class manufacturing', which, according to Fullerton and McWatters (2002), is one of the strategies to improve manufacturing performance.

The JIT manufacturing system is based on the concept of only manufacturing the necessary products, in the necessary quantity, at the necessary time (Sugimori, Kusunoki, Cho, and Uchikawa, 1977). This is done by eliminating non-value added activities such as inventory storage and its associated costs. It is widely believed that the JIT manufacturing system has contributed significantly to the success of Japanese firms since its inception. JIT was first implemented by the Toyota Motor Company in the early 1970s and its success story has spread to other Japanese companies as well as to other companies nationwide. It is viewed as a contributing factor to Japan's reputation for superior quality and growth in productivity (Keller and Kazazi, 1993).

TQM is a very broad concept that is applicable to the entire organisation, which focuses on improving product quality through continuous improvement. JIT and TQM can co-exist as both focus on quality and continuous improvement. Previous studies have

shown that the successful implementation of these two Japanese techniques – either stand alone or together – is found to improve performance in various ways (e.g.: Flynn, Sakakibara and Schroeder, 1995; Fullerton, McWatters and Fawson, 2003; Kaynak, 2003; Matsui, 2007; Dal Pont, Furlan and Vanelli, 2008; Mackelprang and Nair, 2010).

While JIT and TQM aim at minimising costs and producing quality products, Advanced Manufacturing Technology (AMT), is a more modern manufacturing technique that encompasses the use of advanced technologies, such as robotics in the manufacturing of products, and computers to integrate manufacturing processes. Firms mainly adopt AMT because of its ability to produce larger volumes faster and more efficiently. By producing in larger quantities, firms would be able to meet customer demands within a shorter period of time. As a result, they could establish their reputation with customers and, subsequently, gain competitive advantage. These three practices, JIT, TQM and AMT are known as ‘Integrated Manufacturing’ and they complement each other as well as substitute one another (Dean and Snell, 1991). The integration of these practices is expected to give many benefits and results in significantly higher performance levels than the results of implementing either one. Following Dean and Snell (1991), this study classifies JIT, TQM and AMT as integrated manufacturing practices (IMP).

The implementation of manufacturing practices such as IMP may also relate to the business strategy adopted by the firm. The business strategy concerns how an organisation competes within the industry, and the way it positions itself in relation to rivals (Langfield-Smith, 1997). Each organisation may adopt a different business strategy depending on the nature of business and the industry within which it operates. For example, a low cost strategy may be suitable for firms that focus on charging a lower price to their customers, whereas a product differentiation strategy may be more

suitable if their concern is to produce a unique product that is different from other competitors. In today's business world, the business strategy is crucial for ensuring the success of an organisation. The adoption of a strategy that is not suitable to the nature of business could affect the ability of the firms to compete in a challenging business environment.

Changes in manufacturing systems require the use of management accounting systems (MAS) in an organisation to be more critical (Bromwich, 1990; Hoque and Alam, 1999; Mia, 2000; Isa, 2007; Davila and Wouters, 2007; Mia and Winata, 2008). Since the implementation of IMP will bring about significant changes in the manufacturing process, it is predicted that there would be greater demand for broader scope, more timely, integrated and aggregated MAS information. MAS is expected to help organisations to survive in a competitive environment by providing useful information for planning, controlling, monitoring and making decisions. The effective use of MAS information could then lead to improved organisational performance.

As the ultimate objective of every organisation is to achieve the highest performance level possible, each organisation will set its own performance targets based on the resources available. There are several ways to measure performance. Traditionally, organisational performance is mainly measured based on financial indicators such as profitability level, however, in recent years, more effective methods have been used to measure and evaluate performance by using both financial and non-financial indicators.

1.1 Problem Statement

The debates on management accounting development issues started in the 1980s when Kaplan (1983) highlighted the problems faced by the U.S. manufacturing firms as compared to Japanese and Western European manufacturing firms. He then analysed management accounting practices from the 1800s through 1980s in the U.S. and concluded that little innovation has been put in the design and implementation of cost accounting even though the nature of organisations and dimensions of competition have changed considerably (Kaplan, 1984).

In 1987, Johnson and Kaplan provided a more detailed and comprehensive picture of the development of management accounting in their book, '*Relevance Lost: the Rise and Fall of Management Accounting*'. In this book, they explored and discussed the growth and decline of management accounting between 1800 and the late 1980s. They argued that the traditional management accounting techniques that were developed during the industrial revolution are no longer relevant for the current use. Even though the techniques originate from the scientific era, their innovation has stagnated since then.

