

**ROLE OF TECHNOLOGICAL DEPLOYMENT AND  
MANAGEMENT STYLE AS MEDIATORS BETWEEN  
BUSINESS STRATEGY AND PERFORMANCE**

By

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## ABSTRACT

The purpose of this study is to investigate the predominant business strategies adopted by organizations in the Multimedia Super Corridor (MSC); this study also examine the various types of technological deployment and management style that affect the organizations in MSC, Malaysia. Technological deployment in this study is defined to include information system (IS) architecture, strategic impact, and technological source-scanning. A typological approach is used in this study, by using Miles and Snow's typology that characterize business strategy in four categories; prospector, analyzer, defender, and reactor. The second set of mediating factor used in this study is management style; it consist of two style; participative and authoritative management style. This study found that most of the MSC companies adopted the prospector and analyzer strategies, in order to ensure good organizational performance. There are a fraction of MSC companies that adopt the reactor type strategy, and the analysis indicated a negative link to the organizational performance. This study also found that most of the MSC companies adopted the participative management style. It is suggested that the cause for this is the fact that most of the MSC companies are new to the industry (Less than 6 years old). Today's company cannot ignore the importance of information technology in their strategic planning. Information technology (IT) plays a significant role in ensuring the success and continuous development of an organization. This study had found a positive mediating relationship between IT and organizational performance. The biggest effect was from IT architecture.

## DEDICATION

*Dedicated to*

*The School of Management, life will not be the same after this.*

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*Mohammad Zolkarnain Tun Abdullah*

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## ABSTRAK

Objektif utama kajian ini ialah untuk menentukan profil - profil cara teknologi digunakan dengan lebih strategik oleh organisasi yang beroperasi di Multimedia Super Corridor, Malaysia. Kajian ini juga merangkumi, jenis strategi pemiagaan dan gaya pengurusan yang terbaik sekali untuk menentukan pencapaian prestasi yang tinggi untuk sesebuah organisasi. Maklumat mengenai cara teknologi telah digunakan oleh organisasi, merangkumi maklumat mengenai sistem maklumat, keberkesanan strategi dan punca teknologi juga di tentukan. Model Miles dan Snow telah digunakan untuk menentukan jenis strategi pemiagaan yang dilaksanakan, bersama dengan dua jenis gaya pengurusan, iaitu: Pengurusan jenis penglibatan dan Pengurusan jenis autoritatif. Hasil dari kajian ini telah mendapati bahawa, kebanyakan organisasi MSC menggunakan strategi "prospectur" atau "analyzer" untuk memastikan prestasi organisasi tinggi. Bagaimanapun, segelintir organisasi MSC melaksanakan strategi jenis "reactor", dan analisis telah membuktikan hubungan yang negatif ke atas prestasi organisasi. Kajian juga telah mendapati bahawa kebanyakan organisasi MSC, menggunakan gaya pengurusan jenis penglibatan. Ini kemungkinan berlaku kerana kebanyakan organisasi MSC baru ditub an (kurang dari enam tahun beroperasi). Organisasi pada masa kini, tidak boleh mengeneipkan kepentingan sistem teknologi maklumat dalam aktiviti perancangan strategik mereka. Sistem teknologi maklumat memainkan peranan yang utama dalam penentuan kejayaan dan pembangunan sebuah organisasi. Kajian ini telah mendapati perhubungan sampingan yang positif wujud di antara sistem teknologi maklumat dan prestasi organisasi. Faktor yang memberi impak yang terbesar sekali ialah "impact" sistem teknologi maklumat yang digunakan.

# Chapter 1

## INTRODUCTION

### 1.1 Introduction

In a study done by Croteau & Bergeron (2001) they had found that Information Technology (IT) plays a very important role in organizations. So do the other studies cited in Croteau & Bergeron's study (Henderson & Venkatraman, 1999; Bergeron & Raymond, 1995; Porter & Millar, 1985; McFarlan, McKenney & Pyburn, 1983).

