

Chapter 3

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

3.0 Introduction

The main purpose of this study is to investigate the relationship between behavioral and organizational variables, technical factors, organizational structure, as well as organizational culture with ABC success implementation. Inspired by Gosselin (1997), this research also attempts to test whether different types of strategy produce different level of ABC success implementation. Finally, this study intends to examine whether firms, which implement ABC successfully, have a higher level of performance, in terms of manufacturing performance and business performance.

This chapter consists of two sections. In the first section, previous research on factors influencing ABC success is reviewed; followed by the inspiration for current study, and finally the theoretical framework of this study is outlined. Section 2 presents the development of research hypothesis for each of the relationships being studied.

3.1 Theoretical Framework of the Research

The theoretical framework is discussed in this section. Firstly, previous research frameworks initiated by Shields and Young (1989) and Shield (1995) for ABC, which was successfully implemented are presented. Secondly, other previous studies on factors influencing ABC success implementation are reviewed. Finally, research gaps are identified, and then the theoretical framework for this research is presented.

3.1.1 Previous Research Framework

Shields and Young (1989) developed a comprehensive framework to examine factors affecting the success of the cost management system. In the research, after reviewing and analyzing comprehensive literature about how to implement technical and administrative innovation successfully in an organization, they categorized cost management practices as an administrative innovation rather than technical innovation. They also found out that if a firm intends to implement cost management successfully, several behavioral and organizational factors need to be taken into considerations. These factors are top management support, linkage of the cost management system to competitive strategies, adequate internal resources, and non-accounting ownership, integration the cost management system with performance evaluation and compensation, training, and clarity of the objectives of the cost management systems (Shields, 1995). They also stressed that technical variables, such as the application of software, involvement of external expert, and so on, are not the dominant factors to influence the success of cost management practice.

Shields (1995) conducted an investigation among 143 firms to provide empirical evidence to confirm the extent of ABC success in the UK context and find out what factors are associated with ABC success. In his research, Shields adopted Shields and Young's (1989) framework to examine variables that could explain the variation in ABC success implementation. In Shields's research, the independent variables were behavioral and organizational variables, technical variable which were drawn from Shields and Young (1989), the dependent variables was ABC success. The respondents were asked to rate their perceptions about ABC success from 1= "Extremely Unsuccessful and 7= "Extremely Successful", and to state whether they have received financial benefits through ABC implementation.

The results of Shields (1995) indicated that, among behavioral and organizational variables, top management support, linkage to quality initiative issue, link ABC to performance measure and compensation, training for design and implementation of ABC, adequate resources were the dominant factors to explain the variation in ABC success. Shields also found that technical variable was not a significant factor influencing ABC success implementation. Shields's (1995) framework is presented in Figure 3.1. This framework has been applied by many studies, such as Shields and McEwen (1996), Norris (1997), and Krumwiede and Roth (1997) and so on.

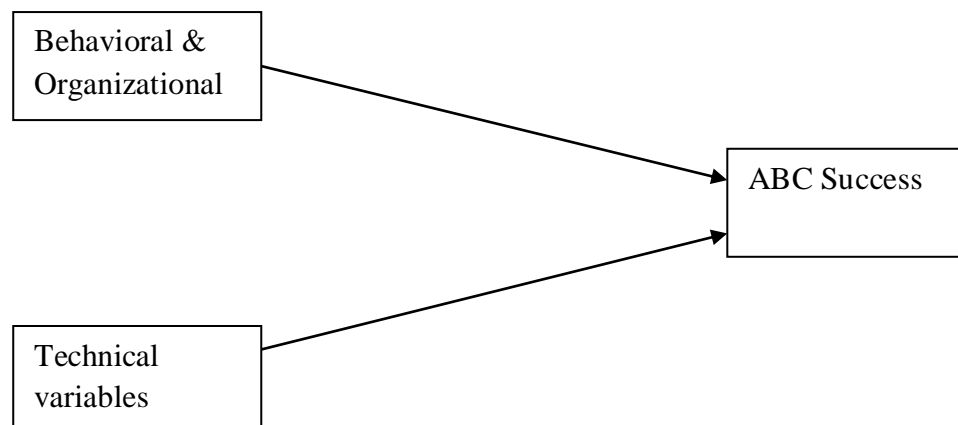


Figure 3.1: Shields's (1995) Model to Examine Factors Influencing ABC Success

During the last decade, a number of studies have been conducted to examine the factors influencing ABC success in different industries and countries. Majority of these researches still adopt the behavioral and organizational variables, which were identified by Shields and Young (1989) and Shields (1995). For example, McGowan and Klammer (1997) applied behavioral and organizational variables as the predictors. Krumwiede (1998a) and Anderson and Young (1999) used organizational variable. In addition, Taba (2005) conducted a survey among South African Post Office. He replicated Shields's (1995) model and found that top management support and cooperation across different departments influenced ABC success. Moreover, Lana and

Fei (2007) used behavioral, organizational and technical variables. Mohammed and Drury (2007) adopted the organizational and behavioral variables, and so on. Based on the literature review in Chapter 2, a summary of the previous research on factors influencing ABC success implementation is presented in Table 3.2 and more details can be found in Appendix A.

Table 3.1: Previous Research about Factors Influencing ABC success

Author	Research method	Variable	Implementation stages
Shields (1995)	A survey of 143 organizations that had implemented ABC	Behavioral and Organizational. Technical variables	Not segmented
Anderson (1995)	Case study of one American organization	Individual, organizational factors, Technological, task, External environment	Initiation Adoption Adaption Acceptance
Innes <i>et al.</i> (1995)	Survey among UK's largest firms	Behavioral and organizational variables	Adoption
Gosselin (1997)	Survey of 161 Canadian manufacturing SBUs.	Organizational structure and strategy	Adoption Implementation
Norris (1997)	Case study	Behavioral, organizational	Not segmented
Van-Nguyen et al. (1997)	Survey of 120 manufacturing firms in Australia	production complexity, firms' size and level of competition	Adoption
McGowan & Klammer (1997)	Survey of 53 employees from 4 targeted sites	Organizational factors	Not segmented

Foster & Swenson (1997)	Survey of 166 ABC users at 132 operations field visits to 15 sites	Non	Not segmented
Brewer (1998)	Case study of HS U.S and Malaysia plant location	Five dimension of national culture	Not segmented
Krumwiede (1998)	Survey of 225 members of the cost management group at U.S manufacturing organizations	Contextual factors and organizational factors	All the stages
Anderson & Young (1999)	Interview and survey data from 21 field research sites of 2 firms	Organizational process and contextual variable	Implementation stage
Supitcha & Morakul (2001)	A comparative case study was conducted on 3 Thai organizations	Five dimension of national culture	Not segmented
Innes & Mitchell (2000)	Survey of UK's largest companies	Behavioral and organizational variables	Adoption
Sartorius <i>et al.</i> (2000)	A questionnaire based survey among listed companies in south Africa	Organizational factors	Not segmented
Cotton <i>et al.</i> (2003)	A questionnaire based survey among largest firms in New Zealand	Behavioral and organizational variables	Adoption
Khalid (2003)	Fax survey covers the biggest 100 firms in Saudi Arab	Size, Production diversity and overhead	Adoption
Baird, Harrison & Reeve (2004)	Mail survey among Australian business units	Size, decision usefulness of cost information and business unit culture.	Adoption

