

THE ADOPTION OF ACTIVITY-BASED COSTING IN THAILAND

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DECLARATION

This dissertation contains no material which has been accepted for the award of any other degree or diploma in any university or other institution, and to the best of my knowledge, this dissertation contains no material previously published or written by another person, except where due reference is made in the text of this dissertation.

Wiriya Chongruksut

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ABSTRACT

The aim of this study is to examine the relationship between the adoption of ABC by firms based in Thailand and the Thai economic crisis (1997) through theoretical models of organisational learning and the relationship between the implementation of ABC and the philosophy of organisational learning. The research model in this study is developed from Hurst's (1995) and Argyris' (1999) theoretical models of organisational learning.

A mail questionnaire survey was considered an appropriate method for this study. The sample was selected from firms listed on the Stock Exchange of Thailand (SET) that operate in the Bangkok region (292 firms). 101 questionnaires were returned, generating a 34.59% response rate. Furthermore, the structured interviews with a self-selecting sub-sample were conducted to supplement the survey data. Out of 101 questionnaire respondents, 12 agreed to be interviewed. The quantitative data were processed using a SPSS program and the qualitative data gathered from the interviews were analysed using content analysis.

The results show that the economic crisis was a significant variable forcing Thai firms to build organisational learning, in terms of the reorganisation or the adoption of innovations, including ABC, for their survival. Due to the changed environment, such as increased competition or growing costs, and the inability of the traditional cost systems to provide information in the new environment, several Thai firms had adopted and implemented ABC in response to the changed environment. This finding also revealed that the adoption of ABC promoted Thai firms' organisational learning in the double-loop mode, which enables an organisation to survive in the rapidly changed environment.

In addition, it was found that the development and implementation of ABC were involved with an organisation's learning and the success of ABC was partly contingent on the level of organisational learning. This study also confirmed that behavioural and organisational variables played crucial roles in helping an organisation to create learning about ABC and leading an organisation to achieve the implementation of ABC. Especially, the clarity of the objectives of ABC was an important variable affecting significant variation in the degree of ABC success.

Last, the findings suggest that an expansion of coverage of surveys and an extension of study to the government sector would be beneficial. Future researchers can also extend the investigation to other innovations and other variables associated with the implementation of ABC, such as contextual variables.

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Chapter 1

Introduction

1.1 Background

'In today's world of automation and intense competition, more accurate cost allocations are needed' (Krumwiede and Roth 1997, p.5). An activity-based costing (ABC) system was developed and was paid extensive attention because it does not allocate only manufacturing costs to products like the traditional cost systems, but also assigns other costs, such as administrative costs, marketing costs and so on, to cost objects, which includes activities, products and customers (Krumwiede and Roth 1997). ABC is claimed by a large number of authors (Kaplan 1988; Cooper 1988; Cooper and Kaplan 1988; Dugdale 1990; Innes and Mitchell 1991; Morrow 1992; Bhimani and Pigott 1992; Turney 1996; Krumwiede and Roth 1997) to be able to provide more accurate product costs than the traditional cost systems do. Many authors (Innes and Mitchell 1991; Bhimani and Pigott 1992; Krumwiede and Roth 1997) also claim that accurate product costs possess useful information for performance measurement, cost control and strategic decisions. In addition, the results of several studies (Innes and Mitchell 1991; Bailey 1991; Nicholls 1992; Adler et al. 2000) show that ABC can help companies with respect to cost reduction and improved profitability.

In 1997, the economic boom in East Asia collapsed precipitously and Thailand was the first country hit by this economic crisis (Jolly 1998). On 2 July 1997, the Thai currency was no longer pegged and the baht was devalued to half of its pre-float value (Nidhiprabha 1998; Phongpaichit and Baker 2000). The devaluation of the baht caused several negative impacts on Thai firms. Many companies borrowing foreign loans,

including finance firms, ceased operating or met insolvencies as a result of huge losses from the exchange rates. A lot of small companies wound up their operations owing to restricted credit by finance companies. As a result, the amount of unemployment increased considerably. Sales of almost all existing Thai firms slumped. Besides, the devaluation of the baht led to rising costs of imported gasoline, raw materials and finance resulting in rising costs of production. In addition, Thai manufacturers and exporters faced severe troubles to compete in the global markets, such as competitors from low-cost developing countries (Hataiseree 1998) and the weakening currencies of competitors (Lwin 1998). It was imperative for the existing Thai companies to improve and develop their production processes, operational processes and management to compete and survive this crisis (Suwongwarn 1998).

ABC is a management innovation for Thailand at the present and it is claimed to offer considerable benefits over the traditional cost systems, such as cost control, cost reduction and better decision making. These benefits are claimed to improve management and to create competitive opportunity, as well as to improve profitability. The adoption of ABC was one of the potential alternatives for Thai firms in this turbulent time, but the implementation of ABC requires a dramatic change in the way in which costs are allocated to products. There have been suggestions that the theory is not sufficiently robust to handle different stages of industrial development or different cultural settings. Appropriate modifications of the ABC theory to the Thai environment may be necessary (Morakul and Wu 2001).

Therefore, the current study is designed to investigate the relevance of the theoretical ABC model to Thailand and the Thai economic crisis in 1997. There have also been suggestions that implementation is affected by the sources and strength of support, the

level of education and competence of the people involved and the organisation's attitude to the solving of problems, that is, its philosophy of 'organisational learning'. Thus, this study includes the investigation of 'organisational learning' as an additional variable which is expected to lead to the development of existing theory.

1.2 Aims of the Research

The aim of this study is to examine the theoretical ABC model and the economic crisis using Thailand as the source of data. This study also includes a theoretical model of organisational learning in the research model. Thus, the relationship between the implementation of such a management innovation and the firm's philosophy of organisational learning will also be examined.

It was expected that the achievement of that aim would involve an investigation of the following matters:

- The degree of adoption of ABC by Thai businesses before and after the economic crisis (1997);
- The relationship between the adoption of ABC and its implementation by Thai businesses and the Thai economic crisis (1997) through Argyris' (1999) and Hurst's (1995) theoretical models of organisational learning;
- The reasons for the implementation of ABC by Thai businesses; and
- The factors influencing the success/failure of ABC in Thailand.

Each of these is now briefly discussed.

1.2.1 To compare the degree of adoption of ABC by Thai businesses before and after the economic crisis.

The economic crisis in 1997 had lead Thai firms to be vulnerable to many severe difficulties, including increasing competitiveness. Yakhou and Dorweiler (1995) show some empirical evidence of the link between competition and changes in management control systems. They indicate that when facing increasing competition, organisations are inclined to adopt advanced management control systems. Seeing that ABC is an advanced management system for Thai firms at the current time, it was expected that the crisis might push Thai organisations to change management systems and to adopt advanced management accounting systems, such as ABC. It was also expected that ABC might be adopted by more firms after the economic crisis (1997).

1.2.2 To investigate the relationship between the adoption of ABC and its implementation by Thai businesses and the Thai economic crisis through theories of organisational learning.

When the economy is in recessionary condition, it forces organisations to learn to survive by reforming themselves (Hurst 1995). These organisations are required to study their operational problems and solve them, as well as to create the ways to streamline themselves to respond to the changed environment (Argyris 1999). These ways may result in change in the organisation's structure, people, technology or management systems.

ABC is a management innovation claimed to furnish massive benefits leading to improved organisational performance and profitability (Argyris and Kaplan 1994). Therefore, ABC may be a way for Thai firms to renew themselves in this crisis. It was expected that the crisis might be correlated to the adoption and the implementation of

ABC, in that the crisis may arouse Thai firms to revamp themselves by adopting and implementing ABC.

Some empirical evidence indicates that organisational capacity to learn is associated with the organisation's adoption of changes in management accounting systems (Libby and Waterhouse 1996). In addition, Argyris and Kaplan (1994) indicate that the implementation process of an innovative initiative is associated with an organisation's capacity to learn. Therefore, this study is aimed to investigate the relationship between the adoption of ABC and its implementation by Thai firms and the Thai economic crisis (1997) through Hurst's (1995) theoretical model and Argyris' (1999) theory of organisational learning.

1.2.3 To identify the reasons for the implementation of ABC by Thai businesses.

Several study results (Innes and Mitchell 1991; Israelsen et al. 1996; Chung et al. 1997) indicate that decisions to adopt ABC are affected by some factors, such as the firm's environment or shortcomings of its current systems. As it was expected in this study that the economic recession might drive Thai firms to restore themselves by adopting and implementing ABC, it is likely that the crisis may be an important factor influencing their decisions to adopt and to use ABC. Thus, another aim of this study is to ascertain Thai firms' reasons for adopting ABC, which may differ from reasons presented in the literature.

1.2.4 To ascertain factors influencing the success/failure of ABC in Thailand.

Many authors (Shields 1995; Anderson 1995; Krumwiede and Roth 1997; Krumwiede 1998) studied variables affecting the success of implementing ABC in several western countries. Shields (1995), Krumwiede and Roth (1997) and Krumwiede (1998) indicate

that the success of ABC is associated more with behavioural and organisational variables than with technical variables whereas Anderson (1995) concludes conversely. On the grounds that Thailand is an Asian country of which environmental characteristics, such as culture, styles of business-operation and so on, differ from those of the western countries, variables affecting the successful implementation of ABC in Thailand may not be the same as those in the western countries. No evidence indicates what factors influence the success/failure of ABC in Thailand. Thus, this study is geared to address this issue. Furthermore, there have been suggestions that the successful implementation of innovations is affected by the capacity of an organisation to learn. It was expected that the successful implementation of ABC might be contingent on organisational learning.

1.3 Research Questions

Seeing that the purpose of this study is to examine the economic crisis and the theoretical ABC model by including a theory of organisational learning, this study aims to scrutinise how the economic crisis in 1997 affected the adoption and the implementation of ABC by Thai firms through 'organisational learning'. According to Hurst (1995), the crisis presses an organisation to learn to survive by switching from the traditional life cycle to the renewal cycle. The organisation's renewal may be the renovation of something lost or the examination of innovations. In this study, the ABC system is assumed to be an innovation that Thai firms may select for their adaptation in this crisis.

Therefore, one of the aims of this research is to compare the degree of adoption of ABC by Thai firms before and after the economic crisis. It was expected that the adoption

level of ABC after the crisis might be higher than that before the crisis. This aim generates Proposition 1.

Proposition 1: There is significant variation in the degree of ABC adoption before and after the economic crisis.

In addition, Libby and Waterhouse (1996) indicate that an organisation's capacity to learn influences the adoption and implementation of new management techniques. Hence, another aim of this study is to investigate the relationship between the implementation of ABC and organisational learning. Seeing that Huber (1991) and Swieringa and Wierdsma (1992) state that organisational learning is the alteration of behaviour in an organisation, it was expected that organisational members might change their behaviours during implementing ABC. This aim leads to Proposition 2.

Proposition 2: Changes in different functional roles in a firm at the different stage of ABC implementation will vary significantly.

Since the Thai culture and environment differ from their western counterparts, it was expected that the reasons for implementing ABC and factors associated with the success/failure of ABC in Thailand were different from those in the literature, but not different among Thai firms. This study is also aimed to ascertain these issues for the implementation of ABC. To address these issues, Propositions 3 and 4 are listed:

Proposition 3: There will be significant differences between companies implementing and companies abandoning ABC in their perceived reasons for adopting ABC.

Proposition 4: There will be significant differences in perceptions of the importance of behavioural and organisational variables at the different levels of ABC success.

Other aspects, such as the objectives to implement ABC, the benefits of ABC and the problems of implementing ABC, are also examined. Even if these aspects have been examined or suggested in the literature, no evidence shows these issues in the Thai environment, especially in Thai public firms. Thus, an aim of this research is to examine these issues in the changed environment and to suggest some issues that have never been examined in the previous literature.

1.4 Justification for the Research

The literature shows that ABC has been implemented and investigated in many countries, such as the U.S.A, U.K., Canada or Australia. However, no empirical evidence indicates the implementation of ABC relevant to an organisation's learning that may lead to the great solution during an economic crisis. Therefore, this study will explore this issue in Thailand.

Moreover, there was conflicting evidence about the variables relating to implementation of ABC and the philosophy of organisational learning. It is expected that this study will shed light on the weighting of those variables and of their relative importance thus modifying the current theory of ABC. In addition, this study is expected to make important contributions with both practical and theoretical implications for ABC in Thailand and to fill the gaps caused by the failure of the existing theory to account for the difference between countries, especially the western countries and Thailand, because it

is unclear whether the success/failure of implementation of ABC is attributable to culture or merely the stage of economic development.

It is also intended that this study will improve the chances of successful implementation of this and perhaps other management innovations by deepening knowledge about the factors which inhibit or facilitate implementation, in Thailand, in particular, and will lead to better informed management and, hence, more efficient and competitive firms with enhanced economic and social benefits. This could be very important in Thailand and other eastern developing countries.

1.5 Research Methods

This study will proceed in the following three stages.

Stage 1: An extensive literature review

Numerous books and articles have explained an ABC system with respect to benefits, problems, implementation, success and satisfaction, as well as adoption. This research will begin with a thorough international search of all pertinent literature for the reason that numerous studies have investigated the implementation of ABC in various aspects and in several industrial countries whereas there is only a small number of studies on ABC in Thailand because ABC has been well known for only a few years. This stage of the research will inform the knowledge base on materials from several disciplines to build the propositions of this research. The literature review will be continued throughout the project.

Stage 2: Collecting data from survey

As the population, comprising all companies listed on the Stock Exchange of Thailand that operate in the Bangkok region (292 companies), is very large, a mail questionnaire

survey is regarded as the appropriate method for gathering data and testing the propositions (Ticehurst and Veal 1999; Sekaran 2000). Questionnaires, which will be subjected to 'translate-retranslate', will be conducted with managers responsible for the implementation of ABC. It is also intended to conduct personal interviews with a self-selecting sub-sample to enrich the data, to check on validity and to eliminate some shortcomings of the mail-questionnaire method. Approval of the questionnaire and interview schedule was obtained from the Ethics Committee early in 2001 of the Victoria University. Both of these methods of gathering data have been used successfully in this area (Foster and Swenson 1997).

Stage 3: Data analysis

Quantitative data will be processed by using a SPSS program leading to appropriate descriptive and inferential statistical analysis, including frequencies, means, standard deviations, chi-square, t-test, Mann-Whitney U test and ANOVA tests. The qualitative data gathered from the interviews will be analysed by using content analysis.

1.6 Definitions

1.6.1 Activity-based costing (ABC)

Krumwiede and Roth (1997, p.4) define that

Activity-based costing is a management accounting system that focuses on measuring the cost and performance of activities, products, customers, and other cost objects. ...The basic premise of ABC is that activities consume resources and cost objects use activities. Thus, ABC assigns resource costs to cost objects based on the activities used by the cost objects.

The common theme of articles reviewed is the role of ABC in providing more accurate product cost information and greater benefits than the traditional cost systems. More details of ABC will be discussed in Chapter 3.

1.6.2 Adoption of ABC

Bjornenak (1997) states that the number of adopters will be determined by the definition of adoption. This study defines 'the adoption of ABC' as the adoption of the idea of ABC due to the fact that the idea, although it may not be implemented at all, still affects the way of thinking in an organisation (Bjornenak 1997). Hence, the adoption rate of ABC in the study includes a number of firms with intention to adopt ABC, which are defined as firms that have implemented ABC, are currently implementing it or plan to do so.

1.6.3 Organisational learning

Organisational learning has a lot of different characteristics (Stata 1989). Thus, several authors describe different definitions of organisational learning, as follows:

- 'Organisational learning is a process of detecting and correcting error' (Argyris 1977, p.116).
- 'Organisational learning means the changing of organisational behaviour' (Swieringa and Wierdsma 1992, p.33).
- 'Organisational learning is the process of changing the organisation to fit the changed environment' (Kloot 1997, p.47).

1.7 Overview of the Dissertation

This study consists of eight chapters, as follows:

Chapter 1 (Introduction) provides a general introduction to the whole dissertation. It conveys the background of the research which leads to aims and problems of this research. In this chapter, the justification for the research and the processes of this research, as well as definitions, are also provided. In addition, the structure and organisation of this dissertation are outlined.

Chapter 2 (Literature Review I: The Change Forcing Adaptation) describes the background of Thai people, such as accounting education and national culture, and the change forcing adaptation. The causes and effects of the Thai economic crisis on Thai businesses entailing changes in management and in management accounting systems of Thai organisations are also presented in this chapter.

Chapter 3 (Literature Review II: Activity-Based Costing) reviews the literature relating to ABC. The reviews include the history and the nature of ABC. Evidence from previous studies on the benefits, the adoption and implementation of ABC also appears in this chapter. In this chapter, seven behavioural and organisational variables concerning the implementation of cost management systems are mentioned because they are expected to be relevant to implementation of ABC in Thailand.

Chapter 4 (Literature Review III: Organisational Learning) contains literature reviews concerning organisational learning, the relationship between organisational learning and crisis and organisational change. These are additional variables expected to affect the

implementation of ABC. This chapter also describes the process of implementing an initiative, which includes organisational members' learning. The research framework is summarised in the final section of this chapter.

Chapter 5 (Research Methodology) develops four propositions. These propositions are formulated to investigate the variables relating to the adoption and the implementation of ABC in Thailand and the economic crisis, as well as organisational learning. This chapter describes sample selection, the data collection method and its criteria. Definitions of variables and the construction of measuring instruments, as well as pre-testing, are also outlined. The last section of the chapter discusses statistical techniques employed to test the propositions.

Chapter 6 (Results, Findings and Discussions: ABC Implementation) analyses data that were collected from the questionnaires relating to individual respondent profiles, company characteristics and company environment, as well as ABC implementation. This chapter considers problems of collecting the data, reliability and validity, as well as non-response bias. Moreover, the relationship between variables based on the sample is discussed in this chapter.

Chapter 7 (Results, Findings and Discussions: Organisational Learning, Propositions and Narrative Analysis) analyses data that were collected from the questionnaires concerned with organisational learning and interview data in terms of narrative analysis. In addition, this chapter reports the empirical results of the proposition tests on the adoption and the implementation of ABC in Thailand, including organisational learning, described in Chapter 5. The robustness of the findings is also discussed in this chapter.

Chapter 8 (Conclusions, Limitations and Future Research) contains conclusions on the whole survey. This chapter includes an overview of research questions, a summary of the outcomes and implication of the research model. The contributions made by this study are also discussed. Last, the limitations of this research study are discussed and suggestions are made to future researchers engaging in the extension of this study on the topic of ABC.

1.8 Summary

This chapter outlines the composition of this study. It introduces the background to and the aims of this research, as well as research questions. The economic crisis in 1997 has been a big change forcing Thai organisations to transform. Their adaptation may be relevant to the implementation of new management techniques, such as ABC. This chapter also provides the justification to indicate the significance of this study and contribution to knowledge concerning ABC and the research methods and definitions of ABC and of adoption, as well as of organisational learning, are described. In addition, the organisation of this dissertation, consisting of eight chapters, is outlined. The next chapter will provide the background of Thai people and the causes of the Thai economic crisis, as well as change in management accounting systems.

Chapter 2

The Change Forcing Adaptation

2.1 Introduction

Many Thai businesses stopped operating and went out of business in 1997 as a result of devaluation of the baht (Jolly 1998). The remaining companies have had to restructure to survive in a turbulent environment (Chau 1999). This chapter is designed to review the background of the Thai people, the economic crisis and the management transformation of Thai firms in the changed environment, including changes to a management innovation. Since culture is one of the factors that influence the successful implementation of new techniques (Hofstede 1984a), first, Thai accounting education and the nature of Thai business culture are reviewed. Second, the causes and consequences of the Thai economic crisis (1997), as well as its effects on Thai organisations, are detailed. Last, change in management accounting is also described.

2.2 Thai Accounting Education

Thai accounting education is based on accounting theory and practice in the United States in which most Thai instructors have completed their graduate studies (Akathaporn et al. 1993). Thus, most Thai accountancy programs, including management accounting courses, generally consist of similar course outlines and course titles as American courses (Holzer and Tremblay 1973). At the secondary school level, some accounting education is available. Meanwhile, Thai accounting education at the university level has a pretty long tradition (Holzer and Tremblay 1973). In 1993, there were 30 universities and technical colleges offering programs in accounting. Some universities offer doctoral

programs and collaborative programs with prestigious American universities (Akathaporn et al. 1993).

In the Thai accounting curriculum, the most necessary area is 'taxation', followed by 'managerial and cost accounting' and 'financial accounting', since the managers and owners of Thai businesses often recognise the importance of accounting information only for tax purposes, such as computing taxation liabilities, completing tax returns and so on (Akathaporn et al. 1993). Akathaporn et al. (1993), whose study is based on a survey of 285 Thai accounting educators and practising accountants, found that the development of accounting education and practice in Thailand had encountered many obstacles, comprising educational, professional and other problems. The most important educational obstacle is the lack of relevant and effective accounting curricula. Lack of sufficient qualified instructors and lack of accounting textbooks written in the Thai language are also major educational problems.

In addition, a lack of government support and the negative influence of social and cultural factors on the accounting profession are important barriers to the development of education and practice in accounting in Thailand since the accounting profession in Thailand is not perceived to be an important and prestigious profession, compared with other professional groups, such as doctors. Inadequate public recognition of the role of accounting, inactive professional accounting societies and the lack of an adequate number of accounting publications are also perceived to be major professional obstacles by Thai accounting educators and practising accountants. For example, the 'Accounting Journal', published by the Institute of Certified Accountants and Auditors of Thailand (ICAAAT), which is the principal agency related to regulating accounting standards and practice in Thailand, is not widely circulated (Akathaporn et al. 1993). On the grounds

that information, specially accounting information, is at the heart of good administration, the changes in the economy and the transformation of types of business operations entail a greater demand for accounting information, especially, for control and decisions (Nikomborirak and Tangkitvanich 2000). Hossain and Adams (1997) expect that accounting will have an increasingly important role in the management and development of Thailand's economy in the future.

2.3 Thai Business Culture

Lippitt et al. (1986) define the culture of an organisation as the 'feel' perceived by an organisation's members and the climate that imposes the members' roles, attitudes and relationships, as well as the norms. Thus, culture comprises the shared beliefs, the principles and the norms that affect organisational action-taking (Fiol and Lyles 1985). Culture sets the identity of a human group in the same way and leads to the development and pattern preservation of institutions in society with a distinctive structure and way of duty (Hofstede 1984a). Since cultural values influence behaviours of people in organisations (Klausner 1993) and the learning process (Stata 1989), business culture has an important role in the operation of companies (Dachasakulsom 1990).

Hofstede (1984a), who studied the influences of culture on management techniques, found that attainable management techniques and practices in one country might not be achievable in another country by virtue of the cultural differences. National culture influences the design and the use of management systems. Management techniques and practices in various countries require modification for effective implementation. The current study involves an adaptation of the ABC systems, a western management accounting technique, to Thailand, an eastern developing country. Accordingly, the

feature of Thai culture, which may be one of the important factors to affect the implementation of ABC in Thailand, is described in this section.

A patronage system is the pre-eminent characteristic of Thai business culture (Cooper 1994; Unger 1998; Teeraparppun 1998). This system involves adherence more to personal relationships than to regulation of an institution (Vivanichakul and Udomsri 1990). It is normally used by the traditional elite, government officials and wealthy figures in business. In organisations, the patronage system is characterized as superiors offering assistance and protection to their subordinates, with the subordinates' giving deference and obedience in exchange for help and protection (Haas 1979).

In addition, Thai relationships are characteristic of a high-power-distance society. The high-power distance of Thai society, which is the degree of inequality in power between people, shows itself in terms of hierarchical values (Hofstede 1984a; Rabibhadana 1993; Morakul and Wu 2001). Generally, this inequality in power is formed in hierarchical boss-subordinate relationships (Hofstede 1984a). The relationships are also based on 'goodness' and the norm in that the younger has to respect the older (Kanchananaga 1979; Hofstede 1984a; Tourret 1989; Vivanichakul and Udomsri 1990; Klausner 1993). This norm permeates Thai organisations. Both characteristics of Thai relationships, a patronage system and a high-power-distance society, are reflected in the bureaucracies of Thai organisations (Serbshon 1994). Thai subordinates acknowledge a hierarchical order and recognize their bosses' leadership (Vance et al. 1992). Hence, Thai subordinates dare not argue with their bosses. They will do what their boss tells them to do, within their abilities (Vivanichakul and Udomsri 1990; Cooper 1994).

Additionally, Thais hardly show their initiative with their superiors because their failure means the loss of face (Tourret 1989; Cooper 1994). That is, Thais have a high level of worry about loss of face, which is one of the important concepts to show the collectivism of the Asian societies (Hofstede 1984a). In the collectivist culture, subordinates are also required to accept a superior's views and to conform (Hofstede 1984a). It seems that Thais are not creative. As a result, a superior is assumed to be an initiator and a decision-maker while a subordinate is assumed to be an obedient person (Vivanichakul and Udomsri 1990). In the collectivism of the Thai society, employees also expect an organisation to take care of them like a family and protect their benefits. Therefore, they feel that the organisation influences their well-being (Hofstede 1984a).

Due to Buddhism's influence, teaching adherence to the middle-of-the-road (not more, not less), Thais are characteristically easy-going and compliant and prefer peace and compromise to conflict (Vivanichakul and Udomsri 1990; Cooper 1994; Unger 1998). They usually try to avoid social encounters leading to conflict (Klausner 1993). So, strikes in Thailand rarely occur in industrial conflict. Commonly, organisations receive coordinated support from employees quite easily (Cooper 1994). At the same time, the middle-of-the-road anchor of Buddhism reflects characteristics of Thai authorities in that Thai authorities dare not make decisions suddenly and do not risk taking on a new technique or approach (Vivanichakul and Udomsri 1990). Therefore, these characteristics of Thai authorities may be barriers to adopting and to implementing the ABC system in Thailand.

A high-power-distance society depends on powerful people (Hofstede 1984a) and the majority of decisions in the organisation are made by its top executives (Morakul and Wu 2001). Therefore, the most important factor transforming the attitudes, behaviours and

structure of Thai organisations is top management (Chimploy 1999). According to Kofman and Senge (1993), the people needing to learn are the ones who have the power to take action. Morakul and Wu (2001) also state that any transformation in rules in a high-power-distance culture, as Thailand, have to derive from the top management of the organisation. If Thai top management wishes to learn an ABC approach and accepts organisational change, ABC may become more widely adopted and implemented in Thai organisations on the grounds that people from a high-power-distance culture, as Thai people, tend to be obedient to their superiors (Hofstede 1984b) and would be comfortable with the 'top-down' approach (Brewer 1998). For example, the implementation of ABC in Total Access Communication (Thailand) Co.Ltd was applied by using top-down management, that is, top management pushed the next lower levels to be interested in and to cooperate in the development of ABC (Toommanon 1997b).

So, Brewer (1998), who studied the relationship between cultural values and ABC success, claims that subordinates from a high-power-distance culture will show less defensive behaviour in implementing ABC. Furthermore, he found that people from collectivist cultures, such as Asian people, would prefer the cross-functional team-based work over the individualized work, thus, they would be comfortable with implementing ABC, which is a management accounting innovation emphasizing team-based work. Hence, it was likely that people in Thailand, which is part of a cluster of countries with high-power-distance and collectivism orientation, may have less defensive behaviour in and be comfortable with the implementation of ABC.

2.4 Crisis and Organisational Change

2.4.1 Economic crisis in Thailand (1997)

During the ten years before 1997, the Thai economy grew at very fast rates (Hossain and Adams 1997; Kunakorn 2000). The gross domestic product (GDP) has expanded by double digits since 1987 (Kunakorn 2000); Thailand had the most rapidly growing economy in the world over the eight-year period of 1988 to 1995 (Bello et al. 1998; Chareonwongsak 1999; Abonyi 1999). Basically, the economic growth arose from the commitment of the Thai government to raising productivity and technological development through industrialisation (Kunakorn 2000). Agricultural products were replaced by manufactured products. Export rate rose from 23% in 1988 to 34% in 1995 (Chareonwongsak 1999).

The financial sector experienced dramatic expansion; from 4% of the Thai economy in 1988, it grew to 8% of the economy by 1995, on account of opening the financial market and the deregulation on the inflow and outflow of money (Chareonwongsak 1999). This liberalisation brought about a lot of financial inflows to Thailand. Most of them were short-term foreign loans (Phongpaichit and Baker 1998; 2000). The money inflows, both in the form of loans and direct investment from abroad, generated plenty of investments in property and many industries, such as automobiles, steel and so on. As a result, the middle class population had higher incomes, building opportunities allowing them to increase their standard of living (Kunakorn 2000). Total consumption, buying houses and luxury items from abroad, in particular, rose sharply (Hataiseree 1998; Anon 1999). The private savings decreased and established the investment-saving gap (Hataiseree 1998; Kunakorn 2000), which was an important factor motivating the economy to expand

rapidly (Puntasen 1998). This gap resulted in increasing the current account deficit from 3% of GDP in 1988 to 8% of GDP in 1996 (Abonyi 1999).

Massive money inflows affected inflation and the fixed exchange rates of Thailand (Phongpaichit and Baker 2000). In order to maintain the inflation, the Thai government and the Bank of Thailand tried to keep the interest rate at high levels (Hataiseree 1998). They also tried to fix the exchange rate so as to make the image of Thailand stable for foreign investors and trading partners (Phongpaichit and Baker 2000). As a result, the baht became overvalued (Phongpaichit and Baker 2000).

The economy began to slow down drastically in 1996 (Hataiseree 1998). In 1996, the export rate dropped sharply to 0% (Chamchoy 1997; Bello et al. 1998; Puntasen 1998; Phongpaichit and Baker 1998; Abonyi 1999) on account of a rapid increase of domestic wage rates during 1991-1995 leading to rising costs and increasing competition from other lower cost developing countries, such as China and Vietnam (Hataiseree 1998; Abonyi 1999; Chareonwongsak 1999). Additionally, Thailand faced a high balance-of-payments deficit and a great amount of short-term foreign debt. These problems attacked the Thai currency (Phongpaichit and Baker 2000). But, the Bank of Thailand still tried to protect the value of the baht by using US\$ 23.4 billion of the Foreign Exchange Stabilization Funds (Puntasen 1998). Finally, the attack on the baht was too great for the Bank of Thailand to control and a severe recession occurred in Thailand (Chareonwongsak 1999; Kunakorn 2000).

On 2 July 1997, the Thai currency was floated and the value of the baht dropped by 56% by January 1998 (Nidhiprabha 1998; Puntasen 1998; Hooke et al. 1999; Leightner 1999; Kunakorn 2000). As a result of this economic crisis, the large companies borrowing

foreign currencies underwent large losses from the exchange rates. For example, the Siam Cement Group, which had borrowed US\$ 4.2 billion of foreign loans, had a loss of 53 billion baht in 1997, mainly losses on foreign exchange (Phongpaichit and Baker 2000). In addition, 56 finance companies (out of the 91 companies in the industry) went bankrupt (Triwannakit 1997; Chamchoy 1997; Anon 1998a; Winn 1998; Jolly 1998; Bello et al. 1998; Leightner 1999; Chareonwongsak 1999). The bankruptcy of those finance companies had a negative impact on the financial liquidity of other small companies and many were closed down (Hataiseree 1998).

Jacobs (1998) indicated that in the first nine months of 1997, 4,700 firms ceased their operations and the Trade Register Department reported that in the first ten months of 1998, 10,175 firms wound up their operations (Anon 1998c). The closing down of these companies brought about a much higher rate of unemployment (Chamchoy 1997; Jacobs 1998). Nidhiprabha (1998) states that wages and salaries in the manufacturing and financial sectors had declined suddenly. The unemployment had risen from 3.5% of the labour force in 1997 to 5.7% in March 1998 (Winn 1998; Anon 1999) and the International Labour Organisation estimated that total unemployment had increased to 3 million persons at the end of 1998 (Phongpaichit and Baker 1998).

Due to the great amount of unemployment, purchasing power in the economic system had sharply decreased. Almost all Thai firms have encountered a considerable decline in sales (Chamchoy 1997; Phongpaichit and Baker 2000). Moreover, manufacturers, especially those who utilize high import content, such as plastic, integrated circuits and so on, have suffered from rising production costs (Triwannakit 1997). Hence, the existing companies, both manufacturing and service, have had to restructure, engaging in downsizing or re-engineering, and to change their strategies to be able to compete

and survive while the economy was in recession (Simachokdee 1997; Suwongwarn 1998; Vatikiotis and Granitsas 1998; Sikes 1999; Chau 1999; Chareonwongsak 1999).

2.4.2 Cost to organisations due to crisis

During the year 1997 (economic crisis year), the gross domestic product (GDP) growth rate of Thailand declined from 5.5% in 1996 to -0.4% in 1997. The Stock Exchange of Thailand index fell from 803 to less than 400 (Winn 1998). In 1997, all sectors of companies in the Stock Exchange of Thailand (SET) had numerous losses from their operations; -62.93% in Building and Furnishing, -139.83% in Chemicals and Plastics, -75.98% in Communication, -65.28% in Property Development, -32.74% in Hotel and Travel Service, -38.77% in Household Goods, -48.94% in Mining, and -14.23% in Electrical Products and Computers (Abonyi 1999).

The Stock Exchange of Thailand reported that 255 companies had net losses from their operations for the third quarter of 1997, amounting to 125 billion baht, and for the fourth quarter of 1997, amounting to 124 billion baht (The Bangkok Business 1998). Moreover, Thailand had total foreign debt of 3,870 billion baht and 860 billion baht was due to be repaid within 12 months (Winn 1998).

According to the foregoing figures, Thailand lost a lot of money through the economic crisis and has had to spend a great deal of money in terms of financial resources and human resources to rehabilitate its economy. But, in rehabilitation, both the Thai government and Thai corporations borrowing foreign currency cannot avoid a big hurdle or burden as the higher interest rate on foreign loans on the grounds that this crisis made the credit rating of the financial sector of Thailand lower (Hataiseree 1998).

2.4.3 Management changes that have occurred after the crisis

The economic crisis made Thai corporations perceive the need for reforms (The East Asia Analytical Unit 2000) and the need for efficient management (Wongcha-um 1997). Since 1997, most Thai corporations, both in the private sector and in the public sector, have reformed themselves and changed their management, especially restructuring both finance and operations (Vatikiotis and Granitsas 1998; Sikes 1999; Chau 1999; The East Asia Analytical Unit 2000). Kloot (1994) states that for an organisation to survive in the changed environment, it must re-engineer or change itself to suit the changed environment. In other words, the organisation must have organisational learning. So, it is likely that Thai corporations are learning to survive in this crisis by restructuring themselves.

In financial restructuring, most Thai firms have attempted to restructure their debt because of holding high levels of debt before July 1997. When the value of the baht collapsed, thousands of firms defaulted on debts (Chau 1999). The debt restructuring may be a way for survival. The debt restructuring is usually in terms of converting debt to equity or changing creditors to be the major shareholders to reduce interest and principal payments (Chau 1999). For example, the Thai Petrochemical Industry (TPI), Thailand's largest integrated petrochemical producer and largest corporate debtor, was one of 353 companies that had struggled to restructure to survive by joining the Bank of Thailand's debt restructuring program. It has planned to exchange debt for equity, cutting its interest burden by about 25% and its debt-to-equity ratio from 3.3:1 to 1.75:1 by the year 2003 (Sikes 1998).

Seeking new partners, especially foreign partners, is another way of financial restructuring of Thai firms (Hataiseree 1998; Sikes 1999). To reinforce the liquidity and

credibility, most Thai firms, financial and banking firms, in particular, were obliged to find new partners. Several small Thai banks, such as Thai Danu Bank, Laem Thong Bank, Nakorn Thon Bank and Bank of Asia, sold the majority of their shares to foreign partners (Vatikiotis and Granitsas 1998; Phongpaichit and Baker 2000).

Besides, operational restructuring has taken many forms: cutting costs, selling assets, mergers and acquisitions, breaking up conglomerates, focusing on core operations (Chau 1999), a reduction in capital spending and layoffs (Anon 1998b). Almost all Thai firms had the same operational problems. For example, the holding of lots of equipment, factories and fixed investments which did not support sales (Chau 1999). To improve company liquidity and increase cash flow, most companies needed to sell their excess assets to other companies; reorganize working capital and focus management on profitable activities (Anon 1998b; Chau 1999). For example, the Amari Atrium Hotel decided to sell the property to improve its liquidity (Lwin 1998). Siam Cement, another example of operational restructuring, reduced its stake in dozens of non-core operations to focus on three of its strongest lines of business: cement, petrochemicals and paper (Chau 1999).