IT can be the key strategic tool for an organization as a recent survey done by the Gartner group on 1400 Chief Information Officers (CIO) belonging to the Gartner's Executive Programs had revealed that executive with significant IT responsibilities are at higher levels of executive decision-making (Gartner, 2000). A new style of executive with business and technology fusion responsibilities has emerged. These executives are evolving to handle different parts of IT and business strategies and implementations. These executive are heavily involved in stimulating new business opportunities due to their better grasp of emerging technology. With their increasing involvement in higher executive-decisions, so do their influence of management style on the organization.

Organizations that use IT with appropriate management style will most probably succeed in its industry. Part of the observation relating the strategic alignment of the IT with the organization structure was detailed in a study done by

Bergeron & Raymond (1995). However, there was no mention on the particular deployment method of the information technology in relation to its strategic initiative. There is also a question of what type of management style that is best suited for each type of strategic activities or "technological deployment" (see chapter 2 for definition) used.

Croteau & Bergeron (2001) had recommended an extended study on interaction of technology deployment on business strategy. Also cited in their study are other studies that examine business strategy, technological deployment, and organizational performance in isolation (Hambrick, 1980; Miller, 1996; Dass, Za ra & Warkentin, 1991).

Croteau & Bergeron (2001) also cited recommendations from DeLone and McLean (1992) to expand the study on the impact of Information System (IS) on organizational performance.

The most recent study was done in Canada by Croteau and Bergeron (2001). Two hundred twenty-three organizations in Canada had participated in that study. Their study had shed some light on the interactions of business strategy, information technology, and the performance of those companies. The study concluded that there is a positive link between strategic activities and organizational performance. Second finding is that the organizations' strategic activities or business strategy has different profiles of technological deployment, this is true for *prospector*, *defender*, and *analyzer* (see chapter 2 for definition of *prospector*, *defender*, and *analyzer*). The final findings of the study show that there is a positive relationship between technological deployment with *prospector* and *analyzer* (Croteau & Bergeron, 2001).

Our study will bring a Malaysian perspective, as the studied population will be the Malaysian Multimedia Super Corridor's list of companies. The results of this study hopefully will benefit the growth of the Malaysian's MSC companies (see objectives in section 1.4).

## **1.2 Significance of study**

The Multimedia Super Corridor (MSC) is the most ambitious program that the Malaysian government has ever embarked upon. It started with a vision for Malaysia to become a fully-developed, matured, and knowledge-rich society by the year 2020. In order to do so, an IT hub is needed. Hence, MSC was developed to encourage innovations and helping companies -- both local and international. The creation of MSC is to establish an IT infrastructure that will assist Malaysia to achieve its objective to become an industrialized county by the year 2020.

IT contributes a defining role within organizations. Strategic usage of IT, even for small companies, if used in an innovative way can create a significant effect (Wiseman, 1988). There are other studies that look at the link between organizational performance and the strategic use of IT (Chan, Huff, Barclay & Copeland, 1997). The findings of our study would be of significance to small local MSC companies as it will provide a basic guideline on how they should set their strategies. The strategic framework would also provide some sort of guide for small local MSC companies, as they are fairly new to the strategic organization of information technology. It is also important for them in order to survive in this age of globalization.

With the current trend of the new millennium, it is becoming a necessary characteristic of organizations to be a learning organization. It is a vital ingredient for any organization to survive in the age of globalization (Senge, 1990; Andy 2001; Woods & Hagemeyer, 2002; Moore, 2001). One of the prerequisites for a learning organization is that the organization allows people to learn, to learn through practice, and through mistakes. One of the management styles that facilitate this behavior is the participative style.

The other style of management style, autocratic style, can still be seen operating in many organizations especially during critical situations, authoritarian style of management would create more success than any other styles. In certain companies, especially those companies that are led by retired civil servants, authoritarian style of management is still being practiced (Rohwer, 2000) Based on input given by the Multimedia Development Cooperation department during the interview session, these companies were led by retired civil servants that bring with them the authoritarian management style. In the early stage of their operation, these companies experience some success as the authoritarian styles seems to be best suited for this stage (Greiner, 1972). Hence, it is appropriate to choose the participative and authoritative styles for this study.