Brown <i>et al.</i> (2004)	cross-sectional survey of Austrian business units	Technological & Organizational variables	Adoption
Maelahet <i>et al.</i> (2006)	Mail survey and case study among manufacturing firms in Malaysia	Cost distortion, decision usefulness, IT, and organizational variables	Adoption
Lana & Fei (2007)	Field study of one Chinese manufacturing	Technical Behavioral Organizational Contextual factors	All the stage
Baird, Harrison and Reeve (2007)	Manufacturing and service industries in Australia	organizational factors and organizational culture	Implementation
Sartorius <i>et al.</i> (2007)	A questionnaire based survey among listed companies in south Africa	Organizational variable, and technical variables	Adoption
Colin <i>et al.</i> (2008)	Manufacturing and service firms in the U.K	Behavioral and organizational variables	Implementation
Majid <i>et al.</i> (2008)	Case study in two Malaysian firms	Behavioral, organizational and technical variables	Adoption Implementation

Source: Adapted from Lana and Fei (2007)

3.1.2 Gaps from Previous Research

From the summary presented in Table 3.1, it can be seen that a majority of research examined behavioral, organizational and technical factors, and their conceptual framework was rooted in Shields and Young's (1989) framework. A summary of variables in ABC success implementation research is depicted in Table 3.2.

Table 3.2: Frequency Analysis of Independent Variables in ABC Success Research

Independent Variable	Frequency
Behavioral	7
Organizational	11
Technical	6
Organizational Structure	1
Organizational Culture	1

From Table 3.2, it can be seen, that only one research by Gosselin (1997) has investigated organizational structure and one research by Baird *et al.* (2007) has examined the relationship between organizational culture and ABC success. Few studies have examined the effects of these two factors on ABC success empirically, but none has examined the effects of these two factors together.

It has been suggested that more studies should be carried out to provide a better understanding about the relationship between ABC success and organizational culture. Shields (1995) in his suggestions for future research stated that cultural factors should not be overlooked as it can determine the effectiveness of behavioral and organizational variables. In addition, Baird *et al.* (2007) found that culture impacts ABC success significantly and culture is relative to organizational and non-cultural factors. To date, there is no comprehensive research to investigate the effect of organizational culture on ABC success in China. According to Hofstede (1983), China represents an Asian culture with a high power distance, low individualism and long-term orientation cultural values, which are very different from western cultures. Thus, research should be undertaken to test the association between ABC success and organizational culture in the Chinese context.

Similarly, more research should be conducted to test the association between ABC success and organizational structure. Structure can influence the adoption and implementation of an innovation and different types of structure may produce different impact on ABC success. According to Damanpour (1991), whether an innovation can be implemented successfully or not is influenced by the type of structure to some extent. In addition, a study carried out by Gosselin (1997) found out that due to different organizational structure, ABC implementation process is easier under certain organizational structure. So far, no studies have been undertaken in the Chinese context to investigate the impact of organizational structure on ABC success. Hence, future research should investigate the relationship between organizational structure and ABC success.

Furthermore, research on ABC success in China is very limited, so far only one research using a case study was conducted in China by Lana and Fei (2007) to examine the factors affecting ABC success among a state-owned business in China. As Chinese began to implement new management technique as ABC, it is imperative to understand whether similar contextual factors affect ABC implementation in China. It might be possible that the ABC implementation success in China is influenced by different contextual factors.

Table 3.1 also shows that the most prior research was done on the ABC adoption stages, while the number of research done on other stages is relatively small, and some research did not specify the stage of implementation. Hence, this research focuses on other stages, especially, on the implementation stage.

So far, Ittner *et al.* (2002) and Banker *et al.* (2008) examined the association between ABC success and manufacturing performance. However, no prior studies have been done to make a comparison between ABC success and business performance in China. Gaps from previous research raised concern about the probable effect of ABC success on business performance.

3.1.3 The Current Study

In general, this study attempts to enhance our understanding about the effects of four variables: behavioral and organizational, technical, organizational culture and organizational structure and the impact of the level of perceived ABC success on the firms' performance. This study proposes to fill a number of gaps in the existing literature:

1. This study is an extension of the study conducted by Shields (1995) by providing a more comprehensive framework, which incorporates organizational culture and organizational structure, behavioral, organizational and technical variables together to investigate factors influencing ABC success in the Chinese context.
2. There is a need for current research on the relationship between ABC success and firm performance. Due to the weaknesses of financial performance, this study concentrates on testing the association between ABC and manufacturing performance, and business performance. So far, only Ittner *et al.* (2002) and Banker *et al.* (2008) tested the relationship between ABC manufacturing performances. Previous research provided little empirical evidence about whether a firm's performance is affected by ABC success implementation, and also no research has been conducted to examine the relationship between ABC success and business performance. Hence, in this study, the firm overall

performance is measured by manufacturing performance and business performance.

3. As discussed in the last section, previous research was mainly conducted on ABC adoption stage, and very few studies have focused on implementation stage. Krumwiede (1998a) divided ABC implementation into six stages; they are initiation, adoption, adaption, acceptance, rutinization, infusion, and the final three stages are considered as “implementation stage”. This study concentrates on one particular stage of ABC implementation that is implementation stage, which consists of acceptance, rutinization and infusion.

3.1.4 Theoretical Framework for Current Research

Based on relevant literature review, the theoretical framework is depicted in Figure 3.2. This theoretical framework is based on the contingency theory and organizational change theory. This framework describes the relationship between mediating variable (ABC success implementation) and independent variable (Behavioral & Organizational variable, technical factors, organizational structure and organizational culture), and between mediating variable and dependent variable (firms’ performance).