Not only private corporations, but also several state enterprises, especially main infrastructure sectors, had to reorganize. Seeing that the Thai government was burdened with the deficits of state enterprises in the financial crisis, it has faced a lack of funds to subsidize state enterprises and has had to accelerate the process of privatising and deregulating state-owned infrastructure enterprises (Chamchoy 1997; Preepiariyavat 1998; The East Asia Analytical Unit 2000). The Thai government has started the process of privatising with share sales of the Electricity Generating Public Co.Ltd, Thai Airways International Public Co.Ltd and the Telephone Organisation of

Thailand (Anon 1998c). Moreover, in the process of privatisation, state enterprises needed to improve their efficiency of operations, such as performance measurement, product strategies, price strategies and so on, to be able to compete.

Abonyi (1999) suggests that in corporate recovery, corporations are constrained to restructure not only financials, but also to reorganise operations (improving performance and operation management) on the grounds that the financial restructuring is short-term restructuring while the operational restructuring is long-term restructuring. Hataiseree (1998) also maintains that in a turbulent economy, Thai firms are required to streamline their operational strategies, such as management, production, marketing or performance measurement, to increase their competence to compete in the global markets. Thus, restructuring and improvement of operational strategies are essential to Thai firms in the current situation.

2.5 Management Accounting Change

Management accounting systems in most Asian countries, including Thailand, are based to a large extent on US practices. Seeing that the majority of local firms in Thailand and other Asian countries are small- or medium-sized family-owned enterprises that have not realized the importance of management accounting information to effective management, the management accounting practices have mainly been used within large-sized firms and international firms. Generally, management accounting practices in international companies tended to be more advanced than those in local companies because these companies have used the management systems of their parent companies in western countries (Baydoun et al. 1997).

Management accounting practices in Asian countries are largely not separated from financial accounting as a distinct discipline. The team of accounting staff usually performs within both the financial and management accounting areas. Countries in the Asia-Pacific region, excepting Japan, still use the traditional management accounting techniques, such as standard costing or budgetary control (Baydoun et al. 1997).

Japan is the only country in this region that has an exceptional style of management differing from North American management style with an emphasis on teamwork, a long-time view and 'feedforward', which focuses on foreseeing and preventing problems before they occur. Therefore, target costing, concentrating on co-operation between managers and workers to solve problems impacting on the production cycle, is a current management accounting technique that reflects the distinctive characteristics of Japanese management (Baydoun et al. 1997).

In a rapidly changed environment, management control systems, including management accounting systems, have an important role in an organisation's response to transformation (Kloot 1997). In particular, management accounting information will assist an organisation to identify the requirements for alteration and the way to respond to a changed environment (Atkinson et al. 1997). At the same time, the management accounting information should be up-dated in accordance with a changed environment (Warwick et al. 1997). Thus, Shields (1997) also claims that changes in the environment, such as deregulation, globalisation or customer demands, will entail changes in management accounting practices. Similarly, Yakhou and Dorweiler (1995), who studied the link between competition and changes in management and control systems by comparison of British, French and U.S. organisations, found that competitive threats have influenced the adoption of management accounting innovations.

In an era of globalisation, Asian countries, including Thailand, cannot avoid the influence from growing internationalisation of business practice and management. Information, including accounting information, is essential for an organisation to create competitive advantages in a borderless era (Suwongwarn 1998). Hence, the importance and the development of management accounting systems in these countries increase. For example, management accounting systems in Thailand have recently received extensive attention and importance from Thai managers on account of the recent growth of the size of Thai owned firms, the growing incidence of joint-ventures and the establishment of large multinational enterprises that lead to the demand for better accounting information and for better accounting management techniques. In addition, the raising of capital through the Thai stock exchange and the government sector's performance measurement in a more tangible way, such as the profit-orientated way, has resulted in improvements in management accounting information and techniques (Hossain and Adams 1997).

In recent years, management accounting systems have had a high rate of change and the characteristics of the new management accounting systems focus on the resource-based approach to strategy formulation, non-financial measures, process-based measures (Atkinson et al. 1997), cross-functional information and the future-orientated information (Kloot 1994). These characteristics are congruent with several attributes of ABC. Consequently, few innovations have engendered as much interest as ABC in the last few years (Swenson 1995). Adler et al.'s (2000) study shows that the majority of surveyed firms in New Zealand (80% of respondents) had made a momentous transformation to their cost management systems during the past five years and most of them (62% of respondents) are planning substantial revisions to their advanced accounting systems, including ABC, over the next three years. Foster and Young's

(1997) study also shows that ABC is the management issue to which managers in the U.S.A. and Australia pay most attention at present. Likewise, Booth and Giacobbe (1997), who studied interest in ABC in Australia, confirm that 'ABC is still a highly dynamic area of management accounting innovation in Australian manufacturing firms'.

2.6 Activity-Based Costing in Thailand

For Thailand, ABC is the new management accounting system. It has been known among Thai academics who studied abroad since the early 1990s (Toommanon 1997a). In the 1980s and early 1990s, the implementation of ABC in the Thai environment emerged from policies of parent companies in the U.S.A. or the U.K. (Toommanon 2000). But, the ABC concept was widely discussed in Thailand through seminars, conferences and journals in 1993 (Kunpanichakit 1993) and has begun to be implemented by some Thai organisations since the late 1990s. Recently, more Thai organisations, both private and public, have adopted and implemented ABC because they believe that it will improve their management and create profitable opportunities in the current economy (Kitivacharapon and Guao-prasertwong 2000). For example, Chimploy (1999), who carried out a case study on the Mae Moh Power Plant of Electricity Generating Authority of Thailand (EGAT), found that EGAT, which is going to privatisation, has implemented the ABC system to improve executives' management and decision making to enable it to compete.

As stated previously, changes in the environment will entail transformation of management accounting practices (Shields 1997). ABC is the innovative management accounting system for Thailand claimed to be able to upgrade management, both in production and in operation, and profitability. Therefore, the current study attempts to

investigate the relationship between the Thai economic crisis and the implementation of ABC by Thai firms.

2.7 Summary

This chapter provides the characteristics of Thai people and organisations, as well as accounting education because there have been suggestions that these factors generally affect the implementation of innovations. A few years ago, the economic crisis caused the large number of negative impacts on Thai businesses. This chapter also describes how the economic crisis in Thailand occurred and how it impacted on Thai businesses. The literature engaging in these issues can be summarised, as follows.

First, Thai people have characteristics of high-power-distance and collectivist societies claimed to facilitate the implementation of ABC. In high-power-distance and collectivist societies, subordinates accept the leadership and views of their superiors and conform to what their superiors say. Thus, most decisions in Thai organisations are made by top executives.

Second, in 1997, a severe recession occurred in Thailand. A large number of Thai firms collapsed. The existing companies have encountered considerable difficulties, such as rising costs due to the floated exchange rate, decline in sales, higher competition and so on. They have had to restructure and change their management to be able to compete and survive in the crisis.

Third, ABC is a new management accounting system in Thailand claimed to be able to streamline an organisation's operation and management. It is expected that ABC may

be the potential change for Thai firms during the crisis. In the next chapter, a detailed review of the literature concerning ABC will be discussed.

Chapter 3

Activity-Based Costing (ABC)

3.1 Introduction

The previous chapter contained a review of the economic crisis and change in management accounting in a rapidly changed environment. This chapter introduces ABC as an advanced management accounting technique in the Thai environment and provides the background and the main features of ABC, together with ABC practice. First, this chapter provides an overview of the history of the development of ABC, followed by the concept and the benefits of ABC. Next, survey evidence on the implementation of ABC and factors relating to the implementation of ABC are discussed. In addition, this chapter reviews the adoption of ABC and Shields and Young's (1989) behavioural and organisational variables that are relevant to the implementation of cost management systems and that are expected to be associated with the implementation of ABC in Thailand, as well as the adoption of ABC by Thai firms.

3.2 The Introduction of ABC

Over the last three decades, competition has forced corporations to have incessant development in all aspects of business, including performance measurement and cost management. In the past, increasing capital intensity, because of automation, had changed the relationship between indirect cost and direct labour cost in a number of industries. The proportion of direct labour cost (variable costs) had contracted considerably, on the other hand; fixed costs had grown (Mills and Cave 1990; Raffish 1991; Morrow 1992; Ferrara 1994; Chung et al. 1997). Therefore, using direct labour, a

small proportion of total manufacturing costs, to allocate indirect costs in the traditional cost systems was considered to be incorrect (Kaplan 1988; Cooper and Kaplan 1988; Dugdale 1990; Turney 1996).

Consequently, the activity-based costing technique has been substantially developed in the last decade (Cooper 1990; Morrow 1992) because it is claimed to avoid the deficiencies of the traditional absorption costing methods, which commonly use direct labour to assign indirect costs (Kaplan 1988; Dugdale 1990). It is also claimed that it can provide more precise information about the cost of the product than the traditional cost systems can, in particular, when manufacturing processes are intricate or products are produced in varying volume because the ABC system allocates indirect costs, such as utilities or maintenance, to the products that consume the resources (Krumwiede and Roth 1997).

The ABC system has been extended to cover non-production costs, which are not related to production or which emerge from operation, such as distributing and selling costs (Innes and Mitchell 1991). Then, cost driver measurements of ABC (used as non-financial measures), such as on-time deliveries or inventory turnover, help operational control, cost control and decision-making. Finally, it provides basic information for the budgeting process (Innes and Mitchell 1991).

Johnson (1990, p.15) states that ‘...ABC certainly ranks as one of the two or three most important management accounting innovations of the twentieth century’. Nevertheless, Kaplan (1988; 1990b) and Johnson and Kaplan (1991) point out that using a single cost system is not sufficient for companies in the competitive environment. The cost system has three essential and different functions: inventory valuation for financial and tax

statements; operational control; and product-cost measurement (Kaplan 1988). The financial reporting system is beneficial for external reporting but it does not provide the performance measurement and product-cost information for managers. Although the traditional standard cost system arranges information with respect to inventory valuation and operational control, it cannot report accurate product-cost information. An ABC system can provide information on both product costs and customer profitability analysis, but not information on actual expenses for periodic financial statements (Kaplan 1990b).

Accordingly, Kaplan (1990b) suggests that companies should integrate information from the operational control systems and activity-based systems. He demonstrates that the ABC system provides budgets for operating departments rooted in forecasts of product volume and product mix. At the same time, the operational control system compares actual expense to forecasted expense provided by the ABC system.

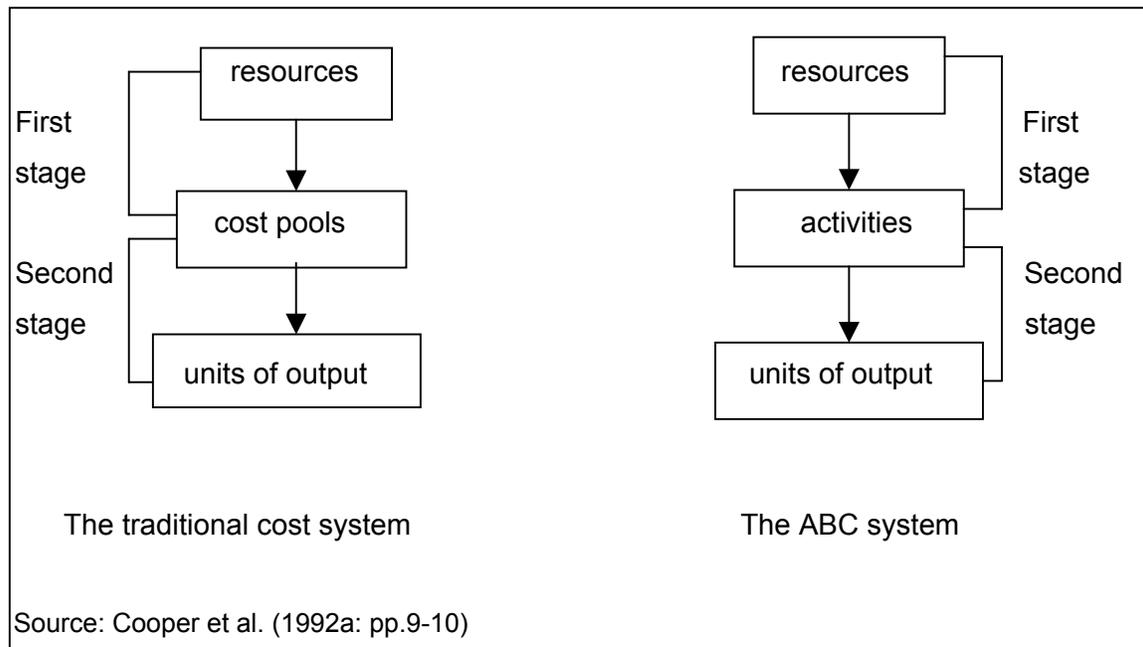
3.3 The Nature of ABC

ABC is a management accounting process that allocates resource costs to products or customers based on activities, which are the factors causing work and incurring cost, used by products or customers (O'Guin 1991, Atkinson et al. 1995; Turney 1996; Krumwiede and Roth 1997). In other words, ABC assigns costs to products according to the activities and resources consumed in producing, marketing, selling, delivering and servicing the product (Turney 1996). The heart of ABC is the activity concept (Turney 1991). ABC assumes that activities originate cost and that outputs build the demand for activities (Turney 1996). An ABC system is designed to eliminate boundaries among departments (Dugdale 1990; Morrow 1992) and to create more exact cost information or to disclose 'the hidden profits and the hidden losses' (Argyris and Kaplan 1994).

Innes and Mitchell (1998) state that both traditional cost systems and ABC systems have similar frameworks but that they have differences in indirect cost allocations. Indirect costs or support costs, such as purchasing materials, machine maintenance and so on, are costs that cannot be easily identified with individual products (Atkinson et al. 1995). Cooper et al. (1992a) illustrate that, first, the indirect and support costs in traditional cost systems are allocated to cost pools and, next, the costs in cost pools are allotted to the products or customers by using a few bases that are proportional to the volume of product-units produced, although many indirect and support resources (such as set-up cost, process engineering cost and so on) are not employed in proportion to the volume of product-units produced. Thus, cost in traditional cost systems is misrepresented.

In contrast, indirect costs in ABC systems are assigned to activities based on the activity's use of resources and cost allocation of each activity into products or customers is based on work volume measures relating to specific product lines, so-called 'cost drivers' (Cooper et al. 1992a; Miller 1996; Baxandale 1999). Exhibit 3.1 compares the traditional cost systems to the ABC system. Both methods have differences not only in the nature of allocation bases, but also in the number of allocation bases utilised to assign costs in the second stage. The traditional cost system employs three common allocation bases, such as direct labour hours, machine hours and material dollars, whereas ABC utilises many allocation bases, such as set-up hours, number of times ordered, number of times handled and other transaction-related bases (Cooper 1988). Consequently, product costs of the ABC system are claimed to have more accuracy than those of the traditional cost systems (Kaplan 1988; Cooper 1988; Dugdale 1990; Innes and Mitchell 1991; Morrow 1992; Turney 1996; Krumwiede and Roth 1997).

Exhibit 3.1 The traditional cost system & the ABC system



Cooper (1988) explored the effect of diverse volume and size of products on reported product costs by comparing the traditional cost system with the ABC system. He found that the traditional cost system, which is based on volume of product-units, distorts product costs, especially when engaging in product diversity in the form of size or volume.

For example, Company A produces four products: P1; P2; P3; and P4. All are manufactured on the same equipment and by similar processes. The characteristics of each product are summarised in Exhibit 3.2. Company A allocates costs to the products by means of direct labour hours. The quantity and dollar value of each input by product, as well as the allocation of overhead costs by both the traditional cost system and ABC, are presented in Exhibit 3.3.

Exhibit 3.2 Product characteristics for Company A

Product	Quantity per year	Material \$ per unit	Direct labour hours per unit	Machine hours per unit
P1	10	6	0.5	0.5
P2	100	6	0.5	0.5
P3	10	18	1.5	1.5
P4	100	18	1.5	1.5

		Size of product	
		Small	Large
Volume	Low	P1	P3
	High	P2	P4

Source: Cooper (1988: p.46)

As cited in Exhibit 3.3, the unit costs of large products (P3 and P4) in the volume-based cost system are three times as high as those of small products (P1 and P2) because the large products consume three times the number of direct labour hours as the small products. The unit costs of products in the same size (the small products: P1 and P2 and the large products: P3 and P4) are the same as they consume the same number of direct labour hours. In fact, the numbers of P2 and P4 (the high-volume products) produced are ten times those of P1 and P3 (the low-volume products) and a low-volume product manufactured once a year is ordered and handled once and a high-volume product produced three times a year is ordered and handled three times. Thus, the same unit costs of products in the same sizes and in varying volumes by volume-related allocation base are misrepresented.

Exhibit 3.3 Product costing data for Company A

Annual Input Consumption Patterns and Dollar Value by Product								
Product	Material (\$)	Direct labour hours	Machine hours	No. of times set up	No. of orders	No. of times handled	No. of part numbers	Total overhead costs
P1	60	5	5	1	1	1	1	
P2	600	50	50	3	3	3	1	
P3	180	15	15	1	1	1	1	
P4	1,800	150	150	3	3	3	1	
Units Consumed	2,640	220	220	8	8	8	4	
Dollar Value(\$)	264	2,200	3,300	960	1,000	200	2,000	\$9,924

Overhead Costs Reported by a Volume-Based Cost System				
Overhead consumption Intensity		Reported overhead costs		
	Direct Labour	Consumption intensity	Overhead traced	Reported unit cost
Dollar value	\$9,924.00		\$45.11	-
Units consumed	220	Direct labour hours that P1 consumes	5	
Consumption intensity per direct labour hour	\$45.11	Costs traced (P1)	\$225.55	\$22.55
		Direct labour hours that P2 consumes	50	
		Costs traced (P2)	\$2,255.50	\$22.55
		Direct labour hours that P3 consumes	15	
		Costs traced (P3)	\$676.65	\$67.66
		Direct labour hours that P4 consumes	150	
		Costs traced (P4)	\$6,766.50	\$67.66

Overhead Costs Reported by an ABC System			
Overhead consumption intensities			
	Direct labour Hours	No. of times set up	No. of part numbers
Total	\$5,764.00	\$2,160	\$2,000
Units consumed	220	8	4
Consumption intensity	\$26.20	\$270	\$500

Reported Overhead Costs						
	Direct labour related	No. of time set up related	No. of part numbers related	Overhead traced	Reported unit cost	Difference from existing system (%)
Consumption intensities	\$26.20	\$270	\$500	-	-	-
Product P1 consumes	5	1	1			
Costs traced	\$131.00	\$270	\$500	\$901	\$90.10	299.55
Product P2 consumes	50	3	1			
Costs traced	\$1,310.00	\$810	\$500	\$2,620	\$26.20	16.18
Product P3 consumes	15	1	1			
Costs traced	\$393.00	\$270	\$500	\$1,163	\$116.30	71.88
Product P4 consumes	150	3	1			
Costs traced	\$3,930.00	\$810	\$500	\$5,240	\$52.40	-22.55

Source: Cooper (1988: p.47)

The overhead costs reported by an ABC system are presented in Exhibit 3.3. When cost drivers, including the number of set-ups, orders, and time handled, are perfectly correlated, the cost of these activities can be collected in a single cost pool. Volume-related costs, consisting of material costs, direct labour costs and machine-related costs, are still assigned to products by using direct labour hours. Hence, the unit costs of products reported by the ABC system, differ from those by the volume-based cost system.

Furthermore, Cooper (1988) explored the ability of volume-based and activity-based cost systems to assign product costs precisely when the numbers of products manufactured are different. He found that the volume-based cost system could not generate accurate unit costs when products differ by volume since it overlooks the differences in input consumption of overhead resources. For example, Company B produces two small products (P1 and P2). P1 is a low-volume product and P2 is a high-volume product. Both are manufactured on the same equipment and by similar processes. The quantity and dollar value of the input by product, as well as the allocation of overhead costs reported by both the traditional cost system and the ABC, are presented in Exhibit 3.4.

Exhibit 3.4 Product costing data for Company B

Annual Input Consumption Patterns and Dollar Value by Product								
Product	Material (\$)	Direct labour hours	Machine hours	No. of times set up	No. of orders	No. of times handled	No. of part numbers	Total overhead costs
P1	60	5	5	1	1	1	1	
P2	600	50	50	3	3	3	1	
Units Consumed	660	55	55	4	4	4	2	
Dollar Value(\$)	66	550	825	480	500	100	1,000	\$3,521

Overhead Costs Reported by a Volume-Based Cost System				
Overhead consumption Intensity	Direct Labour	Consumption intensity	Overhead traced	Reported unit cost
Dollar value	\$3,521.00		\$64.02	-
Units consumed	55	Direct labour hours that P1 consumes	5	
Consumption intensity per direct labour hour	\$64.02	Costs traced (P1)	\$320.10	\$32.01
		Direct labour hours that P2 consumes	50	
		Costs traced (P2)	\$3,201.00	\$32.01

Overhead Costs Reported by an ABC System						
Overhead consumption intensities						
	Direct labour Hours	No. of times set up	No. of part numbers			
Total	\$1,441.00	\$1,080	\$1,000			
Units consumed	55	4	2			
Consumption Intensity	\$26.20	\$270	\$500			
Reported overhead Costs						
	Direct labour related	No. of time set up related	No. of part numbers related	Overhead traced	Reported unit cost	Difference from existing system (%)
Consumption intensities	\$26.20	\$270	\$500	-	-	-
Product P1 consumes	5	1	1			
Costs traced	\$131.00	\$270	\$500	\$901	\$90.10	181.48
Product P2 consumes	50	3	1			
Costs traced	\$1,310.00	\$810	\$500	\$2,620	\$26.20	-18.15

Source: Cooper (1988: p.49)

Company C produces two large products (P3 and P4). P3 is produced in low volume while P4 is produced in high volume. Exhibit 3.5 shows the details on product costing data for Company C. The three companies (Companies A, B and C) produce the same products using the same manufacturing process. The unit costs of Company B and C reported by the volume-based system differ from those of Company A whereas the unit costs of all companies (Companies A, B and C) by the ABC system are the same. A comparison of product costing data of all three companies shows that the ABC system is able to accurately trace product costs when products are manufactured in varying volumes.

In addition, Cooper (1988) examined the ability of both systems to trace product costs when products have diversity of size. Exhibit 3.6 presents the details on product costing data for Company D, which produces two products (P1 and P3) in low volume. P1 is a small product while P3 is a large product. Both are manufactured on the same equipment using similar processes. On the other hand, Exhibit 3.7 shows the details on product costing data for Company E, which manufactures two products (P2 and P4) in high volume. P2 is a small product whereas P4 is a large product. All three companies (Companies A, D and E) manufacture the same products using the same manufacturing processes in the same volume.

Similar to Companies B and C, the unit costs of Companies D and E reported by the volume-based system differ from those of Company A while the ABC system reports the same product costs of all three companies (Companies A, D and E). Consequently, Cooper (1988, p.46) concludes that 'a simple volume-related allocation base cannot capture the complexity of the relationship between volume and lot or order size'. The product costs reported by the ABC system are more accurate than those by the

traditional volume-based system in many situations, including diversity of product size or volume.

Exhibit 3.5 Product costing data for Company C

Annual Input Consumption Patterns and Dollar Value by Product								
Product	Material (\$)	Direct labour hours	Machine hours	No. of times set up	No. of orders	No. of times handled	No. of part numbers	Total overhead costs
P3	180	15	15	1	1	1	1	
P4	<u>1,800</u>	<u>150</u>	<u>150</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>1</u>	
Units Consumed	1,980	165	165	4	4	4	2	
Dollar Value(\$)	198	1,650	2,475	480	500	100	1,000	\$6,403

Overhead Costs Reported by a Volume-Based Cost System				
Overhead consumption Intensity	Direct Labour	Consumption intensity	Overhead traced	Reported unit cost
Dollar value	\$6,403.00		\$38.81	-
Units consumed	165	Direct labour hours that P3 consumes	15	
Consumption intensity per direct labour hour	\$38.81	Costs traced (P3)	\$582.15	\$58.21
		Direct labour hours that P4 consumes	150	
		Costs traced (P4)	\$5,821.15	\$58.21

Overhead Costs Reported by an ABC system				
Overhead consumption intensities				
	Direct labour Hours	No. of times set up	No. of part numbers	
Total	\$4,323.00	\$1,080	\$1,000	
Units consumed	165	4	2	
Consumption Intensity	\$26.20	\$270	\$500	

Reported Overhead Costs						
	Direct labour related	No. of time set up related	No. of part numbers related	Overhead traced	Reported unit cost	Difference from existing system (%)
<i>Consumption intensities</i>	\$26.20	\$270	\$500	-	-	-
Product P3 consumes	15	1	1			
Costs traced	\$393.00	\$270	\$500	\$1,163	\$116.30	99.80
Product P4 consumes	150	3	1			
Costs traced	\$3,930.00	\$810	\$500	\$5,240	\$52.40	-9.98

Source: Cooper (1988: p.50)

Exhibit 3.6 Product costing data for Company D

Annual Input Consumption Patterns and Dollar Value by Product

Product	Material (\$)	Direct labour hours	Machine hours	No. of times set up	No. of orders	No. of times handled	No. of part numbers	Total overhead costs
P1	60	5	5	1	1	1	1	
P3	180	15	15	1	1	1	1	
Units Consumed	240	20	20	2	2	2	2	
Dollar Value(\$)	24	200	300	240	250	50	1,000	\$2,064

Overhead Costs Reported by a Volume-Based Cost System

Overhead consumption Intensity	Direct Labour	Consumption intensity	Overhead traced	Reported unit cost
Dollar value	\$2,064.00	Direct labour hours that P1 consumes	\$103.20	-
Units consumed	20	Costs traced (P1)	5	\$51.60
Consumption intensity per direct labour hour	\$103.20	Direct labour hours that P3 consumes	15	\$154.80
		Costs traced (P3)	\$1,548.00	

Overhead Costs Reported by an ABC System

Overhead consumption intensities

	Direct labour Hours	No. of times set up	No. of part numbers
Total	\$524.00	\$540	\$1,000
Units consumed	20	2	2
Consumption intensity	\$26.20	\$270	\$500

Reported Overhead Costs

	Direct labour related	No. of time set up related	No. of part numbers related	Overhead traced	Reported unit cost	Difference from existing system (%)
<i>Consumption intensities</i>	\$26.20	\$270	\$500	-	-	-
Product P1 consumes	5	1	1			
Costs traced	\$131.00	\$270	\$500	\$901	\$90.10	74.61
Product P3 consumes	15	1	1			
Costs traced	\$393.00	\$270	\$500	\$1,163	\$116.30	-24.87

Source: Cooper (1988: p.51)

Exhibit 3.7 Product costing data for Company E

Annual Input Consumption Patterns and Dollar Value by Product

Product	Material (\$)	Direct labour hours	Machine hours	No. of times set up	No. of orders	No. of times handled	No. of part numbers	Total overhead costs
P2	600	50	50	3	3	3	1	
P4	<u>1,800</u>	<u>150</u>	<u>150</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>1</u>	
Units Consumed	2,400	200	200	6	6	6	2	
Dollar Value(\$)	240	2,000	3,000	720	750	150	1,000	\$7,860

Overhead Costs Reported by a Volume-Based Cost System

Overhead consumption Intensity	Direct Labour	Consumption intensity	Overhead traced	Reported unit cost
Dollar value	\$7,860.00	<i>Consumption intensity</i>	\$39.30	-
Units consumed	200	Direct labour hours that P2 consumes	50	
Consumption intensity per direct labour hour	\$39.30	Costs traced (P2)	\$1,965.00	\$19.65
		Direct labour hours that P4 consumes	150	
		Costs traced (P4)	\$5,895.00	\$58.95

Overhead Costs Reported by an ABC System

Overhead consumption intensities

	Direct labour Hours	No. of times set up	No. of part numbers
Total	\$5,240.00	\$1,620	\$1,000
Units consumed	200	6	2
Consumption intensity	\$26.20	\$270	\$500

Reported Overhead Costs

	Direct labour related	No. of time set up related	No. of part numbers related	Overhead traced	Reported unit cost	Difference from existing system (%)
<i>Consumption intensities</i>	\$26.20	\$270	\$500	-	-	-
Product P2 consumes	50	3	1			
Costs traced	\$1,310.00	\$810	\$500	\$2,620	\$26.20	33.33
Product P4 consumes	150	3	1			
Costs traced	\$3,930.00	\$810	\$500	\$5,240	\$52.40	-11.11

Source: Cooper (1988: p.52)

Cooper et al. (1992a) conclude that the ABC system comprises four basic steps:

1. Identify activities;
2. Assign resource costs to activities by three methods: direct charging, estimation or arbitrary allocations;
3. Identify outputs; and
4. Link activity costs to outputs.

In the ABC system, manufacturing procedures can be segregated into four categories (Cooper and Kaplan 1991; Cooper et al. 1992a; Kock 1995; Horngren et al. 1997) (see Exhibit 3.8).

1. Unit-level activities

Costs are assigned to activities that act on each individual unit of product or service, such as direct labour or materials.

2. Batch-level activities

Costs are assigned to activities associated with a group of units of products, such as set-up costs, material movements or purchase orders.

3. Product-sustaining activities

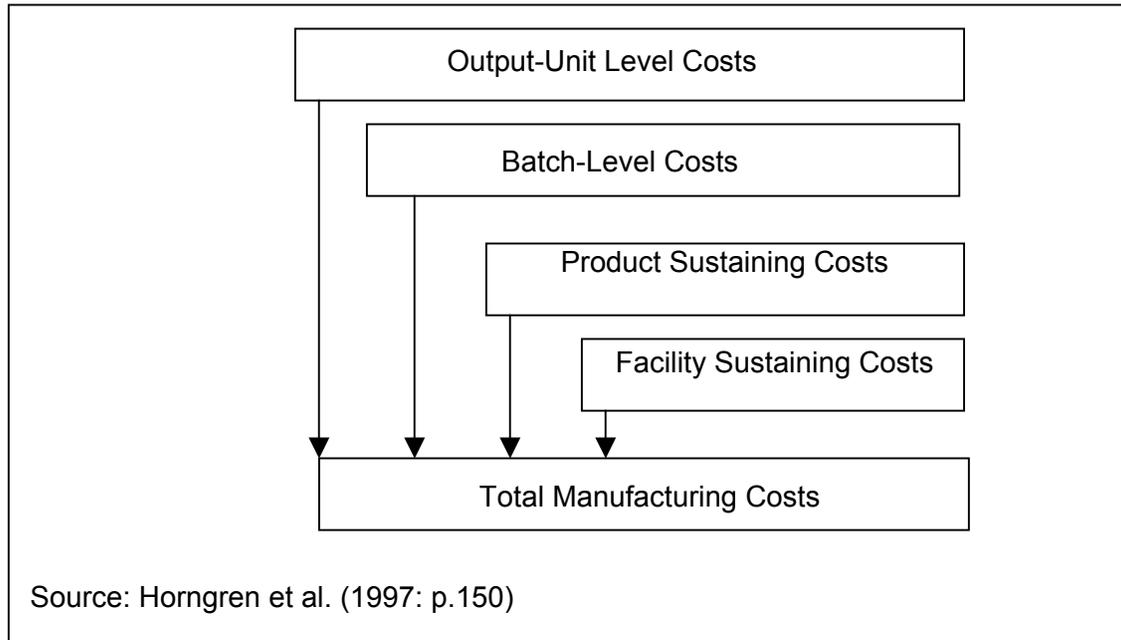
Costs are allocated to activities which are performed to support a specific product or service, such as process engineering, product specifications or engineering change notices.

4. Facility-sustaining activities

Costs, which are viewed as period costs, are assigned to activities underpinning the organisation as a whole. Most of these activities are administrative, such as plant management, security, taxes, building and grounds or heating and lighting. Seeing that the facility-sustaining activities are not based on product-related characteristics (such as product quality, product complexity, product flexibility or production volume),

Cooper and Kaplan (1991), O'Guin (1991) and Adler (1999) argue that these activities should not be viewed on a product basis.

Exhibit 3.8 Manufacturing cost hierarchy



Non-manufacturing procedures can be identified in the other forms of hierarchies. For example, a typical marketing hierarchy consists of customer, channel and market. A typical hierarchy for product-line development and support comprises product line, product family and product group (Cooper et al. 1992a). Hence, O'Guin (1991) claims that the concept of hierarchical costs is a momentous difference between ABC and the traditional cost systems.

Apart from differences in the conception of hierarchical costs, the ABC system and the traditional cost systems differ in thinking about costs or expenses. The traditional cost systems stress the apportionment of past costs to products while the ABC system utilizes future-orientated information, such as budgeted expenses, to allocate costs to

products (O'Guin 1991; Cooper et al. 1992a). Horngren et al. (1997) also describe another difference between the systems; indirect cost allocations of an ABC system are based on non-financial variables, while those of the traditional cost systems are rooted in financial variables.

ABC principles can apply not only to manufacturing organisations, but also to service organisations (Mills and Cave 1990; Kock 1995). Seeing that fixed costs in service organisations, employees' salary, in particular, are more utilized than direct costs and customer's satisfaction is vital for service organisations, ABC is an effective tool for service organisations to trace costs to services produced and to analyse activities and their value to the customer (Kock 1995). In practice, the implementation of ABC in service firms may have some problems, such as the difficulties in identifying employee's time devoted to specific activities (Crave and Meyer 1993). Nevertheless, several studies, such as Brooks and Oliver (1993), Oliver (1994), Kullven and Mattsson (1994) and Kock (1995), show that ABC is useful for service organisations. Moreover, Krumwiede and Roth (1997) maintain that it is rapidly expanding to non-manufacturing companies.

3.4 The Benefits of ABC

ABC is claimed to furnish many significant benefits over traditional costing techniques: enhanced product cost accuracy; more comprehensive cost information for performance measurement; more pertinent data for management's decision-making; more potential for sensitivity analysis; and providing a model prospect on value-adding organisational transactions and activities (Bhimani and Pigott 1992; Chung et al. 1997).

Booth and Giacobbe (1997), who studied activity-based costing in Australian manufacturing firms, found that the major benefits that adopters of ABC received from the implementation of ABC were more precise profit analyses, more accurate costing, better allocation of overhead, improved cost control and cost management. Moreover, several survey results (Innes and Mitchell 1991; Cooper et al. 1992a, 1992b; Swenson 1995; Chung et al. 1997) show that ABC information is utilized to support the manager's operating decisions, such as performance measurement, product design and process improvement. It is also used to advocate for strategic decisions, such as customer profitability and pricing and product mix. Due to the increasing accuracy of output costs, ABC information enables managers to make better decisions on product, product design, process improvement, market segments and customer mix (Cooper and Kaplan 1988; Cooper et al. 1992b; Kaplan 1992).

According to Innes and Mitchell (1991), Shim and Stagliano (1997), Booth and Giacobbe (1997) and Chung et al. (1997), ABC is a significant source of information for decision-making about product costs and product-line profitability. Kaplan (1990a) and Johnson and Kaplan (1991) also claim that accurate product costs are critical to pricing decisions, new product introductions, decisions to drop out-of-date products and decisions on how to respond to the products of competitors correctly and on time since product costs identify causes of resource consumption and ways of saving resources, especially at the product and process design stage (Morrow 1992).

It can lead product designers to decisions on trade-offs between minimizing cost and desired performance (Kaplan 1992) and it provides the cost information of diverse designs that product designers can compare (Kaplan 1990a). Moreover, using product-costing techniques at the design stage can be combined with target costing since

product costs can determine the mix of products to manufacture and to sell (Atkinson et al. 1995) and can evaluate profitability by product group or customer type (Morrow 1992).

In addition, Morrow (1992) indicates that ABC information is an exemplary method of understanding the collection of costs at each cost layer because it provides a meaningful combination between each customer and market segment and the resources they consume. Building cost layers of the ABC system increases revenue values to create profitability analysis. The results of profitability analysis support management for future decisions on customer and market and for prediction of the likely cost of alteration in each market segment (Morrow 1992). Thus, Kaplan (1992) claims that ABC information can help to determine the segments and customers that can be satisfied profitably. In addition, Bukovinsky et al. (2000), who studied a U.S. distributor for industrial robots manufactured by a major Japanese company, found that ABC established the advantages in the sales and administrative areas because the ABC system considered all costs, as opposed to only costs of the products. It helps to increase the monthly operating income of the product line.