### **1.3 Objectives**

The objectives of this study are:

1. To identify the major types of business strategies used in MSC companies.

2. To identify the business strategy or strategies that has a positive relationship with organizational performance.
3. To identify the predominant business strategy used by the local MSC companies.
4. To identify the most appropriate management style associated to the most effective business strategy.
5. To examine the particular management style used in MSC, its relation to the business strategy, and to compare the management style used with the business strategy adopted.

#### **1.4 Scope and Research Questions**

The scope of the study encompasses the list of MSC certified companies. There are currently 625 MSC certified/listed companies (for full listing: [www.mdc.com.my](http://www.mdc.com.my)). Of these, 300 had been in operation for more than two years running. This is the target population, as we will require financial records for more than two years running as part of the growth and profitability analysis.

This study is conducted in Putrajaya, Cyberjaya, and Kuala Lumpur. The unit of analysis is the individual companies. Data were collected using self-administered questionnaire: hardcopy and softcopy questionnaires. The hardcopy were distributed personally and also through the MSC representative, while the softcopy were distributed through the MSC mailing list.

*Research Questions:*

Question 1: What type of business strategy predominantly used in MSC companies?

First question that this study will explore is on the type of business strategies predominantly used by the MSC companies. It is important to know if the MSC companies are adopting the positive business strategies as in the long-run only those companies that adopted the correct business strategies will survive. This study is important for the Multimedia Development Cooperation (MDC) as they can use the result to better manage the MSC companies (Note that MDC is the governing body for all MSC companies).

Question 2: What is the predominant management style used in MSC companies?

Second question that this study will explore is what is the predominant management style used in MSC companies. The two management styles we will be examining are participative and autocratic (see chapter 2 for further explanation).

Question 3: What is the profile of Technological deployment predominantly used in the MSC companies?

The final question that this study will address is the relation on the specific profile of technological deployment with business strategy. Companies in MSC must spend a lot of money to establish their IT infrastructure. As a requirement from MDC (cited from MDC rules and regulations), the company must at least



invest more than RM150,000 in IT infrastructure. Hence, it is important to know the combination of business strategies and technological deployment that will lead positive organizational performance.

## 1.5 Key Words

The following sections present the major key words used in this study.

### **Business Strategy**

The business strategy is defined using Miles and Snow's typology. The typology consists of *prospector*, *analyzer*, *defender*, and *reactor* (Croteau & Bergeron ,2001). Each company will fall into one of the four types according to their perception they have of their environment. One might fall in between two types but there will always be a preferred type over the others (Full description of Miles and Snow's typology is in the Literature Review section).

### **Technological Deployment**

Croteau & Bergeron state in their study that "technological deployment encompasses the way companies plans, manage, and implement information technology". The study also cited five conceptual framework for technological deployment from the following studies; McFarlan et al., 1983; Porter & Miller, 1985; Dass et al., 1991; Bergeron & Raymond, 1995; Henderson & Venkatraman, 1999.

Our study focuses on five components from those frameworks: strategic impact of IT, technological architecture, sources of technology,

technological scanning, and the performance of IT department. We focus on these five components because they are the common components cited in all previous studies mentioned by Croteau & Bergeron (2001) and all their cited studies.

### **Management Styles**

Management style is attitudes, behavior, predisposition, motives, and values of managers with respect to decision-making, delegation, communication, leadership, and flexibility (Saiyadain, 1988). Robbins (1991) emphasize on the followers in leadership effectiveness. No matter what the leader does, the success of any decision-making, delegation, and communication depends on the followers' action. Hence, the style adopted by management will most probably reflect the accepted management styles by the followers/employees. A research done by Likert (1961) shows that consultative and participative managers are the more effective. This study examine the autocratic and participative management style. Autocratic management style is a management style that focus on one individual formal power, non-flexible, highly bureaucratic, and non-participation. Participative management style is of the opposite. These opposing styles will give a wide-spectrum on the measurement for management styles.

### **Organizational Performance**

Organizational performance can be measured using either objective or subjective data (Croteau & Bergeron, 2001). The objective approach refers to the financial data provided by the firm or any secondary data obtained; on

the other hand, the subjective approach refers to the perception of the respondents. This study chooses the subjective approach as the earlier study done by Bergeron and Raymond (1995) shows little difference when organizational performance is measured through either the objective or subjective methods; results obtained were comparable and significant (Croteau & Bergeron, 2001).