3.1.4.1 Theoretical Basis of the Research

Contingency Theory:

The contingency theory is widely adopted as a basis for research in management accounting field (Otley, 1980; Fisher 1995; Chenhall, 2003). The contingency theory asserts that the design and application of control systems are contingent on the environment of the organizational setting in which these controls operate and function (Otley, 1980). It is widely used to explain the characteristics of management accounting system (Merchant, 1998; Anthony & Govindarajan, 2002; Waterhouse &

Tiessen, 1978). It states that the design and structure of the management control system is contingent on number of factors; product diversity, cost structure, size, level of competition and degree of customization (Drury & Tayles, 2005; Sartorius, *et al.*, 2007). The contingency theory is also applicable in the case of ABC. In order to survive in the current competitive environment, companies need to adopt more accurate costing system, such as ABC (Cohen, *et al.*, 2005; Drury & Tayles, 2005). To illustrate the relationship between ABC and the contingency factors, Sartorius, Eitzen and Kamala (2007) gave the following explanations. They stated that with a drastic increase in fixed cost creates a need for more accurate cost allocation technique, such as ABC. ABC is especially suitable to firms which produce more than one products because different products use differential amounts of resources (Baird, *et al.*, 2004). Competition is also a factor which leads to the emergence of more sophisticated costing system such as ABC (Mia & Clarke, 1999). Large sized firms are more likely to adopt ABC than smaller firms due to the larger size of overhead, a bigger number of activities that need to be coordinated, as well as limited resources (Baird, *et al.*, 2007; Sartorius, *et al.*, 2007).

This study investigated the association between four independent variables (behavioral and organizational variable, technical problems, organizational structure, and culture), and the success of ABC implementation, and the effect of ABC success implementation on the firms' performance (manufacturing performance and business performance). Since, the ABC system is regarded as one of the most important new management and control system (MACS), thus, the framework of this study is consistent with prior research which employed contingency framework for management accounting and control system, which claimed that the effective application of MACS could result in

the improvement of the firms' performance (Anderson et al., 1999; Mia & Clarke, 1999).

However, the adoption and implementation of an innovation such as ABC is totally different and could not be explained by only one theory (Chenhall, 2003). Krumwiede (1998a) concluded from a survey among US firms that contextual factors may influence ABC at adoption stage but implementation stage was more associated with organizational factors. He also suggested that once a firm arrives at the ABC implementation stage, it should pay more attention to organizational factors. Hence, contingency theory alone may not be adequate to explain ABC implementation stage and other theory could be applied to explain ABC implementation stage. The second proposed theory is organizational change theory. Organizational change theory was adopted by Maelah *et al.* (2006) to explain factors influencing ABC adoption among Malaysian manufacturing firms.

Organizational Change Theory:

According to the organizational change theory, changes in organizations could be classified into four categories. They are technology, products, structure, and culture (Maelah, *et al.* 2006). Gosselin (1997) categorized ABC implementation stage as the administrative procedure. Therefore, ABC is considered as a structural change, and its success could be determined by top-down approach. The organizational change theory contends that changes in organizations occur in stages. Based on the organizational change theory, Cooper and Zmud (1990) divides IT innovation into six sequence stages; 1) initiation, 2) adoption, 3) adaptation, 4) acceptance, 5) routinization, as well as 6)

infusion. They also stated that at various stages the dominant factors in determining IT innovation are different.

The research by Krumwiede and Roth (1997) adopted Cooper and Zmud's (1990) model to divide ABC implementation into six main stages. They are 1) initiation, 2) adoption, 3) analysis, 4) acceptance, 5) action, as well as 6) Activity Based Management (ABC). Maelah *et al.* (2006, p.76) illustrated an example about the process of ABC implementation by applying organizational change theory. Initially, firms who encountered pressure both externally and internally when improving their costing system would consider changing their costing system from the traditional volume-based costing system to ABC. The advocates of ABC system would hold discussions with top management to get their approval for ABC adoption. The scope of the system and the model for implementation will be decided by the ABC project team. The ABC team also will cooperate with non-accounting staff that may be affected by the ABC system. At this stage, all the staffs will be convinced that the information supplied by the ABC system is more accurate than the traditional volume-based costing system. The ABC information will be used to make operating decisions, such as pricing, costing and so on. At the final stage, the ABC system integrates closely with the firm's information system and financial system. Organizational members expect that the application of ABC could lead to improvement in firms' overall performance. The organizational change theory contends that organizational factors play a major role in the implementation of any practices (Maelah *et al.*, 2006).

This study focuses on ABC implementation stage. Therefore, apart from the contingency theory, the organizational change theory was also applied to provide a

theoretical basis for the research framework in this study. The organizational change theory argued that organizational factors play a major role in the implementation stage of any management innovation. This research with the objectives of testing whether behavioral and organizational factors, such as top management support, adequate resources, and adequate training and so on affect the success of ABC implementation. Therefore, this study expected that the level of ABC success implementation in the Chinese manufacturing firms is influenced by some organizational factors, such as top management support, adequate resources, training, non-accounting ownership and so on.

3.1.4.2 Theoretical Research Framework

Figure 3.2 presents the research framework of the current research. Among the independent variables, behavioral and organizational variables consists of top management support, training in designing and implementing ABC, adequate resources, non-accounting ownership, linkage to performance evaluation and compensation, linkage to competitive strategy, and lastly, the clarity of the objectives of the cost management systems. Technical variables are made up of identification of suitable cost drivers and the firm's key activities, participation of external consultant, collection of necessary data, as well as software. The organizational structure in this study has two indicators, namely, centralization and formalization. Organizational culture is represented by four dimensions; they are outcome orientation, team orientation, attention to details and innovation.

The ABC success implementation is made up of four dimensions, namely user's attitude, technical characteristic rating, impact on organizational process, and perceived usefulness in improving user job performance.

Finally, performance consists of two dimensions, namely manufacturing performance and business performance.