The management accounting techniques are not limited to costing systems only. The scope of management accounting is much wider and also includes information systems that can assist firms in day-to-day operations, especially for planning, controlling, monitoring and making decisions. Johnson and Kaplan (1987) argued that management accounting system practices are no longer relevant in the new business environment due to the increasing complexity in the business environment and the obsolescence of the

traditional management accounting system, which are not in line with the changes in the business environment. The business environment is now becoming more complex and competitive due to rapidly changing technologies and the increasing number of rivals striving to achieve competitive advantage. The forces of globalisation and the advancement in technologies have transformed businesses into a rapidly changing and dynamic business environment. Therefore, to remain competitive, the management accounting system practices of organisations should be modified to suit the changes in the environment in which the organisation operates.

As for manufacturing firms, the rapid technological advancement has resulted in significant changes in their cost structures, processes and controls. In view of these changes, manufacturing firms need to revise their techniques to be able to compete with their rivals. One way is by adopting world class and more advanced manufacturing techniques such as IMP. This study will investigate three prominent techniques used in manufacturing firms. JIT, TQM and AMT are integrated manufacturing techniques adopted by firms to reduce costs, improve quality, and speed up manufacturing processes, in order to ensure continuous improvements. The extant literature reveals that research examining these three practices simultaneously is still lacking. Thus far, no published study has examined the level of implementation of these three techniques simultaneously in Malaysian firms. It is, therefore, important to investigate whether Malaysian manufacturing firms implement these practices, either stand alone or jointly, as part of the strategies to cope with the changes in the business environment. Moreover, the results of the study will assist us in determining whether these practices should be implemented individually or in combination.

Contingency theory suggests that in order to improve performance, control systems such as MAS should be modified to meet the new information needs of today's managers. However, it has been argued that the traditional MAS is lagging behind the changes in the business environment (i.e.: Kaplan, 1983; Kaplan, 1984; Chenhall and Morris, 1986; Mia and Clarke, 1999; Williams and Seaman, 2002; Mia and Winata, 2008; Hoque, 2011). The obsolescence and ineffectiveness of the conventional management accounting in advanced manufacturing environments have also attracted much attention from academia (i.e.: Johnson and Kaplan, 1987; Hiromoto, 1991; Sillince and Sykes, 1995; Davila and Wouters, 2007). Nevertheless, research on the use of MAS with IMP is rather scarce. Thus far, Hoque and Alam (1999) suggested that the adoption of TQM leads to changes in the management accounting and reporting processes; Mia (2000) showed that JIT firms that used a higher provision of MAS information earned higher performance; Isa (2007) found that advanced technology adoption significantly affects the change in management accounting and control systems (MACS) in terms of planning, controlling, costing, directing and decision making; Mia and Winata (2008) also found a positive association between JIT application and managers' use of broad scope MAS information. The review of the literature indicates that there has been no published research examining the use of MAS information in the AMT environment or concerning the implementation of multiple manufacturing practices. Furthermore, as asserted by Malmi and Brown (2008), by examining all the management control systems (MCS) elements in the package, and the relationships between them, a better understanding of the effectiveness of the individual MCS elements could be obtained. Therefore, there is a need to examine the use of MAS information in integrated manufacturing environments.

Due to the recent economic crisis affecting businesses worldwide, firms are experiencing a decline in organisational performance. Various measures are being used by firms to alleviate their performance, including the continual improvement of the production process, however, many still find difficulty in sustaining their market positions. One of the strategies taken by manufacturing firms to improve performance is by adopting world class and more modern practices such as JIT, TQM and AMT. However, past studies (e.g.: Dean and Snell, 1996; Kinney and Wempe, 2002) showed that adopting these practices could not guarantee an improvement in organisational performance. It is possible that performance could not be achieved through the adoption of these techniques alone but must also be accompanied by the use of relevant MAS information. For successful decision making, managers must have adequate information in understandable form and at needed time. To meet these information needs, management accounting system has an important role.

In an advanced manufacturing environment, consistent with the contingency theory, scholars have argued that the use of relevant MAS information may help the organisations to achieve their performance target, which, subsequently, will improve the organisation's performance as a whole. For example, Mia and Clarke (1999) showed that the use of MAS information in the condition of intensified market competition has led to an improvement in both financial and non-financial performance. Similarly, a recent study by Hoque (2011) also suggested that the changes in MACS could enhance organisational performance during highly intensified market competition. Mia (2000) also found that MAS information is related to higher financial performance in JIT firms. However, Patiar and Mia (2008) suggested that the interaction effect of market competition and the use of MAS information in the hotel industry lead to higher non-financial performance but not to financial performance. Yet, there is no empirical

evidence on the role of MAS in the relationship between IMP and performance. Thus, it is necessary to extend this research by examining the use of MAS in improving organisational performance in different settings. It is the aim of this study to examine the mediating effect of MAS information on the relationship between IMP and performance.