## **1.6 Summary and Organization of Chapters**

The correct alignment of business strategy and the IT deployment and infrastructure has proven to be the basis for successful companies. The most common construct for business strategy is the Miles and Snow's typology. Our search for this typology in the world-wide-web resources shows that there are more than 600 researches done using this typology. Hence, we have chosen this typology for the study. Two distinctive management styles are analyzed, the authoritative and participative styles. As for the organizational performance, a measure of perception was used on the organizational growth and profitability. Finally, the combination of the business strategies, technological deployment, and organizational performance are analyzed.

The remaining chapters are organized as follows: Chapter 2 presents the literature reviews on the basic constructs of the business strategy, technological deployment, management style, and organizational performance. Together are the theoretical framework and the development of hypotheses. Chapter 3 outlays the methodology of the research. Chapter 4 presents the statistical analyses and

describes the results of the study. Finally, Chapter 5 presents the discussion of findings, limitations, implications of this study, and suggestions for future research.

## Chapter 2

### LITERATURE REVIEW

#### 2.0 Introduction

The literature review is based on four constructs: business strategy, technological deployment, management style, and organizational performance. Literature review will be presented for each of the constructs:

This study is an extension from Croteau and Bergeron (2001). This study implemented a mediation analysis with linear regression tests, as recommended by their study to explore the model using other modes of analysis. Other differences are the scope of the study where Croteau had done on all industry in Canada while this study focus on the MSC companies which are largely medium-size companies (less than 250 employees) and this study look at an additional mediating factors to organizational performance, the prevailing management style of the organization. A written consent was given prior to the study in order for us to adopt part of the questionnaires (see Appendix A). Since this study has similar variables for the independent and dependent variables, the literature reviews are similar for these two parts. We have gone through the recommended literatures from Croteau and found that those literatures are very pertinent to this study.

## **2.1 Business strategy**

Business strategy is defined as actions taken by the management team based on information collected from various sources; such as results from the implementation of strategy in utilizing scarce resources, managing the surrounding environment, the structuring of organization, and the implementing of specific processes. The effectiveness of a business strategy can be measured by the performance, such as profitability of an organization.

Business strategy in this study uses the typological classification. Typological approach in identifying business strategy is creating a better understanding of strategic reality of an organization (Croteau & Bergeron ,2001). This study has chosen Miles and Snow's typology as it is the most commonly studied typology and it is also recommended by Croteau and Bergeron (2001) to choose this typology.

Miles and Snow's typology (1978) identified four primary strategies; prospector, defender, analyzer, and reactor.

Prospectors are entrepreneurial firms. They find and exploit new-products and market opportunities. Innovation is sometimes more important than profitability and these organizations are more willing to take risks. They are also more willing to trade efficiency for growth.

Defenders, on the other hand, stress efficiency with tightly organized firms and focus on a narrow market segment. As defenders avoid unnecessary risks, they usually lag behind competitors in innovations and only adopt proven innovations which are in their area of expertise. They focus on the bottom line and emphasize their efforts on production efficiency. One way to accomplish this is to have

standard economic actions such as production of high quality products or competitive pricing. Defenders are motivated to keep costs down. Training costs money - as a result, they invest in less training than any other strategy type (Obert, 2000).

Analyzers approximate between the prospectors and the defenders strategies. Therefore, they are adapted for efficiency and productivity when market is stable, usually imitating defenders. They move to innovation and scanning when market is turbulent, usually following prospectors.

Reactors have no clear strategic orientation. They usually respond inappropriately to their environment and often land into crisis. Their responses are also on short term gains instead of long term gains.

Organization will emphasize one of the above four business strategies. There will always be a predominant strategy adopted by the organization. Each of the strategies has its own benefits and drawbacks; prospector, analyzer, and defender are expected to enhance organizational performance (they exist is the same continuum). Reactor, on the other hand, hinder or obstruct organizational performance, hence, are not included in the continuum (Croteau and Bergeron ,2001). (see Figure 1).