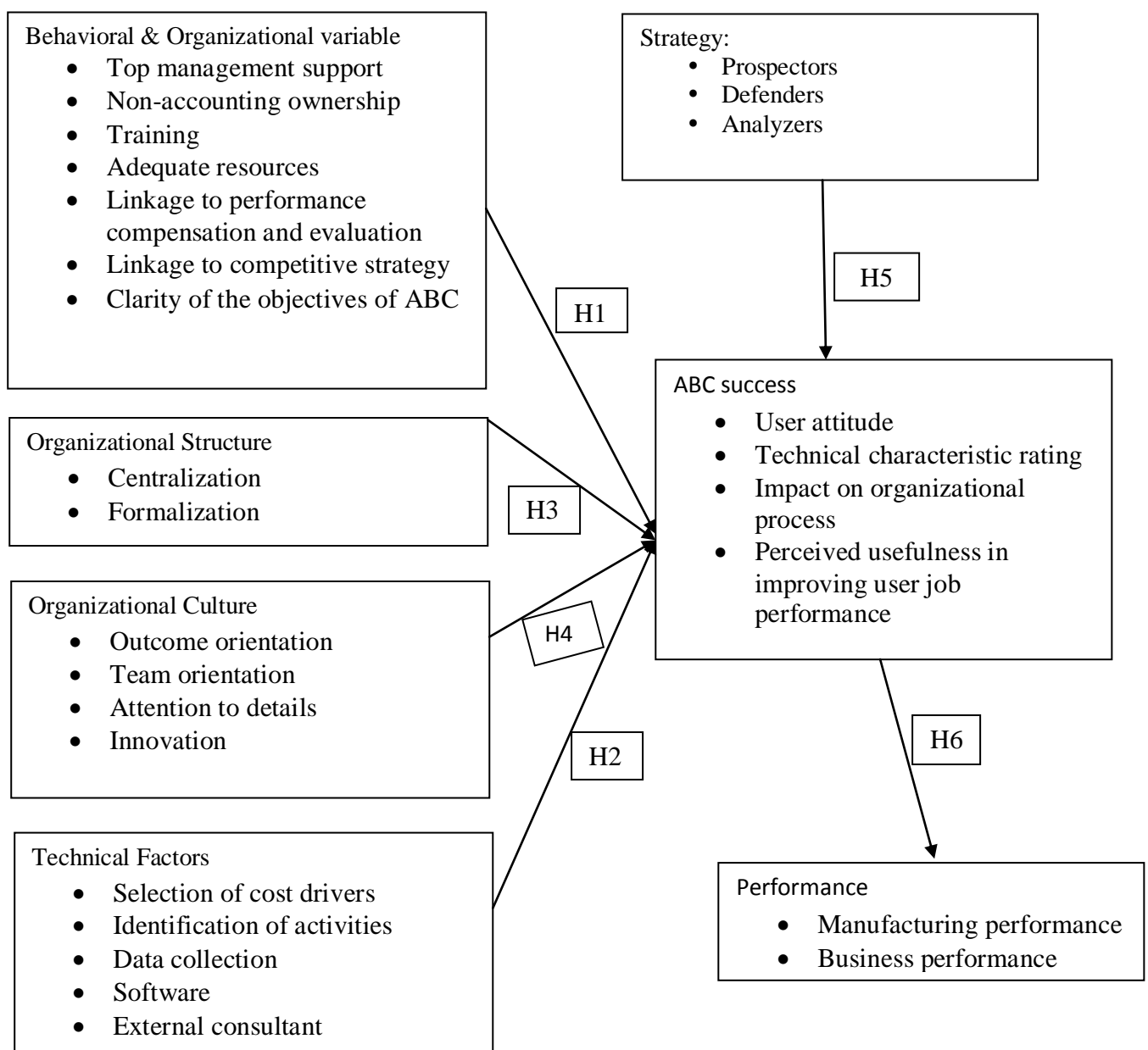


Figure 3.2: Theoretical Research Framework

3.2 Hypotheses Development

The research hypotheses for the current study are developed to address the research questions and objectives, which are discussed in Chapter 1. Hypothesis 1 and its sub hypothesis 1 to sub hypothesis 7 aim to answer research questions related to the relationship between behavioral, organizational variables and ABC success. These sets of hypotheses propose that ABC success is significantly associated with behavioral and organizational factors. If firms emphasize on the importance of all these factors, it would impact ABC implementation positively.

Hypothesis 2 addresses the research questions about the relationship between the technical variable and ABC success. Hypothesis 2 signifies that technical factors could explain the variation in the ABC success implementation, which is similar to Shields (1995) which stated that in order to implement ABC successfully, technical factors should be taken into consideration.

Hypothesis 3 and its sub hypotheses attempt to answer research questions that dealt with whether there is a relationship between the structures of an organization and ABC success. It indicates to some extent, that ABC success is influenced by a choice of organizational structure.

Hypothesis 4 and its sub-hypotheses intend to answer research questions about whether there is a significant relationship between organizational culture and ABC success. It is based on the assumption that culture factors affect ABC success.

Hypothesis 5 relates to the research questions as to whether the different types of strategies adopted could produce various level of ABC success. It is based on the assumption that if a firm adopts a different business strategy, such as prospectors, defenders and analyzers, the level of ABC success also will be different.

Hypothesis 6, Hypothesis 6a, and Hypothesis 6b aim to answer research question about the relationship between ABC success and the firm's performance, in terms of the firms' overall performance, and its sub components, namely, manufacturing performance and business performance. This study assumes that higher ABC success implementation could leads to higher level of performance.

3.2.1 Behavioral and Organizational variable

Shields (1995) concluded that to implement ABC successfully in the organization, firms should deal with behavioral and organizational variables, Shields summarized seven components of behavioral and organizational variables: top management support, non-accounting ownership, adequate resources, training, link to performance measure and compensation, linkage of ABC to competitive strategies, as well as clarity of ABC objective. Shields and McEwen (1996) found that overlook the importance of behavioral and organizational variable results in the failure of ABC implementation. Norris (1997) also argued that behavioral and organizational factors influence ABC success. Hence, the following hypothesis is proposed:

H1: There is a positive relationship between Behavioral and organizational variable and ABC success.

3.2.1.1 Top management support

The literature on innovation suggested that leadership is the critical factor for the success of an innovation (Walton & Susman, 1987; Hoffman & Hegarty, 1993; Scott & Bruce, 1994) especially for accounting innovation (Campi, 1992). ABC is considered as an administrative innovation, thus, top management support or leadership is expected to be a critical factor for its success.

Top management is considered as the most crucial factor in influencing the success of ABC according to numerous studies (Chongruksut, 2002; Krumwiede, 1998a; Lana & Fei, 2007; McGowan & Klammer, 1997; Shields, 1995; Shields & McEwen, 1996; Taba, 2005). According to Shields and McEwen (1996), the organization's goal, competitive strategies, as well as resources (capital, time and competence) can be influenced by top management support. Thus, top management support is a vital factor to affect ABC implementation. Top management support also has a key role in using ABC information to communicate with non-accounting staffs so that they could be encouraged to make use of ABC information (Shields, 1995).

Similarly, Foster and Swenson (1997) concluded from a survey of 166 ABC users, that the success of ABC needs cross-functional support, as well as top management's champion and commitment.

The ABC system should possess the necessary resources, such as man-hours, capital and operational employees' participation. Therefore, top management should invest considerable financial resources to purchase ABC software and hardware, provide training for employees at adoption and implementation stage of ABC, as well as in the

collection of detailed data (Gunasekaran et al, 1999). Top management support could eventually eliminate the employees' resistance towards ABC implementation (Agryris & Kaplan, 1994). The following hypothesis depicts this relationship:

H1a: There is a positive relationship between top management support and ABC success implementation.

3.2.1.2 Non-Accounting Ownership

Cooper et al. (1992) surveyed eight companies to investigate the reason why companies have trouble and delay in using ABC for decisions making even though they applied a high technical method in the design stage. They found that for most of these firms, only the accounting staffs retained the ABC ownership. They suggested that if non accounting employees could take part in the early stage of ABC implementation, ABC can be implemented more effectively (Maelah *et al.* 2006). Maelah *et al.* (2006, p. 83) stated that

Since ABC can provide important economic information about all parts of a company; broad ownership increases the chances that non-accountants will support and promote ABC and be committed to its use and success. When ABC is owned by accountants, there is danger that it might be used only to satisfy their needs, which often related to status within the accounting profession and external reporting. The consequence can be a cycle of ABC designs without corresponding management action.