Kaplan (1990a), O'Guin (1991) and Innes and Mitchell (1995b, 1998) also claim that ABC information is useful for managers in budgeting and performance measurement as activity-based budgets prepare objectives for each activity (Oliver 1994) and assess future resource needs (Innes and Mitchell 1995a; Turney 1996). Moreover, activity-based budgets provide the links between the activities, the organisational acts and the resources consumed, and illustrate the differences between resource consumption and resource provision (Morrow 1992). As a result, activity-based budgets improve operational control and performance measurement (Morrow 1992).

Several studies (Innes and Mitchell 1991, 1993, 1995b; Bailey 1991; Nicholls 1992; Adler et al. 2000) report that the key areas of ABC benefits are cost control and cost reduction, as well as improved profitability. Turney (1996) states that in cost-reduction analysis, ABC does not decrease cost, but that cost can only be diminished by changing the activities performed and by redeploying the redundant resources, such as reducing the time to set up a machine or removing unnecessary activities. Cost analysis of ABC leads to operational improvement opportunities and increased profitability (Kaplan 1992).

O'Guin (1991), Krumwiede and Roth (1997), Moghaddam (1997), Innes and Mitchell (1998) and Redman (1998) state that ABC is a system that gets rid of the distortions of information in the traditional cost system and non-value-added activities, which do not add to the customer's satisfaction with the product. Seeing that it identifies the activities occurring and the resources they consume, and links the activities to processes as 'cost objects', an ABC system assists management to understand and to analyse business processes and their effects on the cost base. ABC's providing accurate cost information at the business process level, which is at the same level that total quality management (TQM) operates, also supports TQM to evaluate costs and to manage poor quality (Letza and Gadd 1994). Accordingly, Norris (1997, p.189) claims that 'ABC complements TQM'.

The analysis of the business processes by using activity analysis guides management to process improvement, including elimination of non-value-added activities (Morrow 1992; Roberts and Silvester 1996), and then the process improvement leads to cost reductions, one of the most important benefits of ABC (Adler et al. 2000) and one of the major subjects of TQM (Letza and Gadd 1994). Thus, Krumwiede and Roth (1997) claim

that if ABC is designed to facilitate the other strategic initiatives, such as TQM, ISO and so on, it will support their implementation more effectively.

As continuing process improvement is the successive identification and elimination of waste in operating activities, it helps to eliminate non-value-added activities, decrease time to perform activity, select the low-cost activity and share activities with other products to yield economies of high-volume production. These ways of process improvement further reduce costs (Turney 1991). Hence, O'Guin (1991) claims that ABC can reduce costs of companies and increase quality contemporaneously.

In the more competitive environment of a turbulent economy, the importance of superior cost control, of coherent performance measurement and of precise knowledge of product costs increases because cost advantage is the essential component of differentiation strategies in competition (Johnson and Kaplan 1991). O'Guin (1991) also claims that the ABC system is a cost planning system that provides information for managers to plan not only differentiation strategies, but also low-cost strategies since ABC determines core activities and helps analyse systems and policies that drive costs.

Kaplan (1992) claims that the ABC system provides valuable economic information to support a company's operational improvement and customer satisfaction programs. To survive and prosper in the competitive environment, managers need to use both ABC information and other information on revenues, customer preference, process quality and cycle times. Nonetheless, the benefits claimed are not always achieved (Player and Keys 1995) because Chenhall and Langfield-Smith's (1998b) survey results show that benefits which the companies gained from activity-based costing have a lower rank than benefits from other management accounting techniques. But, Bailey (1991) and Innes

and Mitchell (1998) maintain that ABC benefits are far more valuable than its disadvantages. It was expected in this study that Thai firms had an appreciation of the value of ABC and implemented it for development of themselves in the changed environment.

3.5 Implementation of ABC

3.5.1 Variables relating to the implementation of ABC

A number of researches examined the implementation of ABC and factors influencing success. Shields (1995), Anderson (1995), McGowan and Klammer (1997), Krumwiede and Roth (1997), Krumwiede (1998) and Innes and Mitchell (1998) made studies of ABC implementation in similar perspectives in Canada, the U.S.A and the U.K. Anderson (1995), who did a case study of General Motors, found that technological factors impacted on the success of ABC whereas the study results of Shields (1995), who examined the relationship between a diversity of behavioural, organisational and technical factors, and the success of implementation of ABC, show that variables influencing the success of implementing ABC involve behavioural and organisational variables, as opposed to technical variables. These variables comprise top management support, linkage of the ABC system to competitive strategies, linkage of the ABC system to performance evaluation and compensation, sufficient internal resources, training in designing and implementing ABC and non-accounting ownership, which is the commitment of non-accountants to use ABC information.

Shields' (1995) study, based on Shields and Young's (1989) theoretical framework, is supported and extended by several studies. Norris' (1997) study results agree with Shields' (1995) findings in that the successful implementation of ABC is associated more

with behavioural and organisational variables than with technical variables. Shields and McEwen (1996) found that a significant cause for the unsuccessful implementations of ABC of several companies was the emphasis of architectural and software design of the ABC system by overlooking behavioural and organisational issues. Krumwiede and Roth (1997) also found that behavioural and organisational variables, claimed by Shields (1995), can overcome the barriers of each stage in the implementation of ABC and can lead to the successful implementation of ABC.

In addition, Krumwiede (1998) surveyed U.S. manufacturing firms to study how contextual factors, such as the potential for cost distortion or size of firms; and organisational factors, such as top management support, training or non-accounting ownership, affect each stage of the ABC implementation process. He found that the different factors affected the various stages of implementation of ABC and the degree of importance of each factor varies according to the stage of implementation. A company's potential for cost distortions (a contextual factor) is a highly important factor in its decision to adopt and implement an ABC system, and top management support, non-accounting ownership and implementation training (organisational factors) can lead to reaching the highest stage of implementation of ABC. Krumwiede (1998) concludes that firms considering or implementing the ABC system should take organisational and contextual factors into account.

According to O'Guin (1991), the success of ABC relies on four crucial factors: top management support; comprehension by employees; accessibility to the ABC system; and to the system ownership by internal people. In other words, the ABC system is required to be simple for employees to understand and to use and employees and management must be internally committed to the ABC system. When they support it, all

obstructions to the implementation of ABC are eliminated. Similar to Argyris and Kaplan (1994), an 'education' and 'sponsorship' process is essential, but it is inadequate for the implementation of an innovation like ABC because organisational members usually create the organisational defensive routines, which is the protection of themselves from embarrassment or threat, when an organisation implements an innovative initiative. Overcoming these barriers is 'creating internal commitment'.

Turney (1996) also states that initial steps needed to succeed in implementing ABC are to generate interest in ABC at all levels of the company, to remove any barriers to adopt ABC and to obtain management's commitment to support the implementation of ABC. The results of Norris' (1997) study confirm that internal commitment of the individual managers to the change influences the successful implementation of ABC. Morrow (1992) also claims that the implementation of ABC is likely to be unsuccessful without the commitment and sponsorship of users, and senior management. Even if Briers and Chua (2001) claim that the fulfil implementation of ABC is contingent not only on top management support, but also on external consultants, several studies (Shields 1995; Shields and McEwen 1996; Roberts and Silvester 1996; McGowan and Klammer 1997; Krumwiede 1998) contend that the most essential factor influencing the successful implementation of ABC is top management support, which means the encouragement, by senior management, of ABC developing teams.

It is possible that top management support may be one of the most important factors in implementing ABC in the Thai environment on the grounds that top executives or senior managers in the Thai organisation are the ones who have the power to take action and make most of the decisions in the organisation (Morakul and Wu 2001). However, there

is little evidence to indicate what factors affect the implementation of ABC or influence the success of implementation of ABC in the Thai environment.

In practice, the implementation of ABC has some problems. The results of several surveys (Bailey 1991; Nicholls 1992; Cobb et al. 1992; Oliver 1994; Booth and Giacobbe 1997; Innes and Mitchell 1998; Chen et al. 2001) show that the main problems with the implementation of ABC are the difficulties of data collection. ABC involves the collection of a great deal of data relating to cost-drivers and item's relationship to specific products (Booth and Giacobbe 1997). Thus, the difficulties of data collection are usually the problems that both companies implementing ABC and companies rejecting ABC confront.

Booth and Giacobbe (1997) and Innes and Mitchell (1998) also found that other higher priorities were the pre-eminent problems for companies considering or rejecting ABC, especially small companies, because they thought that ABC was a big change for their companies. In addition, the survey results of the Chartered Institute of Management Accountants (CIMA) (1990, presented in Innes and Mitchell 1998) report that problems in practice include activities crossing departmental boundaries and the difficulties of choosing suitable cost drivers (Roberts and Silvester 1996; Innes and Mitchell 1998). Chung et al.'s (1997) and Chen et al.'s (2001) studies also indicate that inability to integrate with the current accounting system is a major problem of implementation of ABC.

Roberts and Silvester (1996) argue that most problems in implementing ABC are ascribed neither to technical imperfections of ABC nor to the way of applying theory. The key problem is organisational resistance. But in the Thai environment,

organisational resistance may not be the key problem in implementing ABC because characteristically, Thai people prefer to avoid conflict and tend to accept and to act what superiors tell them (Vivanichakul and Udomsri 1990; Cooper 1994). Nevertheless, it is unclear what problems most Thai firms have encountered in implementing ABC and what the key problem is.

3.5.2 Stages of the implementation process of ABC

Even if ABC installations may have some problems, the enhanced knowledge and grasp about ABC makes it valuable (Glad 1993). Krumwiede and Roth (1997) state that many firms adopting ABC may not use it successfully since they do not perceive the behavioural, organisational and political aspects of each stage in the implementation. Krumwiede and Roth (1997) claim that ABC is an information technology (IT) innovation, which provides information for managers to make their decisions, as opposed to a pure technical innovation. Accordingly, managers need to comprehend the stages of the IT implementation process to implement ABC successfully. The IT implementation process is categorized as six sequential stages: initiation; adoption; adaptation; acceptance; routinization; and infusion (Cooper and Zmud 1990). Krumwiede and Roth (1997) adapted Cooper and Zmud's (1990) IT stage model, based on the organisational change, to the implementation of ABC. They describe each stage of the implementation process of ABC.

1. Initiation

The 'initiation' stage occurs when there is pressure to change an existing system, which arises from organisational need, technological innovation or external competitive threats, and a search for solutions. If companies perceive that their costs are significantly misrepresented and that ABC is a possible solution, they are showing that they initiate the implementation of ABC.

2. Adoption

'Adoption' involves a decision to invest the resources necessary for implementing ABC. Since a decision to invest the required resources must be approved from top management, the powerful champion's support is necessary in this stage.

3. Adaptation

ABC is developed and installed in this stage. That is, the implementation team analyses the resource costs and links them to activities. Then, team members cooperate to identify cost drivers and to trace these activities to outputs, such as products, service and so on. Training members of an organisation and clearly defining objectives and scope of ABC will enable the organisation to pass this stage because both activities will improve members' understanding of ABC and cooperation among departments.

4. Acceptance

'Acceptance' involves organisational members' commitment to use ABC. They recognise the potential benefits and worthwhile investment of ABC. 'Acceptance' will not occur if these individuals do not comprehend and approve of ABC and members' incomprehensibility and disagreement with ABC usually entail their resistance to use ABC. So, to educate managers and employees about the value of the ABC system will eliminate their resistance and create their internal commitment.

5. Routinization

'Routinization' occurs when ABC is used as a part of normal activities in an organisation. In this stage, ABC is accepted and used by the persons outside the accounting/finance function for decision making. Reporting all costs in financial reports and providing budgets based on activities will encourage managers to use ABC information in their decision making. Lack of the 'routinization' stage may be attributed to changes in the external environment after the 'adaptation' or 'adoption' stages. That is, ABC may no longer reach a company's needs when the company encounters the crisis or industry

revolution. It is possible that a company may go back to the 'adaptation' stage to redesign the ABC system in consonance with the altered objectives of the company in the changed environment.

6. Infusion

In this stage, ABC is harmoniously integrated with other organisational systems and the organisational effectiveness increases by virtue of using ABC. For ABC, the 'infusion' stage refers to the activity-based management (ABM), which means using activity information of management to improve profits and competitive advantages. ABM is achieved when non-value-added activities are identified and eliminated and ABC performance evaluation is used for continuous improvement or reengineering. Thus, cost reduction or process improvement is an essential part of the strategic focus. Linkage of the implementation of ABC to major competitive strategies and to performance evaluation will support achievement of ABM.

3.5.3 Environmental factors

Anderson and Young (1999) argue that even if the innovation process is significant to the successful implementation of ABC, the process and the outcomes are directly affected by the organisation's initial environment, such as culture or organisational structure. Shanahan and Dance (1997) also state that the successful implementation of ABC is affected by the nature of organisations and environmental factors. Likewise, Brewer (1998), who studied the relationship between international cultural diversity and ABC success by comparison between the U.S. and Malaysia plant location, found that the level of ABC success in Malaysia was higher than that in the U.S. because Malaysia, like other Asian countries, has high-power-distance and collectivist cultures facilitating the success of ABC, vis-à-vis the U.S. This study indicates that the dimensions of national cultures affect the level of ABC success.

Accordingly, Otley (1980) claims that no single accounting system can be applied to all organisations in all environments. It depends on the particular environment in which an organisation exists. In addition, Hofstede (1984a) suggests that attainable accounting techniques and practices in one country require modification for the effective implementation in another country. It is not clear what factors facilitate the implementation of ABC in the Thai environment. By virtue of cultural differences, factors influencing the implementation of ABC in Thailand may differ from those in other industrial countries and system modifications in accordance with the Thai environment may be necessary.

There are few studies involving the implementation of ABC in Thailand. Chimpoy (1999), who studied ABC for the operating budget of Electricity Generating Authority of Thailand, found that top executives had important roles in the adoption of ABC in Thai firms since they had power to bring about the implementation of ABC and to convince employees to adopt it. Morakul and Wu (2001), who studied cultural influences on the implementation of ABC in Thailand, also found that many modifications were required, when the organisations tried to implement the ABC system in the Thai environment. They report that owing to a high-power distance in the Thai society, of which members accept the unequal distribution of power in their organisations, implementing ABC successfully in the Thai environment must not empower and redistribute the power to employees in the production department to have access to and control over information otherwise both cause a higher resistance level from the accounting department.

In a high-power-distance culture, people having power attempt to protect themselves from losing their power. Therefore, employees in the accounting department, who possess and control information, are afraid that they will lose their power if there is

empowerment to employees in the production department to have access to and control over information. Additionally, Morakul and Wu (2001) suggest that the implementation of ABC in the Thai environment should not use outside consultants because they have little power to convince employees to adopt the new system and to act on their advice.

Nevertheless, Morakul and Wu's (2001) and Chimony's (1999) studies have some limitations. The most important limitation is the use of a small sample involving government-owned utility enterprises. All modifications may not apply to other public firms in various industries. Hence, one of the purposes of this research is to ascertain the factors influencing the success of ABC of Thai public firms in other industries by using a larger sample.

3.6 Adoption of ABC

Over the last decade, even if ABC has been widely applied to manufacturing, wholesale, retail and service sector organisations (Cooper et al. 1992a), the adoption of ABC by companies around the world has been at a fairly low rate (Innes and Mitchell 1995b; Chenhall and Langfield-Smith 1998b). Armitage and Nicholson (1993) show that organisations in Canada and in the U.S.A. implementing ABC were 14% and 11% of respondents, respectively. But, a subsequent study carried out by Hosseini et al. (1997) show that the number of Canadian and American firms in the process of implementing ABC had increased to 20% and 28%, respectively.

In the UK, ABC development is obviously at an early stage (Innes and Mitchell 1991). Innes and Mitchell (1991; 1995c) indicate that only 6% of respondents in 1990 were implementing ABC and 33% of respondents were considering ABC. Nicholls (1992) also found that 10% of respondent companies in the UK were implementing ABC. Innes and

Mitchell's follow-up studies found that in 1994, 16% of respondent firms with more than 12,000 employees (Innes and Mitchell 1995c) and 20% of respondents with the UK's largest firms were using ABC and 27.1% of the UK's largest firms were considering its adoption (Innes and Mitchell 1995b). Yakhou and Dorweiler's (1995) study results also show that 48% of respondent firms in the U.K. were using ABC.

In Australia, Booth and Giacobbe (1997), who conducted a survey on the ABC experience of ASCPA (Australian Society of CPAs) members working in Australian manufacturing firms in 1995, found that 12% of 213 respondent firms had adopted ABC and 29% were still considering the adoption of ABC. 33% of 95 firms that had not adopted ABC had planned to consider ABC in the future. Similarly, Nguyen and Brooks (1997) reported that 12.5% of 120 respondent firms in the State of Victoria in Australia were using ABC and 8.3% intended to adopt ABC in the future. In 1998, Chenhall and Langfield-Smith (1998b), who studied the adoption and benefits of management accounting practices in Australia, found that new management accounting techniques, such as ABC, were more widely adopted than had been found in antecedent surveys. They show that the largest Australian manufacturers, listed on the Business Review Weekly, adopting ABC were 56% of 78 respondents.

Similarly, the use of ABC in Asian countries is not widespread (Baydoun et al. 1997). It is likely that these countries have begun experimenting with ABC in recent years. Consequently, their adoption rates are the take-up rates. For example, results of a survey in Hong Kong in 1999 by Chen et al. (2001) show that 11% of respondents had already used ABC and a further 5% were planning to implement it in the next year. Chung et al. (1997), who synthesized and evaluated the available empirical evidence on ABC practices in Singapore, also found that the general adoption rate of ABC in

Singapore was not high (4%-21%) as Singapore companies were still at the early stages of their experimentation with ABC. They have undergone difficulties in ABC design and implementation. Chung et al. (1997) suggest that if Singapore companies spend a longer time period with ABC experimentation, the adoption rate of ABC in Singapore may exceed that of the developed countries having a longer ABC experimentation.

The foregoing examples show that though the rates of ABC adoption in these countries are not very high, their adoption rates of ABC and their interest in ABC are growing. Suzuki and Asada (1997) claim that interest in ABC by Japanese enterprise is increasing. Innes and Mitchell (1995c, p.51) also maintain that

Activity-based approach is still growing, not only in terms of the number of organisations adopting it, but also in terms of the scope of how it is used.

Shim and Stagliano's (1997) survey results show that an ABC system is increasingly popular and rapidly accepted in the U.S.A. Booth and Giacobbe (1997, p.6) also claim that 'ABC is still a highly dynamic area of management accounting innovation in Australian manufacturing firms'.

In addition, the results of Warwick et al.'s (1997) study indicate that managers perceive the usefulness of cost information provided by the ABC system to be higher than that by the volume-based costing systems (the traditional cost systems). Several survey results (Bailey 1991; Shields 1995; McGowan and Klammer 1997) indicate that most preparers (managers) and users (employees) are satisfied with the implementation of ABC. Foster and Swenson (1997), who studied the success of activity-based cost management (ABCM) and the determinants of that success, also found that ABCM champions and

senior management were satisfied with the implementation of ABC and they viewed it as a success.

In fact, there are several variables engaged in the adoption of ABC. Gosselin (1997), who studied the relationship between the organisational structure and the adoption of ABC, indicates that organisations with mechanistic characteristics, which have high formalisation, centralisation and vertical differentiation, facilitate the adoption of ABC. Israelsen et al. (1996) and Chung et al. (1997) found that a highly competitive environment, a great importance of the pricing factor and major concern of costs (such as increase in overhead costs or automation in the production process) predisposed companies to adopt ABC. Inadequacy of the present accounting system in generating relevant information needed for decision-making, such as inaccuracies of product costing information or overhead cost allocation, is another major factor to urge companies to adopt ABC (Innes and Mitchell 1991; Nguyen and Brooks 1997; Chung et al. 1997).

For Thailand, no evidence or research is manifest as to the degree of ABC adoption and factors affecting Thai firms' decisions to implement ABC. It is likely that the economic crisis forced Thai firms into a highly competitive environment that may thrust them to adopt ABC and the characteristics of national culture may facilitate the adoption of ABC. Therefore, this research will investigate the extent to which Thai firms adopted ABC and the reasons for adopting ABC.

3.7 Model for Implementing Cost Management Systems

Shields and Young (1989) developed a theoretical model for the implementation of cost management systems. They point out that the attainable implementation of cost management systems, including an ABC system, depends on seven behavioural and organisational variables: top management support; linkage of the cost management system to competitive strategies; linkage of the cost management system to performance evaluation and compensation; sufficient internal resources; training in designing, implementing and using cost management systems; non-accounting ownership; and consensus about and clarity of the objectives of the cost management systems.

1. Top management support

Top management support for ABC is vital for the reason that they are able to determine goals, strategies and resources (such as capital, time and competence), and to prepare the support necessary to activate employees to use ABC (Shields and McEwen 1996). Top management also has a key role to use ABC information in communications with other employees to encourage them to utilize ABC information.

2. Linkage of the cost management system to competitive strategies

Linkage of the ABC system to competitive strategies (such as quality or speed strategies) is necessary for competition since ABC information is helpful in improving competitive position and profitability of firms. For example, if a firm utilizes a low-cost strategy in competition, the ABC system will prepare precise assessments of product or process costs for designers to know the costs of customisation. The closer the linkage between ABC and competition strategy, the more potential an ABC system will have (Shields and McEwen 1996).

3. Linkage of the cost management system to performance evaluation and compensation

Allocating costs is an administrative function, thus, transformation of cost allocations will affect employees' performance evaluation leading to increased resistance (Krumwiede and Roth 1997). Generally, employees take an interest in what affects their welfare. Hence, linkage of the ABC system to performance evaluation and compensation stimulates employees to implement an ABC system. This linking convinces employees that rewards depend on their behaviour and the resulting system demonstrates their performance and reflects their future compensation (Shields and McEwen 1996). They will cooperate in ensuring it succeeds.

4. Sufficient internal resources

The internal resources embrace time and commitment of top management, managers, accountants and operating employees. The implementation of ABC demands sufficient internal resources as they build ownership, knowledge and action within the company. Sufficient internal resources give employees the opportunity to learn about the ABC system and the ABC benefits, and make employees have less resistance (Shields 1995).

5. Training in designing, implementing and using cost management systems

Training encompasses reading, lectures and on-the-job training. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Training reduces employees' lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC. Seeing that the ABC system is designed to provide information for employees in various departments for

analysis and action, training is also a good method for building non-accounting ownership (Shields 1995).

6. Non-accounting ownership

Non-accounting ownership, the commitment of individuals or groups who are not accountants to use ABC information, is an important determinant of the success of ABC because ABC can provide essential economic information for people throughout the company, not only for accountants. Whenever non-accountants (such as operating employees, design engineers or top executives) are committed to use ABC information, the implementation of ABC is effective. Non-accounting ownership is also the consequence of top management support for ABC, linkage of ABC to competitive strategies and linkage of ABC to performance evaluation and compensation, as well as training in using ABC (Shields 1995). It activates employees or managers to accept and implement more ABC information.

7. Consensus about and clarity of the objectives of the cost management systems

Consensus about and clarity of the objectives of the ABC system among ABC designers and users are essential to assure that an ABC system is effectively implemented and ABC information is efficiently produced (Shields 1995). When the objectives of ABC are accurately conveyed, such as to improve the precision of cost estimation for customized products, ABC designers and users can develop a conception of how ABC should be designed and how its information should be used.

Overall, the combination of top management support, linking to competitive strategy, linking to performance evaluation and compensation, as well as clarity of the ABC objectives, shows that employees perceive the importance and benefits of ABC information to their own and their firm's achievement. The relationship between

sufficient internal resources and training in designing and implementing ABC is an effective strategy for introducing ABC to lead employees to understand, accept and encourage the use of ABC, as well as to build non-accounting ownership. Finally, non-accounting ownership, which is the commitment of non-accountants to use ABC information, activates all functional employees to accept and to implement more ABC information (Shields 1995). It is possible that these behavioural and organisational factors may influence the implementation and success of ABC in the Thai environment.

3.8 Adoption of ABC by Thai Firms

Due to the devaluation of the baht in 1997, the prices of petroleum, gasoline, in particular, increased about 20%. This has had an impact on the costs of production leading to a rise in the price of all products. Additionally, the rising cost of raw materials and the costs of production, as a result of the depreciation of the baht, have reduced the capability of the Thai manufacturers and exporters utilizing high import content in competition in the global markets (Triwannakit 1997; Chamchoy 1997; Kunakorn 2000). Not only the manufacturers and exporters employing high import content, but also those utilizing high domestic content, such as agricultural raw materials, have faced difficulties to compete in the international markets since the currencies of competitors, such as Malaysia, Indonesia and the Philippines, have been weaker than the baht (Lwin 1998).

To survive in the increasingly competitive environment, it is necessary for Thai firms and manufacturers to improve performance and management, such as to improve production process, product design, product pricing, cost control or cost reduction, to restore sustained profitability (Simachokdee 1997; Abonyi 1999). ABC, which is claimed to offer huge benefits including cost control, cost reduction and improved profitability, may be

one of alternatives for Thai firms in improving their operations and profitability in this turbulent situation. For example, the Toyota Motor (Thailand) Company has utilized ABC in cost control and production design to build competitive advantages in the current economy (Trutassanawin 1998). Due to moving to privatisation soon, the Electricity Generating Authority of Thailand (EGAT), another example, has just employed ABC to improve performance measurement, process and planning for preparation in business competition (Chimploy 1999; Morakul and Wu 2001).

Evidence from the U.S.A. and the U.K. suggests increasing adoption of ABC as a result of facing increased competition in the recessionary environment. For example, in the 1980s, US firms had more adoption of ABC on account of facing increased competition. They found that ABC could improve their profitability (Kaplan 1990b). In the UK, another example, the pressure from the recessionary environment in the early 1990s stimulated UK firms to adopt ABC increasingly because they believed that ABC was a tool that could help them to cope with the recession (Innes and Mitchell 1995b). Moreover, Cooper (1997) claims that in the increased competition and reduced profit margins, cost management becomes more crucial to the success of the company. Accordingly, it is likely that the economic crisis and higher global competition will force Thai firms to learn and to implement ABC to improve their profitability. Furthermore, Thailand has several factors, such as high-power-distance and collectivist cultures, that are likely to facilitate the success of ABC. Therefore, it was expected that ABC might be more widely adopted by Thai firms, especially after the economic crisis.

3.9 Summary

ABC is a cost management process that assigns costs to products/service according to the activities and resources consumed. The literature shows that the rates of ABC adoption by companies around the world are not very high; however, the adoption rates of ABC and the interest in ABC are growing. Several authors claim that ABC offers many significant benefits over the traditional costing systems, such as more product cost accuracy, more cost information for performance measurement and management's decision-making, improved cost control, cost reduction and increased competitive capability and profitability.

Many studies report that the successful implementation of ABC is affected by several variables, such as behavioural, organisational, technical or contextual variables. The implementation of ABC affects the organisational member's behaviour and operation and the majority of previous studies shows that the behavioural and organisational variables influence the implementation of ABC. So, this study will test this issue in Thai firms by concentrating on Shields and Young's (1989) behavioural and organisational variables. Since there have been suggestions that the implementation of innovations are contingent upon an organisation's learning, the next chapter will provide a detailed discussion on the 'organisational learning'.

Chapter 4

Organisational Learning

4.1 Introduction

In Chapter 3, survey evidence on the implementation and usefulness of ABC, together with the adoption of ABC, was reviewed. It is expected in the current study that the crisis will be related to the implementation of ABC through learning. Thus, the purpose of this chapter is to review the literature relating to organisational learning. First, this chapter discusses the organisational learning theories assumed to be associated with the implementation of ABC by Thai firms, followed by the relationship between the crisis and organisational learning. Many authors claim that organisational learning usually emerges in conjunction with organisational change. So, organisational change is also reviewed. Since ABC is an innovation for the Thai environment, this chapter describes the process of implementing an innovative initiative. Last, all concepts are outlined as the research model.

4.2 Organisational Learning Theories

Due to the ambiguity of the basic concept, organisational learning has many different mechanisms (Vikkunen and Kuutti 2000). Stata (1989, p.64) states that 'organisational learning occurs through shared insights, knowledge, and mental models...and past knowledge and experience'. Similarly, Garvin (1993) and Weathersby (2000) state that the learning process is established through experiences. On the other hand, Huber (1991) and Swieringa and Wierdsma (1992) state that 'organisational learning' refers to the transformation of organisational behaviour and a learning procedure of

organisations stems from individual learning, but organisational learning is not equivalent to the total of individual learning. Individual learning is essential but not adequate for organisational learning on the grounds that an organisation has not learned spontaneously when individuals within the organisation have learned something (Fiol and Lyles 1985; Senge 1992; Swieringa and Wierdsma 1992). So, the organisation needs to share knowledge and understanding (Senge 1992).

Seeing that organisational learning is a multifaceted interaction between individual and collective learning, the analysis of collective learning involves the study of all aspects or elements together (Vikkuenen and Kuutti 2000). Moreover, organisational learning is local and situational, that is, structures, practices, habits and ways of thinking in an organisation are established within the historical framework of that particular organisation. So, change from the current situation to a new one has to consider the organisation's historical perspective, as well. Fiol and Lyles (1985) also claim that corporate culture, strategy, an organisational structure and environment are the important contextual factors that influence the emergence of organisational learning. Senge (1992) suggests five new component technologies, including personal mastery, mental models, building shared vision, team learning and system thinking, to transform learning organisations.

Huber (1991) claims that there are four constructs, such as knowledge acquisition, information distribution, information interpretation and organisational memory, integrally relating to organisational learning. Organisational learning begins with 'knowledge acquisition, which is the process of obtaining knowledge that the organisation appreciates as constructive. Then, information from diverse sources is shared (the 'information distribution' process) and is given meaning and shared understanding

among the organisation's members (the 'information interpretation' process). Finally, the organisation stores knowledge for future use, called the 'organisational memory' process. Likewise, Lipshitz and Popper (1996) state that the organisational learning process comprises systematically collecting data on cause-effect relationships, analysing data, storing the results of analyses (lesson learned) in the organisation's memory, spreading the lesson learned throughout the organisation and integrating them into operations.

According to Argyris (1977, p.116), 'organisational learning is a process of detecting and correcting error'. Thus, a critical constituent of learning is error (Bedeian and Zammuto 1991; Weathersby 2000). An error is any mismatch between intentions and actual results (Argyris 1993). Learning does not happen if someone only detects a new problem or finds out a solution for a problem. Learning happens when the designed solutions are actually used. Hence, discovered problems and designed solutions are essential, but not adequate for organisational learning. Organisations exist so as to act and to achieve their expected consequences (Argyris 1999).

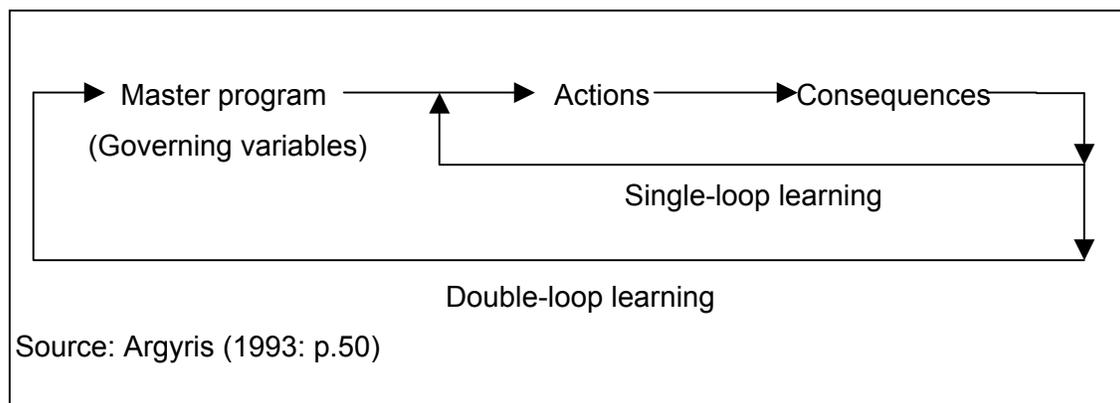
Argyris (1977; 1999) categorizes the types of organisational learning as 'single-loop learning' and 'double-loop learning'. Single-loop learning is to change the behaviour (Argyris 1993) based on routine (Fiol and Lyles 1985). Whenever a mistake is discovered and corrected without inquiry or change in the fundamental policies or objectives, the learning is called 'single-loop learning'. In other words, single-loop learning maintains a set of rules and limits itself to the detection and correction of errors within that given system of rules (Argyris 1993). This mode occurs when performance is at or above desirable levels of the organisation (Newman 2000) and when the fundamental routines remain suitable for the organisation (Stein and Vandenbosch

1996). Thus, it maintains the status quo and is in accordance with an organisation's extant strategy and operations (Fulmer 1994). Errors that are detected and corrected are the operating problems, such as changes in production rates or material orders (Fulmer 1994). No renewal occurs. Decisions in single-loop learning are rooted in observation (Eskildsen and Dahlgaard 1999).

On the other hand, if a process not only discovers and corrects a mistake, but also entails questions altering the underlying policies, master programs, norms or objectives of the organisation, the process is called 'double-loop learning' (see Exhibit 4.1). Double-loop learning happens when mismatches, between expected results and actual results, are corrected by altering master programs or governing variables (Argyris 1993; 1999). Hence, this mode takes place when performance is below desirable levels of the organisation (Newman 2000) and when the organisation rethinks extant capabilities or methods which have proved inadequate (Eskildsen and Dahlgaard 1999) and adopts new principles, assumptions and patterns which often turn into competitive advantages (Stein and Vandenbosch 1996). Double-loop learning (the higher-level learning) focuses on developing differentiated structures or rules and adjusting overall rules or norms. So, this mode affects the organisation as a whole (Fiol and Lyles 1985). Similarly, Lichtenstein (2000) states that

The first-order learning (single-loop learning) refers to improving performance within a specific framework of mission, strategy and objectives, while the second-order learning (double-loop learning) implies calling the entire framework into question, identifying a new mission and set of goals that better achieve what is necessary at that time (p.51).

Exhibit 4.1 Single-loop learning and double-loop learning



Stein and Vandebosch (1996) claim that the higher-order organisational learning (double-loop learning) has the capability of enlargement of organisational performance and profitability significantly. Double-loop learning must begin at the individual level in the highest level of the organisation and then pervade the organisation for the reason that individuals in the highest level of the organisation have the required independence to utilize the learning and they are vital people supporting or inhibiting the subordinates' learning. Hence, in double-loop learning, the highest-level managers open their minds to learn new ways of doing things and to develop the habit of checking their assumptions.

Argyris (1999) concludes that both 'single-loop learning' and 'double-loop learning' are necessary for all organisations. Single-loop learning is suitable for the repetitive or routine jobs while double-loop learning is appropriate for the more complicated jobs relating to the future of the organisation. Generally, most activities of organisations are single-loop while double-loop actions are the operating paradigms.

Kloot (1997) states that organisational learning is a process of changing an organisation to suit the transformed environment. Hence, organisational learning usually takes place when organisations are in a changed and competitive environment (Kloot 1997) and when organisations detect errors having substantial importance and high cost for the organisation (Lipshitz and Popper 1996). In the rapidly changed environment, single-loop learning or adaptive learning may be insufficient since single-loop learning engages in solving only operating problems (Kloot 1997). But, double-loop learning or generative learning makes an organisation solve the problems in a novel and creative manner. It responds to transformation in the competitive environment (Newman 2000). Double-loop learning is essential to enable the organisation to survive in periods of rapid transformation (Kloot 1994) and in the long term (Fiol and Lyles 1985). As suggested by Argyris (1999), double-loop learning may occur in organisations on account of a crisis precipitated by some event in the environment; such as recession, a crisis created by existing management or a revolution from within.

Kloot et al. (1999) indicate that Huber's (1991) learning constructs can be linked with single- and double-loop learning. Exhibit 4.2 shows the links between Huber's constructs and Argyris' types of organisational learning. The single- and double-loop learning models illustrate the depth of learning while the constructs determine both the occurrence and level of learning.

Exhibit 4.2 The links between Huber's constructs for learning and single- and double-loop learning.

Huber's constructs	Single-loop learning	Double-loop learning
Knowledge acquisition	- Routine knowledge	- Non-routine acquisition of knowledge - Creating or instituting new knowledge acquisition practices
Information distribution	- Information remains with small group	- Information shared more widely - The development of better distribution channels and systems resulting in wider sharing of information
Information interpretation	- Smaller group may have similar interpretations	- Diverse group more likely to have multiple interpretations
Organisational memory	- Stored in routine reports	- Stored in special reports - Development of new mechanisms for storing memory
Source: Kloot et al. (1999: p.8)		

Organisational learning has a lot of different characteristics (Stata 1989). On the grounds that organisational learning is detection and correction of mistakes designed to improve the effectiveness of individual behaviour in organisations (Argyris and Schon 1996), it is seen as a basic concept that incorporates management instruments and methods to facilitate organisational change and improvement (Stata 1989). The management system is a type of organisational learning (Morgan 1998). Morgan (1998) states that the management systems that generate continuous improvement, such as TQM (total quality management), Kaizen (the Japanese concept of continuous improvement) and so on, promote double-loop learning because they establish information, insight and capacities that can go forward to new levels of development. Under these systems,

employees are encouraged to find their recurring problems, to examine ways of practice and to seek better ways that lead to improvement.