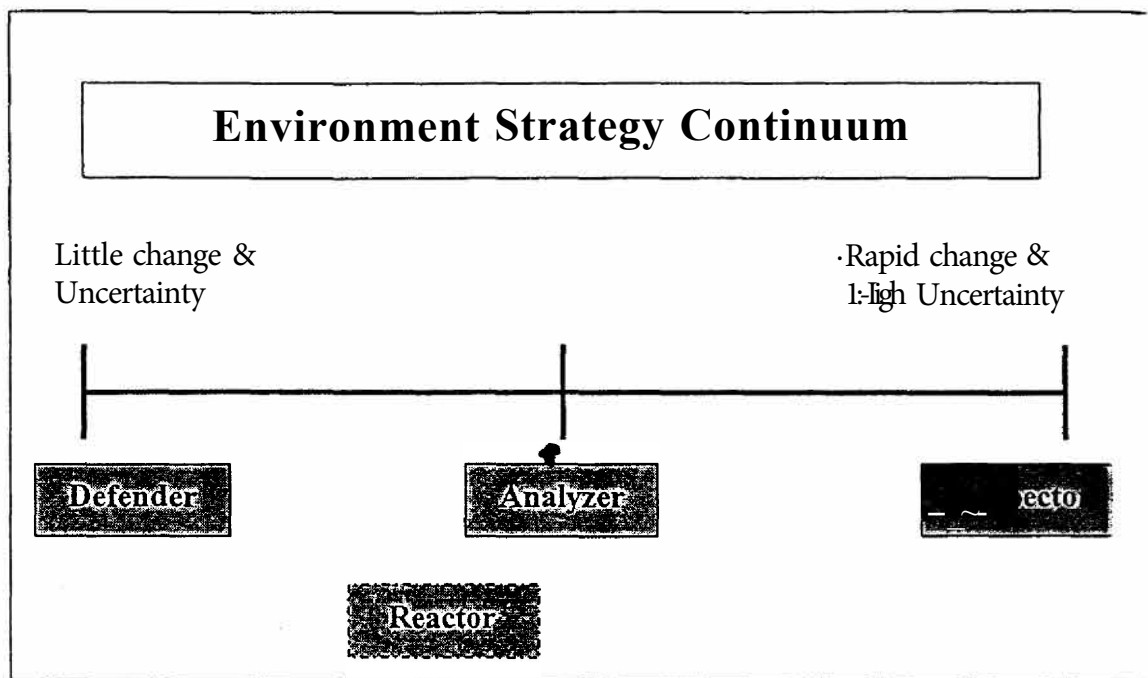


Figure 1. Environment Strategy Continuum.

Many studies have been done on the relationship between business strategy and organizational performance. For instance, Miller (1987) found a positive relationship between business strategy and organizational performance in many conditions.

As cited in Croteau & Bergeron (2001) study, they had mention various studies that had shown positive relationship between organizational performance and the prospectors, defenders and analyzers business strategies; these studies are Parnell (2000), Venkatraman (1989), Zahra and Covin (1993), Snow and Hrebiniak (1983), Hambrick (1983), Conant, Mokwa & Burnett (1989), Namiki (1989), Tavokolian (1989), Parry and Parry (1992), and Karimi, Gupta & Somers (1996).



### **2.3 Technological deployment**

As stated by Croteau & Bergeron (2001) that technological deployment is defined as the way companies plan, manage and execute information technology (IT) to achieve higher effectiveness level.

Croteau & Bergeron (2001) state the important of the following five studies that put forward the concept technological deployment: McFarlan et al., 1983; Porter & Miller, 1985; Das et al., 1991; Bergeron & Raymond, 1995; Henderson & Venkatraman, 1999.