Furthermore, the decision to adopt certain manufacturing techniques could be influenced by certain contextual factors. The contingency theory asserts that certain manufacturing techniques and control systems of an organisation must be congruent with the contexts within which the organisation operates (e.g.: Lawrence and Lorsch, 1967; Waterhouse and Tiessen, 1978; 1983; Otley, 1980), and that the organisation could gain higher performance if the context and the control systems are properly matched (e.g.: Frey and Gordon, 1999; Boulianne, 2007; Cadez and Guilding, 2008; Hoque, 2011). According to Chenhall (2003; 2007), the contextual factors are categorised into several components such as external environment, technologies, structure, strategies, culture and size. In this study, the relationship between IMP and two contextual factors will be examined. A review of the literature suggests that the adoption of manufacturing practices is influenced by both external and internal factors (e.g.: Dansky and Brannon, 1996; Kotha and Swamidass, 2000; Chong and Rundus, 2004; and Prajogo and Sohal, 2006). However, past studies examining the effect of both external and internal factors on the adoption of manufacturing practices is very much lacking. Therefore, it is the aim of this study to add to the literature on the relationship between external and internal contextual factors, and IMP implementation.

1.2 Research Questions and Objectives

Based on the above discussion, this study aims to address the following research questions:

1. Is there any relationship between the intensity of market competition and the use of IMP?
2. Is there any relationship between strategy and the use of IMP?
3. Is there any relationship between IMP and business unit performance?
4. Is there any relationship between IMP and MAS?
5. Is there any relationship between MAS and business unit performance?
6. Does MAS mediate the relationship between IMP and business unit performance?

Consistent with the research questions, the general objective of this study is to examine the relationship between the intensity of market competition, strategy, MAS information, the use of IMP and performance among Malaysian manufacturing firms. Accordingly, the specific objectives of this study are as follows:

1. To examine the relationship between the intensity of market competition and the use of IMP.
2. To examine the relationship between strategy and the use of IMP.
3. To examine the relationship between IMP and business unit performance.
4. To examine the relationship between IMP and MAS.
5. To examine the relationship between MAS and business unit performance.
6. To examine whether MAS mediates the relationship between IMP and business unit performance.

1.3 Significance of the Study

This study contributes to both theory and practice. The current study has some theoretical implications that could contribute to the literature. First, in today's advanced business environment, an increasing number of firms are adopting IMP as part of their pursuit of excellence. However, research examining these three practices simultaneously and how they affect control systems such as MAS is still lacking. As the contingency theory suggests, the control systems used by an organisation are contingent upon its context, thus, it is pertinent to examine how IMP affects the use of MAS in organisations.

Second, it has been argued that the role of MAS in an integrated manufacturing environment needs to change to suit the changing information needs of managers. However, research that examines the role of MAS in this environment is very much lacking. A review of the literature reveals that, thus far, there is no published research examining the use of MAS information in an AMT environment, particularly an IMP environment. Thus, this study aims to fill this gap in the literature by investigating this issue in the context of IMP, either by itself or in combination.

In addition, the relationship between IMP, managerial use of MAS and performance are examined. Even though a number of empirical studies have investigated the relationship between IMP and performance, the findings are inconclusive. For example, while Jaikumar (1986), and Kotha and Swamidass (2000) found that AMT implementation has a positive impact on performance, Dean and Snell (1996) found otherwise.

Similarly, Callen, Fader and Krinsky (2000), Fullerton et al. (2003), and Matsui (2007) showed that JIT could improve the performance of the adopter firms, the study by Kinney and Wempe (2002) demonstrated a contradictory finding. As IMP represents an integrated and world class manufacturing practice that is argued to be an important predictor of performance, the inconclusive results between IMP and performance have generated a lot of research interest related to the nature of the relationship. It has been argued that perhaps there are other factors such as use of MAS information by managers that might play a mediating role in this relationship. It is possible that use of appropriate MAS information by IMP firms will enable them to make better business decisions, thus resulting in improved performance. Thus far, previous studies have not examined the effect of MAS information in mediating the relationship between IMP and performance. Furthermore, this study extends the previous studies by focusing on the achievement of performance targets for both financial and non-financial measures.

Third, the contingency theory also implies that the level of IMP is influenced by the context within which an organisation operates (Dansky and Brannon, 1996; Kotha and Swamidass, 2000; Hendricks and Singhal, 2001; Prajogo and Sohal, 2006; among others). A review of the literature reveals that manufacturing practices are influenced by various contextual factors, including the environment, technology, structure, size, strategy and culture (Chenhall, 2003; 2007).