The management accounting system is a part of the overall management system and one of the learning tools to provide strategies for management (Kloot 1994). Kloot et al. (1999, p.51), who studied the linking between some management accounting practices and organisational learning in a changed environment, claim that '..., organisational learning is inextricably linked to management accounting practices'. That is, management accounting supports organisational learning, in that management accounting information systems provide and distribute the information that the organisation demands, as well as provide reports, which store information in the organisational memory, so that the organisation learns whether this learning is single- or double-loop learning. At the same time, management accounting, itself, changes owing to organisational learning (Kloot et al. 1999). Appropriate management accounting systems can contribute to capacity for organisational learning (Kloot 1997). Furthermore, Kloot et al. (1999, p.10) maintain that 'Appropriate management accounting systems can provide information about the 'fit' between the organisation and its environment, ...'.

Most traditional management accounting systems, such as budgeting feedback, indicate operational problems occurring in the past fiscal year (Kloot 1994). Those systems only examine sales, expenses, profits and other measurements of performance to ensure that activities in an organisation remain within set limits (Morgan 1998). Therefore, the organisations using the traditional management accounting systems can solve problems only at an operating level, not the underlying problems, under the current policies. The learning that happens within those organisations is single-loop learning. Whenever

members of an organisation find that the traditional management accounting system cannot help them to improve profitability and cope with the changed environment and seek new operating forms that can solve their fundamental problems in an innovative manner, the organisation is learning in double-loop mode. Therefore, shifting to implement ABC, which entails the modification of an organisation's fundamental norms or policies, by Thai firms may show their learning in the double-loop mode.

Furthermore, ABC is an information system designed to improve organisational performance by focusing on accuracy of product costs and profitability of product lines (Argyris and Kaplan 1994). It is introduced as an organisational enabler of productive organisational learning that leads to double-loop-learning (Argyris 1999). Thus, if Thai organisations use ABC information for activity-based management (ABM), which is management analysis geared to yield continuous improvement (Turney 1992) based on the same principles as TQM or Kaizen, they are encouraged to learn in the double-loop mode.

4.3 Organisational Learning and Crises

Uncertainty in the environment is one of the contextual factors urging organisations to build learning (Fiol and Lyles 1985). Several authors (Fiol and Lyles 1985; Senge et al. 1994; Kloot 1997) claim that organisational learning and organisational renewal, as well as innovation, are important to rescue organisations in a turbulent environment. Thus, Hurst (1995) developed the organisational learning model called 'ecocycle' to apply to social organisations in a crisis period. He claims that the ecocycle model is characterized by an 'infinity loop' that consists of three perspectives on management action:

1. Rational action

Action is purposive and rational. Managers think logically, making clear alternatives before they perform. Their performance can generally be justified technically as maximizing some determined objective, such as profits.

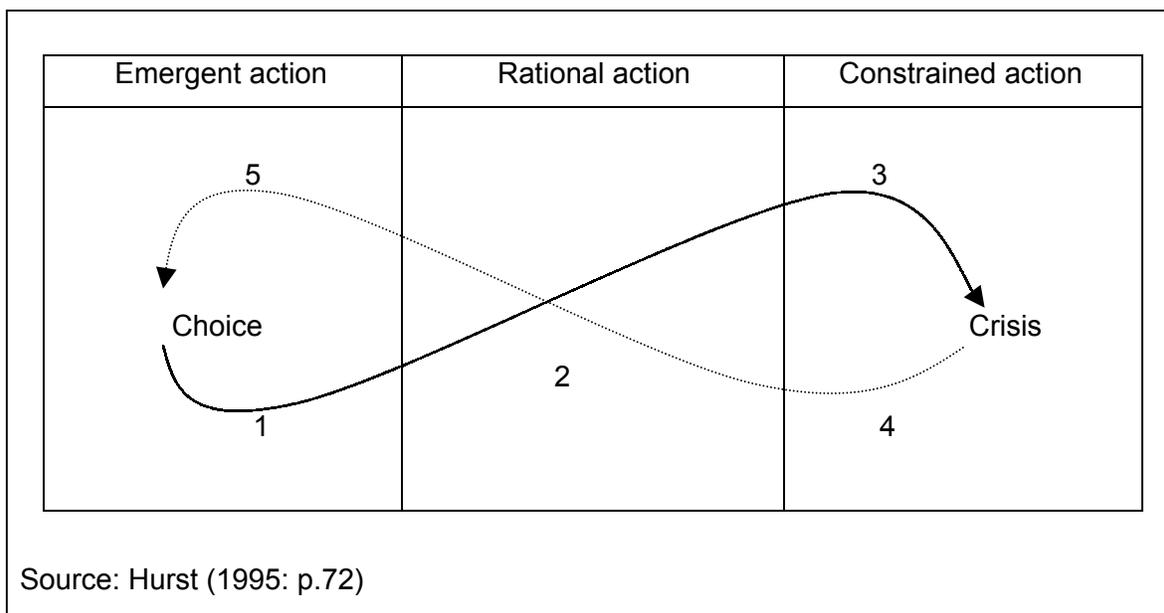
2. Constrained action

Action is constrained by external situations beyond managers' control.

3. Emergent action

Action is emergent from a procedure that is nearly haphazard in nature.

Hurst (1995) continues that the 'organisational ecocycle' separates the process of organisational change into two half-loops (see Exhibit 4.3). The 'front' (performance) loop is the conventional life cycle, about the evolution of a technical system. The 'back' (learning) loop is the renewal cycle, about the evolution of a social system. The renewal is about the future and about the renovation of something that has been lost as an organisation has grown and thrived. The learning loop stresses people and their interactions in the consequences of crisis that lets one examine innovation and organisational contexts. Thus, managers in the renewal cycle (learning loop) have to understand the social contexts on which learning is contingent.

Exhibit 4.3 Model of organisational ecocycle

The performance loop consists of three stages (stage 1 to stage 3).

Stage 1: The business thrives and grows.

Stage 2: The business has momentous growth in revenues and income, together with steady enlargement in the scale of the organisation.

Stage 3: The business is in economic recession. This crisis entails a major financial crisis forcing the organisation to revive itself.

For purposes of a firm's longevity and capacity to cope with a diversity of environment, management must strive to make the hazardous transition from 'performance organisation' to 'learning organisation'. The learning loop, beginning in crisis, comprises two stages (stage 4 to stage 5).

Stage 4: When all constraints on the operations and the hierarchy within the business are broken up by the crisis, the management attempts to rescue the company by restoring itself, such as layoffs, downsizing, asset sales, closure of 'non-core' operations or reduction in size of 'core' operations.

Stage 5: Management action takes on an emergent character again. Management allows the formation of a network of relationships held together by shared values and emerging vision of common purposes. The renewed organisation recovers the ability to stay in business.

Comparatively, Thai business had grown very rapidly since 1987 (Kunakorn 2000) (stage 1 in the performance loop or conventional life cycle). The boom Thai economy generated increasing incomes and standards of living, including a larger scale of the organisation (Kunakorn 2000) (stage 2 in the performance loop) and then, Thai economy began to slow down drastically in 1996 (Hataiseree 1998). The economic crisis (1997) forced Thai organisations to realise the necessity of change for their survival (stage 3 in the performance loop). According to Suwongwarn (1998) and Chareonwongsak (1999), Thai organisations have had restructurings, such as layoffs, downsizing, re-engineering, closure of 'non-core' operations, or reduction in size of 'core' operations. For example, Thai Petrochemical Industry (TPI) reduced its stake in several non-core operations, including stakes in power plants, deep-sea ports and oil tanker terminals (Sikes 1998). Several government-owned enterprises, such as Communication Authority of Thailand (CAT) and Krung Thai Bank, are preparing to privatise, too (The East Asia Analytical Unit 2000). This evidence may show that Thai businesses are learning to restore themselves for survival in stage 4 of 'the learning loop' or 'the renewal cycle', as to the future of the organisation.

When organisations change, information provided by management accounting systems, used as a learning tool, must also be reformed to ensure support for the organisational learning for survival. Management accounting information suitable for organisational change and learning in the current time must have the nature of both financial and non-

financial information that emphasizes the future and strategic perspectives, as well as cross-function (Kloot 1994). Warwick et al. (1997, p.152) claim that 'Activity-based costing systems have been advanced as an appropriate method of providing useful cost information in this changed environment'. Moreover, when organisations are in the situation of declining operations, such as falling sales, some activities and costs must be reduced. ABC information, focusing on activities of the organisation, is claimed to be able to support cost reduction, downsizing or layoffs (Miller 1996). Thus, to alter the cost management system by the implementation of ABC may be one of many modes of the Thai firms' organisational learning to develop innovative solutions and recover their ability to march to stage 5 of the renewal cycle in the future.

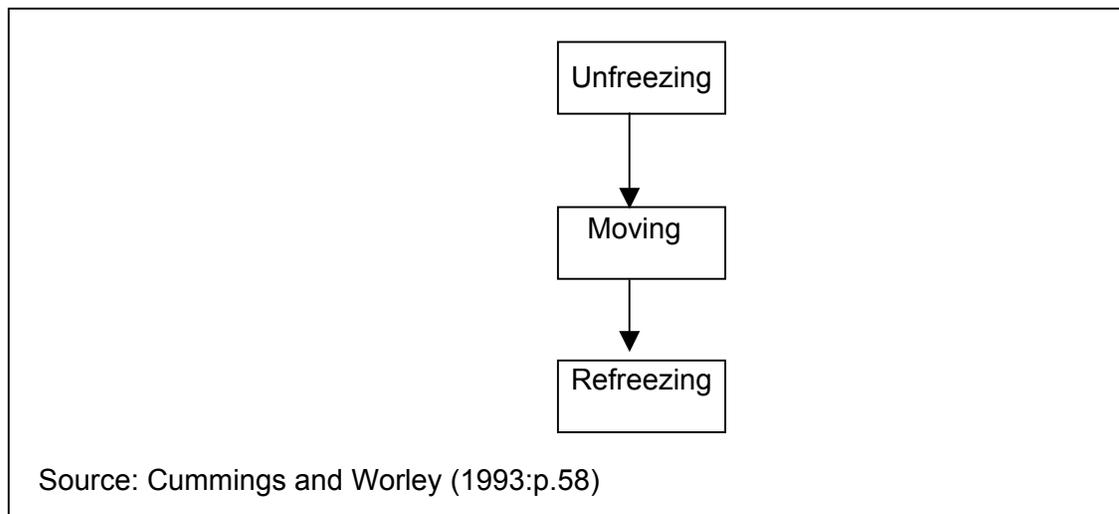
4.4 Organisational Change

According to Friedlander (1984), Dixon (1994) and Senge et al. (1994), 'organisational learning' and 'organisational change' support each other since organisational learning is a continuing process of change in the organisation. Organisational change emerges from three main forces: dissatisfaction with the status quo, such as profit or quality; a strong attraction towards moving to a more desirable condition, such as goals; and the appeal of a strategy to guide to a desirable condition. All three forces make managers feel the need for change (Dervitsiotis 1998). It is likely that all three forces may motivate organisational change in Thai firms.

Many models of change have the basic concept of Lewin's change model. Lewin's change model includes three steps: unfreezing; moving; and refreezing (Kanter et al. 1992; Cummings and Worley 1993; Dessler 1995; Argyris 1999) (see Exhibit 4.4). 'Unfreezing' refers to a decline in resistance by identifying a problem and the necessity of a shift and to seek for a new solution. The second step, 'moving', or 'change' refers to

changed behaviours, attitudes, and organisational structure through organisational change. Finally, 'refreezing' refers to the assessment of the results of the change and to the procedural revision assuring that the change will be accommodated within the organisation (Cummings and Worley 1993).

Exhibit 4.4 Lewin's change model



Dessler (1995) claims that the organisational change process rooted in Lewin's change model comprises six key stages, as follows:

1. Becoming aware of the pressure for change

Pressures come from inside or outside the organisation. Internal pressures building transformation include falling turnover, conflict, growing costs and insufficient quality of products (Dessler 1995). Most external pressures for change are widespread today as a result of a rapidly rising rate of change in the world. The external pressures for change that most companies confront in the current time are consolidation, deregulation, raised regulation, unsteady currencies and globalisation of consumer and producer markets. In particular, the economic crisis is claimed to be an intense pressure to build big changes

in organisations (Kim 1998). Hence, the economic recession or crisis (1997) may be an important pressure bringing about change in Thai firms.

2. Recognizing the need for change

This stage means managers understand the threatening situations and attempt to change their company to respond to the changed environment. Thus, the economic crisis may force Thai companies to perceive the need for change.

3. Diagnosing the problem

When managers recognize the need for change, they must diagnose the problems faced to define the causes and the subsequent results of the problems. Managers discover the causes of specific problems by gathering pertinent information about current operations, through interviews, observation, survey instruments or archival sources, and analysing them. Then, managers draw conclusions for action planning and intervention for solving problems, potential change and improvement. For example, Thai firms' management may detect that the distortion of product costs by the traditional cost system is one of their operational problems and managers discover that ABC may provide a solution.

4. Planning the change

This stage is to consider what to change. Changes can be categorized as changes in structure, task, technology or people. Change in structure, or reorganisation, is related to reorganising departments, revising the span of control or decentralizing. The purpose of reorganisation is to create organic or adaptative organisations. Change in task is related to enriching or specializing jobs. Redesigned tasks are designed to gain employees' commitment to quality or automatic work teams. Change in technology involves installing a new product line, inventory control system or new selection procedure. Change in people can change through training, conferences or other development activities to provide the skills they need for their jobs. Likewise, Thai management, after the crisis, acknowledged the need for alteration in the organisation,

such as restructuring, changing the manufacturing technology or the cost system. ABC may be one of changes that Thai firms chose to cope with this crisis.

5. Implementing the change

This stage involves changing structure, strategy, task, people or technology in the organisation. If ABC is one of the changes made by Thai firms, this stage means the implementing process of ABC.

6. Follow up on the change

The final stage is to evaluate the consequences of alteration and to revise it to ensure that change keeps on being pursued. When implementing ABC, Thai firms have to assess the results of implementation of ABC and modify it to accommodate it to their organisations.

Argyris (1999) also states that Lewin's change model has been utilized for single-loop learning and double-loop learning. Neither learning type can occur without 'unfreezing' on the grounds that 'unfreezing' is the process of indicating a problem or error and finding solutions. Nevertheless, the 'unfreezing' stage alone cannot generate 'double-loop learning' as double-loop learning includes change in underlying policies, norms or objectives (Argyris 1977; 1999). Therefore, double-loop learning is required to include the 'moving' and 'refreezing' stages.

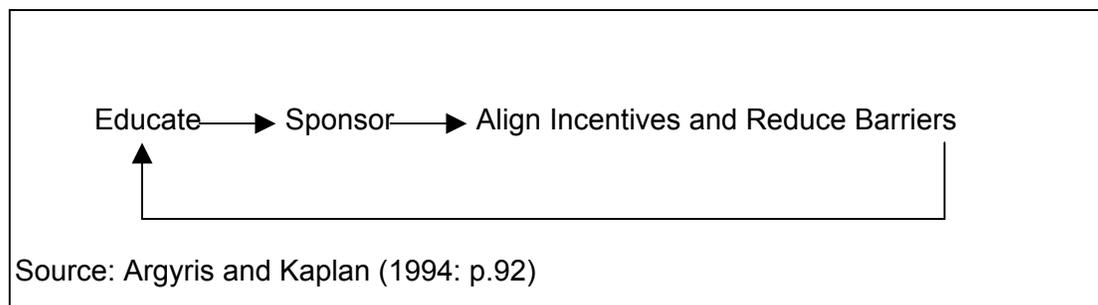
Thai organisations were forced by the unsteady currencies and the economic recession (1997) to realize the necessity of revolution and to search for new resolutions, such as restructuring by re-engineering or downsizing or revolutionizing technology or cost systems (stage 3 of Hurst's model). If Thai firms consider the ABC system as one of many possible resolutions to revitalize themselves for survival, this evidence will show that they are in the 'initiation' stage of the implementation process of ABC. Cooper and

Zmud (1990) claim that this stage is consistent with Lewin's 'unfreezing' stage. If Thai firms adopt and convert to implement ABC ('adoption' and 'adaptation' stage of the implementation process of ABC), this change will show that Thai firms are learning in stage 4 of Hurst's learning loop and are changing in the 'moving' stage of Lewin's model. Finally, if they can modify the process of ABC to accommodate it to themselves, the implementation of ABC by those Thai firms may be successful and may enlarge their ability to compete and to succeed in business. These actions will show that Thai firms are in stage 5 of Hurst's renewal cycle and in the 'acceptance' or 'routinization' or 'infusion' stages of the implementation process of ABC, relative to the 'refreezing' stage of Lewin's change model.

4.5 Process of Implementing an Initiative

Argyris and Kaplan (1994) state that the process of implementing an innovative initiative is a process of creating awareness of a new idea and overcoming individual and organisational resistance to change. It consists of at least three different stages: education; sponsorship; and alignment of incentives (see Exhibit 4.5).

Exhibit 4.5 The process of implementing an initiative



Stage 1: Education

This stage is learning and accepting the logic and validity of a new technique by key managers. 'Education' identifies the need for a new costing system, such as ABC, and underscores the better decisions informed with information produced from an ABC approach. In addition, 'education' presents the opportunities for increased profits from making these decisions. This stage comprises three steps.

1.1 Show the gaps in extant theory and practice

This step is to show the differences between the traditional costing systems and the ABC system. For example, the traditional costing systems cannot precisely allocate costs to products, services or customers, but the ABC system is claimed to be able to do so.

1.2 Indicate a new theory that closes the gaps

This step is to describe how the processes of ABC correct the shortcomings of the traditional costing system. For instance, the ABC system assigns indirect costs and support costs to products based on activities. So, ABC can accurately assign costs to products or customers.

1.3 Prepare examples of the new technique's benefits

This step is to indicate the benefits of the ABC system by exhibiting examples of companies that have been successful in the implementation of ABC. These examples may be presented through books, articles in journals or representatives from successful companies.

Stage 2: Sponsorship

This stage is to convince authoritative managers in the organisation of a new technique (ABC) to lead to the change process. The conviction or persuasion is a logical activity that is presented for authoritative managers to perceive how and why ABC concepts work and provide benefits to their organisation. Whenever authoritative managers

decide to use ABC, they become the advocates for ABC in their organisation and they will convince others in their organisation by using the same 'education' method that they experienced. This stage is separated into two processes: analysis; and action. Each process requires four roles of people in the organisation: advocate; sponsor; project leader; and target.

2.1 Analysis Process

In this process, authoritative managers decide to use ABC. Thus, they support ABC by estimating the expenses and profits that the organisation will receive.

2.1.1 *Advocate*: individual/group who activates the new project.

Advocate should be a senior finance person or a senior line manager.

2.1.2 *Sponsor*: individual/group who legitimates the project.

Sponsor should be company controller or a vice-president of finance.

2.1.3 *Project leader*: individual/group who implements the project.

Project leader is a person who proves the ABC concept and develops information about costs of activities, products and customers. So, the project leader for the analysis process should have technical skills, such as a plant controller or assistant.

2.1.4 *Target*: individual/group who is expected to change based on the yield of the project.

Target should be a person who has responsibility in operations, marketing or engineering and who has authority to make decisions on pricing, product design, product mix, customer relationships and operating improvements.

2.2 Action process

This process is to create organisational change.

2.2.1 *Advocate*: individual/group who requires the change to happen.

Advocate in the 'action process' should be an executive in the finance group.

2.2.2 *Sponsor*: individual/group who legitimates the change.

Sponsor in the 'action process' should be an executive who can compel a change in decisions.

2.2.3 *Project leader*: individual/group who implements the change.

Project leader in 'action process' should have process skills to interpret the ABC information into actual decisions, actions and implementation.

2.2.4 *Target*: individual/group who must actually change.

Target should be an operating manager or group in a line organisation who has the authority to make decisions and take actions.

Stage 3: Align incentive

The final stage is to enable the change to happen in the organisation. In the 'education' and 'sponsorship' stages, the organisation prepares the structures or the systems that facilitate, reward and reinforce effective transformation. Therefore, in this stage, the organisational enablers have to make an effort to prepare information about the ABC system and incentives in order that most people in the organisation will adopt the technical change.

However, Argyris and Kaplan (1994) indicate that the process of implementing an initiative may not be successful as a result of the barriers created by organisational defensive routines, which are threats to the acceptance of new ideas. The barriers, which deter learning, are formed as resistance to change at individual group and organisational levels. For example, managers may resist transformation into implementing ABC in that the change will impact on the existing power structure (Ness and Cucuzza 1995) or the unit's profit and the level of expected bonus (Atkinson et al. 1995). The employees will probably resist the implementation of ABC for the reason that they want to hide mistakes or they fear to have more work to do (Atkinson et al. 1995; Ness and Cucuzza 1995). Importantly, they fear that ABC will induce cost cutting

decisions leading to laying-off personnel (Atkinson et al. 1995). According to Argyris (1999), the organisational defensive routines are important obstacles inhibiting double-loop learning. Hence, ABC, an information system geared to improve organisational performance and an enabler of double-loop learning, may be hindered by the defences of organisational members who are embarrassed by the ABC information shedding light on their performance (Argyris 1999).

'Creating internal commitment' may be required to defeat these barriers. Argyris and Kaplan (1994, p.90) state that 'commitment refers to the amount and type of energy that individuals will devote to tasks'. One of the best ways to create internal commitment is to introduce the overall philosophy of a new technique (ABC) to all employees through educational programs and training seminars in order that they may learn and make sense of the need for change, the benefits of ABC, the benefits for the organisation (such as more profitability) and the benefits for themselves (such as a stronger tie between each employee's contribution and organisational rewards) (Atkinson et al. 1995). Individuals who are internally committed will have personal responsibility and initiate behaviour. They tend to have their senses of responsibility, justice and productiveness developed and they are vigilant about searching for and correcting mistakes. Finally, they tend to be aware of the ABC system and they are willing to act.

Overall, the economic crisis in 1997 was the pressure not only driving most Thai companies to study their problems and to correct them, relating to Argyris' (1999) organisational learning process, but also forcing those companies to revolutionise themselves to be able to survive in this troublesome economy, relevant to Hurst's (1995) renewal cycle. Each company devises ways to streamline itself. Some companies change in structure or strategy. Some change in tasks or people. Some firms change in

technology or take up an innovation, such as new product lines or cost management systems (Suwongwarn 1998), corresponding with Lewin's and Dessler's organisational change process.

Simachokdee (1997) states that to survive in this crisis, organisations are required to revitalise their managements to induce productivity improvement, continuous improvement and cost reduction. Seeing that an ABC system is claimed to be able to provide accurate information for management to contribute to the continuous process improvement and cost reduction, it is possible that one of many alternatives for Thai firms to improve themselves to be able to exist in the current economy may be the implementation of ABC.

In addition, Kloot et al. (1999) claim that organisational learning cannot be separated from management practices and that the development of management systems is dependent on the level of organisational learning. Argyris and Kaplan (1994) suggest that the process of implementing the ABC system should begin at educating key or top managers about the ABC system due to their independence, being able to learn, and their influences on the subordinates' learning (Argyris 1999).

If top managers decide to use ABC, they are likely to become 'advocates' or 'sponsors' in implementing ABC in their organisation by preparing the learning environments for all employees, such as educational programs or training seminars. As a result, learning will permeate throughout the organisation. All employees will learn and understand the need for change and the benefits of ABC (Argyris and Kaplan 1994).

Moreover, in the Thai culture, Thai employees tend to accept their bosses' leadership and to comply in a hierarchical order. Finally, they may adopt and implement a new technique, such as ABC, consonant with the 'moving' stage of Lewin's model. If an organisation can adjust the ABC system to suit itself, the organisation is on the 'refreezing' stage of Lewin's model.

Therefore, the current study attempts to examine how the economic crisis affected the adoption and implementation of ABC by Thai firms and what factors influenced the implementation of ABC. As mentioned earlier, many studies are based on Shields and Young's (1989) theory: the successful implementation of the cost management systems is contingent on seven behavioural and organisational variables. Accordingly, it was expected that factors influencing the implementation of ABC by Thai firms might be associated with Shields and Young's (1989) behavioural and organisational variables.

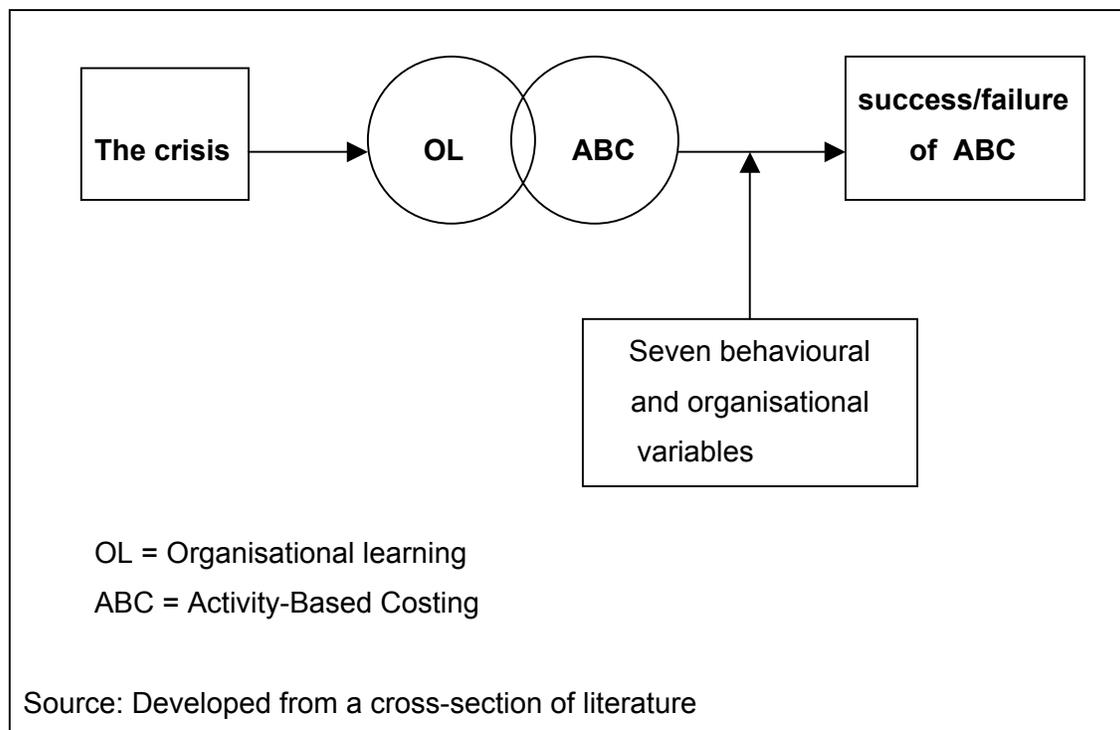
4.6 Research Model

As stated earlier, the economic crisis is the pressure forcing Thai firms to appreciate the necessity for change for continued existence. The adoption of an efficient innovation may be a solution for an organisation in this crisis (Suwongwarn 1998). Therefore, modification in management innovation or production technology may be one solution for Thai firms. It was expected in this study that the economic crisis had forced Thai firms to learn to seek ways to revitalise themselves and one of the viable reforms may be the adoption of an innovative management accounting system, like ABC. In the literature review, the adoption and the implementation of management innovations are usually affected by an organisation's resources and capacity to learn. Thus, it was also expected

in the current study that the implementation of ABC would involve the company's philosophy of organisational learning.

Seeing that the implementation of ABC impacts on the performance evaluation of personnel, production and operation, behavioural and organisational factors may be relevant to the implementation and the success of ABC. The behavioural and organisational factors in this study are based on Shields and Young's (1989) theoretical model. The interrelationship between variables is shown in Exhibit 4.6.

Exhibit 4.6 Research model



4.7 Summary

'Organisational learning' has a diversity of characteristics. Argyris (1977; 1999) classified the types of organisational learning as 'single-loop learning' and 'double-loop learning'. Double-loop learning is claimed to be able to help an organisation to survive in periods of rapid change. In addition, Hurst (1995) developed the organisational learning model to apply to organisations in a crisis period. This model suggests that the business in the recessionary economy is generally constrained to regenerate itself for the continued existence of the business. It was expected in this study that the crisis might force Thai firms to modify themselves and the adoption of ABC may be one of their changes. Thus, an objective of this study is geared to investigate this issue.

There have been suggestions that organisational learning is associated with organisational change and the implementation of ABC is related to Lewin's change model, consisting of three steps: unfreezing; moving; and refreezing. Thus, the concept of Lewin's organisational change is reviewed in this chapter. In addition, Argyris and Kaplan (1994) suggest a process of implementing an initiative by focusing on a case of ABC, which embraces three stages: education, sponsorship and alignment of incentives. This process is creation of awareness of a new idea and defeat of organisational resistance to change. Consequently, it was expected in this study that the implementation of ABC might be related to organisational learning.

The foregoing literature review provides the basis for the development of a research model to explain the relationship of the crisis and the implementation of ABC through the organisational learning theory. A detailed discussion on the propositions and the research methodology used to conduct this study will be provided in the next chapter.

Chapter 5

Research Methodology

5.1 Introduction

In this chapter, the research methodology utilised in the current study is described and the research propositions relating to the objectives of the current study are stated. Various methods available for collecting data and the characteristics of the sample group are also set out in this chapter. In order to preserve the rights and safety of the participants, rules on ethics and confidentiality in collecting data also are described. In addition, details of variables and the questionnaire design to test the propositions, as well as testing questions in the questionnaire, are outlined. Finally, techniques to analyse data are provided.

5.2 Propositions

As stated in Section 1.2, the first two objectives of the current study are to examine the degree of adoption of ABC by Thai firms before and after the economic crisis (1997) and to investigate the relationship between the adoption of ABC and its implementation by Thai firms and the Thai economic crisis.

According to Hurst (1995), when a business is in economic recession, the company will learn to survive by reviving itself, such as reorganising or adopting new techniques or innovations. Kloot (1994) also states that when organisations change, information provided by management accounting systems must be reformed to ensure support for the organisational learning for survival. Especially, in a borderless era, accurate information is necessary for the company to seize competitive advantages (Suwongwarn

1998) and ABC, which is an advanced management accounting system focusing on accuracy of product costs, is claimed to be able overcome the information distortion of the traditional cost systems and to furnish huge benefits leading to improved organisational performance and profitability (Argyris and Kaplan 1994).

In addition, some empirical evidence shows that an organisation encountering increasing competition is predisposed to adopt an innovative management control system (Yakhou and Dorweiler 1995) and organisational capacity to learn is associated with the organisation's adoption of changes in management accounting systems (Libby and Waterhouse 1996). Therefore, the adoption of ABC may be one of many modes of transformation for Thai firms to revitalize to survive in a turbulent environment. Seeing that the implementation of ABC solves the shortcomings of the traditional cost system and Argyris (1999) states that detecting and correcting mistakes promote organisational learning, it was expected in the current study that the economic crisis would force Thai firms to build learning to survive by adopting ABC. The first proposition is stated as follows:

Proposition 1: There is significant variation in the degree of ABC adoption before and after the economic crises of 1997.

The results of Bhimani and Pigott's (1992) study show that the implementation of ABC affects behaviours of organisational members. It has made the various functional roles in an organisation change. For example, when implementing ABC, the accountants had understood the operational processes within the organisation and had appreciated the importance of manufacturing processes and operational and production activities. Accordingly, the accountants had had more communication with other functions and

shared accounting information with them after adopting ABC. Factory managers, another changed functional role, had altered the perception of accounting information after adopting ABC. They had become economically perceived to the importance of accounting information and financial effects of their activities on individual product profitability and on the whole organisation. Thus, after adopting ABC, the factory managers had employed accounting information to support the continuous manufacturing improvement and product costs increasingly (Bhimani and Pigott 1992). The nature and timing of particular changes may be associated with steps in the implementation of the system.

Besides, Huber (1991) and Swieringa and Wierdsma (1992) state that the alternation of behaviour in an organisation is 'organisational learning'. In addition, Krumwiede and Roth (1997) indicate that the implementation process of ABC is relevant to organisational change and several authors (Friedlander 1984; Dixon 1994; Senge et al. 1994) state that organisational change and organisational learning underpin each other because organisational learning is a continuing process of change in the organisation. Argyris and Kaplan (1994) also indicate that the process of implementing an initiative is related to an organisation's capacity to learn. It was expected that there would have been changes in roles of organisational members in each stage of ABC implementation and the change in each stage of ABC implementation might show organisational members' capacity to learn about the implementation of ABC. This leads to the following proposition.

Proposition 2: Changes in different functional roles in a firm at the different stages of ABC implementation will vary significantly.

The next objective of the current study is to explore the reasons for the implementation of ABC by Thai firms. According to the literature, decisions to adopt ABC are influenced by many variables, such as the changed environment (Israelsen et al. 1996; Chung et al. 1997), changed cost structure (Bjornenak 1997) or shortcomings of the existing system (Innes and Michell 1991 ; Nguyen and Brooks 1997 ; Chung et al. 1997). While all Thai firms have been subjected to the same turbulent economic event (changed environment), it is not known whether they have all reacted in similar ways. The expectation from the literature, based on Western firms, is that similar firms will react in similar ways. However, it is not known whether this expectation applied to Thai firms.

Proposition 3: There will be significant differences between companies implementing and companies abandoning ABC in their perceived reasons for adopting ABC.

According to the literature, the success of ABC is correlated with several variables or factors, such as behavioural and organisational factors (Shields and Young 1989), technological factors (Anderson 1995) or contextual factors (Krumwiede 1998). Since ABC is used by a team of employees and management, its implementation involves behavioural and organisational change (Innes and Mitchell 1991; Bhimani and Pigott 1992). Consequently, several studies, such as Shields (1995), McGowan and Klammer (1997), Foster and Swenson (1997) and Krumwiede and Roth (1997), have contributed and provided insight into understanding Shields and Young's (1989) theoretical framework, involving behavioural and organisational factors. Although some authors, such as Argyris and Kaplan (1994), did not study variables based on Shields and Young's (1989) study, the variables studied by Argyris and Kaplan (1994) are viewed as a sub-set of the key variables in Shields and Young's (1989) framework (Smith 2000).

However, Otley (1980) states that a single accounting system cannot be applied to all organisations in all environments. Typically, it is affected by the particular environment in which an organisation exists. Hence, factors influencing the implementation of ABC in the Thai environment may differ from those in other industrial countries. This leads to the final objective of the current study: to investigate the factors influencing the success/failure of ABC in Thailand, building on Shields and Young's (1989) theoretical model.

These variables are thought to be crucial because they involve what is necessary to employees and their preparation to accept and work with ABC. Top management support for ABC is essential since they are powerful people who can push the ABC project and who will provide all the resources to assure that the implementation of ABC will be accomplished. Consensus between the designers and users of ABC is also important since it will enable the designing and implementing of ABC to correspond with the users' demands.

Moreover, ABC should be linked to the competitive strategy of the firm in order that ABC will concentrate on and provide information in consonance with information demands of competitive strategies. ABC should be also linked to performance evaluation and compensation to activate employees to use ABC information to control their behaviour and increase the rate of continuous improvement. Designing and implementing an ABC system requires sufficient resources, particularly internal resources, since they will create the employees' opportunity to learn about ABC. In addition, training in designing, implementing and using ABC should be provided for the employees of the firm in order to establish confidence in ABC. Finally, training helps build non-accounting ownership and non-accounting ownership facilitates employees' continuous improvement.

It was expected that seven behavioural and organisational factors might affect the implementation and the success of ABC in Thailand. Therefore, the final proposition to be tested is:

Proposition 4: There will be significant differences in perceptions of the importance of behavioural and organisational variables at the different levels of ABC success; these include:

- (1) top management support;
- (2) linkage of ABC to competitive strategies;
- (3) linkage of ABC to performance evaluation and compensation;
- (4) sufficient internal resources;
- (5) training in designing, implementing and using ABC;
- (6) non-accounting ownership; and
- (7) clarity of the objectives of ABC.

5.3 Data Collection

This study is an attempt to explain how the economic crisis affected the adoption and implementation of ABC by Thai firms and why Thai firms have or have not adopted ABC. It is anticipated that Thai firms will have modified ABC to suit local conditions and philosophies and will have implemented this system to varying degrees. Thus, the data to be collected relate to modifications to theory, implementation and consonance between expectation and outcomes.