McFarlan et al. (1983), stressed the importance for organizations to understand factors that affect the formulation of information system (IS) strategy. They also stressed on the strategic value of IS and the need to carefully evaluate the current future applications. Porter and Miller (1985) pointed out the importance of IS in enhancing the competitive advantage of an organization. Das, Zahra & Warkentin (1991) present a framework with four principle dimensions related to information technology: distinct competencies, role of IT, design and development of IS, and also design and development of technology, organization, and infrastructures. Bergeron and Raymond (1995) illustrate the top five concerns of CIOs related to the management of IS: the positioning and role of IS, the strategic use of IS, the new technology applications, the planning and architecture of IS, and the security of IS. Henderson and Venkatraman (1999) presented four key items that described a successful marriage between strategic alignments of IT with business strategy. Organizations should address the following items: business

strategy, IT strategy, organizational infrastructure and technological infrastructure (Croteau and Bergeron ,2001).

Croteau and Bergeron (2001) have come up with seven principle components:

1. Strategic use of information technology - refers to the strategic use of IT to counter competitions, reduce competitive disadvantage, and to achieve strategic goals.
2. Management of information \_technology - refers to the usage of IT, how much it is employed in the company, new development of IT, and the degree of application of IT in day to day activities.
3. Role of the IS department - refers to the importance of IT planning, IT alignment with organizational structure, effectiveness of software development, and management of communication networks.
4. Technological infrastructure - refers to the IT procedures and architecture.
5. Organizational infrastructure - refers to the internal functioning of the IS department such as formal structure, processes, reporting relationships, support groups, and skills (Dess et al., 1991 ).
6. Administrative infrastructure - refers to policies that control and guide the work done in IS department (Dess et al., 1991 ).
7. Technological scanning - refers to how an IT department of an organization manages, organizes, and distribute IT relevant information to the rest of the organization with the objective of enhancing the competitiveness of the company.

Out of all these studies we have extracted five components, which later will be used to measure technological deployment: strategic impact of IS department, technological architecture, technological scanning, source of IS development, and IS performance evaluation.

Managing technology will take more or less the same efforts as managing it poorly; though the prior is more preferable as it is obviously more profitable for the organization. The best way to achieve such results is to formulate a technological strategy that is based on a systematic analysis of what might be termed the technological profile of the company (Ansoff & Stewart, 1967).

## **2.4 Management style**

Managers are challenged with making decisions practically every minute they are at work. In order to be able to complete tasks in a timely manner, managers must be able to delegate many of their tasks and with this allow decisions to be made by others in a professional manner. This type of decision making is widely known as participative leadership. The pioneering work on participative leadership was done by Lewin, Lippitt, and White (1939). Since then the work has expanded into a wide range of participative management style. It ranges from autocratic to consultation to joint decision and finally to delegation. These are the three widely accepted taxonomies of decision procedures (Heller & Yukl, 1969; Tannenbaum & Schmidt, 1958; Vroom & Yetton, 1973).

Participative management can be visualized using a continuum. The following diagram (figure 2) shows the continuum ranging from non-influence by others to highly influence by others:

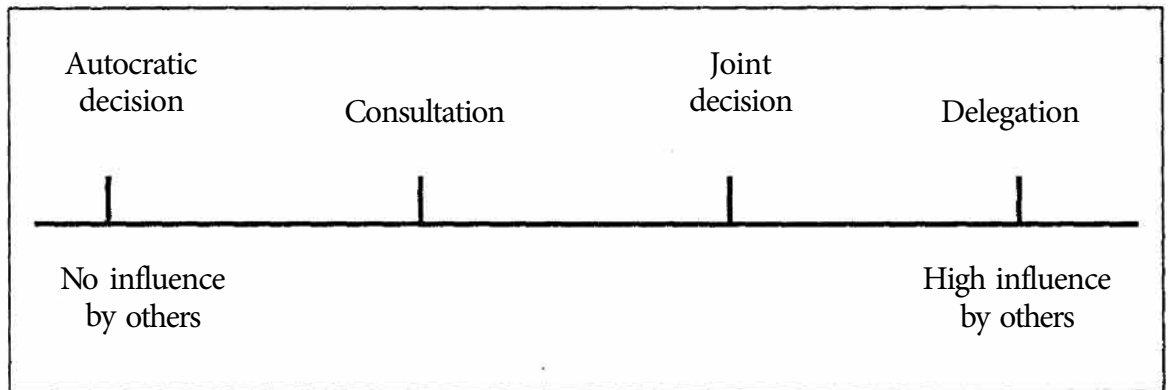


Figure 2. Continuum of decision procedures.