A further review of literature on contingency studies indicates that the research examining the effect of competition is still limited even though the competition is becoming more intense. Furthermore, no study has investigated the relationship between competition and IMP. Thus far, Khandwalla (1972; 1973) and Hoque (2011) showed that market competition influences the use of management controls; Mia and

Clarke (1999) suggested that the intensity of market competition influences firms to use MAS information; Das, Handfield, Calantone and Ghosh (2000) and Chong and Rundus (2004) demonstrated that market competition influences the use of certain practices such as quality practices and TQM; Ax, Greve and Nilsson (2008) found a positive correlation between competition and the adoption of target costing; and Patiar and Mia (2008) showed that market competition leads to a decline in financial performance. Considering the growing importance of competition and lack of study on its effect on IMP, there is a need to investigate whether the level of intensity of market competition does affect the adoption of IMP.

In addition, the business strategy adopted by the firms might also influence the management decision to adopt particular manufacturing techniques. For example, Dansky and Brannon (1996), and Prajogo and Sohal (2006) suggested that business strategy influences the adoption of TQM; Kotha and Swamidass (2000) argued that business strategy is associated with AMT implementation. However, none of the published research has examined the influence of business strategy on the use of IMP as a whole.

Hence, this study investigates two contextual factors that may influence the adoption of these practices, namely, intensity of market competition and strategy. Furthermore, market competition and strategy are chosen because they represent external and internal contextual factors, respectively.

Overall, this study aims to examine the relationships among intensity of market competition, business strategy, IMP, the use of MAS information and performance. It will add to the current body of knowledge by providing empirical evidence as to

whether these manufacturing techniques are useful to improve performance, with the use of MAS information as a mediating variable. Thus far, the review of literature has found no published study examining these relationships in Malaysia or other countries.

Finally, this study contributes to the literature since it combines at least two major disciplines. IMP is categorised under the operations management (OM) discipline, whereas MAS represents the management accounting (MA) discipline. According to Hansen and Mouritsen (2007, p. 729), “Where MA is based on accounting numbers in hierarchical flows of information enabling planning and control, OM is more concerned with technological, architectural and organisational principles established to facilitate the lateral flow of goods and services”. The integration of functional departments, activities and organisational goals in IMP would affect the role of MA by changing the nature of planning and control tasks in IMP operations. Sousa and Voss (2008) also recognised that OM problems could be viewed from other disciplines.

This study also contributes to practice in several ways. First, the current study provides insights into the type and level of advanced manufacturing practices that are adopted in the condition of intense competition. Similarly, this study could also shed valuable insights into the business strategy that is suitable and should be pursued by the firms in order to adopt these practices. Second, by examining the relationship between integrated manufacturing and performance, it could assist managers in deciding which of these practices could bring greater benefit to their organisation. In addition, the findings of this study provide insights to managers whether to adopt only a single practice of IMP, or a combination with other IMP practices. Third, this study investigates the role of MAS information in enhancing business performance in an advanced manufacturing setting. The findings of this study could highlight the importance of MAS information

in assisting managers to make more effective business decisions, which, eventually, determine organisational performance.

1.4 Thesis Organisation

This thesis consists of six chapters. It begins with the introduction, followed by literature review and the theoretical framework and hypotheses development. Research methodology is presented next, followed by results and discussion, and finally, summary and conclusion.

Chapter 1: Introduction

Chapter 1 provides an overview of the research. It outlines the background and the needs of the study, research questions, objectives of the study, significance of the research, and organisation of the thesis.

Chapter 2: Literature Review

Chapter 2 reviews prior literature related to the study. Relevant studies related to market competition, strategy, integrated manufacturing, MAS, and performance are discussed. The objective of the literature review is to identify gaps that will be researched in the current study.

Chapter 3: Theoretical Framework and Hypotheses Development

Chapter 3 starts with a discussion of relevant theory to be used in the study. Subsequently, this chapter presents the theoretical framework, the relationship between the variables and the development of research hypotheses.

Chapter 4: Research Methodology

This chapter contains a discussion on the research design. The sample selection, data collection method, a thorough discussion of the variables used, measurements for each variable, and statistical method for data analysis are discussed in detail.

Chapter 5: Results and Discussion

In this chapter, the results of the study based on the data collected are discussed. The discussion of the results includes both descriptive analyses and hypotheses testing. Relevant tables, figures, and graphs are also presented to support the discussion of the findings.

Chapter 6: Summary and Conclusion

Chapter 6 outlines the summary of the research and conclusion drawn from the study. Some limitations in carrying out the study are highlighted as well as some recommendations for future research.