Collecting data can be conducted in a variety of ways and from various sources. Each data collection method has advantages and disadvantages. Sekaran (2000) states that

although personal interviews or face-to-face interviews have the advantages of flexibility in adapting and clarifying the questions, they have cost, time and geographical limitations. On the other hand, a mail questionnaire survey is best suited for the collection of a substantial amount of information at a reasonable cost from large numbers of people in a wide geographical area.

Several researchers in the literature of ABC used the mail questionnaire survey method for similar reasons. For example, Shields (1995), who studied the firms' degree of success with ABC and variables associated with ABC success, used a mail-out survey in gathering data because it is a cost-effective method and suitable for analysing a large sample of firms' experience with ABC. Similarly, Gosselin (1997), who studied the effect of strategy and organisational structure on the adoption and implementation of ABC, chose a mail survey to collect data because it enabled him to survey a large sample of the population at low cost. Moreover, this method causes less pressure on an immediate answer and a comfortable feeling of anonymity and concentrates on facts rather than subjective views (Gosselin 1997).

Consequently, the mailed questionnaire survey seems to be most appropriate to gather data in the current study because the population consists of all companies, both in the manufacturing and service industries, listed on the Stock Exchange of Thailand which operate in the Bangkok region (292 companies). The main reasons to choose companies listed on the Stock Exchange of Thailand are that they are large-sized firms that should have greater resources available for investment in new systems, such as ABC, and a great deal of data about them is available from the Stock Exchange of Thailand.

However, a disadvantage of the mail questionnaire is possible ambiguity in the questions. So, the questionnaire used in this study, comprising 22 pages, was tested to ensure the suitability of the questions and to eliminate ambiguities (Sekaran 2000). Furthermore, it is usually anticipated that a low response rate may occur, which is another potential problem. Sekaran (2000) suggests that sending follow-up letters, providing the respondent with self-addressed, stamped return envelopes and keeping the questionnaire brief are useful ways to improve the rate of response to mail questionnaires. Accordingly, the questionnaire in this study was sent with a cover letter and a reply and postage-paid envelope. The cover letter was addressed to the accounting/finance manager of each firm as the person considered most likely to understand the cost accounting systems and assumed to be the key person responsible for the implementation of ABC in Thai firms. A follow-up telephone call was made and a follow-up questionnaire was posted, approximately, four weeks after the first mail-out.

Sekaran (2000) also states that since almost all data collection ways have some biases, collecting data through multi-methods and from multiple sources lends rigour to research. Foster and Swenson (1997), who studied the success of activity-based cost management (ABCM) and the determinants of the success, collected data by mail survey and field visits. The purposes of their field visits were to gain additional insight and develop individual perspectives. Anderson and Young (1999), who studied the impact of contextual and process factors on the evaluation of activity-based costing systems, also employed multiple data collection methods, including surveys and personal interviews. The interviews were designed to supplement the survey data.

In order to clarify the respondents' doubts and to obtain rich data to provide a form of cross check on validity, personal interviews with a self-selecting sub-sample were also

conducted in the current study. Seeing that structured interviews give more in-depth information about specific variables of interest (Sekaran 2000), a list of predetermined questions was posed to the interviewees before conducting the interviews. The interviews were taped, with the interviewees' agreement, and notes taken to ensure accuracy in recording data.

5.4 Rules on Ethics and Confidentiality

Before conducting the interviews and the questionnaire survey, the approval of the Ethics Committee of the Victoria University was achieved in 2001 to preserve the rights, liberties and safety of the participants (see Appendix B). In addition, an information sheet, including the name of Victoria University of Technology and the name of the school, was prepared to explain the purpose of the study and the ethical rules and was given to each participant, attached to the questionnaires (see Appendix C). The participants were informed that under the ethical rules, they were participating voluntarily and no risks, such as psychological, moral, legal or other risks, would occur with them. For administrative purposes of the researcher the questionnaires were coded. The codes were exercised only by the researcher (the author) for follow-up procedures. Access to the codes was restricted to the researcher. The personal interviews were conducted by consent of the participants. Before conducting the personal interviews, the participants were fully informed as to the objectives of the research and the ethical rules.

Completed questionnaires of the survey and transcripts of the personal interviews are kept in a secure place at Victoria University under the researcher's control and are available only to the researcher and supervisors. The interview tapes were cleaned after

transcription. In addition, the results are only reported in aggregate form so as to prevent the identification of individual responses from the participants.

5.5 Variables

Several variables were determined as options of respondents in the questionnaires. These variables can be classified into seven categories: demography; company characteristics; company environment; ABC implementation; ABC benefits; problems of ABC implementation; and organisational learning (Table 5.1). All variables of the first three categories were designed to seek general information about respondents and their firms. Therefore, these variables were used for all respondents.

Table 5.1 Variables determined in a questionnaire

Category	Variables determined in a questionnaire	Question	
1	Variables determined for all respondents		
	Demography		
	1.1 Personal information of a respondent 1.2 Organisational culture	1-7 8	
2	Company characteristics		
	2.1 Industry group	9	
	2.2 Firm size 2.3 Organisational structure	10-11 12-14	
3	Company environment		
	3.1 Production and product characteristics	15-23	
	3.2 Cost structure	24-32	
4	Variables determined for ABC adopters or abandoners		
	ABC implementation		
	4.1 Experience with ABC implementation	33-40	
	4.2 Facilities to the process of ABC implementation	41-43	
	4.3 Reasons for adopting ABC	44	
	4.4 The usage of ABC information	45-46	
	4.5 The level of ABC success	47	
	4.6 Factors influencing the ABC success	48	
	5	ABC benefits	
		5.1 Objectives of implementing ABC	49
		5.2 Gained benefits from implementing ABC	50
	6	5.3 Importance and necessity of ABC in the current environment	51-55
		Problems of ABC implementation	56
7	Organisational learning		
	7.1 Firm's adaptation after the crisis	57	
	7.2 The change in a firm after implementing ABC	58-60	
	Variables determined for non-adopters		
	1. Reasons for not adopting ABC	61	
	2. Examination of ABC	62	
	3. Future plan about ABC	63	
	4. Firm's adaptation after the crisis	64	

The first category relates to personal information of respondents (such as gender, age, education, work experience and professional organisation memberships) and organisational culture while the second category is associated with industry, firm size and organisational structure. The third category consists of variables relevant to production and product/service characteristics (such as degree of diversity of products/services, degree of complexity of production process and so on) and cost

structure (such as firm's type of cost management techniques, factor influencing in allocating overhead costs, bases to allocate overhead costs and so on).

The purpose of Categories 4-7 was to discover data about the implementation of ABC. Thus, the questions in these sections were used for adopters or abandoners of ABC. Generally, there is some confusion between adoption of an ABC idea and implementation of it. 'If ABC is adopted as an idea, but not implemented, it still may effect the way of thinking in a company' (Bjornenak 1997, p.7). The number of adopters of the idea will be significantly greater than the number of companies implementing ABC. Bjornenak (1997) maintains that the number of adopters depends on the definition of adoption. In this study, adopters, which are defined as firms that have implemented or are currently implementing ABC, are viewed as a sub-set of firms with intention to adopt ABC, which are defined as firms that have implemented ABC, are currently implementing it or plan to do so. Consequently, firms with intention to adopt ABC were considered in calculating the adoption rate of ABC in this study.

The fourth category comprises variables involving experiences with ABC implementation (such as knowledge and learning about ABC, the adoption of ABC, the stage of the ABC implementation, the beginning year to implement ABC and so on), facilities to process of ABC implementation (such as software, consultants and so on) and reasons for adopting ABC. In addition, this category includes variables involving the usage of ABC information, the level of ABC success and factors influencing the ABC success.

The fifth category relates to objectives of the implementation of ABC, gained benefits from implementing ABC and perceived importance and necessity of ABC in the current environment while the sixth category is concerned with the problems of ABC

implementation. As the current study is designed to investigate the relationship between the economic crisis and the implementation of ABC through organisational learning, the final category includes variables relevant to organisational learning, such as the changes in a firm after the crisis or firm's adaptation to the changed environment and the changes in a firm after implementing ABC.

Variables of the fourth and seventh categories were used to test the propositions whereas variables of other categories were expected to indicate reasons and factors supporting explanations of adoption or non-adoption of ABC.

5.6 Questionnaire Design

Most data were collected from the questionnaire. Some questionnaire items were developed from existing studies (Joye and Blayney 1990; Swenson 1995; Foster and Swenson 1997; McGowan and Klammer 1997; Krumwiede and Roth 1997; Gosselin 1997; Nguyen and Brooks 1997; Krumwiede 1998; Innes and Mitchell 1998; Morakul and Wu 2001) as they had been shown to be reliable. Nevertheless, additional questions were developed to be suitable to the study. All questions were shown in closed form because the closed questions have guidance of answers that may encourage the respondents to have more interest in answering the questionnaire. Key questions used a Likert-type scale. Factors influencing the success/failure of implementation of ABC, the objectives of ABC implementation, the gained benefits of ABC and change due to the ABC implementation were scored on a seven-point numerical scale from 1 = strongly disagree to 7 = strongly agree. The five-point itemised rating scale, anchored from 1 = not important to 5 = critically important, was used for

questions as to reasons for adopting ABC, problems of implementation of ABC and organisational learning.

The written questionnaire (see Appendix C) consists of 64 questions (in seven sections). The first section was designed to seek characteristics of the participants. So, this section, Questions 1-8, is about the personal information of the participants, such as their age, gender, education, working experience, and some general information about national culture. Question 8, based on the national culture, was adapted from the Morakul and Wu's (2001) measurements.

Section 2 was aimed to examine the company characteristics. Thus, Questions 9-14 seek general information about the company in which the participants are now working, such as its industry group, organisational structure and size. These questions relate to the link between characteristics of the firm and its predisposition to adopt ABC since several studies, such as Chung et al. (1997), Gosselin (1997), Nguyen and Brooks (1997), Krumwiede (1998) and Chenhall and Langfield-Smith (1998b), found that characteristics of the firms are associated with the adoption of ABC. Questions 9-12, based on characteristics of the firm, were developed from Nguyen and Brooks (1997) while the others relating to organisational structure were triggered, in part, by the Joye and Blayney 1990's study.

The purpose of Section 3 is to investigate the environment of the participant company. Questions 15-32 are concerned with the firm's cost structure and cost management techniques, as well as characteristics of product/service and production. These questions investigate whether these factors are associated with the adoption or non-adoption of ABC since the results of Chung et al.'s (1997) and Bjornenak's (1997)

studies show that the cost structure of a company and characteristics of product/ service and production influence the capability of the company to adopt and implement ABC. Questions to measure characteristics of product/service and production (Questions 15-23) were documented by Swenson (1995) and the measures (Questions 24-32) based on the firm's cost structure include Joye and Blayney (1990) and Nguyen and Brooks (1997).

The fourth section was designed to examine the implementation of ABC in Thailand. This section (Questions 33-48) involves the implementation of ABC, the adoption or non-adoption of ABC and the success or failure of implementation of ABC, as well as factors influencing the successful implementation of ABC. The definitions of 'ABC' and of 'the adoption of ABC' were stated clearly at the beginning of this section. Questions 33-34 relate to the awareness of ABC by the participants. Question 35 (Nguyen and Brooks 1997) is intended to measure the degree of adoption of ABC, which is the first objective of this research study. The purpose of Question 36 (Krumwiede and Roth 1997; Gosselin 1997) is to identify the stages of the implementation of ABC by adopters or users. On the other hand, Question 37 identifies the stages at which the firms abandoning ABC stopped implementing ABC. Questions 38-39 relate to the firm's initiation of ABC. Seeing that Innes and Mitchell (1998) and Briers and Chua (2001) indicate that external consultants and software packages are related to the adoption of ABC, Questions 40-43 (Innes and Mitchell 1998) are designed to seek the implementation of ABC with external consultants, software or a stand-alone system. Question 44, based on Chung et al.1997, seeks the reasons for adopting ABC, which is one of the objectives of this research. Questions 45-46, adapted from Swenson (1995) and Foster and Swenson (1997), are about areas for which ABC information is used.

Question 47 in the fourth section relates to the level of the success of implementation of ABC (Foster and Swenson 1997). On the grounds that the successful adoption and implementation of an innovation depends on several factors/variables (Gosselin 1997) and Shields and Young's (1989) variables influencing the success of cost management systems have been widely used in the ABC literature (Shields 1995; McGowan and Klammer 1997; Foster and Swenson 1997; Krumwiede and Roth 1997), the purpose of Question 48 (Foster and Swenson 1997; McGowan and Klammer 1997) in this section is to discover which factors/variables influence the success/failure of implementation of ABC in Thailand.

The fifth section was aimed to scrutinise the benefits which the participant companies had gained from the ABC implementation. This section (Questions 49-55) is about the objectives of implementing ABC, ABC benefits and importance of ABC in the current environment. The purpose of Question 49 is to investigate the objectives of implementation of ABC. Several studies, such as Innes and Mitchell (1991), Bhimani and Pigott (1992), Swenson (1995), Chung et al. (1997) and so on, show diverse benefits of ABC. Thus, Question 50 is intended to examine the actual ABC benefits that Thai firms have gained. Questions 49-50 were adapted from Innes and Mitchell (1998) and Morakul and Wu (2001).

The remaining questions were developed specially for this project and careful attention was given to their reliability during the pre-testing (Section 5). Questions 51-55 measure the satisfaction with ABC and the importance of ABC in the changed environment perceived by the firms. All questions in this section were measured by a seven-point scale from 1 = strongly disagree to 7 = strongly agree.

The next section (Question 56) involves the problems of implementation of ABC that the firm has experienced. As mentioned in previous literature, in installation and implementation of ABC, most firms tended to encounter some problems, which may be similar or different among firms. This question, containing 19 sub-questions, was measured by a five-point scale from 1 = not important to 5 = critically important.

The final section (Questions 57-64) is concerned with organisational learning. Question 57, containing 8 sub-questions, investigates the relationship between the economic crisis and organisational learning. This question was presented in a five-point Likert-scale measurement from 1 = not at all to 5 = extremely. Questions 58-60 examine the firms' learning about ABC. Question 58 was measured by a seven-point scale from 1 = strongly disagree to 7 = strongly agree while Questions 59-60 were measured by a five-point scale from 1 = no changes to 5 = very significant changes.

The last four questions (Questions 61-64) are to be answered by non-adopters of ABC. The purpose of this section is to investigate the reasons for not adopting ABC and the organisational learning of non-adopters of ABC. Question 61 scrutinises the reasons for not adopting ABC. Respondents were requested to rate on a five-point scale from 1 = not important to 5 = critically important. Question 62 relates the experiment of implementing ABC by the company that has not implemented or is not currently implementing ABC. Question 63 investigates the viability of implementing ABC by the non-adopters of ABC. The last question examines the non-adopters' learning to adapt to the changed conditions. Like Question 57, this question consists of 8 items and was measured by a five-point scale from 1 = not at all to 5 = extremely.

As further justification for the questions asked, the relationship of each question to the four propositions is set out in Table 5.2.

Table 5.2 The relationship of questions to the propositions

Proposition	Questions and variables in a Questionnaires relating to the propositions
1	Q35 (The adoption of ABC) Q38 (The beginning year of ABC implementation)
2	Q36 (The stages of ABC implementation) Q58 (The changes in various functions)
3	Q35 (The adoption of ABC) Q44 (The reasons for adopting ABC)
4	Q47 (The level of ABC success) Q48 (The behavioural and organisational factors)

Seeing that people in Thailand employ Thai as the first language, translation of the questionnaire was required to be conducted. Sekaran (2000, p.242) states that 'it is important to ensure that the translation of the instrument to local language is equivalent to the original language in which the instrument was developed'. The questionnaire should be first translated by a local expert. Therefore, the questionnaire in this study was first developed in English. It was then translated into Thai by a bilingual person who grew up in Thailand, obtained his doctorate in management accounting in the U.K., and has been teaching in Thailand for several years. The translation and the original were carefully compared and examined to assure that there were no significant differences between the English and Thai versions.

In the personal interviews, a descriptive questioning method was used to induce the interviewees to give as much information as possible about details on the implementation process of ABC, problems in implementing ABC and reasons for implementing ABC, especially about how the crisis has driven their firms to change themselves.

5.7 Pre-testing

As stated earlier, Shields (1995) used a mail-out survey in collecting data. His validity of questionnaire was tested based on a review by representatives of some public accounting firms. Similarly, to confirm the clarity and validity of this questionnaire, it was first pre-tested by two expert academics in management accounting, one is Thai and other is Australian, and three management accountants who have had experience in their industries for many years, one is Thai and others are Australian. This confirmed that the estimate of the time required was reasonable and that the questions were suitable for the intended audience. Some questions were modified to satisfy their comments before being sent to the participants.

5.8 Data Analysis Techniques

Collected data consist of two categories: quantitative and qualitative. The qualitative data gathered from the interviews were analysed by content analysis. The quantitative data analysis, together with testing of propositions, involved the use of the Statistical Package for the Social Sciences (SPSS) program for statistical analysis.

To investigate whether or not there is significant difference in the degree of ABC adoption before and after the crisis, proposition 1 was tested by chi-square. Propositions 2 and 4 were tested by ANOVA on account of examining differences of means of more than two groups at a time. The compared-mean t-test technique was considered to be appropriate for proposition 3 because it compared between the perceived reasons for implementing ABC by users and abandoners.

Other statistical techniques were also used in analysing additional data to support explanation of the relationships of variables. For example, frequency distributions were utilised to describe the data in terms of nominal scales, such as the personal data (Questions 1-7), the classification of industry groups (Question 9), the characteristics of the company (Questions 10-14), the environment of production/service (Questions 15-23) and the cost structure (Questions 24-26, 28-29 and 31-32). In addition, the knowledge on ABC (Questions 33-34), the adoption of ABC (Question 35), the stages of implementation of ABC (Questions 36-37), the feature of implementation of ABC (Questions 39-43), and the success level of implementing ABC (Question 47), as well as the examining implementation of ABC in the past and planning to use ABC in the future by non-adopters (Questions 62-63), were tested by frequency distributions.

Since the Mann-Whitney U test is a non-parametric equivalent of the t-test for testing differences between two independent groups, it is considered to be suitable for comparing characteristics, which are in terms of the Likert-scale data, of two groups (intention and non-intention to adopt ABC groups), such as the organisational structure (Question 13), the environment of production/service (Questions 15-21), the cost structure (Questions 25, 27 and 30) and the organisational learning (Questions 57 and 64).

In addition, a chi-square technique was employed again to demonstrate the relationship between two variables, which are nominal scales, such as the success of implementing ABC (Question 47) and the stages of ABC implementation (Question 36) or technical variables (Questions 41-43). A Pearson correlation was also utilised to measure the correlation of variables on an interval scale, such as the expected benefits of ABC (Question 49) and the gained benefits of ABC (Question 50).

Finally, some other statistical measures, such as means and standard deviations, were used in analysing Likert-scale data, such as the culture of Thais (Question 8), the cost structure (Questions 27 and 30), the reasons for adopting ABC (Question 44), the frequency of using ABC information (Questions 45-46), the factors influencing the implementation of ABC (Question 48), the benefits of ABC (Questions 49-55), the problems of implementing ABC (Question 56), the changes in organisation (Questions 58-60), the reasons for not implementing ABC (Question 61) and organisational learning (Questions 57 and 64). The results of data analysis and interpretation will be explained in the next chapter.

5.9 Summary

This chapter describes the research methodology used for the current study. Four proposed propositions, which reflect all objectives of this study, are discussed. Proposition 1 will test the relationship between the crisis and the adoption of ABC while Proposition 2 will investigate the relationship of organisational learning and the implementation of ABC. Propositions 3 and 4 will explore reasons for adopting ABC and behavioural and organisational variables affecting the success of ABC, respectively.

The collection of data for this study is governed by the Victoria University's rules on ethicality. This study employed multiple data collection methods, including a questionnaire survey and personal interviews. In respect of questionnaire design, all questions in the questionnaire were shown in closed form and key questions were based on a Likert-type scale. Pre-test was provided to confirm the clarity and validity of the questionnaire before conducting data collection. Collected data were analysed by content analysis for qualitative data and by the SPSS program for quantitative data. The

next chapter will provide the results, findings and discussions with respect to the implementation of ABC.

Chapter 6

Results, Findings and Discussions: ABC Implementation

6.1 Introduction

As outlined in Chapter 5, a survey questionnaire was sent to 292 firms listed on the Stock Exchange of Thailand (SET) operating in the Bangkok region. 101 questionnaires were returned, generating a 34.59% response rate. In this chapter, the data collected from questionnaires are analysed and discussed. Problems of collecting the data are also discussed and then reliability, validity and non-response bias are presented. This chapter describes the individual respondent profiles, company characteristics and company environment, as well as ABC implementation. Moreover, an analysis of the relationship between variables based on the sample is provided.

6.2 Problems of Data Collection

Most respondents completed the questionnaire and some gave sincere commitments to be interviewed. Nevertheless, some difficulties occurred in collecting data because of the following reasons:

1. missing data;
2. inability to participate in face-to-face interviews

6.2.1 Missing data

Some respondents did not complete some questions in the questionnaire. No respondent omitted responses to more than three questions. However, those questionnaires are still used for the data analysis of this study.

Two respondents did not answer Section 1 - Question 8, relating to opinions about organisational cultures. As expected, the respondents, who are at the age of more than 40 and have worked for more than 20 years, are worried about their seniority. So, they were reluctant to answer these questions.

Some questions in Section 2 – Question 12 and Question 13 relating to organisational structure have also not been answered by some respondents. Two respondents, who graduated in the accounting/finance fields and are familiar with accounting/finance systems, may have little knowledge concerning organisational structure. Therefore, they may not be sure of definitions or features of organisational structure and chose not to answer these questions.

Additionally, five respondents did not answer some questions in Section 3 – Question 15 to Question 24, concerning the environment of the company, such as number of products or diversity in products. A respondent indicated that his company is a holding company that takes care of many subsidiary companies having a lot of various products; others indicated that their companies are service companies, such as advertising or health care services.

Some questions in Section 3 – Question 28 to Question 32 associated with overhead cost allocations have not been answered by some respondents. Some respondents claimed that their companies are only distributors, not manufacturers. The others claimed that their companies are in an insurance group and some of the product cost terminology would not be relevant.

There are three respondents who did not answer some questions concerning engineering or production departments or positions in Section 4 – Question 46 because their companies are in banking or finance and security groups that do not have these positions or departments. They could not answer these questions. In addition, one respondent did not answer Question 50 (benefits of ABC) in Section 6 and Question 58 to Question 60 (changes due to the implementation of ABC) in Section 7 because he claimed that his company was in the initial stage of developing and installing an ABC system. Therefore, he could not evaluate benefits and changes due to the implementation of ABC so far.

However, all questionnaires have been treated as valid and, when appropriate, gaps are reported as missing data.

6.2.2 Inability to participate in face-to-face interviews

Twelve respondents had agreed to be interviewed to increase details of data. Four of them were unable to participate in face-to-face interviews. Some interviewees do not work at the head-office in the Bangkok region. They work at offices in the southern cities of Thailand, so it was not in feasible to conduct face-to-face interviews. The others were unwilling to participate in face-to-face interviews because they were so busy with the rehabilitation of their organisations. So, these interviews were conducted by phone.

6.3 Reliability, Validity and Non-response Bias

Reliability of the multi-item measurement scale in the questionnaire was estimated by using Cronbach's alpha, the most common method accepted by researchers (Francis 2001). Coefficient alpha indicates the degree of internal consistency among items in the

questionnaire. Table 6.1 presents the Cronbach's alpha coefficient for each key variable used in the statistical analysis. The Table also indicates the descriptive statistics in terms of average scores and range of key variables. The results of these calculations indicate overall reliability of all key variables because the values exceed conventional levels of acceptability (Francis 2001).

Table 6.1 Reliability statistics

Variables	Mean	Actual range	Theoretical range	Alpha Cronbach*
-Reasons for adopting ABC	3.40	2.86-4.14	1-7	.734
-Factors influencing ABC	4.91	4.08-5.85	1-7	.938
-Objectives of ABC	5.54	4.50-6.21	1-7	.937
-Benefits of ABC	5.38	4.46-5.85	1-7	.943
-Problems of ABC	3.39	2.93-3.93	1-7	.879
-Changes due to ABC	5.03	4.08-5.67	1-7	.760
-Organisational learning	4.04	3.79-4.43	1-7	.812

* The conventional values = 0.7

When employing mail surveys to collect data, two potential problems are expected to occur: low response rate and non-response bias. In order to increase the response rate, a follow-up telephone call was conducted and a follow-up questionnaire was mailed approximately four weeks after the initial mailing. Although there is no test to ensure that non-response bias does not exist, a test for non-response bias by comparing the early and late respondents to the survey was conducted to support the assessment of this possibility (Innes and Mitchell 1995; Krumwiede 1998). Validity of the first and second mailing was assessed by using the t-test technique to compare the mean-values of each variable as to the company characteristics. Table 6.2 shows that there are no differences between the characteristics of companies in the first and the second groups because all significance values are above the alpha level of 0.05. Therefore, evidence of non-response bias was not found and it is expected that 101 respondents in this study can be representative of the whole selected sample.

Table 6.2 Test of non-response bias

Comparison	N	Mean	Standard Deviation	Significance*
Industry group				0.833
-first group	60	13.18	9.65	
-second group	41	13.56	8.19	
Number of employees				0.566
-first group	60	3.07	1.74	
-second group	41	3.27	1.72	
Thai-owned company				0.843
-first group	59	1.81	0.39	
-second group	41	1.83	0.38	
Organisational Structure				
Centralised				0.075
-first group	59	3.78	0.85	
-second group	41	3.49	0.71	
Vertical				0.480
-first group	57	3.33	0.81	
-second group	40	3.45	0.78	
Formalized				0.926
-first group	58	3.62	0.72	
-second group	41	3.63	0.70	
Function				0.552
-first group	60	0.93	0.25	
-second group	40	0.90	0.30	
Product				0.056
-first group	60	0.57	0.50	
-second group	40	0.75	0.44	
Geographical areas				0.413
-first group	60	0.30	0.46	
-second group	40	0.23	0.42	
SBU				0.618
-first group	60	0.40	0.49	
-second group	40	0.35	0.48	

* At the 0.05 level of significance.

6.4 Profile of Respondents

A total of 292 questionnaires was mailed to the accounting/finance managers of companies listed on the Stock Exchange of Thailand that operate in the Bangkok region. 101 questionnaires were returned and they represent a response rate of 34.59%. Of the 101 respondents, 12 had agreed to be interviewed to increase details of data (11.88% of respondents) and provide the opportunity for further explanation of the issues.

Table 6.3 shows the individual respondents' profiles in terms of their gender, age, education and experience. 53 of 101 individual respondents (52.5%) were female and the others were male. 44.6% and 42.6% of the individual respondents were in the 41-50 age and 31-40 age, respectively. The level of education that the overwhelming majority of the individual respondents achieved was at least bachelor degree in Thailand. Most individual respondents had had accounting or finance experience for 11-20 years (48%) and had never had foreign work experience or training (72%). It was notable that the proportion of female respondents working with large sized firms (more than 2000 employees) was greater than that of male respondents working with these firms. 68.8% of individual respondents working with firms with more than 2000 employees were female. This result is shown in Table 6.4.

Table 6.3 Characteristics of respondents

Characteristics	Categories	number	Percentage
Gender	Female	53	52.5
	Male	48	47.5
Age	20-30 Years	3	3.0
	31-40	43	42.6
	41-50	45	44.6
	51-60	10	9.9
Education	Undergraduate	1	1.0
	Graduate	50	49.5
	Post graduate	50	49.5
Country that graduate	In Thailand	91	90.1
	Overseas	10	9.9
Work experience	Less than 5 years	1	1.0
	5-10	23	23.0
	11-20	48	48.0
	More than 20 years	28	28.0
Foreign work experience/training	No foreign work experience	72	72.0
	Foreign work experience	28	28.0

Note: Data drawn from Question 1 (gender), Question 2 (age), Question 3 (education), Question 4 (country that graduate), Question 5 (experiences) and Question 7 (foreign experience/training).

Table 6.4 Gender and firm size

Number of employees	Gender of respondent		Total
	Male	Female	
Less than 200			
• Count	10	11	21
• % within number of employees	47.6%	52.4%	100.0%
• % of total	9.9%	10.9%	20.8%
200 – 500			
• Count	9	13	22
• % within number of employees	40.9%	59.1%	100.0%
• % of total	8.9%	12.9%	21.8%
501 –1000			
• Count	11	9	20
• % within number of employees	55.0%	45.0%	100.0%
• % of total	10.9%	8.9%	19.8%
1001 – 1500			
• Count	7	6	13
• % within number of employees	53.8%	46.2%	100.0%
• % of total	6.9%	5.9%	12.9%
1501 – 2000			
• Count	6	3	9
• % within number of employees	66.7%	33.3%	100.0%
• % of total	5.9%	3.0%	8.9%
More than 2000			
• Count	5	11	16
• % within number of employees	31.3%	68.8%	100.0%
• % of total	5.0%	10.9%	15.8%
Total			
• Count	48	53	101
• % within number of employees	47.5%	52.5%	100.0%
• % of total	47.5%	52.5%	100.0%

Note: Data drawn from Question 1 (gender) and Question 10 (number of employees).

Individual respondents were also asked to indicate memberships of professional accounting organisations in Question 6. It was apparent that most Thai accounting/finance managers were not interested in memberships of those organisations. 46.5% of individual respondents were members of the Institute of Certified Accountant and Auditors of Thailand (ICAAT) whereas 2% of individual respondents were members of Institute of Internal Auditors Thailand (IIAT).

Hofstede (1984a) and Brewer (1998) claim that Asian people, including Thais, have the characteristics of high-power-distance and collectivist societies. They would prefer team-based work to individualized work (Brewer 1998) and accept a superior's views

(Hofstede 1984a), as well as do what a superior needs (Cooper 1994). Table 6.5 shows the mean scores of organisational culture of Thai people. It was apparent that individual respondents preferred team-based work arrangements (mean scores = 5.87) and in order to have their plans work, they had to carry out superiors' instructions (mean scores = 4.93) and to fit in their plans with the desires of superiors (mean scores = 4.79). This result is consistent with the findings by Hofstede (1984a), Cooper (1994) and Brewer (1998).

Table 6.5 Descriptive statistics of organisational culture

Organisational culture	N	Minimum	Maximum	Mean	S.D.
-To prefer teamwork arrangement	99	1	7	5.87	1.31
-To be function to carry-out superiors' instructions.	99	1	7	4.93	1.39
-To fit work plans with the desires of powerful people	99	1	7	4.79	1.53
-Ideas controlled by powerful people.	99	1	7	3.51	1.67
-To worry about expressing disagreement with superiors	99	1	7	3.17	1.65
-To worry that ideas and opinion not accepted by others.	99	1	7	3.12	1.61

Note: - A seven-point scale (1 = 'strongly disagree' and 7 = 'strongly agree').
 - Data drawn from Question 8 (organisational culture).

6.5 Company Characteristics

Table 6.6 shows the responses by industry sector. These respondents were to a large extent representative of the originally selected population of listed companies on the Stock Exchange of Thailand (SET). The property development industry comprised the largest percentage (9.9%), followed by the agribusiness (8.9%) and building and furnishing materials industries (8.9%). Other data show that 82% of respondent companies were not wholly Thai-owned companies.

Table 6.6 Industry group

Industry group	Frequency	Percentage
Agribusiness	9	8.9
Bank	5	5.0
Building and Furnishing Materials	9	8.9
Chemicals and Plastics	2	2.0
Commerce	2	2.0
Communication	3	3.0
Electrical, Products and Computer	5	5.0
Electronic Components	1	1.0
Energy	2	2.0
Finance and Securities	7	6.9
Food and beverages	5	5.0
Health Care Services	6	5.9
Hotel and Travel Services	5	5.0
Household and Goods	1	1.0
Insurance	5	5.0
Jewelry and Ornament	1	1.0
Machinery and Equipment	2	2.0
Mining	1	1.0
Packaging	2	2.0
Printing and Publishing	1	1.0
Professional Services	2	2.0
Property Development	10	9.9
Pulp and Paper	1	1.0
Textiles Clothing and Footwear	7	6.9
Transportation	2	2.0
Vehicles and Parts	3	3.0
Warehouse and Silo	1	1.0
Other	1	1.0
Total	101	100.0

Note: Data drawn from Question 9 (industry groups).

The size of companies was measured by the number of employees and paid-up registered capital. The number of employees ranged from less than 200 to more than 2000. Most respondent companies had no more than 1000 employees. 21.8% of the respondent firms had between 200-500 employees, 20.8% of the respondent firms had less than 200 employees, and 19.8% of the respondent firms had between 501-1000 employees. Paid-up registered capital of respondent companies ranged from less than 100 million to more than 10000 million baht. Predominantly, the respondent companies had capital from 100-500 million baht (46.5%). Tables 6.7 and 6.8 show the number of employees and paid-up registered capital of the respondent companies.

Table 6.7 Number of employees

Number of employees	Frequency	Percentage
Less than 200	21	20.8
200– 500	22	21.8
501– 1000	20	19.8
1001–1500	13	12.9
1501-2000	9	8.9
more than 2000	16	15.8
Total	101	100.0

Note: Data drawn from Question 10 (number of employees).

Table 6.8 Capital of company

Capital of company	Frequency	Percentage
Less than 100 million baht	5	5.0
100– 500 million baht	47	46.5
501– 1000 million baht	20	19.8
1001–2000 million baht	10	9.9
2001-5000 million baht	8	7.9
5001-10000 million baht	7	6.9
more than 10000 million baht	4	4.0
Total	101	100.0

Note: Data drawn from Question 11 (capital of company).

In terms of organisational structures, most respondent companies had concentrated on features of centralised decision-making authority and formalised jobs. Moreover, the majority of respondent companies had arranged organisational structures by function and products/services, rather than other methods. Tables 6.9 and 6.10 show the organisational structures of respondent companies.

Table 6.9 Organisational structure

Organisational structure	N	Minimum	Maximum	Mean	S.D.
Centralised	100	2	5	3.66	.81
Formalised	99	2	5	3.63	.71
Vertical	97	2	5	3.38	.80
Other	3	1	5	3.33	2.08

Note: - A five-point scale (1 = 'not at all' and 5 = 'extremely').

- Data drawn from Question 13 (organisational structure).

Table 6.10 Arrangement of organisational structure

Organisational structure	Number	Percentage
By functions	92	92
By products/services	64	64
By SBU	38	38
By geographical areas	27	27

Note: Data drawn from Question 14 (arrangement of organisational structure).

6.6 Company Environment

Respondents were asked to describe the environment of their companies. As indicated in Table 6.11, in general, there was a spread between the moderate and significant degree for each variable relating to the environment of respondent companies. 77.2% of respondent companies had significant to extreme intensity of competition in their industry while 19% had significant to extreme variation in complexity of production and in technical complexity among their product/services. 73%, 75% and 76% of respondents indicated that their firms had moderate to extreme diversity in products/services, capital equipment intensity and flexibility of manufacturing/service facility in that order.

Table 6.11 Company environment

Environment	None	Slightly	Moderate	Significant	Extreme	Total
Technical complexity	15 15.0%	25 25.0%	41 41.0%	15 15.0%	4 4.0%	100 100.0%
Complexity of production	22 22.0%	19 19.0%	40 40.0%	15 15.0%	4 4.0%	100 100.0%
Diversity in products	7 7.0%	20 20.0%	34 34.0%	27 27.0%	12 12.0%	100 100.0%
Flexibility of manufacturing	5 5.0%	19 19.0%	48 48.0%	22 22.0%	6 6.0%	100 100.0%
Capital equipment intensity	6 6.0%	19 19.0%	25 25.0%	41 41.0%	9 9.0%	100 100.0%
Intensity of competition	1 1.0%	3 3.0%	19 18.8%	52 51.5%	26 25.7%	100 100.0%

Note: Data drawn from Question 15 (technical complexity), Question 16 (complexity of production), Question 17 (diversity in products), Question 18 (flexibility of manufacturing), Question 19 (capital equipment Intensity) and Question 20 (intensity of competition).

In terms of number of products/services, the majority of respondent companies (63.5%) had produced less than 20 types of products/services. In addition, 38% and 37% of respondent companies had seldom and occasionally introduced new products/services, respectively (Table 6.12).