Shields (1995) conducted a mail survey to investigate the factors which determine ABC success among 143 firms that implemented ABC in USA. Shields (1995) found that the ownership by non-accountants affect the ABC success implementation significantly. Shields's (1995) view was also supported by Shields and McEwen (1996).

Shields and McEwen (1996) also found a significant relationship between non-accounting ownership and ABC success implementation. They also pointed out that if non-accounting staff did not participate in the implementation of ABC, the non-accountants could not be motivated to support the implementation of ABC system, and therefore, the possibilities of implementing ABC successfully would be decreased.

Krumwiede (1998a) found a significant relationship between the ABC success implementation and the non-accounting ownership from a research among 225 manufacturing firms in the USA. Krumwiede (1998a) also highlighted that a higher level of involvement by non-accounting staff could result in a higher level of ABC success implementation.

Mohammed and Drury (2007) conducted a survey using postal questionnaire among 176 UK manufacturing firms and service firms to examine the effects of behavioural and organizational variables on ABC success. They found that the involvement by non-accounting staff during the stage of ABC implementation was one of the key determinants of ABC success implementation. Mohammed and Drury (2007) also suggested that to make non-accountants participate in the process of ABC implementation, top management should also link ABC system to the performance evaluation and compensation of non-accounting staffs. The following hypothesis is presented as below:

H1b: There is a positive relationship between non-accounting ownership and ABC success implementation.

3.2.1.3 Training

Training refers to the level of training put into the design, implementation, and the application of ABC. Krumweide (1998a) found out that a high association exists between ABC success implementation and training program, and Krumweide (1998a) also stressed that training could make ABC implementation reach the highest level of success. Similar views are presented by Shields (1995) and McGowan and Klammer (1997) that sufficient training programs and resources can affect the level of satisfaction of ABC implementation among users.

According to Tait and Vessey (1998) and Maelahet al. (2006), the accessibility of well trained manpower could influence the success of any projects. They found that in order to enhance the usefulness of information provided by a system, training is a very important component that could equip employees with knowledge of the system. They suggested that to prevent their employees from feeling stressed during the process of change, an organization should provide adequate training resources.

The aims of ABC training is not only to educate employees on the benefits and objectives of ABC, but also to remove the resistance to ABC and the feeling of being threatened (Argyris & Kaplan, 1994; Shields, 1995). Finally, training can assist in establishing confidence in ABC and building non-accounting ownership, which facilitates the employees' continuous improvement (Chongruksut, 2002), and training could help to correlate corporate strategy, performance evaluation and compensation system and the objective of ABC (Shields, 1995). The present study examined the relationship relative to the following hypothesis:

The result of a study by Mohammed and Drury (2007) among manufacturing and service companies in the UK context indicated that if sufficient training were provided for designing, implementing, as well as using the ABC system, the implementation of ABC system would be a success.

H1c: There is a positive relationship between training and ABC success implementation.

3.2.1.4 Internal Resources

Shields and McEwen (1996) argued that sufficient resources, particularly internal resources are needed at the designing and implementation stage of ABC. Internal resources normally refer to sufficient fund and time, as well as employees' knowledge and understanding on how to implement ABC effectively (Clarke & Mullins, 2001; Mehmet & Douglas, 2001). Sufficient resources have been claimed as the critical factors for ABC success implementation and adoption (Innes, Mitchell & Sinclair, 2000; Clarke & Mullins, 2001; Mehmet & Douglas, 2001). Seaman and Shields (2001) argued that the cost of implementing ABC is very expensive, as the cost incurred during ABC adoption stage, and further upholding cost during the implementation stage may lead to the cost of operating ABC to exceed the benefits of ABC. This may lead to the resistance to adopt and implement ABC. Similarly, Krumwiede (1998a) stated that ABC implementation is a time consuming process, and it takes more time than expected, which may also lead to the resistance of ABC implementation. However, the employees' resistance to ABC can be eliminated by providing adequate resources during ABC implementation (Shields, 1995).

Furthermore, the results of a study by Sartorius *et al.* (2000) among firms in a South African environment showed that the implementation of ABC needs adequate internal resources without which the implementation of ABC might fail. Based on the above discussion, the following hypothesis is proposed:

H1d: There is a positive relationship between internal resources and ABC success implementation.

3.2.1.5 Linkage of the Cost Management System to Performance and Evaluation

Krumwiede and Roth (1997) regarded tracing overhead cost as an administrative function, rather than technical function. Therefore, any changes in the cost allocation method that influence the employees' performance evaluation may result in resistance. Normally, employees are interested in what determine their wellbeing. Thus, employees could be motivated and stimulated to implement ABC when there are links between the ABC system and performance assessment and compensation especially, when employees feel that ABC system could demonstrate their performance fairly (Shields & McEwen, 1996).

Moreover, for employees, who link the ABC system to performance and evaluation would create awareness of the rewards determined by their behavioral and the resulting system shows their performance and reflects their compensation (Shields & McEwen, 1996).

McGowan and Klammer (1997) conducted a research to examine the employees' contentment with ABC system at four sites in Southwestern United States, namely three manufacturing firms and one service firms. All the four firms applied the information which generated by ABC system. They found that the employees' contentment with ABC implementation depends on the extent to which ABC system is linked to their performance assessment and compensation. The closer the ABC system is linked to their performance appraisal and compensation, the higher level of satisfaction the employees would perceive the ABC system.

Baird *et al.* (2007) also highlighted that if a firm could directly link performance measure and compensation to the information supplied by ABC system, the employees could be motivated to use ABC system, and eventually the likelihood of ABC success could be improved (Drake *et al.*, 2001). Thus, the hypothesis to be tested is:

H1e: There is a positive relationship between linkage to performance compensation and evaluation and ABC success implementation.

3.2.1.6 Linkage of the Cost Management to Competitive Strategies

Shields (1995) concluded that ABC success is still influenced by the degree to which ABC is linked to competitive strategy, especially the quality initiatives, such as TQM, and JIT. If a company could integrate ABC with the competitive strategy closer, it is more likely to implement ABC successfully. Also Shields concluded that it is also necessary to combine ABC system with quality initiative, such as Just-in time and other speed initiative. Shields and McEwen (1996) presented a similar view that the higher

degree of linkage between ABC and competitive strategies, particular with quality initiative, the higher level of ABC success will be.

Baird *et al.* (2007) found a significant and positive association between link ABC to other competitive strategies, especially, quality initiatives and ABC success implementation among Australian business units. Baird *et al.* (2007) also concluded that linking ABC system to competitive strategy, especially quality initiatives could make the implementation of ABC easier and more successful. They also stressed that firms that adopted quality initiative, such as TQM, JIT are more successful in implementing ABC than those that did not implement quality initiatives. Therefore, the hypothesis to be tested is:

H1f: There is a positive relationship between linkage to competitive strategy, especially quality initiatives and ABC success implementation.