Autocratic decision making is where the manager makes all the decisions without considering the opinions or suggestions of other people (there is no participation). Previous studies had found that participative management is a more effective type of management style (Bradford & Cohen ,1998; Kanter, 1983; and Kouzes & Posner ,1987).

## 2.5 Organizational performance

As mentioned earlier, organizational performance can be measured either subjectively or objectively. The results from both measurements are comparable and significant as describe by Bergeron and Raymond (1995).

Croteau & Bergeron (2001) cited the importance of aligning IT with business strategy in order to achieve a better organizational performance. Hence, it is deemed

important for this study to analyze and relate the IS in organization with organizational performance, following the recommendation by the study.

## 2.6 Theoretical Framework

The research model is shown in Figure 3. A contingency approach is used to formulate the model. The approach examines the relationship between several variables; business strategy, technological deployment, management styles, and organizational performance. Among many studies, one example was to use a mediator approach (Croteau & Bergeron, 2001). We are going to adopt a similar approach in using mediation tests.

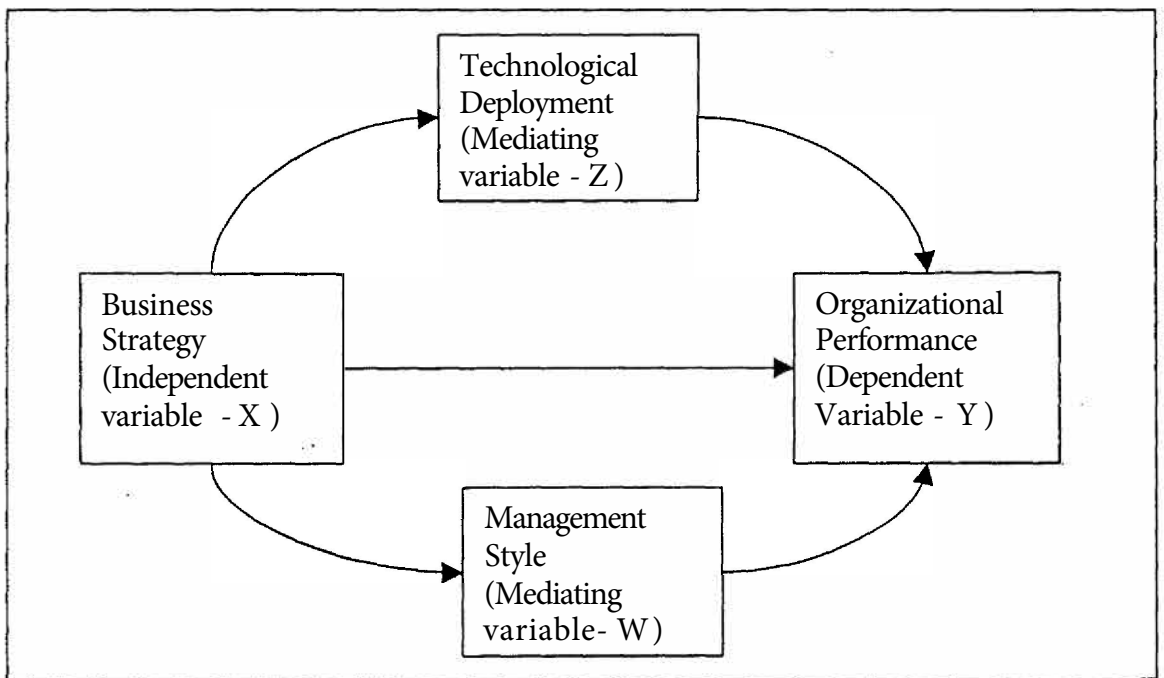


Figure 3. Research Model

## 2.7 Hypotheses

The hypotheses are formulated through mediation approach. The link between constructs can be explained through the a mediator (as prescribed by Venkatraman, 1989a). For example, the mediating variable that intervene between business strategy (independent variable) and organization performance (dependant variable) are the management style and technological deployment.