Table 6.12 Number of products and introduction of new products

Features		Number	Percentage
Number of products/services	- less than 20	61	63.5
	- 20-50	15	15.6
	- 51-100	6	6.3
	- 101-200	5	5.2
	- 201-500	6	6.3
	- more than 500	3	3.1
Introduction of new products	- seldom	38	38.0
	- occasionally	37	37.0
	- fairly often	18	18.0
	- very often	7	7.0

Note: Data drawn from Question 22 (introduction of new products) and Question 23 (number of products).

According to Table 6.13, a large number of respondent companies showed that reliability (93%), quality (92.1%), cost (81.2%), delivery performance (77.2%) and price (74.2%) were very to critically important for their products/services while variety of products/services (74.2%) were medium to very important. Moreover, most respondents indicated that competitors (81.2%), customers (80.2%) and product cost (79.2%) were very to critically important factors for pricing.

Table 6.13 Characteristics of products

	Not important	Little important	Medium important	Very important	Critically important	Total
Characteristics of Products						
-Price	0 0.0%	1 1.0%	25 24.8%	58 57.4%	17 16.8%	101 100.0%
-Quality	0 0.0%	2 2.0%	6 5.9%	40 39.6%	53 52.5%	101 100.0%
-Cost	0 0.0%	2 2.0%	17 16.8%	53 52.5%	29 28.7%	101 100.0%
-Variety of products	2 2.0%	11 10.9%	37 36.6%	38 37.6%	13 12.9%	101 100.0%
-Reliability	0 0.0%	1 1.0%	6 5.9%	36 35.6%	58 57.4%	101 100.0%
-Delivery performance	3 3.0%	6 5.9%	14 13.9%	41 40.6%	37 36.6%	101 100.0%
Factors for pricing						
-Product cost	2 2.0%	4 4.0%	15 14.9%	43 42.6%	37 36.6%	101 100.0%
-Customers	0 0.0%	4 4.0%	16 15.8%	48 47.5%	33 32.7%	101 100.0%
-Competitors	2 2.0%	1 1.0%	16 15.8%	48 47.5%	34 33.7%	101 100.0%

Note: Data drawn from Question 21 (characteristics of products) and Question 25 (factors for pricing).

In terms of setting budgets (Question 26), the majority of respondent companies had used the participative method (61.4%), followed by bottom-up (19.8%), top-down (13.9%) and mix between the three methods (5%). Most respondent companies gave much importance of budget to cost control (mean scores = 4.04), performance evaluation (mean scores = 4.01) and operational planning (mean scores = 3.97) while the importance of budget to compensation (mean scores = 3.42) and decentralised decisions (mean scores = 3.34) was in the medium level (Question 27).

Individual respondents were also asked to indicate the cost-management techniques used. The most common technique was standard costing while job, process and target costing, as well as actual costing, had been used by a minority of respondent companies. In allocating overhead costs to products/services, the most common base was units of products/customer service. Labour baht, labour hours, direct materials and machine hours had been used by a minority of respondent companies (Table 6.14).

Table 6.14 Cost management techniques and bases in cost allocation

	Number	Percentage
Cost Management techniques		
- standard costing	51	51.0
- process costing	37	37.0
- job costing	30	30.0
- target costing	20	20.0
- other (actual costing)	14	14.0
Bases in cost allocation		
- units of products	59	60.2
- labour baht	40	40.8
- labour hours	38	38.8
- direct materials	25	25.5
- machine hours	16	16.3
- set-up times	9	9.2

Note: Data drawn from Question 24 (cost management techniques) and Question 29 (bases in cost allocation).

In terms of cost structure, on average, total manufacturing costs of respondent companies comprised direct material (47.62%), direct labour (20.88%), production/service overhead costs (18.84%) and non-production/service costs (12.44%).

The cost structures among the respondent companies were so varied because the proportions of those cost categories ranged from 0% to 100% (Table 6.15). The variation in the cost structures was attributed to the differences in industry characteristics, the degree of automation and intensity of competition in different industries.

Table 6.15 Cost structure

Cost categories	N	Minimum	Maximum	Mean	S.D.
Direct material	89	0	97	47.62	27.57
Direct labour	89	0	70	20.88	18.37
Production overhead	89	0	100	18.84	18.94
Non-production overhead	89	0	100	12.44	13.97

Note: - N = 89 cases , 12 participants had left the question unanswered because they claimed that their firms were just distributors or insurance firms which had not classified cost structures like Table 6.14.

- Data drawn from Question 30 (cost categories).

In addition, most individual respondents showed that product/service cost control (74.5%) was a very to critically important factor in allocating overhead costs in their companies while other factors, such as departmental evaluation (76.6%), managers' performance evaluation (75.5%), product/service pricing (74.5%) and so on, were medium to very important factors in allocating overhead costs (Table 6.16).

Table 6.16 Factors in allocating overhead costs

Factors in allocating overhead costs	Not important	Little important	Medium important	Very important	Critically important	Total
-Product/service cost control	1 1.0%	7 7.1%	17 17.3%	50 51.0%	23 23.5%	98 100.0%
-Product/service pricing	7 7.1%	5 5.1%	27 27.6%	46 46.9%	13 13.3%	98 100.0%
-External reporting	12 12.2%	10 10.2%	43 43.9%	27 27.6%	6 6.1%	98 100.0%
-Production/service planning	4 4.1%	5 5.1%	24 24.5%	47 48.0%	18 18.4%	98 100.0%
-Product/service addition/deletion	5 5.1%	12 12.2%	40 40.8%	33 33.7%	8 8.2%	98 100.0%
-Departmental evaluation	3 3.1%	9 9.2%	23 23.5%	52 53.1%	11 11.2%	98 100.0%
-Managers' performance evaluation	6 6.1%	9 9.2%	23 23.5%	51 52.0%	9 9.2%	98 100.0%

Note: Data drawn from Question 28 (factors in allocation overhead costs).

A large number of individual respondents (43%) expected that their proportion of overhead costs to total manufacturing/service cost would increase slightly. 22% and 17% of individual respondents believed that the proportion of overhead costs to total manufacturing/service costs would decrease slightly and be stable in the near future, respectively (Table 6.17).

Table 6.17 Expected proportion of overhead costs

Proportion of overhead costs	frequency	Percentage
To increase substantially	4	4.0
To increase slightly	43	43.0
To be stable	17	17.0
To decrease slightly	22	22.0
To decrease substantially	4	4.0
Do not know	10	10.0
Total	100	100.0

Note: Data drawn from Question 31 (expected proportion of overhead costs).

In respect of satisfaction with the current overhead cost allocation and overall product/service costing system, 56% of respondents claimed that their systems needed improvement, but were still usable and 34% were reasonably satisfied, although some improvement might be useful. At the same time, a few respondents (4%) were very satisfied with the current overhead cost allocation and product costing system and did not require improvement (Table 6.18).

Table 6.18 Satisfaction with the current overhead cost allocation and product costing system

Satisfaction with the current cost system	Frequency	Percentage
Very satisfied	4	4.0
Reasonably satisfied	34	34.0
Needs improvements	56	56.0
Dissatisfied	6	6.0
Total	100	100.0

Note: Data drawn from Question 32 (satisfaction with the current cost system).

6.7 Adoption of ABC

The individual respondents could be divided into groups, based on two criteria (the knowledge and the adoption of ABC); this grouping approach was adapted from Bjornenak (1997).

The first criterion was based on the knowledge of ABC. As indicated in Table 6.19, almost 39% of 101 individual participants claimed that they had never known ABC. They did not know what ABC was. The remaining 62 individual respondents (61.38%) showed that they had familiarity with ABC. In addition, the individual respondents with ABC knowledge (62 respondents) were asked to indicate experience of learning ABC in Question 34. Most of them showed that they learnt ABC from university (37.1%) and seminars or conferences (37.1%). The rest of them learnt ABC by reading (22.6%) and in-house training (3.2%).

Table 6.19 ABC adoption by all respondent firms

Groups of ABC adoption	Total of all respondents	
	N	%
Having Knowledge of ABC		
• Adopters	12	11.88
• Abandoners	2	1.98
• Non-adopters*		
- Intending to adopt ABC	23	22.77
- No plan to adopt ABC	<u>25</u>	<u>24.75</u>
	<u>62</u>	<u>61.38</u>
No Knowledge of ABC	<u>39</u>	<u>38.62</u>
Total of all respondents	<u>101</u>	<u>100.00</u>

* Total of non-adopters = 48

Note: Data drawn from Question 33 (knowledge of ABC).

In addition, Table 6.20 shows the level of individual respondents' education and their familiarity with the concept of ABC. It shows that all individual respondents knowing a concept of ABC (62 firms) were people who achieved at least university level and most

of them (67.7%) achieved a postgraduate level in their education. Hence, it is expected that the curricula at universities will further spread the knowledge of ABC in Thailand.

Table 6.20 Education and ABC knowledge

Education of respondent	ABC knowledge		Total
	Yes	No	
Tafe level			
• Count	0	1	1
• % within ABC knowledge	.0%	2.6%	1.0%
• % of total	.0%	1.0%	1.0%
University level			
• Count	20	30	50
• % within ABC knowledge	32.3%	76.9%	49.5%
• % of total	19.8%	29.7%	49.5%
Master level			
• Count	42	8	50
• % within ABC knowledge	67.7%	20.5%	49.5%
• % of total	41.6%	7.9%	49.5%
Total			
• Count	62	39	101
• % within ABC knowledge	100.0%	100.0%	100.0%
• % of total	61.4%	38.6%	100.0%

Note: Data drawn from Question 3 (education of respondent) and Question 33 (knowledge of ABC).

The second criterion was based on the adoption of ABC. Bjornenak (1997) states that there are two aspects to the adoption of ABC. The adoption of ABC refers to: the adoption of the idea; or implementation. In the implementation aspect, if a respondent had used ABC or was currently implementing it, he was classified as an adopter. Out of 62 individual respondents knowing ABC, 12 firms (19.35%) were classified as 'adopters'. Two firms (3.23%) reported that they had adopted ABC in the past, but have abandoned it. They were classified as 'abandoners' (see Table 6.21 and Exhibit 6.1). In an interview with one of the abandoners, it was reported that his firm would implement ABC again in the future. He claimed that his major reason for abandoning ABC temporarily was instability due to his firm's reorganisation. The remaining 48 firms (77.42%) said that they were familiar with the concept of ABC, but had not yet decided to adopt it. They

were classified as 'non-adopters'. Classification of all respondents is shown in Exhibits 6.2 and 6.3.

Table 6.21 Comparison of the ABC adoption of all firms and firms with ABC knowledge

Groups of ABC adoption	Total of all respondents		Total of respondents with ABC knowledge	
	N	%	N	%
Having Knowledge of ABC				
• Adopters	12	11.88	12	19.35
• Abandoners	2	1.98	2	3.23
• Non-adopters*				
- Intending to adopt ABC	23	22.77	23	37.10
- No plan to adopt ABC	25	24.75	25	40.32
	<u>62</u>	<u>61.38</u>	<u>62</u>	<u>100.00</u>
No Knowledge of ABC	<u>39</u>	<u>38.62</u>		
Total of all respondents	<u>101</u>	<u>100.00</u>		

* Total of non-adopters = 48

Note: Data drawn from Question 33 (knowledge of ABC) and Question 35 (adoption of ABC).

Exhibit 6.1 Classification of all respondents

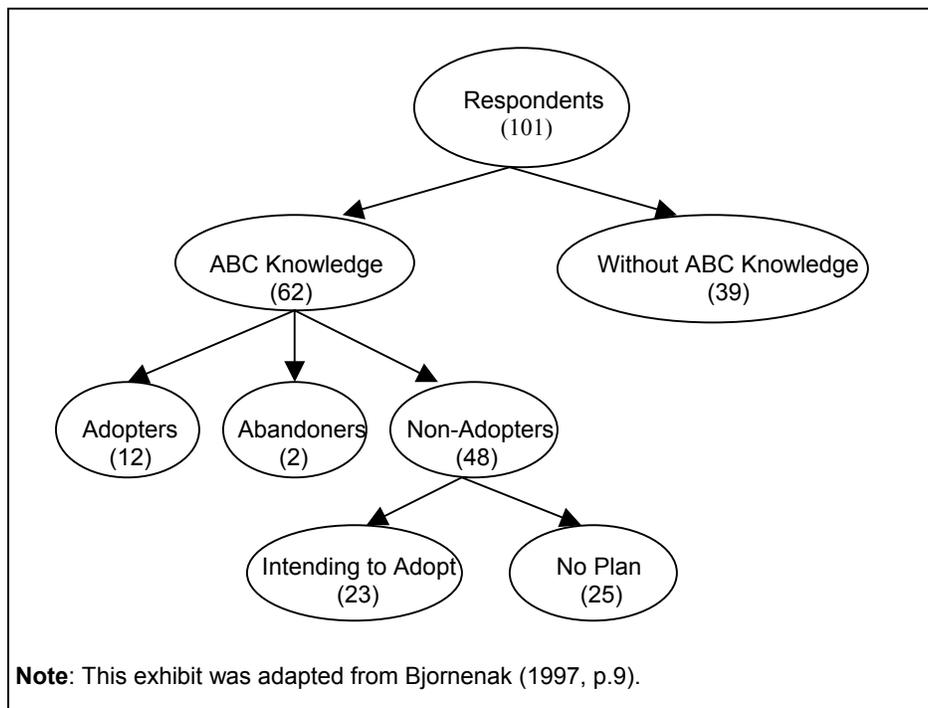
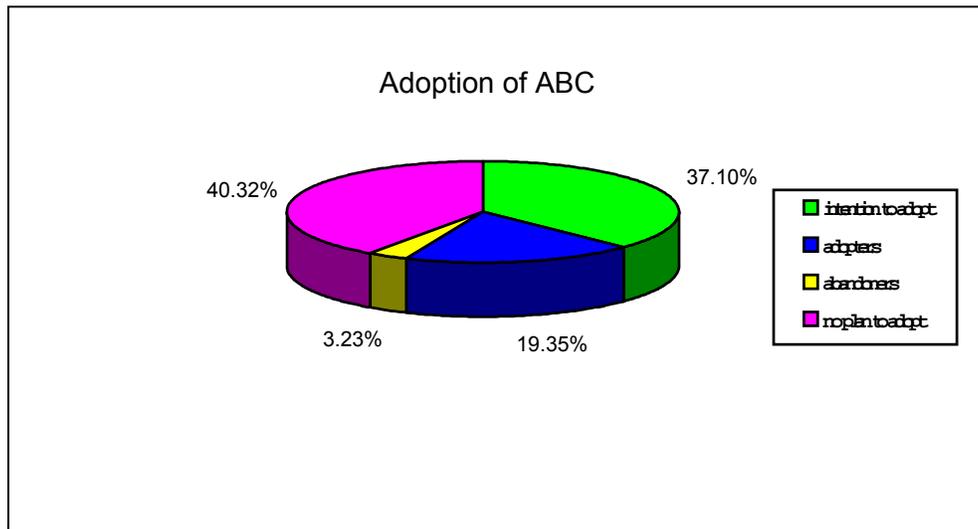
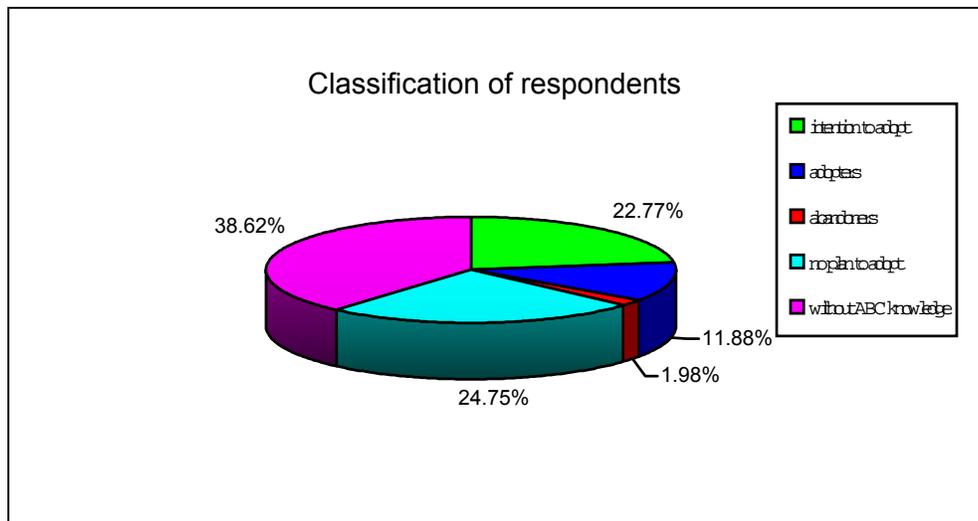


Exhibit 6.2 ABC adoption



Note: n = total of respondents having knowledge of ABC = 62

Exhibit 6.3 Percentage of classification of all respondents



Note: n = total of all respondents = 101

As shown in Tables 6.21 and 6.22, twenty-three non-adopters expected or intended to implement ABC in the future. The rest of the non-adopters (25) did not intend to adopt ABC. Eleven of 48 non-adopters examined the use of ABC in their firm; 6 deemed ABC not suitable while 5 were reconsidering and planning to implement it again in the future (Table 6.22).

Table 6.22 Non-adopters' examination and future plan as to ABC

Examination of ABC	Future Plan		Total
	Yes	No	
Yes	5	6	11
No	18	19	37
Total	23	25	48

Note: Data drawn from Question 62 (examination of ABC) and Question 63 (future plan).

Table 6.21 and Exhibit 6.2 indicate the adoption rate of ABC in Thailand by comparing the firms having ABC knowledge (19.35%) and Table 6.19 and Exhibit 6.3 indicates the adoption rate by comparing all respondent firms (11.88%). However, these Exhibits show that the adoption rate of ABC in Thailand was not high, like in other countries in Asia, such as Singapore (Chung et al. 1997), Malaysia (Baydoun et al. 1997) or Hong Kong (Chen et al. 2001).

As mentioned earlier, the adoption of ABC has two aspects: the idea and implementation. Thus, the adoption rate of ABC is contingent on its definition. Bjornenak (1997) indicates that although the idea may not be implemented at all, it still affects the way of thinking in a company, such as the interpretation of the existing cost information. Therefore, his second criterion was based on the adoption of ABC as the idea, rather than the implementation. Adopters in his study were defined as firms that had implemented ABC, were currently implementing it or plan to do so. Nguyen and Brooks (1997) and Chen et al. (2001) also indicate that their adoption rates of ABC include a

number of firms intending or planning to adopt ABC in the future because they believe that firms intending to adopt ABC would have general characteristics similar to firms that have already adopted and high potential of the adoption of ABC.

Consequently, if 23 firms intending or planning to adopt ABC in the future actually adopt it, and one abandoner really reconsiders it, the adoption rate in Thailand could be as high as 58 per cent of those firms having ABC knowledge (62 firms). This adoption rate of ABC was based on Bjornenak (1997). His non-adopting group (30.67% of all respondents), which did not plan to use ABC, does not include firms without ABC knowledge. Bjornenak's (1997) approach contrasts with those of Nguyen and Brooks (1997) and Chen et al. (2001). According to Nguyen and Brooks (1997) and Chen et al. (2001), firms with non-intention to adopt ABC, which they called non-adopters, include firms without knowledge. In this case, the adoption rate of ABC in Thailand would be 35.64% of all respondent firms (101 firms) (Table 6.23).

Table 6.23 Intention to adopt ABC

Groups of adoption	Based on Bjornenak's (1997) approach		Based on Nguyen and Brooks' (1997) and Chen et al.'s (2001) approach	
	N	%	N	%
Intention				
• Adopters	12			
• Abandoner (reconsidered ABC)	1			
• Non-adopters (intending to adopt ABC in the future)	<u>23</u>			
	<u>36</u>	58.06	36	35.64
Non-intention				
• Abandoner	1			
• Non-adopters (no plan to adopt)	<u>25</u>			
	<u>26</u>	<u>41.94</u>	26	
Total of firms with ABC knowledge	<u>62</u>	<u>100.00</u>		
No knowledge of ABC			<u>39</u>	<u>65</u>
Total of all respondent firms			<u>101</u>	<u>100.00</u>

Note: Data drawn from Question 33 (knowledge of ABC), Question 35 (adoption of ABC) and Question 63 (plan to use ABC in the future).

This is a markedly higher rate than the rates found in surveys in many industrial countries in Asia-Pacific area (Table 6.24). Nguyen and Brooks (1997), for example, reported the results of their Australian-based survey in 1996. Only 21.7% of all respondent companies had adopted or planned to implement ABC in the future. More recently, Chen et al. (2001) reported the results of their survey in Hong Kong. They found a relatively low level of usage of ABC in 1999 (15.5%). It is possible that if Thai colleges and universities, as well as publicity, have wider diffusion of knowledge of ABC, the likelihood of Thai firms' usage of ABC will increase.

Table 6.24 Comparison of ABC adoption rates

Rates of ABC adoption based on all respondents			Chen et al. 2001		Nguyen and Brooks (1997)	
	Thailand (2001)*		Hong Kong (1999)*		Australia (1996)*	
	N	%	N	%	N	%
-Firms with ABC intention	36	35.6	14	15.5	26	21.7
-Firms without ABC intention	<u>65</u>	<u>64.4</u>	<u>76</u>	<u>84.5</u>	<u>94</u>	<u>78.3</u>
Total of all respondents	<u>101</u>	<u>100.0</u>	<u>90</u>	<u>100.0</u>	<u>120</u>	<u>100.0</u>

*The survey year

On the whole, the individual respondents in this study were divided into groups by using two criteria: the knowledge and adoption of ABC. Based on the knowledge of ABC (the first criterion), 62 individual respondents (61.38%) had the knowledge of ABC (Table 6.21). The second criterion was based on the adoption of ABC, which has two aspects: the idea and the implementation. This study focused on the adoption of ABC as the idea. The adoption rate of ABC in this study included a number of firms intending or planning to adopt ABC in the future, other than a number of firms implementing ABC. Table 6.23 shows that 36 firms with ABC knowledge, which consists of 12 firms implementing ABC and 24 firms intending to adopt ABC, had intention to adopt ABC.

Accordingly, the adoption rate of ABC in this study was based on the knowledge and the adoption of ABC as the idea; that is, the intention to adopt ABC.

6.8 Reasons for Not Adopting ABC

48 individual respondents with ABC knowledge not adopting ABC gave reasons explaining their decisions to continue with traditional cost systems. The reasons suggested in the questionnaire were classified into three categories: inherent difficulties with ABC; firm's characteristics and business environment; and confidence in the existing cost systems. The individual respondents were asked to rate items on a five-point scale where one (1) represented 'not important' and five (5) represented 'critically important'. The possible reasons were explored by looking at the mean scores of each item. The responses are summarised in Table 6.25.

Table 6.25 Reasons for not adopting ABC by respondents with ABC knowledge

Reasons for not adopting ABC	Mean	Min.	Max.	S.D.
Inherent difficulties with ABC				
-Too complex and time-consuming	3.96	1	5	1.07
-Difficulties in selecting appropriate software	3.73	1	5	1.09
-Difficulties in collecting data on the cost drivers	3.69	1	5	1.07
-Lack of expertise to implement ABC	3.46	1	5	1.35
-Difficulties in selecting cost drivers	3.44	1	5	0.99
-Consultants too costly	3.40	1	5	1.16
-Lack of awareness of ABC	3.37	1	5	1.35
-Costly to switch to ABC	3.27	1	5	1.22
Firm's characteristics and business environment				
-Higher priorities of other changes or projects	3.67	1	5	1.06
-Lack of internal resources	3.48	1	5	1.07
-Lack of management policies	3.17	1	5	1.17
-Lack of top management support	3.15	1	5	1.24
-Less complexity in products/services	3.02	1	5	1.16
-Have relative small proportion of overheads in total manufacturing/service costs	2.90	1	5	1.12
-No intensity of competition	2.69	1	5	1.06
-Resistance from employees	2.17	1	4	0.93
Confidence in the existing cost systems				
-Satisfied with the current system	3.46	1	5	0.87
-No significant problems with current system	3.38	1	5	1.08
-Ambiguity of ABC benefits in literature	3.17	1	5	1.15

Note: - A five-point scale (1 = 'not important' and 5 = 'critically important').

- Data drawn from Question 61 (reasons for not adopting ABC).

The most cited reasons for not adopting ABC were the inherent difficulties with ABC design and implementation group. The complexity and time-consumption was cited as the most important reason for not adopting ABC, followed by difficulties in selecting appropriate software packages and in collecting data on the cost drivers. Similar evidence is reported by Chung et al. (1997) in Singapore. But, these results contrast to the findings by Nguyen and Brooks (1997), who claim that the difficulties in technical aspects were not significant reasons for the decision not to adopt ABC.

Higher priorities of other changes or projects in the firm's characteristics and business environment group were also cited as a major factor impinging on the decision to adopt ABC. From the interview data, some companies had not implemented ABC yet because of the higher priorities of other projects. For example, the competitive environment had

forced them to improve their operation and to upgrade the quality of their products by implementing ISO (International Organisation for Standardisation) 9001 or 9002 on customers' requirement and this project had taken many years to carry out.

Nevertheless, those firms expected to implement ABC in the near future because they believed that ABC information would support ISO 9001 or 9002 and TQM in their firms. This finding is consistent with the finding by Norris (1997), suggesting that ABC complements other management techniques, such as TQM. Krumwiede and Roth (1997) claim that if ABC is designed to facilitate the other strategic initiatives, such as TQM, ISO 9000 or business process re-engineering, it supports the easier implementation of other initiatives. In addition, lack of internal resources was a major reason for not adopting ABC in the firm's characteristics and business environment group. This result is similar to the results of many previous surveys (Nicholls 1992; Nguyen and Brooks 1997; Innes and Mithchell 1998).

The satisfaction with the current system seemed to be a common reason in the confidence in the existing cost systems group cited in Asian countries (Chung et al. 1997; Chen et al. 2001), including Thailand. Similar evidence is reported by Nguyen and Brooks (1997) and Chung et al. (1997). In general, the reasons for not adopting ABC are not different from those documented in other countries (Nicholls 1992; Cobb et al. 1992; Oliver 1994; Ballas and Venieris 1996; Chung et al. 1997; Baydoun et al. 1997; Nguyen and Brooks 1997; Innes and Mitchell 1998; Chen et al. 2001), except resistance from employees.

According to Table 6.25, resistance from employees was cited to be little important as a reason not adopting ABC (mean scores = 2.17, minimum scores = 1, maximum scores =

4). As stated previously, Thai people have a high-power-distance culture; they tend to be obedient to their superiors (Hofstede 1984b). Hence, resistance from employees was likely to be an insignificant reason for not adopting ABC in Thailand. This result contrasts to the finding by Nguyen and Brooks (1997), who report that resistance from management and employees appears to be an important reason for not adopting ABC in Australia.

6.9 ABC Implementation

Results and discussions as to ABC implementation are reported in this section. Firms using ABC consist of adopters (firms that were currently implementing or had used ABC) and abandoners (firms that had adopted ABC, but had abandoned it). Similar to Chen et al. (2001), on the grounds of the small number of firms implementing or using ABC (12 adopters and 2 abandoners), it is difficult to do statistical tests, other than descriptive ones. Thus, testing in this section is largely descriptive and speculation.

Classification of the implementation process of ABC in this study was based on Krumwiede and Roth's (1997) model. According to Krumwiede and Roth (1997), the implementation process of ABC consists of six stages: initiation; adoption; adaptation; acceptance; routinization; and infusion stages. The 'initiation' stage takes place when a company perceives the distortion of the existing cost system and the possible solution by implementing ABC. The 'adoption' process begins when a company gets approval to invest the resources necessary for implementing ABC. When ABC is developed and installed in a company, it shows that the company reaches the stage of 'adaptation'. This stage includes a pilot program since the pilot program is to test the impact of ABC implementation on the organisation and to identify any associated and potential

operational problems, as well as to offer recommendations involving the implementation of ABC, before implementing ABC fully.

The 'acceptance' stage involves organisational members' commitment to use ABC. Whenever, ABC is used as a part of normal activities in an organisation, the 'routinization' process begins. If ABC is seamlessly integrated with other organisational systems, the company reaches the highest stage of the implementation process of ABC, the 'infusion' stage. In this stage, the activity-based management (ABM), which means management's using activity information to improve performance measurement, profits and competitive advantages, is used in the company.

In this study, a participant who can answer this question (Question 36) had already reached the 'initiation' stage (perception of misrepresentation of the existing cost system and ABC as possible solution) and this study was designed to explore the adoption of ABC. Thus, the implementation process of ABC in this study started at the 'adoption' stage (investing and developing the necessary resources). Table 6.26 shows the stages of the implementation of ABC by Thai firms. A large number of adopters (41.7%) were implementing ABC to the stage of using ABC as a part of daily practices (routinization stage). In this stage, ABC is accepted and used by the persons outside the accounting/finance function for decision-making (Krumwiede and Roth 1997). The percentages of firms reaching the stage of developing and installing ABC (adaptation stage) and the stage of integrating with other systems (infusion stage) were the same (16.7% of adopters).

Table 6.26 Stages of ABC implementation

Stages	Adopters		Abandoners	
	N	%	N	%
<ul style="list-style-type: none"> • Adoption stage -Investing/developing the infrastructure 	1	8.3	0	0.0
<ul style="list-style-type: none"> • Adaptation stage -Developing and installing ABC, as well as training employees 	2	16.7	0	0.0
<ul style="list-style-type: none"> -A pilot project 	1	8.3	2	100.0
<ul style="list-style-type: none"> -Full Implementation of ABC 	1	8.3	0	0.0
<ul style="list-style-type: none"> • Acceptance stage -Internal commitment to use ABC 	0	0.0	0	0.0
<ul style="list-style-type: none"> • Routinization stage -Daily practices 	5	41.7	0	0.0
<ul style="list-style-type: none"> • Infusion stage -Integrating with other systems 	2	16.7	0	0.0
Total	12	100.0	2	100.0

Note: Data drawn from Question 36 (stages of ABC implementation).

At the same time, all abandoners stopped the implementation of ABC at an early pilot testing stage. Shanahan and Dance (1997) state that a pilot project is beneficial in that managers can compare the worth of ABC with minimum investment of time and other resources and produce quick results, as well as create recommendations. So, many firms conducted a pilot project before the decision to implement ABC fully. However, one of the abandoning firms intended to implement ABC again in the future.

Since the implementation process of ABC entails organisational change, Krumwiede and Roth's (1997) six stages of ABC implementation are associated with Lewin's organisational change model. When a company perceives the distortion of the existing cost system and sees ABC as a possible solution, this stage is consistent with Lewin's 'unfreezing' stage. When a company adopts ABC and changes its structure and behaviours for the implementation of ABC ('adoption' and 'adaptation' stages of the implementation process of ABC), the company is in Lewin's stage of 'moving'. The final stage of Lewin's organisational change model ('refreezing' stage) refers to the evaluation of the change and revision of the changed procedure to be accommodated within the

organisation (Cummings and Worley 1993). This stage is consonant with the 'acceptance', 'routinization' and 'infusion' stages of the Krumwiede and Roth's (1997) implementation process of ABC.

According to Table 6.26, the majority of Thai firms implementing ABC (adopters) (58.4%) had reached the highest stage ('refreezing' stage) of Lewin's organisational change model. The remaining firms were in the 'moving' stage of organisational change. It may be expected from Table 6.23 that 24 firms not implementing ABC, but intending to use ABC in the future (23 non-adopters and one abandoner) will stay in the 'unfreezing' stage of organisational change and the 'initiation' stage of the ABC implementation process on the grounds that they had perceived the distortion of the existing cost system and perceived ABC as a new solution, but changes had not occurred in their organisations yet.

From data drawn from Questions 39-43, half of the respondents adopting ABC reported that the idea of ABC adoption was initiated in their firms by accounting/finance managers, followed by top management (42.9%) and administrative manager (7.1%). The ABC users had largely used ABC in some selected divisions or departments (64.3%). Additionally, most ABC users favoured designing their own systems (78.6%) rather than employing external consultants and favoured the use of ABC integrated with the existing accounting system (not a stand-alone system) (57.1%). In terms of software, there were a few firms that had used Hyper ABC (7.1%) and Oros Version 1.1 software (7.1%). The remaining firms (85.7%) had developed their own in-house software. From the interview data, almost all interviewed firms created their own

software programs since commercial software packages in the market were not suitable for their firms.

6.9.1 Reasons for ABC adoption

Individual respondents adopting ABC (12 adopters and 2 abandoners) were asked to rate the importance of various factors in the decision to adopt ABC. The individual respondents were asked to rate items on a five-point scale where one (1) represented 'not important' and (5) represented 'critically important'. Table 6.27 shows the results. ABC users largely indicated that increased competition (mean scores = 4.14) and growing costs, including product costs and administrative costs, (mean scores = 4.14) were more important reasons for adopting ABC than other reasons. Moreover, rating a minimal scale for these reasons at the level 3 (medium important) by respondents presents that both reasons were significant factors influencing their decision to adopt ABC. These reasons might result from the economic crisis, which had subjected them to increasing competition and costs, forcing Thai firms to seek innovations, such as ABC, to increase their efficiency of operation and profitability.

The existing cost systems' inaccuracies of product cost (mean scores = 3.64), inability to provide relevant information in the new business environment (mean scores = 3.57) and inability to adapt to increased automation in the production/service process (mean scores = 3.43) were also cited as major reasons for adopting ABC. These reasons for adopting ABC seem different from Booth and Giacobbe's (1997) findings. They found that the perception of importance of indirect costs, high number of product lines or awareness of ABC literature were the main reasons to adopt ABC. Nevertheless, the reasons for adopting ABC in Thailand are similar to those documented in many countries

(Innes and Mitchell 1991; Israelsen et al. 1996; Nguyen and Brooks 1997; Chung et al. 1997).

Table 6.27 Reasons for ABC adoption

Reasons for ABC adoption	N	Minimum	Maximum	Mean	S.D.
- Increased competition	14	3	5	4.14	.86
- Growing costs	14	3	5	4.14	.77
- The inaccuracies of product cost of the traditional cost systems	14	2	5	3.64	.93
- Inability of the traditional cost systems to provide information in the new environment	14	1	5	3.57	1.16
- Inability of the traditional cost systems to adapt to increased automation in the production process	14	2	5	3.43	.85
- Restructuring	14	1	5	3.36	1.15
- The economic recession	14	2	5	3.29	.91
- Lack of decision-making information	14	1	5	3.21	1.12
- Facing allocation problems	14	2	5	3.14	1.03
- Globalisation of consumer or producer markets	14	1	5	3.14	1.10
- Increasing proportion of overhead costs	14	2	4	3.14	.53
- Increasing number of products	14	2	4	3.07	.73
- Increased regulation	14	1	5	2.86	1.17

Note: - A five-point scale (1 = 'not important' and 5 = 'critically important').
 - Data drawn from Question 44 (reasons for ABC adoption).

6.9.2 Factors influencing the success of ABC

Individual respondents were asked to give their opinions on factors in the successful use of ABC. They were asked to rate items on a seven-point scale where one (1) represented 'strongly disagree' and seven (7) 'strongly agree'. The responses are summarized in Table 6.28.

Table 6.28 Factors influencing the success of ABC

Factors influencing the ABC success	N	Minimum	Maximum	Mean	S.D.
-Top management support	14	3	7	5.71	1.49
- Link to performance evaluation	14	4	7	5.64	1.01
- Top management commitment	14	3	7	5.50	1.16
- Clear and concise objectives	13	3	7	5.23	1.01
- Adequate resources	14	3	7	5.21	1.12
- Non-accounting commitment	14	3	7	4.86	1.35
- Non-accounting ownership	14	3	7	4.79	1.19
- Link to competitive strategy	14	3	7	4.71	1.07
- Sharing information	14	2	7	4.71	1.27
- Providing education	14	2	7	4.36	1.45
- Link to compensation	14	2	7	4.29	1.44
- Implementation training	14	2	7	4.14	1.46
- Design training	14	2	6	4.00	1.24

Note: - A seven-point scale (1 = 'strongly disagree and 5 ='strongly agree').
 - Data drawn from Question 48 (factors influencing ABC success).

Many previous studies report that an essential and key factor influencing the success of implementing ABC is top management support (Shields 1995; Shields and McEwen 1996; Roberts and Silvester 1996; McGowan and Klammer 1997; Krumwiede 1998). According to Table 6.28, not surprisingly, top management support had the highest average rating (mean scores = 5.71). This means that most ABC users perceived that top management support was more important to the successful implementation of ABC than other variables were. Due to a high-power-distance culture, top executives in Thai organisations are the ones who have power to take action and make most decisions in the organisation (Morakul and Wu 2001).