3.2.1.7 Clarity of the Objectives of the ABC

Shields (1995) argued that consensus on clarity of the objectives of the ABC system is necessary for ABC designers and users to ensure the effectiveness of ABC information and efficiency of ABC implementation process.

McGowan and Klammer (1997) stated that during the ABC implementation process, if the objectives and benefits of ABC are understood by designers and users clearly, the ABC implementation would produce a higher level of success.

Shields and McEwen (1996) found that the consensus and clarity of the objectives of ABC was one of the dominant factors in determining ABC success implementation from a study among USA firms that adopted ABC. Shields and McEwen (1996) also stressed that if the objectives of the ABC system, such as providing more accurate costing information could be understood clearly by designers and users, then the designers and users of ABC system could implement ABC effectively and the information that is generated by ABC system could also be applied efficiently. On the contrary, , if the objectives of ABC system were not clearly apprehended by users, the implementation of ABC system would be more difficult (Shields & McEwen, 1996).

Chongruksut (2002) carried out a survey using mail questionnaire to investigate the factors influencing ABC success implementation among the firms that are listed on the Stock Exchange of Thailand (SET), and found that one of the dominant factors that are affecting the ABC success implementation is the clarity of the objectives of ABC system.

Mohammed and Drury (2007) also suggested that to implement the ABC system successfully, the aims of ABC should be clear to its users and designers. Furthermore, Majid *et al.* (2008) conducted two case studies with two Malaysian firms: one Malaysian based multinational firms, and another Malaysian multinational firm. They concluded that the ABC system could be implemented successfully by ensuring the objectives of ABC system are understood by users. Thus, the proposed hypothesis is as follow:

H1g: There is a positive relationship between Consensuses on the clarity of the objectives of the ABC success implementation.

3.2.2 Technical Variables

Lana and Fei (2007, p. 253) reviewed previous research on factors influencing ABC success adoption and implementation. They summarized that the technical variables which may produce an impact on ABC success implementation as “practical knowledge of applying the conceptual design of an ABC system within an organizational context, which mainly includes the identification of a suitable number of cost drivers and activities, selection of activities that relates to products, and understanding of the capability of existing computer system to support ABC system”.

Shields (1995) stressed the importance of technical variables; she argued that if technical variables could be used harmoniously with the previously identified behavioral and organizational variables, the success of ABC implementation could be increased.

Based on a survey among 511 manufacturing firms with an Irish background during the process of ABC implementation, Clarke, Hill and Steven (1999) concluded that firms may experience some technical problems, such as difficulties in assigning costs to the activities which could reflect the whole organization, difficulties in selecting the cost drivers, problems in obtaining suitable computer software, difficulty in collecting the necessary data for ABC implementation, as well as the involvement of experts both internally and externally.

Clarke *et al.*'s (1999) findings were consistent with Hussain *et al.*'s (1998) view. Hussain *et al.* (1998) found some difficulties associated with ABC implementation which was how to identify a firm's key activities, how to choose the most suitable cost drivers, and how to collect ABC data effectively and correctly, as well as lack of necessary resources (Adler, Everett, & Waldron, 2000).

Lana and Fei (2007) conducted a case study in one Chinese firm to find out the extent to which ABC is successfully implemented. They found out that the company experienced problems in collecting data, selecting cost drivers and key business activities, because they failed to update the ABC system. If the ABC system is outdated, it cannot capture the necessary information for data collection, cost drivers and activities identification and selection. Similar practical problems were reported by companies in western countries (Lana, John, & John, 2003) Based on discussion above, the research hypothesis proposed is:

H2: There is a negative relationship between technical problems and ABC success implementation.

3.2.3 Organizational Structure

The ability to adopt and implement an innovation can be affected by the organizational structure (Damanpour, 1991), and organizational structure is also an important determinant in the diffusion of innovation process (Gosselin, 1997). An organizational structure can be classified into mechanistic structure and organic structure, and mechanistic structure has higher level of formalization and centralization in contrast to

organic structure (Burns & Stalker, 1961). According to Gosselin (1997), Activity Management (AM) consisted of three levels, namely Activity Analysis (AA), Activity Cost Analysis (ACA) and Activity Based Costing (ABC). Gosselin (1997) pointed out that AM has both characteristics of technical and administrative innovation. The early stages of AM are consisted of AA and ACA, and AA and ACA are considered as technical innovation due to a greater emphasis on processes and activities and the method of producing products or how services are being provided. On the other hand, ABC is classified as an administrative innovation. because new administrative processes, rules, regulations as well as new organizational structure maybe created during ABC implementation. Based on the dual-core model mentioned in the Chapter 2, Gosselin (1997) proposed that ABC is easier to adopt in organizations with mechanistic characteristics. Because in mechanistic organizations, once top management makes decisions to devote to a new system, they would invest and use all the resources in the new system to ensure the successful implementation of the new system and to supervise the process of implementation (Gosselin, 1997).

The implementation of any innovation in an organization can be divided into two separate processes (Damanpour, 1991). The first stage is initiation stage, and the next level is implementation. Damanpour (1991, p. 562) defined the initiation stage as:

All activities pertaining to problem perception, information gathering, attitude formation, evaluation, and resource attainment leading to the decision to adopt. The implementation stage consists of all events and actions pertaining to modifications in an innovation and an organization, initial utilization, and continued use of the innovation when it becomes a routine feature of the organization.

The ambidextrous model suggested that with organic characteristics, organizations can adopt innovation very easily, and the implementation stage of an innovation can be facilitated in mechanics organization (Gosselin, 1997). Gosselin (1997) also concluded that mechanistic organizations are more likely to implement ABC successfully. The proposed hypothesis in this research is as follows:

H3: There is a positive relationship between mechanistic structure and ABC success implementation.

Centralization and formalization are selected in this study to operationalize the organic and mechanistic structure based on the following arguments. Firstly, they could exemplify the major dimensions of organizational structure, and they were used, as well as cited by numerous innovation studies (Hage & Aiken, 1967; Aiken, Bacharach, & French, 1980; Damanpour, 1987, 1991; Gosselin, 1995, 1997). Secondly, as Gosselin (1997) stated that the mechanistic structure has a higher level of centralization than that of organic structure, and mechanistic organizations always formalize its rules, polices and producers. However, organic organizations favor the informal control systems. Gosselin (1997) concluded from a survey among Canadian business units that centralization and formalization are positively related to the successful implementation of ABC. Hence two sub-hypothesis are discussed as follows:

3.2.3.1 Centralization

Centralization means the decision making rights are controlled by the top level in the hierarchy (Gosselin, 1997). Gosselin (1997) suggested that ABC implementation in

centralized organizations has a higher rate of success than that of decentralized organizations, because in centralized organizations, operational decisions are made by managers from the higher hierarchy of the organization. Once top management makes resolution to implement ABC system, they will allocate all resources, such as time, employees to ABC projects to ensure that ABC can be successfully implemented. Division managers have no authority to hinder ABC implementation and they have to obey the orders or instructions from top management. On the other hand, in a decentralized organization, division managers may have authority to make certain decisions. If they perceive that the ABC system failed to satisfy their needs, they would require additional work and may find it difficult to make changes to the existing accounting system, and may resist the ABC implementation in their departments.