There had been studies previously done by Parry & Parry, 1992; Conant et al., 1989; Snow & Hrebiniak, 1980; Croteau & Bergeron, 2001. The studies had shown positive links between organizational performance and the prospector, analyzer and defender business strategies, while the reactor strategy has a negative relationship. The motivation for the last hypothesis (H1e) is from the fact that MSC is new (6 years in operation), hence, it is expected that most of the companies will be 'followers'. Analyzers are characterized as a strategy that imitate or follow either the prospectors or defenders that suits the current environment.

### *Hypothesis 1;*

H1: Prospector, analyzer, and defender have higher relative effect on organizational performance compared to reactor type.

For hypotheses 1, we will use linear regression to test the mediation conditions.

The second hypothesis relates to the relationship between technological deployments with different types of business strategies. Technological deployment

is based on various essential aspects of information technology in relation to organizational performance.

*Hypothesis 2;*

H2: There are different degrees of technological deployment usage for different type of business strategy.

The third hypothesis will focus on the relationship between management styles and the different types of business strategies.

*Hypothesis 3;*

H3: Participative management style leads to better organizational performance.

## **2.8 Summary**

The study on Miles and Snow's typology had been used multiple times in various studies. Most are concerned about organizational performance. Many of these studies have shown that the prospector, defender, and analyzer typologies positively contributed to organizational performance (A negative relationship was shown for reactor type). The digital age has made IT a vital part of any organization. Earlier studies had looked on the strategic value of IS. Later studies evaluate the use of IS to enhance competitive position of an organization. In the 1990's more studies surfaced that evaluates the relationship between business strategy, technological deployment, and organizational performance.

Only two types of management styles are evaluated in this study (Autocratic and participative). These two management types are closely related, in fact, it exist on the same decision making continuum (See Figure 2). Although participative management style had been shown to be more preferable in today's organizations,

autocratic management still holds significant importance in many organizations. The findings from this study will be able to show to us which style of management MSC companies are currently using and whether it is effective or not.



## **Chapter 3**

### **METHODOLOGY**

#### **3.0 Introduction**

The study encompasses the strategic management of an organization, the management style, the technological aspect of it, and finally the contribution of these constructs to the organizational performance. We will test the business strategy in relation to technological deployment and management style, and how it will affect organizational performance.

This chapter is arranged into five parts. Section 3.1 describes the research site. Section 3.2, describes the variable and measurements. Section 3.3, present the procedures. The next sections, section 3.4 and section 3.5 presents data collection methods and analysis methods respectively.

#### **3.1 Research Site**

The selected sites for this study are Putrajaya and Cyberjaya in Selangor, Malaysia. These two areas are designated areas by the Malaysian government that houses most of the MSC companies. There are more than 500 IT companies housed in these two areas. These companies are either local, local-MNC, or MNC. We have selected a population of 550 companies for this study. The maximum population size as of March 2002 is 625 companies. A large sample-frame is needed

as we expect low responses from these companies, also due to the fact that our element of analysis is the individual companies.

### **3.2 Variable and measurements**

There are four constructs for this project: Strategic activities, technological deployment, management style, and organizational performance.

Strategic activities or business strategy is measured using questionnaire. We have adopted the eleven-questions formulated by Miles and Snow to identify which strategy an organization uses. These questions are based on what they called adaptive problems: entrepreneurial, administrative, and engineering. Each question was related to the four typologies (Prospector, defender, analyzer, and reactor). Measure of majority of those eleven questions will indicate the preferred generic strategy. In case of ties, we will classify the result as analyzer. In a case where the tie is with the reactor type, we will identify the resulting style as reactor strategy. This rule was set and explained in the study done by Conant et al. (1990).

Technological deployment is described as how the company manage the information technology in correspond to its strategic initiative. Twenty-three questions/items are extracted from the study done by Oas et al. (1991), Bergeron & Raymond's (1995), and Janz et al. (1996). A Likert-type scale of 1 to 6 is used (highly disagree to highly agree).

Eleven questions with Likert-type scale were used. The range is from 1 to 6 (highly disagree to highly agree). The questions were adopted from a study done by Kang & Saiyadain (1994).