Individual respondents also reported that linkage of ABC to performance evaluation (mean scores = 5.64) and top management commitment to use ABC information as the basis for decision-making were important factors (mean scores = 5.50), followed by clarity of the objectives of ABC among designers and users (mean scores = 5.23) and adequate resources (mean scores = 5.21). These findings are consistent with the results in the study by Shields (1995) that only behavioural and organisational variables, especially top management support, linkage to performance evaluation and

compensation, adequate resources, linkage to competitive strategies, training in implementing ABC and non-accounting ownership, are related to the success of ABC implementation, but the technical implementation variables are not. In general, the results of this study are similar to those of other studies (Roberts and Silvester 1996; McGowan and Klammer 1997; Krumwiede 1998).

6.9.3 Objectives of ABC adoption

The questionnaire also elicited expectations on what benefits would be gained from the adoption of ABC. This question was ranked on a seven-point scale (1 = strongly disagree and 7 = strongly agree). Table 6.29 shows that the major objectives of ABC adoption were for more accurate cost information (mean scores = 6.21) and for better-cost control (mean scores = 6.14). These expected benefits from adopting ABC are consistent with those reported by Shields (1995), Shields and McEwen (1996), Bruggeman et al. (1996), Booth and Giacobbe (1997) and Adler et al. (2000). In addition, increase in competitive capability (mean scores = 5.93) and assistance in cost reduction (mean scores = 5.86), as well as better performance measurement, (mean scores = 5.79) were regarded by Thai users as primary goals in adopting ABC.

Table 6.29 Objectives of ABC adoption

Objectives of ABC adoption	N	Minimum	Maximum	Mean	S.D.
- More accurate product/service costs	14	5	7	6.21	.80
- Cost control improvement	14	4	7	6.14	.77
- Increase in competitive capability	14	4	7	5.93	.92
- Assistance in cost reduction efforts	14	1	7	5.86	1.66
- Better performance measurement	14	1	7	5.79	1.53
- Decision-making improvement	14	1	7	5.71	1.54
- Elimination of waste by providing visibility of non-value-added activities.	14	3	7	5.71	1.27
- Increase in profitability	14	3	7	5.71	1.27
- Better overhead cost allocation	14	3	7	5.64	1.08
- Encouragement of commitment to quality and continual improvement	14	4	7	5.57	.85
- Provision of more accessible and timely information	14	4	7	5.50	1.09
- Increase in the effectiveness of budgeting by identifying the cost/performance relationship of different service levels.	14	3	7	5.50	1.09
- Provision of behavioural incentives to improve manufacturing/service excellence	14	2	7	5.36	1.34
- Improvement in shareholder value	14	3	7	5.36	1.34
- Management attention to interdependencies of departments	14	3	7	5.21	1.05
- Assistance in product/service design and product/service mix	14	3	7	5.07	1.21
- Breakdown of barriers between different functional areas	14	2	7	5.00	1.30
- Increased customer satisfaction	14	1	7	4.50	1.45

Note: - A seven-point scale (1 = 'strongly disagree' and 7 = 'strongly agree').
 - Data drawn from Question 49 (objectives of ABC adoption).

6.9.4 Benefits of ABC implementation

Individual respondents were asked to indicate which listed benefits they had experienced from using ABC. This question was ranked on a seven-point scale (1 = strongly and 7 = strongly agree). Table 6.30 shows that more accurate product/service cost (mean scores = 5.85) and cost control improvement (mean scores = 5.77) were key areas of ABC benefits. They are very similar to the benefits given by many studies (Innes and Mitchell 1991; Bailey 1991; Nicholls 1992; Swenson 1995; Booth and Giacobbe 1997; Chung et al. 1997).

Table 6.30 Benefits of ABC implementation

Benefits of ABC implementation	N	Minimum	Maximum	Mean	S.D.
- More accurate product/service costs	13	5	7	5.85	.69
- Cost control improvement	13	4	7	5.77	.73
- Better performance measurement	13	1	7	5.69	1.55
- Encouragement of commitment to quality and continual improvement	13	4	7	5.62	.87
- Increase in competitive capability	13	4	7	5.54	.97
- Increase in the effectiveness of budgeting by identifying the cost/performance relationship of different service levels.	13	3	7	5.54	1.05
- Assistance in cost reduction efforts	13	1	7	5.46	1.66
- Increase in profitability	13	3	6	5.46	.97
- Decision-making improvement	13	1	7	5.46	1.45
- Better overhead cost allocation	13	3	6	5.38	.96
- Elimination of waste by providing visibility of non-value-added activities.	13	3	7	5.38	1.26
- Breakdown of barriers between different functional areas	13	3	7	5.23	1.01
- Provision of more accessible and timely information	13	4	7	5.23	.93
- Management attention to interdependencies of departments	13	3	7	5.23	.93
- Provision of behavioural incentives to improve manufacturing/service excellence	13	2	7	5.23	1.42
- Improvement in shareholder value	13	3	7	5.23	1.24
- Assistance in product/service design and product/service mix	13	3	6	5.00	1.00
- Increased customer satisfaction	13	1	6	4.46	1.45

Note: - A seven-point scale (1 = 'strongly disagree' and 7 = 'strongly agree').

- N = 14, one respondent had left this question unanswered because he claimed that his firm was in the initiative stage of developing and installing ABC. He could not evaluate the benefits of implementing ABC.

- Data drawn from Question 50 (benefits of ABC implementation).

ABC users also reported that they had gained benefits from the ABC implementation in terms of better performance measurement (mean scores = 5.69), continual improvement (mean scores = 5.62) and increase in the effectiveness of budgeting (mean scores = 5.54). Similar evidence is reported by Kaplan (1990a) and Innes and Mitchell (1995b). Additionally, ABC users realised a perceived benefit of ABC in terms of increasing competitive capability (mean scores = 5.54). It is likely that in the high competitive environment of a turbulent economy, cost advantage is important for competition (Johnson and Kaplan 1991) and ABC is a cost planning system that provides information for competitive strategies (O'Guin 1991). Hence, Thai firms currently encountering the

economic crisis realised this benefit of ABC. Moreover, ABC users showed that ABC supported cost reduction efforts, increase in profitability and improvement of decision-making (mean scores = 5.46). Besides, it was observed that increased customer satisfaction (mean scores = 4.46) was a benefit of ABC that had a lower rank than other benefits.

Table 6.31 shows comparisons between objectives of ABC adoption and actual benefits gained from adopting ABC. Expected and actual benefits gained from adopting ABC have significantly high and positive relationship since Pearson correlation values are positive and close to 1. According to mean scores, the levels of satisfaction of most benefits that ABC users actually gained from adopting ABC were slightly lower than those of expected satisfaction of benefits. But, ABC users were satisfied with benefits in terms of breakdown of barriers between different functional areas and encouragement of continual improvement more than they expected.

Table 6.31 Comparisons between expected and actual benefits from the adoption of ABC.

Benefits of ABC implementation	Expected benefits (Mean scores)	Actual benefits (Mean scores)	Pearson Correlation
- More accurate product/service costs	6.21	5.85	0.651
- Cost control improvement	6.14	5.77	0.784
- Increase in competitive capability	5.93	5.54	0.771
- Assistance in cost reduction efforts	5.86	5.46	0.959
- Better performance measurement	5.79	5.69	0.951
- Decision-making improvement	5.71	5.46	0.934
- Elimination of waste by providing visibility of non-value-added activities.	5.71	5.38	0.881
- Increase in profitability	5.71	5.46	0.704
- Better overhead cost allocation	5.64	5.38	0.934
- Encouragement of commitment to quality and continual improvement	5.57	5.62	0.950
- Provision of more accessible and timely information	5.50	5.23	0.504
- Increase in the effectiveness of budgeting by identifying the cost/performance relationship of different service levels.	5.50	5.54	0.860
- Provision of behavioural incentives to improve manufacturing/service excellence	5.36	5.23	0.965
- Improvement in shareholder value	5.36	5.23	0.836
- Management attention to interdependencies of departments	5.21	5.23	0.887
- Assistance in product/service design and product/service mix	5.07	5.00	0.611
- Breakdown of barriers between different functional areas	5.00	5.23	0.729
- Increased customer satisfaction	4.50	4.46	0.862

Note: - A seven-point scale (1 = 'strongly disagree' and 7 = 'strongly agree').

- Data drawn from Question 49 (objectives of ABC adoption) and Question 50 (benefits of ABC).

Furthermore, individual respondents were asked to rate the level of satisfaction and importance of ABC. A seven-point scale (1= strongly disagree and 7 = strongly agree) was used in measuring these responses. Table 6.32 indicates that the majority of ABC users had a quite high level of satisfaction with the gained benefits (mean scores = 5.64, minimum = 4, maximum = 7) and perceived worth in implementing it (mean scores = 5.79, minimum = 5, maximum = 7). Most users perceived that ABC was very important (mean scores = 5.57, minimum = 2, maximum = 7) and necessary (mean scores = 5.93, minimum = 5, maximum = 7) in the current environment. They also believed that ABC

had played a part in helping their firms to survive in the changed environment (mean scores = 5.57, minimum = 4, maximum = 7).

Table 6.32 Satisfaction and importance of ABC

Satisfaction and importance of ABC	N	Minimum	Maximum	Mean	S.D.
- Satisfaction with the gained benefits of ABC	14	4	7	5.64	.74
- Importance of ABC in the current environment	14	2	7	5.57	1.45
- Worthiness of ABC implementation	14	5	7	5.79	.58
- Necessity of ABC in the changed environment	14	5	7	5.93	.73
- To help the company to survive	14	4	7	5.57	.85

Note: - A seven-point scale (1 = 'strongly disagree' and 7 = 'strongly agree').

- Data drawn from Question 51 (ABC satisfaction), Question 52 (importance of ABC), Question 53 (worthiness of ABC), Question 54 (necessity of ABC) and Question 55 (taking part in helping the company to survive).

6.9.5 The success level of ABC implementation

ABC users were asked to rate their perception of the success of implementation of ABC in their firms. Table 6.33 shows the perceptions of the success of implementing ABC by adopters. The majority of ABC users (adopters) perceived the success level of implementing ABC as favourable.

Table 6.33 Perceptions of the level of ABC success

The level of ABC success		Adopters
Average	Count	5
	% within ABC users	45.5%
Good	Count	6
	% within ABC users	54.5%
Total	Count	11
	% within ABC users	100.0%

Note: - Data drawn from Question 47 (the level of ABC success).

- The level of ABC success (Question 47) is classified into five levels: 'very poor', 'poor', 'average', 'good' and 'very good'.

- N = 11, One respondent had left this question unanswered because he claimed that his firm was in the initiative stage of developing and installing ABC. He could not evaluate the level of ABC success.

In particular, virtually all adopters in the higher stages of the implementation of ABC (using ABC as a part of daily practices and integrating with other organisational systems stages) perceived the success level of implementing ABC to be favourable (Table 6.34). The adopters in other stages of the implementation of ABC perceived the success level of implementing ABC as only moderately favourable as they might be in the initial stages of the implementation of ABC.

Table 6.34 Perceptions of the level of ABC success in each stage

The stage of ABC implementation		Level of ABC success		Total
		Average	Good	
Investing the infrastructure	Count	1	0	1
	% within level of success	20.0%	0.0%	9.1%
	% of total	9.1%	0.0%	9.1%
Developing and installing	Count	1	0	1
	% within level of success	20.0%	0.0%	9.1%
	% of total	9.1%	0.0%	9.1%
A pilot project	Count	1	0	1
	% within level of success	20.0%	0.0%	9.1%
	% of total	9.1%	0.0%	9.1%
Full implementation	Count	1	0	1
	% within level of success	20.0%	0.0%	9.1%
	% of total	9.1%	0.0%	9.1%
Using ABC as a part of daily practice	Count	1	4	5
	% within level of success	20.0%	66.7%	45.5%
	% of total	9.1%	36.4%	45.5%
Integrated with other system	Count	0	2	2
	% within level of success	0.0%	33.3%	18.2%
	% of total	0.0%	18.2%	18.2%
Total	Count	5	6	11
	% within level of success	100.0%	100.0%	100.0%
	% of total	45.5%	54.5%	100.0%

Note: Data drawn from Question 36 (stages of ABC implementation) and Question 47 (level of ABC success).

In addition, Table 6.35 indicates that there is a significant difference between the ABC success of firms using and not using a stand-alone system (significance value = 0.043), but there is no significant relationship between the ABC success and other technical variables, such as external consultants or software (significance values = 0.252 and 0.599, respectively). These results, excluding using a stand-alone system, are in consonance with Shields' (1995) findings in that ABC success is not significantly related

to the use of technical variables, but differ from the results of Anderson's (1995) study. It was observed that the majority of ABC users had employed in-house software and consultants. Moreover, the level of success of firms not using a stand-alone system, external consultant and commercial software was mainly higher than that of firms using these technical variables.

Table 6.35 Technical variables and ABC success

Technical variables		Level of success			Total
		Very poor	Average	Good	
Stand-alone	Yes	0 0.0%	5 83.3%	1 16.7%	6 100.0%
	No	1 14.3%	1 14.3%	5 71.4%	7 100.0%
Consultants	Yes	0 0.0%	2 100.0%	0 0.0%	2 100.0%
	No	1 9.1%	4 36.4%	6 54.5%	11 100.0%
Software	Hyper ABC	0 0.0%	1 100.0%	0 0.0%	1 100.0%
	Oros Version 1.1	0 0.0%	1 100.0%	0 0.0%	1 100.0%
	In-house software	1 7.7%	4 36.4%	6 54.5%	11 100.0%

Note: Data drawn from Question 41 (stand-alone system), Question 42 (consultants), Question 43 (ABC software) and Question 47 (level of ABC success).

Table 6.36 shows the frequency of using ABC information for decision-making. This question was ranked on a five-point scale (1 = seldom and 5 = very often). Accounting managers (mean scores = 4.36, minimum = 4, maximum = 5) and production managers (mean scores = 4.00, minimum = 3, maximum = 5) often used ABC information for decision making while design engineers made less use of ABC information for decision making than other functional areas (mean scores = 3.09). In contrast, Chen et al. (2001) found that the accounting and finance function was not the most important motivator using ABC information. In addition, ABC information was used often to very often in cost

control and performance measurement areas (mean scores = 4.29 and 4.21, respectively, minimum = 3, maximum = 5) (Table 6.37).

Table 6.36 Functional areas using ABC information

Functional areas	N	Minimum	Maximum	Mean	S.D.
- Accounting managers	14	4	5	4.36	.50
- Production managers	13	3	5	4.00	.71
- Top management	14	2	5	3.86	.77
- Administrative managers	14	2	4	3.64	.63
- Marketing managers	14	1	4	3.29	.91
- Design engineering	11	1	5	3.09	1.04

Note: - A five-point scale (1= seldom and 5 = very often).

- Data drawn from Question 46 (functional areas using ABC information).

Table 6.37 Areas using ABC information

Areas using ABC information	N	Minimum	Maximum	Mean	S.D.
- Cost control	14	3	5	4.29	.61
- Performance measurement	14	3	5	4.21	.58
- Decision making	14	1	5	3.93	1.07
- Planning	14	1	5	3.86	1.03

Note: - A five-point scale (1= seldom and 5 = very often).

- Data drawn from Question 45 (areas using ABC information).

6.9.6 Problems of ABC implementation

It is well documented that the design and implementation of ABC takes time and faces difficulties (Bailey 1991; Nicholls 1992; Armitage and Nicholson 1993; Chung et al. 1997; Chen et al. 2001). To shed light on this, individual respondents were asked to evaluate difficulties in designing and implementing ABC. The level of difficulty encountered was ranked on a five-point scale (1= not important and 5 = critically important). The results are summarised in Table 6.38.

Table 6.38 Problems of ABC implementation

Problems of ABC implementation	N	Minimum	Maximum	Mean	S.D.
- Involves a great deal of work	14	2	5	3.93	.83
- Difficulty in gathering data	14	2	5	3.79	.89
- Takes up a lot of managers' time	14	2	5	3.79	.70
- Difficulty in defining cost drivers	14	2	5	3.64	.93
- Difficulty in identifying activities	14	1	5	3.57	1.50
- Lack of commitment and cooperation among departments	14	2	5	3.57	1.02
- Takes up a lot of computer staff's time	14	2	5	3.57	1.22
- Change of cultural and mind-set	14	2	5	3.57	.85
- Lack of knowledge of data collection	14	2	5	3.50	1.02
- Difficulty in designing system	14	1	5	3.43	1.09
- A higher priority of other projects	14	1	4	3.29	.91
- Changing environment	14	2	4	3.29	.73
- High cost of ABC consulting	14	2	5	3.21	1.31
- High cost of implementing ABC	14	2	4	3.07	.83
- Lack of top management support	14	1	4	3.00	1.36
- Resistance to change	14	2	4	3.00	.88
- Lack of software packages	14	1	4	2.93	1.27
- Integration with the current accounting system	14	1	4	2.93	1.21

Note: - A five-point scale (1 = not important and 5 = critically important).

- Data drawn from Question 56 (problems of ABC implementation).

The greatest difficulty of implementing ABC was implication of a great deal of work (mean scores = 3.93), followed by difficulty in gathering data on cost-drivers (mean scores = 3.79) and taking up a lot of managers' time (mean scores = 3.79), as well as difficulty in defining cost drivers (mean scores = 3.64). These results confirm the findings of Booth and Giacobbe (1997) and Innes and Mitchell (1998).

In addition, difficulty in identifying activities, lack of commitment and cooperation among departments, and taking up a lot of computer staff's time, as well as necessary change of cultural and mind-set (mean scores = 3.57) were regarded as challenging tasks. It is surprising that integrating ABC into the existing accounting system (mean scores = 2.93) were seen as a less important problem while some results in other countries reported that this problem was a major difficulty in implementing ABC (Chung et al. 1997; Innes and Mitchell 1998; Chen et al. 2001).

Resistance from employees and lack of top management support (mean scores = 3.00) were not very important problems of implementing ABC in Thailand. These findings were expected on the grounds of a high-power-distance culture of Thai people. That is, Thais tend to comply with what their superior says and most decisions are made by top executives. Thus, resistance from employees was not seen as a serious problem. In addition, as shown in Table 6.28, most ABC users in Thailand perceived that top management support was an essential and key factor for the successful implementation of ABC. Thai top management had largely provided its sufficient support for the implementation of ABC to their organisational members. Therefore, top management support was not lacking for the implementation of ABC by Thai firms.

It was observed that most problems in implementing ABC in Thailand were more technical barriers than behavioural barriers. These findings contrast with the results of Roberts and Silvester (1996), who indicate that most problems with ABC are not attributed to technical barriers and with the finding by Krumwiede and Roth (1997), suggesting that barriers to ABC result from more behavioural and organisational variables than technical variables.

All in all, this section provided the generalisations about the implementation of ABC in the Thai environment in various aspects, such as the success level, the benefits and problems of ABC implementation, factors influencing the success of ABC, reasons for adopting ABC and the objectives of ABC adoption. The next section will seek differences across a variety of issues for intention/non-intention to adopt ABC groups.

6.10 Comparison of Firms with Intention and Non-Intention to Adopt ABC

As mentioned earlier, the grouping approach of adopters/non-adopters in this study was based on Bjornenak (1997), who investigated the adoption of ABC in Norway. He classified the respondents into two distinct groups: an adopter and a non-adopter group, based on the knowledge of ABC and the intention to adopt ABC. Consequently, 'adopters' in his study comprised firms that had implemented or were currently implementing or intending to adopt ABC while non-adopters included firms that did not want to adopt ABC or had not yet decided, but excluded firms without ABC knowledge.

Two criteria were applied to this study to investigate the differences between firms with intention and without intention to adopt ABC. The first criterion was based on the knowledge of ABC (Table 6.21). 39 out of all respondents (101 respondents) claimed that they had never known ABC. The remaining 62 respondents presented that they had familiarity with ABC. The second criterion was based on the intention to adopt ABC (Table 6.23). 62 respondent firms with ABC knowledge were classified into two groups: an intention and a non-intention group, for investigating characteristics and environment of firms within two groups on the grounds that firms planning or intending to adopt ABC in the future would have similar characteristics to those firms currently implementing ABC.

In contrast to Nguyen and Brooks (1997) and Chen et al. (2001), the non-intention group excluded firms without ABC knowledge since firms without intention to adopt ABC and firms without ABC knowledge seem not to be homogenous. Nguyen and Brooks (1997) and Chen et al. (2001) define their non-adopters of ABC, including firms with and without

ABC knowledge, as firms that did not plan to use ABC. In terms of firms with ABC knowledge, firms refused to plan to use ABC, irrespective of having ABC knowledge; they may consider it not to be suitable for their firms. If the firms without ABC knowledge later become familiar with ABC, they may adopt or plan to use it. It seems not to be rational if firms with and firms without ABC knowledge are included in the same group. Consequently, this study separated firms without ABC knowledge from firms with ABC knowledge, but non-intention to adopt ABC.

As shown in Table 6.23, an intention group consists of 12 firms currently using or implementing ABC, one abandoner (a firm adopted ABC in the past, but had abandoned it) planning to implement it again in the future and 23 firms intending to adopt ABC in the future. Hence, this group includes 36 firms. On the other hand, a non-intention group comprises one abandoner and 25 firms that did not expect or plan to implement ABC in the future. Total of firms in this group is 26.

This section provides the results and discussions as to the relationships between the adoption of ABC and the profiles of individual respondents and of their firms, such as gender, industry and size structure, organisational structure, company environment and cost structure, by comparing firms with intention and non-intention to adopt ABC.

6.10.1 Gender

Table 6.39 provides the relationship between gender of individual respondents and intention to adopt ABC. The results show that intention to adopt ABC of males is not significantly different to intention to adopt ABC of females (significance value = 0.307 at the 0.05 level). Nevertheless, 63.9% of males and 50% of females had intended to adopt ABC.

Table 6.39 Gender and intention to adopt ABC

Gender		Intention to adopt ABC		Total
		An Intention group	A non-intention group	
Male	Count	23	13	36
	% within intention group	63.9%	36.1%	100.0%
	% of total	37.1%	21.0%	58.1%
Female	Count	13	13	26
	% within intention group	50.0%	50.0%	100.0%
	% of total	21.0%	21.0%	41.9%
Total	Count	36	26	62
	% within intention group	58.1%	41.9%	100.0%
	% of total	58.1%	41.9%	100.0%

Note: Data drawn from Question 1 (gender of respondents).

6.10.2 Industry and size structure

Table 6.40 shows firms with intention and non-intention to adopt ABC by industry sector. There is no major difference across the profiles of both groups within each of the industry sub-categories. As expected, manufacturing firms had higher adoption of ABC than service firms did; most firms intending to adopt ABC were in agribusiness, and building and furnishing materials groups. Nevertheless, it was surprising that firms in a financial and securities group also had a relatively high adoption of ABC (3 firms had already used ABC and one firm intended to implement it).

Table 6.40 Industry of intention and non-intention group

Industry group	Manu- facture*	Ser- vice**	Intention group	Non- intention group
Agribusiness	*		3	3
Bank		**	1	2
Building and Furnishing Materials	*		4	1
Chemicals and Plastics	*		0	1
Commerce		**	0	1
Communication		**	2	0
Electrical, Products and Computer	*		1	2
Electronic Components	*		1	0
Energy	*		2	0
Finance and Securities		**	4	3
Food and Beverages	*		2	0
Health Care Services		**	3	0
Hotel and Travel Services		**	1	0
Household and Goods	*		1	0
Insurance		**	2	2
Jewellery and Ornament	*		1	0
Machinery and Equipment	*		1	0
Mining	*		0	0
Packaging	*		1	0
Printing and Publishing	*		0	1
Professional Services		**	0	1
Property Development		**	0	5
Pulp and Paper	*		0	1
Textiles Clothing and Footwear	*		2	2
Transportation		**	2	0
Vehicles and Parts	*		2	0
Warehouse and Silo	*		0	0
Other	*		0	1
Total			36	26

Note: Data drawn from Question 9 (industry group).

* Manufacturing firms, 21 manufacturing firms intended to adopt ABC and 12 manufacturing firms did not.

**Service firms, 15 service firms intended to adopt ABC and 14 service firms did not.

Tables 6.41 and 6.42 show the size of firms with intention and non-intention to adopt ABC. Both measures of size (number of employees and registered capital) show that there is no statistically significant difference in firm size between firms with and without intention to adopt ABC because significance values of number of employees and registered capital (0.162 and .0449, respectively) are above the confidence level of 0.05.

Table 6.41 Number of employees and ABC adoption

Number of employees	Intention to adopt ABC		Total
	Intention firms	A non-intention firms	
Less than 500			
• Count	10	13	23
• % within intention group	27.8%	50%	37.1%
• % of total	16.1%	21%	37.1%
501-1,500			
• Count	17	7	24
• % within intention group	47.2%	26.9%	38.7%
• % of total	27.4%	11.3%	38.7%
More than 1,500			
• Count	9	6	15
• % within intention group	25.0%	23.1%	24.2%
• % of total	14.5%	9.7%	24.2%
Total			
• Count	36	26	62
• % within intention group	100.0%	100.0%	100.0%
• % of total	58.1%	41.9%	100.0%

Note: Data drawn from Question 10 (number of employees).

Table 6.42 Capital of the company and ABC adoption

Capital of the company	Intention to adopt ABC		Total
	Intention firms	Non-Intention firms	
Less than 500 million baht			
• Count	17	14	31
• % within intention firms	47.2%	53.8%	50%
• % of total	27.4%	22.6%	50%
501-2,000 million baht			
• Count	7	7	14
• % within intention firms	19.4%	26.9%	22.6%
• % of total	11.3%	11.3%	22.6%
More than 2,000 million baht			
• Count	12	5	17
• % within intention firms	33.3%	19.2%	27.4%
• % of total	19.4%	8.1%	27.4%
Total			
• Count	36	26	62
• % within intention firms	100.0%	100.0%	100.0%
• % of total	58.1%	41.9%	100.0%

Note: Data drawn from Question 11 (capital of company).

This finding contrasts with many previous studies (Innes and Mitchell 1995b; Nguyen and Brooks 1997; Chung et al. 1997; Bjornenak 1997; Krumwiede 1998; Chen et al. 2001). The researchers report that larger firms are more likely to adopt ABC. A possibility explaining the results of the test is that all firms with and without intention to

adopt ABC are firms listed on the Stock Exchange of Thailand (SET) and firms listed on the SET normally are large. So, there is no significant difference in firm size of both groups of Thai firms.

6.10.3 Organisational structure

Seeing that an independent samples t-test has several assumptions and the data from this study did not satisfy the stringent assumptions, differences between firms with intention and non-intention to adopt ABC were statistically tested by using the Mann-Whitney U test, which is the non-parametric alternative to the t-test for independent samples (Pallant 2001). Since Gosselin (1997) studied the effect of organisational structure on the adoption and implementation of ABC, the relationship between the organisational structure and the adoption of ABC was also tested. Table 6.43 shows that no statistically significant differences in Gosselin's (1997) three major dimensions of organisational structures, comprising centralisation, vertical differentiation and formalisation, between firms with and without intention to adopt ABC were found. This result contrasts with the findings by Gosselin (1997) reporting that organisations with mechanistic characteristics, which have high formalisation, centralisation and vertical differentiation, prefer to adopt ABC. Nevertheless, Table 6.44 indicates that firms with intention to adopt ABC had higher levels of the three dimensions than those without intention did.

Table 6.43 Mann-Whitney U test for organisational structure

Organisational structure	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
-Centralised decision-making authority	466.000	1132.000	-.031	.975
-Vertical differentiation	372.500	672.500	-.793	.428
-Formalisation	362.500	687.500	-1.457	.145

Note: Data drawn from Question 13 (organisational structure).

Table 6.44 Descriptive statistics for organizational structure

Organisational structure	N	Mean rank	Sum of rank
Centralised decision-making authority			
• Intention to adopt ABC	36	31.44	1132.00
• Non-intention to adopt ABC	26	31.58	821.00
• Total	62		
Vertical differentiation			
• Intention to adopt ABC	35	31.36	1097.50
• Non-intention to adopt ABC	24	28.02	672.50
• Total	59		
Formalisation			
• Intention to adopt ABC	36	33.43	1203.50
• Non-intention to adopt ABC	25	27.50	687.50
• Total	61		

Note: Data drawn from Question 13 (organisational structure).

The relationship between organisational structures in other dimensions and the adoption of ABC was also tested. Table 6.45 shows that there is no significant relationship between the adoption of ABC and the organisational structures organised by functions, products/services, geographical areas or strategic business units (SBU). These results indicate that organisational structures are not associated with the adoption of ABC in Thailand. Therefore, they contrast with Gosselin's (1997) findings.

Table 6.45 Arrangement of organisational structure

Organisational structures		Intention firms	Non-intention firms	Total	Exact Sig.
By function	Yes	33	23	56	1.000
	No	3	2	5	
By products/services	Yes	22	17	39	0.787
	No	14	8	22	
By geographical areas	Yes	11	7	18	1.000
	No	25	18	43	
By SBU	Yes	17	9	26	0.438
	No	19	16	35	
Total		36	25	61	

Note: - One firm had left these questions unanswered.

- Data drawn from Question 14 (organisational structure).

6.10.4 Company environment

Several researchers (Nguyen and Brooks 1997; Bjornenak 1997; Chung et al. 1997; Chen et al. 2001) studied the relationship between the adoption of ABC and company environment, such as complexity of production process, diversity of products or intensity of competition. There are conflicts among their results. Nguyen and Brooks (1997) found that firms with greater complexity of production and higher competitive environment had the higher likelihood of implementing ABC. On the contrary, Bjornenak (1997) and Chen et al. (2001) argue that there is no statistical difference between adopters and non-adopters in intensity of competition. Hence, these relationships were also explored.

Table 6.46 indicates that there are statistically significant differences in variation in product complexity, production complexity and capital equipment intensity between firms with and without intention to adopt ABC and Table 6.47 shows that the firms with greater variation in product complexity, complexity of production and intensity of capital equipment had the higher potential of adopting ABC.

The result concerning production complexity is consistent with the finding by Nguyen and Brooks (1997) while the result relating to variation in product complexity differs from the results reported by Nguyen and Brooks (1997). At the same time, Table 6.46 indicates that statistically significant differences in product diversity, flexibility of manufacturing facility and competitive intensity of firms with and without intention to adopt ABC do not exist.

Table 6.46 Mann-Whitney U test for company environment and ABC adoption

Company environment	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
- Product-complexity variation	268.500	619.500	-2.839	.005
- Complexity of production	306.000	657.000	-2.275	.023
- Diversity in products	344.000	695.000	-1.678	.093
- Flexibility of manufacturing facility	422.000	773.000	-.518	.605
- Capital equipment intensity	281.500	632.500	-2.647	.008
- Intensity of competition	411.000	1077.000	-.874	.382

Note: Data drawn from Question 15 (technical complexity), Question 16 (complexity of production), Question 17 (diversity in products), Question 18 (flexibility of manufacturing), Question 19 (capital equipment intensity), Question 20 (intensity of competition).

Table 6.47 Descriptive statistics for company environment and ABC adoption

Company environment	N	Mean rank	Sum of ranks
Technical complexity			
• Intention to adopt ABC	35	36.33	1271.50
• Non-intention to adopt ABC	26	23.83	619.50
• Total	61		
Complexity of production			
• Intention to adopt ABC	35	35.26	1234.00
• Non-intention to adopt ABC	26	25.27	657.00
• Total	61		
Diversity in products			
• Intention to adopt ABC	35	34.17	1196.00
• Non-intention to adopt ABC	26	26.73	695.00
• Total	61		
Flexibility of manufacturing			
• Intention to adopt ABC	35	31.94	1118.00
• Non-intention to adopt ABC	26	29.73	773.00
• Total	61		
Capital equipment intensity			
• Intention to adopt ABC	35	35.96	1258.50
• Non-intention to adopt ABC	26	24.33	632.50
• Total	61		
Intensity of competition			
• Intention to adopt ABC	36	29.92	1077.00
• Non-intention to adopt ABC	26	33.69	876.00
• Total	62		

Note: Data drawn from Question 15 (technical complexity), Question 16 (complexity of production), Question 17 (diversity in products), Question 18 (flexibility of manufacturing), Question 19 (capital equipment intensity), Question 20 (intensity of competition).

The results are consistent with Chung et al.'s (1997) and Chen et al.'s (2001) results in respect of the product diversity and Nguyen and Brooks' (1997) findings in terms of the

flexibility of manufacturing facility. But, the results of this study contrast with the findings by Nguyen and Brooks (1997) and Chung et al. (1997) in terms of the competitive intensity. They found that companies in highly competitive industries were more likely to adopt ABC. Nevertheless, Bjornenak (1997) and Chen et al. (2001) found that there was no significant difference in the competitive pressures between adopters and non-adopters (relative to this study result).

With regard to the product diversity, Bjornenak (1997) and Nguyen and Brooks (1997) consider the number of products and customised products as proxies of product diversity. Similarly, Tables 6.48 and 6.49 show that there are no differences in frequency of new products/services and number of products between firms with and without intention to adopt ABC (significance values = 0.130 and 0.503, respectively, at the 0.05 level). Similar evidence was reported by Nguyen and Brooks (1997).

Table 6.48 Introduction of new products and ABC adoption

Introduction of new products	Intention to adopt ABC		Total
	Intention firms	Non-intention firms	
Seldom			
• Count	9	12	21
• % within intention firms	25.0%	48.0%	34.4%
• % of total	14.8%	19.7%	34.4%
Occasionally			
• Count	15	9	24
• % within intention firms	41.7%	36.0%	39.3%
• % of total	24.6%	14.8%	39.3%
Fairly / very often			
• Count	12	4	16
• % within intention firms	33.3%	16.0%	26.2%
• % of total	19.7%	6.6%	26.2%
Total			
• Count	36	25	61
• % within intention firms	100.0%	100.0%	100.0%
• % of total	59.0%	41.0%	100.0%

Note: Data drawn from Question 22 (introduction of new products).

Table 6.49 Number of products/services and ABC adoption

Number of products	Intention to adopt ABC		Total
	Intention firms	Non-intention firms	
Less than 20			
• Count	20	15	35
• % within intention firms	58.8%	60.0%	59.3%
• % of total	33.9%	25.4%	59.3%
20– 50			
• Count	6	2	8
• % within intention firms	17.6%	8.0%	13.6%
• % of total	10.2%	3.4%	13.6%
More than 50			
• Count	8	8	16
• % within intention firms	23.5%	32.0%	27.1%
• % of total	13.6%	13.6%	27.1%
Total			
• Count	34	25	59
• % within intention firms	100.0%	100.0%	100.0%
• % of total	57.6%	42.4%	100.0%

Note: Data drawn from Question 23 (number of product /service).

All in all, these results suggest that Thai firms with high variation in technical complexity among products/services, complexity of production/service processes and intensity of capital equipment were more likely to adopt ABC. Product diversity, flexibility of manufacturing/service facility and intensity of competition did not explain the adoption of ABC among Thai firms.

6.10.5 Cost structure

The main difference between ABC and the traditional cost systems is in the allocation of indirect or overhead costs. Accordingly, several studies (Bjornenak 1997; Nguyen and Brooks 1997; Chung et al. 1997; Chen et al. 2001) expect that the proportion of overhead costs to total costs would relate to the adoption of ABC. Tables 6.50 and 6.51 show that there are no statistically significant differences in the proportion of production overhead costs and non-production overhead costs to total costs between firms with and without intention to adopt ABC, even though most firms with intention to adopt ABC had

a higher proportion of production and non-production overhead costs than those without intention did (mean ranks = 28.67 versus 23.55 and 28.82 versus 23.34, respectively).

Table 6.50 Mann-Whitney U test for proportion of overhead costs

Overhead costs	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
- Production overhead	265.000	518.000	-1.207	.227
- Non-production overhead	260.500	513.500	-1.297	.195

Note: Data drawn from Question 30 (cost categories).

Table 6.51 Descriptive statistics for proportion of overhead costs

Overhead costs	N	Mean rank	Sum of ranks
Production overhead			
• Intention to adopt ABC	36	28.67	860.00
• Non-intention to adopt ABC	26	23.55	518.00
• Total	62		
Non-production overhead			
• Intention to adopt ABC	36	28.82	864.50
• Non-intention to adopt ABC	26	23.34	513.50
• Total	62		

Note: Data drawn from Question 30 (cost categories).

These mean that the proportion of overhead costs to total costs does not effect the adoption of ABC significantly. These results contrast with the findings by Bjornenak (1997), indicating that the adoption of ABC and a percentage of overhead costs have a positive relationship. Nevertheless, the results of this study are in accordance with several studies by Nguyen and Brooks (1997), Chung et al. (1997) and Chen et al. (2001).