Gosselin (1997) conducted a survey among the Canadian manufacturing firms to investigate whether the organizational structure has a direct relationship with ABC success implementation. The results indicated that among the manufacturing firms which adopted ABC, only the centralized organizations are likely to be more successful in the implementation of ABC. Hence a sub-hypothesis is presented as follow:

H3a: There is a positive relationship between centralization and ABC success implementation.

3.2.3.2 Formalization

Formalization represents the degree to which rules, procedures and policies within an organization are standardized (Gosselin, 1997). Zmud (1982) carried out a study to

examine the effects of centralization and formalization on the adoption and implementation of modern software practices. The findings showed that during the initiation stage of modern software practices, less formalized structure could facilitate the initiation stage. However, once an organization decides to fully implement the modern software practices and make it part of the information system the formalized structure is needed to ensure the successful implementation of the modern software practices. Similar arguments could be applied to the ABC implementation process.

Gosselin (1997) stated that Activity Analysis (AA) and Activity Cost Analysis (ACA) are the initiation stage of ABC implementation. In this stage, less formalized organization may adopt AA and ACA, but once organizations move to a higher stage, ABC implementation stage, the organization should formalize rules, policies and procedures to ensure that ABC could be successful. In his study on Canadian manufacturing firms, he found that the higher the level of formalization, the more successful ABC will be. The present research examines this relationship as stated by the following hypothesis.

H3b: There is a positive relationship between formalization and ABC success implementation.

3.2.4 Organizational Culture

There are many definitions for organizational culture. This study will use Higginson and Warder's (1993) organizational culture definition as "a set of shared values, norms and beliefs that get everybody heading in the same directions" (p.11). Baird, Harrison

and Reeve (2007) used similar definition in their study to examine the relationship between ABC success implementation and organizational culture.

Prior research showed that whether business practices could be successfully implemented or not is generally influenced by culture factors. For example, Schneider *et al.* (1996) stated that if a firm plans to implement a business practice successfully, it should make the practice compatible with its organizational culture; otherwise, the business practice may less likely to succeed.

Malmi (1997) conducted a longitudinal case study to explore the reason for ABC failure in a firm. He found that the users' resistance led to the failure to implement ABC successfully, and organizational culture can explain why users within organization may resist ABC.

Skinner (1998) pointed out one reason why ABC cannot be successfully implemented in some firms is because of the incompatibility between culture and ABC. A more recent research on the relationship between ABC success and organizational culture was carried out by Baird, Harrison and Reeve (2007). In their study, they sent survey questionnaires to randomly selected managers of Australian business units. The result indicated that organizational culture was associated with the ABC success implementation. The present research examines the relationship relative to the following hypothesis:

H4: There is positive relationship between ABC success and organizational culture.

In order to investigate the relationship between ABC success implementation and organizational culture, in this research, the organizational culture factor is divided into four perspectives: outcome orientation, team orientation, attention to details, and innovation. They are initiated by O'Reilly *et al.* (1991) , and applied by Baird *et al.* (2007) to examine the impact of organizational culture on Activity management success. Four sub hypotheses are proposed as follows:

3.2.4.1 Outcome orientation

O'Reilly *et al.* (1991, p. 505) defined outcome orientation as “the extent to which business units emphasize actions and results, have high expectations for performance, and competitive”. Baird *et al.* (2004) asserted that in a company, if the degree of outcome orientation is higher, it will focus more on practices. Eventually, processes could be improved which will lead to enhanced performance and improved competitiveness.

Baird *et al.* 's (2007) research among Australian business units showed that the outcome of the orientation has a greater impact on the success of all levels of activity management (AA, ACA and ABC). They concluded that if a company stresses the importance of this dimension of organizational culture, it would actively adopt new management accounting and control system to enhance the overall performance and make an effort to the new practices to ensure they can be successfully adopted and implemented. The sub hypothesis is presented as follow:

H4a: There is positive relationship between outcome orientation and ABC success implementation.

3.2.4.2 Innovation

Baird *et al.* (2004) conducted a research to investigate the extent of activity management practices used in Australian business units, and they also investigated the relationship between the extent of adoption and the organizational culture dimension of innovation, outcome orientation, as well as tight versus loose control. They used Gosselin's (1997) three level of Activity management as the basis. The results indicate that all culture dimensions were associated with the three level of activity management (AA, ACA and ABC). However, no significant relationships were found between innovation and ABC adoption, but significant association was only found for in the AA and ACA stage. On the other hand, the outcome orientation and tight versus loose control had significant relationship between ABC adoption.

Baird *et al.* (2007) examined whether significant association could be found between activity management implementation and organizational culture. They found that the innovation dimension had a negative association with ABC implementation. This finding confirmed Baird *et al.*'s (2004) results. Baird *et al.*'s (2007) argued that failure to find a strong association between ABC success implementation and innovation is reasonable. They further argued that innovation is important at the adoption stage of activity management; however, once a firm has already adopted activity management, innovation may hinder the successful implementation of other activity management. So the current study examines the following hypothesis:

H4b: There is a negative relationship between innovation and ABC success implementation.

3.2.4.3 Attention to details

Baird *et al.* (2007) found that attention to details is strongly associated with the highest level of Activity management, which is Activity Based Costing. They argued that a significant relationship should exist between attention to details and ABC. ABC implementation usually involves a great amount of work collecting data and selecting suitable cost drivers which requires a lot of attention to details. So if a firm has this cultural characteristic, it will have a higher possibility of success rate. The sub hypothesis is presented as follows:

H4c: There is positive relationship between attention to details and ABC success in the Chinese manufacturing firms.

3.2.4.4 Team orientation

Landry (1997) stated that for ABC implementation to be successful it requires team work both externally and internally, partnership formation which could improve the operational process continuously, enhance productivity, as well as improve efficiencies. Brewer (1998) conducted a case study in Harris Semiconductor (HS), which has adopted ABC system at plants operating in both US and Malaysia. Brewer's study employed Hofstede's (1983) national culture classification. In Hofstede's work, Malaysia was considered as a collectivist society; on the other hand, USA was categorized as an individualist society. He found that the cross functional team-based approach produced a higher level of ABC success in Malaysia than that of US.

Gering (1999) highlighted that in order to ensure ABC success implementation, a multi-functional team is needed at each stage of ABC implementation. A multi-functional team requires people from different perspectives or departments to collaborate with each other to overcome practical problems during ABC implementation. If a multi-functional team can function well, the ABC success implementation could be guaranteed.

Drake *et al.* (2001) conducted a research to find out how some features of organizational factors can determine the information which is generated by ABC system. They found that appropriate incentive policies are able to motivate users to use ABC information to reduce costs and enhance processes. They also stated that an effective approach to create incentive is team work and the more communication between team members; the more team based creativity ideas would be produced. Eventually, the desired cost and operational control can be achieved by applying ABC system.

Baird *et al.* (2007) reviewed Landry (1997), Gering (1999) and Drake *et al.*'s (2001) work and stressed that team work is considered as an important factor for the successful implementation of activity management. The present study examines the following hypothesis:

H4d: There is a positive relationship between team work and ABC success implementation.

3.2.5 Strategy

Different types of business strategy demands for different organizational structure and design of management information system (Abernethy & Guthrie, 1994; Jusoh & Parnell, 2007). Past research concluded that centralization could be more effective to defenders. While, the decentralization structure is more suitable to prospectors (Govindarajan, 1986). Innovation can be easier among prospectors than defenders, and administrative innovation has a higher possibility of success in defenders than that of prospectors (Gosselin, 1997). Prospectors normally adopt the organic structure, while mechanistic structures are commonly found in defenders (Gosselin, 1997).

Gosselin (1997) stated that the activity management has both technical innovation and administrative innovation characteristics. Gosselin (1997) classified ABC as an administrative innovation; and he also found that ABC was more likely to succeed in the mechanistic structure. This study aims to examine the following hypothesis.

H5: Among companies that adopt ABC; defenders have a higher level of ABC success than prospectors and analyzers.

3.2.6 ABC Success and Firm's Overall Performance

Numerous studies showed that ABC success results in the improvement of a firm's performance both financial performance, such ROI (Kennedy & Affleck-Graves, 2001; Cagwin & Bouwman, 2002), and non financial performance, such as quality, cost and time significantly (Ittner *et al*, 2002; Banker *et al*, 2008). Due to the limitations of financial performance discussed in the last chapter, this study only focus on examining

the effect of ABC on a firms' non financial performance, such as manufacturing performance and business performance. This study expects that ABC could lead to the improvement in firms' performance, such manufacturing performance and business performance. The hypothesis for this study was provided as follows:

H6: There is a positive and significant relationship between ABC success and firms' performance.

Besides examining the relationship between ABC success and firms' performance, this research also attempts to test the relationship between ABC success and the sub components of firms' performance, namely, manufacturing performance and business performance.

3.2.6.1 ABC Success and Manufacturing Performance

Some manufacturing firms may lose the competitive advantage due to high quality costs, lower product quality, and long customer leading time, as well as manufacturing cycle time. ABC can be an effective tool to solve this problem and develop core competencies.

According to Carolfi (1996), through the application of ABC, activities that produce poor quality can be analyzed. Poor quality indicates that the costs of some aspects of processes should be reduced, and by using ABC, processes can be evaluated. Opportunities with the greatest potential for improving quality and reducing cost could be identified. Also the efficiency and effectiveness of major activities or process, which

could be used as the standard for continuous improvement can be pointed out. Carolfi (1996) also stressed that information supplied by ABC could assist companies to adapt to the constantly changing business environment and build up competitive advantages.

Anderson and Young (1999) conducted a field research on two automobile manufacturing firms. Both firms were at the matured stage of ABC implementation and many of its branches are adopting ABC. They found that the branches, which perceive ABC were success. It was argued that cost in plants can be assessed accurately, and ABC information impacts on plant performance significantly, in terms of reduction in manufacturing cycle time, customer leading time, and quality improvement.

Ittner *et al.* (2002) carried out a study to examine the connection between ABC implementation and manufacturing performance. They adopted cost, quality and time as the indicators for the manufacturing performance. The results showed that ABC implementation led to a higher quality and reduction in manufacturing cycle time and lead time. Even though the results did not present a significant relationship between cost reduction and ABC implementation, but they also propose that cost reduction can be attained through the improvements in cycle time and quality.

The latest research about the relationship between ABC implementation and manufacturing performance was done by Banker, Bardhan and Chen (2008). Their study aimed to investigate the effect of ABC on the use of world-class manufacturing (WCM) practices and manufacturing performance. In their research model, ABC adoption is the independent variable, WCM is the mediator, and plant performance is

the dependent variable. They found that the firms, which adopted the ABC system, are more likely to apply world-class manufacturing practices, and the firms, which adopted world-class manufacturing practices, have higher level of product quality, shorter manufacturing cycle time and customer lead time, and lower manufacturing cost, excluding purchasing cost. Even though they did not find a direct relationship between ABC and manufacturing performance, they still found that the impact of ABC on manufacturing performance can be mediated by the application of world-class manufacturing practices.

Based on the discussion of prior research, this research attempts to examine the following hypothesis:

H6a: There is a positive relationship between ABC success and manufacturing performance among Chinese manufacturing performance.

3.2.6.2. ABC success and Business Performance

Business performance in this study adopts Mia and Clarke's (1999) definition, who viewed operational performance as

The extent to which the organization has been successful in attaining its planned target or targets, examples of performance criteria are: attainment of targets related to productivity, costs, quality, delivery, service, sales volume, market share, and profit.

Isa (2004) conducted a research among manufacturing firms in the Malaysian context to examine the relationship between Management accounting and control system

(MACS) changes and business performance. The measures for business performance were drawn from Mia and Clark's (1999) instrument. The findings indicated that there is a moderate positive relationship between perceived business performance and MACS changes. And she also concluded that the management accounting and control system should be constantly updated to suit the dynamic business environment. If MACS is out of date, it could not supply accurate feedback information to managers to make strategic decisions, and the business performance would, therefore be harmed due to untimely and irrelevant feedback information.

However, until now, there is still a lack of literature on the relationship between ABC success and business performance. ABC is considered as the new management accounting practice, and the quality of relevant information needed by managers could be enhanced through ABC implementation. The implementation of ABC is believed to lead to the improvement in business performance. Thus, the hypothesis below formally represents the above discussion:

H6b: There is positive relationship between ABC success and business performance.

3.3 Summary

This chapter presents the conceptualization of the theoretical framework based on the contingency theory and organizational change theory and the basis for hypotheses development. The primary focus of the hypotheses development is to set up the association between the independent variables that comprise behavioral and organizational variables, technical variables, organizational structure, organizational culture and dependent variable, which is ABC success implementation. This is then

followed by establishing the hypothesis that looks at the difference between the type of strategy and the level of ABC success implementation. Lastly, the hypotheses are formulated for the relationship between ABC success implementation and the dependent variable firm performance, namely manufacturing performance and business performance.