In terms of characteristics of products/services, other than reliability, there are no significant differences between firms with and without intention to adopt ABC (Table 6.52). As shown in Table 6.53, the firms with intention to adopt ABC focused on the reliability of their products/services more than the firms with non-intention to adopt ABC did (mean ranks = 34.94 versus 26.73, respectively).

Table 6.52 Mann-Whitney U test for characteristics of products/services

Characteristics of products/services	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
- Price	448.000	1114.000	-.319	.750
- Quality	402.500	753.500	-1.085	.278
- Cost	409.500	760.500	-.933	.351
- Variety of products	366.000	717.000	-1.520	.128
- Reliability	344.000	695.000	-2.081	.037
- Delivery performance	369.000	720.000	-1.511	.131

Note: Data drawn from Question 21 (characteristics of product/service).

Table 6.53 Descriptive statistics for characteristics of products/services

Characteristics of products/services	N	Mean rank	Sum of ranks
Price			
• Intention to adopt ABC	36	30.94	1114.00
• Non-intention to adopt ABC	26	32.37	839.00
• Total	62		
Quality			
• Intention to adopt ABC	36	33.32	1199.50
• Non-intention to adopt ABC	26	28.98	753.50
• Total	62		
Cost			
• Intention to adopt ABC	36	33.13	1192.50
• Non-intention to adopt ABC	26	29.25	760.50
• Total	62		
Variety of products			
• Intention to adopt ABC	36	34.33	1236.00
• Non-intention to adopt ABC	26	27.58	717.00
• Total	62		
Reliability			
• Intention to adopt ABC	36	34.94	1258.00
• Non-intention to adopt ABC	26	26.73	695.00
• Total	62		
Delivery performance			
• Intention to adopt ABC	36	34.25	1233.00
• Non-intention to adopt ABC	26	27.69	720.00
• Total	62		

Note: Data drawn from Question 21 (characteristics of products/services).

In addition, there is a statistically significant difference in a pricing factor between firms with and without intention to adopt ABC (Table 6.54). The firms with intention to adopt ABC gave higher importance of a customer factor in pricing than firms without intention did (Table 6.55) whereas no significant differences in product cost and competitor factors between the two groups were found.

Table 6.54 Mann-Whitney U test for pricing factors

Factors in pricing	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
- Product cost	421.500	772.500	-.708	.479
- Customers	312.000	663.000	-2.382	.017
- Competitors	442.000	793.000	-.402	.688

Note: Data drawn from Question25 (factors in product/service pricing).

Table 6.55 Descriptive statistics for pricing factors

Factors in pricing	N	Mean rank	Sum of ranks
Product cost			
• Intention to adopt ABC	36	32.79	1180.50
• Non-intention to adopt ABC	26	29.71	772.50
• Total	62		
Customers			
• Intention to adopt ABC	36	35.83	1290.00
• Non-intention to adopt ABC	26	25.50	663.00
• Total	62		
Competitors			
• Intention to adopt ABC	36	32.22	1160.00
• Non-intention to adopt ABC	26	30.50	793.00
• Total	62		

Note: Data drawn from Question25 (factors in product/service pricing).

Moreover, Table 6.56 shows that there is a statistically significant difference in the importance of the budget towards decentralized decisions between firms with and without intention to adopt ABC. The firms intending to adopt ABC considered that budget was important for decentralized decisions (Table 6.57).

Table 6.56 Mann-Whitney U test for importance of budget

Importance budget toward areas	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
- Cost control	412.500	763.500	-.870	.385
- Performance evaluation	398.000	749.000	-1.147	.251
- Compensation	401.000	1067.000	-1.012	.312
- Operational planning	379.000	730.000	-1.413	.158
- Decentralised decisions	331.000	682.000	-2.084	.037

Note: Data drawn from Question 27 (importance of budget toward various areas).

Table 6.57 Descriptive statistics for importance of budget

Importance budget toward areas	N	Mean rank	Sum of ranks
Cost control			
• Intention to adopt ABC	36	33.04	1189.50
• Non-intention to adopt ABC	26	29.37	763.50
• Total	62		
Performance evaluation			
• Intention to adopt ABC	36	33.44	1204.00
• Non-intention to adopt ABC	26	28.81	749.00
• Total	62		
Compensation			
• Intention to adopt ABC	36	29.64	1067.00
• Non-intention to adopt ABC	26	34.08	886.00
• Total	62		
Operational planning			
• Intention to adopt ABC	36	33.97	1223.00
• Non-intention to adopt ABC	26	28.08	730.00
• Total	62		
Decentralised decisions			
• Intention to adopt ABC	36	35.31	1271.00
• Non-intention to adopt ABC	26	26.23	682.00
• Total	62		

Note: Data drawn from Question 27 (importance of budget toward various areas).

6.11 Summary

The survey findings in this chapter highlight a number of interesting aspects concerning ABC in Thailand. Many key findings were made in this chapter.

First, even if the usage rate of ABC in Thailand was low, the level of intention to adopt ABC was relatively high. The adoption rate of ABC in Thailand was as high as 58% of all respondent firms having ABC knowledge (based on the knowledge of ABC and the adoption of ABC as the idea) or nearly 36% of all respondent firms, which include firms with and without ABC knowledge (based on the adoption of ABC as the idea). The low rate of usage was not due to ignorance of the new costing method, but rather due to other factors, such as the inherent difficulties with ABC design and implementation and the higher priorities of other changes or projects. So, it is expected that the adoption rate of ABC in Thailand will be much higher in the future.

Second, the increased competition and growing costs, as well as the inability of the traditional costing systems to provide information for management in the new environment were major reasons for adopting ABC. Most ABC users had a high level of satisfaction with the gained benefits of ABC, especially in terms of more accurate product costs, cost control improvement, better performance measurement, continuous improvement and increase in competitive capability, as well as increase in profitability. In addition, most users perceived that ABC was very important and necessary in the current environment. They also believed that it had taken a part in helping their firms to survive in the changed environment. Most users had perceived the level of success of implementing ABC to be favourable (average-good levels).

Third, most ABC users perceived similarly that behavioural and organisational variables, particularly top management support, were important to the successful implementation of ABC. At the same time, most problems in implementing ABC in Thai firms were relevant to more technical barriers than behavioural barriers.

Finally, Thai firms with high variation in product complexity, complexity of production/service processes and intensity of capital equipment had the high likelihood of adopting ABC.

The next chapter will provide the results and discussions as to organisational learning and report the results of proposition testing and interview data analysis.

Chapter 7

Results, Findings and Discussions: Organisational Learning, Propositions and Narrative Analysis

7.1 Introduction

Chapter 6 provided the results of analysing data from questionnaires in a number of aspects. In this chapter, the organisational learning among Thai firms and the relationship between organisational learning and ABC are described. In addition, this chapter includes reports of the results of testing the four propositions set down in Chapter 5. These propositions are related to the variation in the degree of ABC adoption before and after the economic crisis of 1997, the differences in the perceived reasons for adopting ABC between companies implementing and companies abandoning ABC and the relationship between stages of the implementation of ABC and changes in various functional roles, as well as the relationship between the success of ABC and behavioural and organisational variables. Finally, the interview data are provided in terms of narrative analysis.

7.2 Organisational Learning

Kloot (1997) states that organisational learning usually occurs when organisations are in a changed and competitive environment. Therefore, in order to investigate organisational learning of Thai firms, all participants were asked how their organisations had adapted to

the changed conditions caused by the currency crisis. A five-point scale (1 = 'not at all' and 5 = 'extremely') was used in measuring the responses.

As shown in Table 7.1, all participants (101) reported that since the economic crisis, employees of their firms had understood the changes in the external environment and the need for change significantly (mean scores = 4.04, minimum = 3, maximum = 5). Also, their firms had changed their policies to adapt to the changed conditions caused by the crisis (mean scores = 3.94, minimum = 2, maximum = 5) and had restructured or reorganised to survive (mean scores = 3.66, minimum = 1, maximum = 5). According to Hurst (1995), when the business is in economic crisis, the crisis forces an organisation to learn to survive by restoring itself, such as restructuring or reorganising. Kloot (1997) also suggests that organisational learning results from understanding the changes taking place in the external environment and adapting the organisation to suit the changed environment. Thus, the results of this study indicate that the crisis had brought about organisational learning in Thai organisations and the Thai businesses were learning for survival, especially in Hurst's (1995) 'the learning loop'.

Table 7.1 Adaptation of organisations during the crisis

Adaptation of organisations	N	Minimum	Maximum	Mean	S.D.
- Employees' understanding as to the changes in the external environment and the need for change.	101	3	5	4.04	.66
- Changes in the company's policies to adapt to the changed conditions caused by the crisis.	101	2	5	3.94	.79
- Restructuring or reorganising to survive.	101	1	5	3.66	1.06
- Employees' analysis of problems or mistakes.	101	1	5	3.53	.81
- Providing training in the new techniques.	101	2	5	3.52	.79
-Employees' performance improvement in mind when using the new techniques.	101	1	5	3.52	.81
-Employees' solutions by testing new techniques.	101	1	5	3.50	.87
-Employees' alteration of their behaviours in accordance with the new techniques.	101	1	5	3.50	.77

Note: - A five-point scale (1= 'not at all' and 5 = 'extremely').

- Data drawn from Question 57 and 64 (organisational learning).

To compare organisational learning of firms with intention and non-intention to adopt ABC, the Mann-Whitney U test was used to test the differences between two groups. Table 7.2 shows that there are significant differences in employees' understanding of the changes in the external environment, testing new techniques or innovations for solution, receiving training in the new techniques, altering their behaviours in accordance with the new techniques and improving their performance between intention and non-intention groups (at the 0.05 level of significance).

Table 7.2 Mann-Whitney U test for adaptation of organisations during the crisis

Adaptation of organisations	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
- Employees' understanding as to the changes in the external environment and the need for change.	342.500	693.500	-2.003	.045
- Changes in the company's policies to adapt to the changed conditions caused by the crisis.	458.500	1124.500	-.150	.881
- Restructuring or reorganising to survive.	453.000	804.000	-.227	.821
- Employees' analysis of problems or mistakes.	390.000	741.000	-1.194	.232
- Providing training in the new techniques.	260.000	611.000	-3.226	.001
-Employees' performance improvement in mind when using the new techniques.	279.000	630.000	-2.894	.004
-Employees' solutions by testing new techniques.	283.000	634.000	-2.846	.004
-Employees' alteration of their behaviours in accordance with the new techniques.	270.000	621.000	-3.069	.002

Note: - At the 0.05 level of significance.

- Data drawn from Questions 57 and 64 (organisational learning).

Table 7.3 shows that mean ranks and sum of ranks in these questions of an intention group are higher than those of a non-intention group. This means that Thai firms with intention to adopt ABC had more understanding about the changed environment and provision of training in new knowledge or techniques for their employees than firms without intention did. In addition, this indicates that Thai firms with intention to adopt ABC were learning to solve their problems by testing new knowledge or techniques and one of their new techniques was the implementation of ABC. According to Newman (2000), in the double loop mode, an organisation solves the problems in a novel manner. Hence, these results (Table 7.3) explain that the firms with intention to adopt ABC had more learning in the double loop mode than the firms with non-intention did and the adoption of ABC by Thai firms might promote learning in the double-loop mode. However, firms with and without intention to adopt ABC had organisational learning

during the crisis because Tables 7.1 and 7.3 show that they all had changed in their policies to adapt to the changed conditions caused by the crisis and had restructured or reorganised to survive. So, even if ABC has not been pursued, other change programs may have been explored.

Table 7.3 Descriptive statistics for adaptation of organisations during the crisis

Adaptation of organisations	N	Mean rank	Sum of ranks
- Employees' understanding as to the changes in the external environment and the need for change.			
• Intention to adopt ABC	36	34.99	1259.50
• Non-intention to adopt ABC	26	26.67	693.50
• Total	62		
- Changes in the company's policies to adapt to the changed conditions caused by the crisis.			
• Intention to adopt ABC	36	31.24	1124.50
• Non-intention to adopt ABC	26	31.87	828.50
• Total	62		
- Restructuring or reorganising to survive.			
• Intention to adopt ABC	36	31.92	1149.00
• Non-intention to adopt ABC	26	30.92	804.00
• Total	62		
- Employees' analysis of problems or mistakes.			
• Intention to adopt ABC	36	33.67	1212.00
• Non-intention to adopt ABC	26	28.50	741.00
• Total	62		
- Providing training in the new techniques.			
• Intention to adopt ABC	36	37.28	1342.00
• Non-intention to adopt ABC	26	23.50	611.00
• Total	62		
-Employees' performance improvement in mind when using the new techniques.			
• Intention to adopt ABC	36	36.75	1323.00
• Non-intention to adopt ABC	26	24.23	630.00
• Total	62		
-Employees' solutions by testing new techniques.			
• Intention to adopt ABC	36	36.64	1319.00
• Non-intention to adopt ABC	26	24.38	634.00
• Total	62		
-Employees' alteration of their behaviours in accordance with the new techniques.			
• Intention to adopt ABC	36	37.00	1332.00
• Non-intention to adopt ABC	26	23.88	621.00
• Total	62		

Note: Data drawn from Question 57 and 64 (organisational learning).

As shown in Table 7.1, since the crisis, all Thai firms had understood the changed external environment and accepted the need for change. In addition, they had changed their policies to adapt to the changed conditions caused by the crisis and have restructured or reorganised to survive, as well as tested new techniques or innovations for their solution. From interview data, some firms had adopted ABC as their innovation. Some firms had adopted other innovations, such as ISO 9001 or 9002 or TQM. Although some firms had not adopted innovations or new techniques (such as ABC or ISO 9001 or 9002), they had reorganised (such as change in their operating system or improvement of flow of work) in order to survive in the crisis. These results indicate that Thai firms were learning to change themselves to fit the changed environment and the crisis seemed to be a factor driving Thai firms to build organisational learning.

7.3 Learning and ABC Implementation

ABC is a management tool affecting an organisation's operations and behaviours. Kloot et al. (1999) state that the development of management systems, such as ABC, is associated with organisational learning. To explore the relationship between ABC and organisational learning, the respondents were asked to evaluate changes in their firms as a result of the implementation of ABC by rating items on a seven-point scale where one (1) represented 'strongly disagree' and (7) represented 'strongly agree'.

As shown in Table 7.4, since implementing ABC, the accounting department had still retained access to and control of information (mean scores = 5.69, minimum = 4, maximum = 7). In addition, an increase in communication across functional areas (mean scores = 5.62, minimum = 4, maximum = 6) and encouragement of cross-functional teams (mean scores = 5.46, minimum = 4, maximum = 6) were the significant changes

in their firms by virtue of the implementation of ABC. According to Brewer (1998), people from collectivist cultures, including Thai people, would be comfortable with the implementation of ABC since those from the collectivist cultures would prefer the cross-functional team-based work to the individualised work and ABC is an innovation focusing on team-based work. The results in Table 7.4 are consistent with Brewer's (1998) findings.

Table 7.4 Descriptive statistics for changes in various functions

Functions	N	Minimum	Maximum	Mean	S.D
-Accounting department's retaining of access to and control of information.	13	4	7	5.69	.85
-Increase of communication across functional areas.	13	4	6	5.62	.77
-Encouragement efficient use of cross- functional teams and working groups.	13	4	6	5.46	.78
-Increased responsibility in other departments ,other than accounting department.	13	4	6	5.38	.65
-Development of the differentiated structures.	13	4	7	5.38	1.12
-Employee's monitor of their activities for continuous improvement.	13	4	6	5.23	.60
-Increased fairness of performance evaluation criteria.	13	4	6	5.23	.83
-Transformation of strategic management	13	2	7	5.08	1.32
-Modification of fundamental norms or policies.	13	3	6	5.00	1.00
-Changed role of the accounting function.	13	2	6	4.85	1.07
-Encouragement of the breakdown if departmental barriers.	13	3	6	4.69	1.03
-Changed overall rules.	13	2	7	4.69	1.25
-Changed roles of the non-accounting managers.	13	2	6	4.69	1.11
-Independent decision-making of the production departments.	12	3	6	4.67	.98
-Changed roles of the authority of organisation.	13	1	6	4.08	1.32

Note: - N =13, One respondent had left this question unanswered since he claimed that his firm was at the initial stage of developing and installing ABC. He could not evaluate this question.

- Data drawn from Question 58 (changes due to ABC implementation).

In addition, an increase in responsibility in other departments, other than the accounting department (mean = 5.38, minimum = 4, maximum = 6) and differential structures (mean = 5.38, minimum = 4, maximum = 7) were the significant changes on account of implementing ABC. Increased continuous improvement and fairness of performance evaluation (mean scores = 5.23, minimum = 4, maximum = 6) were also the minor changes owing to the implementation of ABC. The results in Table 7.4 indicate that the implementation of ABC encouraged teamwork across functional areas, non-accounting job effort (increased responsibility) and performance measurement.

In addition, respondents were asked which areas and departments were affected by the implementation of ABC. They were asked to rate items on a five-point scale where one (1) represented 'no changes' and five (5) 'very significant changes'. The responses are summarised in Tables 7.5 and 7.6.

Table 7.5 Influence of ABC on functions

Functions	N	Minimum	Maximum	Mean	S.D
Accounting	13	3	5	4.00	.58
Production	13	2	5	3.62	.77
Administrative	13	2	4	3.00	.58
Marketing	13	1	4	2.77	1.01

Note: - A five-point scale (1 = 'no changes' and 5 = 'very significant changes').

- N=13, One respondent had left this question unanswered since he claimed that his firm was at the initial stage of developing and installing ABC. He could not evaluate this question.

- Data drawn from Question 60 (functional areas changed due to ABC implementation).

Table 7.5 shows that the functional role of the accounting department had changed significantly owing to the implementation of ABC (mean scores = 4.00), followed by the production department (mean scores = 3.62). Similar evidence is reported by Bhimani and Pigott (1992), suggesting that the roles of the accounting and production functions altered by virtue of the ABC implementation. They state that accountants have become more familiar with the operational processes, organisational activities and management of the organisation, especially at the factory level. The production employees have also perceived accounting data as a managerial tool at the factory level.

Table 7.6 Influence of ABC on activities

Activities	N	Minimum	Maximum	Mean	S.D
Strategic focus	13	3	5	3.77	.60
Process	13	2	4	3.54	.66
Pricing strategy	13	2	4	3.23	.73
Product mix	13	1	4	3.15	.90
Incentive compensation	13	1	5	3.15	1.14
Customer segments	13	1	5	2.92	.95
Distribution channels	13	1	4	2.92	.86

Note: - A five-point scale (1 = 'no changes' and 5 = 'very significant changes').

- N=13, One respondent had left this question unanswered since he claimed that his firm was at the initial stage of developing and installing ABC. He could not evaluate this question.

- Data drawn from Question 59 (activities influenced from ABC implementation).

Additionally, Table 7.6 shows that the implementation of ABC had the most influence on the strategic focus area (mean scores = 3.77), followed by process (mean scores = 3.54) and pricing strategy (mean scores 3.23). These results are consistent with the findings by Chen et al. (2001), indicating that the use of ABC has mainly impacted on process improvement and price decision areas.

Cooper and Zmud (1990), who studied the implementation model of information technology (IT) innovations, claim that the implementation process of IT innovations is

associated with organisational change and Krumwiede and Roth (1997), who adapted Cooper and Zmud's (1990) model to the implementation of ABC, maintain that ABC is an IT innovation of which the implementation process entails organisational change. Several studies in the literature (Friedlander 1984; Dixon 1994; Senge et al. 1994) claim that organisational change and organisational learning support each other due to the fact that organisational learning brings about change in the organisation continuously. In addition, Huber (1991) and Swieringa and Wierdsma (1992) state that the transformation of organisational behaviours represents organisational learning. The results in Tables 7.4, 7.5 and 7.6 show that the implementation of ABC resulted in the alteration of behaviour in an organisation. Hence, these results suggest that the implementation of ABC leads the organisation to learning.

Argyris (1977; 1999) classifies the types of organisational learning as 'single-loop learning', which is to alter behaviour based on routine, and as 'double-loop learning', which solves the problems of an organisation by altering the underlying policies or norms. Both modes of organisational learning are necessary for all organisations (Argyris 1999). Single-loop learning is suitable for solving the operating problems (Fulmer 1994) while double-loop learning enables the organisation to survive in periods of rapid transformation (Kloot 1994) and in the long term (Foil and Lyles 1985).

Foil and Lyles (1985) suggest that double-loop learning concentrates on developing differentiated structures or rules. Kloot et al. (1999) show that double-loop learning comprises new knowledge acquisition, sharing of information across diverse groups, multiple interpretations across diverse groups and development of new mechanisms for storing memory. According to Table 7.4, the implementation of ABC had developed the differentiated structures of an organisation and resulted in communication across

functional areas to share and interpret information, as well as stored information for future use to improve the operation of the organisation.

Furthermore, Morgan (1998) claims that the management systems that generate continuous improvement promote double-loop learning as they build information, insights and capacities that can go forward to new levels of development. Table 7.4 also shows that the implementation of ABC increased continuous improvement. Thus, the implementation of ABC seemed to promote learning in the double-loop mode.

All in all, ABC is a management tool and its implementation entails organisation's new insights and modified behaviour. As shown in Tables 7.4 and 7.5, since implementing ABC, the functional roles of the accounting and production departments had changed significantly and the responsibility of employees in other departments had increased. The interview data also showed that the implementation of ABC had altered employees' behaviours and responsibilities. These changes show that Thai firms using ABC were learning the implementation of ABC and had changed their behaviours to be consonant with the concept of ABC in order to succeed in the implementation of ABC. Hence, the implementation of ABC by Thai firms is associated with organisational learning.

7.4 Propositions- Test Results

In Chapter 5, four propositions concerning the implementation of ABC and organisational learning were created. The results of testing these propositions are reported in this section.

7.4.1 Proposition 1

It was expected that the economic crisis would force Thai firms to create learning to survive by adopting ABC. So, Proposition 1 was generated.

Proposition 1: There will be significant variation in the degree of ABC adoption before and after the economic crisis of 1997.

This proposition was tested by the chi-square test. Testing indicates that Proposition 1 cannot be accepted. Tables 7.7 and 7.8 show that the degree of ABC adoption before the economic crisis (1997) is not different from that after the crisis because the significance value (significance value = 0.505) is above the alpha level of 0.05. 5 out of 12 adopters had first contemplated ABC after the crisis (1997).

Table 7.7 Chi-square tests for the degree of ABC adoption and the beginning year of ABC adoption

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	1.296	1	.255	.505
Continuity Correction	0.117	1	.733	
Likelihood Ratio	1.949	1	.163	.505
Fisher's Exact Test				.505
Linear-by-Linear Association	1.204	1	.273	.505
N of Valid Cases	14			

Note: - At the 0.05 level of significance.

- Data drawn from Question 35 (adoption) and Question 38 (the beginning year).

- N = 14: 12 adopters and 2 abandoners.

Table 7.8 The beginning year of ABC adoption and plan to implement ABC

The beginning year of ABC adoption	Adoption of ABC		Total
	Adopters	Abandoners	
Pre the crisis*			
• Count	7	2	9
• % within total	50%	14.3%	64.3%
Post the crisis**			
• Count	5	0	5
• % within total	35.7%	.0%	35.7%
Total			
• Count	12	2	14
• % within total	85.7%	14.3%	100.0%

Note: Data drawn from Question 35 (adoption of ABC) and Question 38 (the beginning year).

* Pre the crisis includes the year 1997 and before 1997.

** Post the crisis includes the year 1998-2001.

Three possibilities were considered to explain the results of this test. First, there was a small number of firms implementing ABC (12 adopters and 2 abandoners); therefore, it was difficult to achieve statistical significance. The second possibility explaining this test result was the postponement of implementing ABC on account of higher priorities of other projects. As expected, the economic crisis would force Thai firms to take on new techniques or innovations, ABC in particular, to their organisations to improve their management and profitability to survive in a turbulent environment. According to Table 6.25, a significant reason for not adopting ABC was higher priorities of other projects and according to the interview data, an example of a higher priority project was the ISO project, which is a long-term project required by customers. So, many non-adopters could not adopt ABC at the current time. However, 23 firms that had not adopted ABC intended or planned to implement ABC in the future. Some interviewees not adopting ABC maintained that ABC was their next management project.

They stated reasons for the intention to implement ABC that they believed ABC would improve their management (in terms of supporting ISO 9001 and TQM, controlling cost or pricing) entailing increased profitability and competitive advantages. Thus, it is

expected that in the near future, Proposition 1 will be accepted on account of a higher degree of ABC adoption in Thailand.

Finally, since Yakhou and Dorweiler (1995) found that 'a competition factor' is one of the motivations to adopt management accounting innovations, it was feasible that encountering higher competition from other lower cost developing countries (such as China and Vietnam) before 1997 (Hataiseree 1998; Abonyi 1999; Chareonwongsak 1999) might have encouraged several Thai firms to adopt ABC before the crisis.

Even though Proposition 1 cannot be accepted, the results from Table 6.21 and the interview data indicate that many non-adopters did not ignore the new cost management systems, such as ABC. They also showed their intention to adopt ABC in the future because they believed that ABC would increase profitability and competitive advantages. Therefore, ABC is an innovation that many Thai firms had shown interest in and planned to implement.

Besides, from the results of Table 7.1 and the interview data, since the crisis, all Thai firms had understood the changed external environment and changed their policies to adapt to the changed conditions. To stay in the current environment, they had improved their operation and management by reorganising (such as changes in their operating system or improvement of flow of working) or taking on new techniques or innovations (such as ISO 9001 or 9002 or TQM). According to the literature, in the recessionary economy, a company learns to reinstate itself to endure (Hurst 1995) and a process of transforming an organisation to fit the changed environment shows organisational learning (Kloot 1997). Thus, the results of Table 7.1 and the interview data indicate that

the economic crisis forced Thai firms to build organisational learning, in terms of reorganisation or the adoption of innovations, for their survival.

7.4.2 Proposition 2

Proposition 2: Changes in different functional roles in a firm at the different stages of ABC implementation will vary significantly.

A one-way ANOVA (analysis of variance) was considered to be appropriate to test this proposition on the grounds of testing differences of means of more than two groups at a time. In addition, the fact that ANOVA is sensitive to uneven class sizes has been recognised and allowed for in the analysis. As shown in Table 7.9, a result of testing shows that only two variables (information control by the accounting department and change of the accounting function) were found to have significant differences at the different stages of the implementation of ABC (significance values = 0.012 and 0.043, respectively).

Table 7.9 One-way ANOVA test for changes in various functions and stages of ABC implementation

Functions	Sum of squares	df	Mean square	F	Sig.
-Accounting department's retaining of access to and control of information. • Between groups* • Within groups • Total	5.136 .500 5.636	5 5 10	1.027 .100	10.273	.012
-Increase of communication across functional areas. • Between groups • Within groups • Total	1.382 2.800 4.182	5 5 10	.276 .560	.494	.772
-Encouragement efficient use of cross-functional teams and working groups. • Between groups • Within groups • Total	1.527 3.200 4.727	5 5 10	.305 .640	.477	.782
-Increased responsibility in other departments, other than accounting department. • Between groups • Within groups • Total	1.027 1.700 2.727	5 5 10	.205 .340	.604	.703
-Development of the differentiated structure. • Between groups • Within groups • Total	3.527 9.200 12.727	5 5 10	.705 1.840	.383	.842
-Employee's monitor of their activities for continuous improvement. • Between groups • Within groups • Total	1.245 1.300 2.545	5 5 10	.249 .260	.958	.518
-Increased fairness of performance evaluation criteria. • Between groups • Within groups • Total	1.682 4.500 6.182	5 5 10	.336 .900	.374	.848
-Transformation of strategic management. • Between groups • Within groups • Total	3.609 15.300 18.909	5 5 10	.722 3.060	.236	.931
-Modification of fundamental norms or policies. • Between groups • Within groups • Total	6.700 3.300 10.000	5 5 10	1.340 .660	2.030	.228
-Changed role of the accounting function. • Between groups • Within groups • Total	10.909 2.000 12.909	5 5 10	2.182 .400	5.455	.043

Table 7.9 (Continued)					
Functions	Sum of squares	df	Mean square	F	Sig.
-Encouragement of the breakdown of departmental barriers.					
• Between groups	4.182	5	.836	.523	.753
• Within groups	8.000	5	1.600		
• Total	12.187	10			
Changed overall rules.					
• Between groups	5.382	5	1.076	.420	.818
• Within groups	12.800	5	2.560		
• Total	18.182	10			
-Independent decision-making of the production departments.					
• Between groups	6.100	5	1.220	1.220	.436
• Within groups	4.000	4	1.000		
• Total	10.100	9			
-Changed roles of the non-accounting managers.					
• Between groups	11.382	5	2.276	4.065	.075
• Within groups	2.800	5	.560		
• Total	14.182	10			
-Changed roles of the authority of organisation.					
• Between groups	8.800	5	1.760	.786	.601
• Within groups	11.200	5	2.240		
• Total	20.000	10			

Note: - Data drawn from Question 36 (stages of ABC implementation) and Question 58 (changes in various functions).

*Between groups means between stages of the ABC implementation.

This means that in each stage of the implementation of ABC, information control and the functional role of the accounting department had changed significantly. In the initial stage of the implementation of ABC (investing/developing the infrastructure needed to facilitate change and support ABC), the functional role of the accounting department was hardly changed (mean scores = 2) and the accounting department had high power in access to and control of information (mean scores = 7). When a firm had developed the implementation of ABC to reach higher stages, the functional role of the accounting department was changed significantly (mean scores = 5) and its power in access to and control of information declined substantially (mean scores in the integrating stage = 4.5).

The functional roles of the accounting department had more changes in each stage of implementing ABC than those of other departments did.

It is possible that, previously, the accounting data were under arrangement and control of just the accounting department. Due to the implementation of ABC, other non-accounting departments, such as top management, production or engineering departments, had changed their roles to more preparation and usage of ABC data. Power in access to and control of information of the accounting department was altered. Therefore, information control and the functional roles of the accounting department varied according to the stages of the implementation of ABC. Especially, power in access and control of information by the accounting department had declined in higher stages of the implementation of ABC (Table 7.10).

According to the interview data, the implementation of ABC had made employees in non-accounting departments have more responsibility for collecting and reporting data, as well as utilising cost information. However, it does not mean that the accounting department had no power in access to and control of information after adopting ABC. In fact, it still had power in access to and control of information (Table 7.4), but its power and control of information was reduced by the implementation of ABC (Tables 7.9 and 7.10). This result contrasts with the findings by Morakul and Wu (2001). They suggest that the implementation of ABC in Thailand must keep power in access to and control of information within the accounting department and must not empower the production department. It is possible that Morakul and Wu's (2001) study is limited in government-owned utility enterprises, which have the unique context of the enterprises, while this study involves the public and private firms in various industries.

Table 7.10 Descriptive statistics for changes in various functions and stages of ABC implementation

Functions	Stages of the ABC implementation	N	Mean	S.D.	Min	Max
-Accounting department's retaining of access to and control of information.	-Investing the infrastructure	1	7.00	.	7	7
	-Developing and installing.	1	6.00	.	6	6
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	6.00	.	6	6
	-Daily practices	5	6.00	0.00	6	6
	-Integrating with other systems	2	4.50	0.71	4	5
	Total	11	5.82	0.75	4	7
-Increase of communication across functional areas.	-Investing the infrastructure	1	6.00	.	6	6
	-Developing and installing.	1	6.00	.	6	6
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	6.00	.	6	6
	-Daily practices	5	5.80	0.45	5	6
	-Integrating with other systems	2	5.00	1.41	4	6
	Total	11	5.73	0.65	4	6
-Encouragement efficient use of cross-functional teams and working groups.	-Investing the infrastructure	1	6.00	.	6	6
	-Developing and installing.	1	5.00	.	5	5
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	6.00	.	6	6
	-Daily practices	5	5.60	0.50	5	6
	-Integrating with other systems	2	5.00	1.40	4	6
	Total	11	5.55	0.60	4	6
-Increased responsibility in other departments , other than accounting department.	-Investing the infrastructure	1	5	.	5	5
	-Developing and installing.	1	6	.	6	6
	-A pilot project	1	6	.	6	6
	-Full implementation of ABC	1	6	.	6	6
	-Daily practices	5	5.40	0.55	5	6
	-Integrating with other systems	2	5.50	0.71	5	6
	Total	11	5.55	0.52	5	6
-Development of the differentiated structure	-Investing the infrastructure	1	6.00	.	6	6
	-Developing and installing.	1	4.00	.	4	4
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	6.00	.	6	6
	-Daily practices	5	5.40	1.52	4	7
	-Integrating with other systems	2	6.00	0.00	6	6
	Total	11	5.55	1.13	4	7
-Employee's monitor of their activities for continuous improvement.	-Investing the infrastructure	1	6.00	.	6	6
	-Developing and installing.	1	5.00	.	5	5
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	5.00	.	5	5
	-Daily practices	5	5.20	0.45	5	6
	-Integrating with other systems	2	5.50	0.71	5	6
	Total	11	5.36	0.51	5	6
-Increased fairness of performance evaluation criteria.	-Investing the infrastructure	1	6.00	.	6	6
	-Developing and installing.	1	5.00	.	5	5
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	5.00	.	5	5
	-Daily practices	5	5.00	1.00	4	6
	-Integrating with other systems	2	5.50	0.71	5	6
	Total	11	5.27	0.79	4	6
-Transformation of strategic management	-Investing the infrastructure	1	6.00	.	6	6
	-Developing and installing.	1	5.00	.	5	5
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	4.00	.	4	4
	-Daily practices	5	4.80	1.64	2	6
	-Integrating with other systems	2	5.50	2.12	4	7
	Total	11	5.09	1.38	2	7

Table 7.10 (continued)						
Functions	Stages of the ABC implementation	N	Mean	S.D.	Min	Max
-Modification of fundamental norms or policies.	-Investing the infrastructure	1	6.00	.	6	6
	-Developing and installing.	1	3.00	.	3	3
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	5.00	.	5	5
	-Daily practices	5	4.80	0.84	4	6
	-Integrating with other systems	2	5.50	0.71	5	6
	Total	11	5.00	1.00	3	6
-Changed role of the accounting function.	-Investing the infrastructure	1	2.00	.	2	2
	-Developing and installing.	1	6.00	.	6	6
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	5.00	.	5	5
	-Daily practices	5	5.00	0.71	4	6
	-Integrating with other systems	2	5.00	0.00	5	5
	Total	11	4.91	1.14	2	6
-Encouragement of the breakdown of departmental barriers.	-Investing the infrastructure	1	5.00	.	5	5
	-Developing and installing.	1	4.00	.	4	4
	-A pilot project	1	4.00	.	4	4
	-Full implementation of ABC	1	6.00	.	6	6
	-Daily practices	5	5.00	1.41	3	6
	-Integrating with other systems	2	4.00	0.00	4	4
	Total	11	4.73	1.10	3	6
-Changed overall rules.	-Investing the infrastructure	1	5.00	.	5	5
	-Developing and installing.	1	3.00	.	3	3
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	4.00	.	4	4
	-Daily practices	5	4.80	1.79	2	7
	-Integrating with other systems	2	5.00	0.00	5	5
	Total	11	4.73	1.35	2	7
-Independent decision-making of the production departments.	-Investing the infrastructure	1	4.00	.	4	4
	-Developing and installing.	1	3.00	.	3	3
	-A pilot project	1	4.00	.	4	4
	-Full implementation of ABC	1	6.00	.	6	6
	-Daily practices	5	5.00	0.82	4	6
	-Integrating with other systems	2	5.00	1.41	4	6
	Total	11	4.70	1.06	3	6
-Changed roles of the non-accounting managers.	-Investing the infrastructure	1	2.00	.	2	2
	-Developing and installing.	1	4.00	.	4	4
	-A pilot project	1	6.00	.	6	6
	-Full implementation of ABC	1	6.00	.	6	6
	-Daily practices	5	4.80	0.84	4	6
	-Integrating with other systems	2	5.00	0.00	5	5
	Total	11	4.73	1.19	2	6
-Changed roles of the authority of organisation.	-Investing the infrastructure	1	2.00	.	2	2
	-Developing and installing.	1	4.00	.	4	4
	-A pilot project	1	5.00	.	5	5
	-Full implementation of ABC	1	4.00	.	4	4
	-Daily practices	5	4.60	0.89	4	6
	-Integrating with other systems	2	3.00	2.83	1	5
	Total	11	4.00	1.41	1	6

Note: Data drawn from Question 36 (stages of ABC implementation) and Question 58 (changes in various function).

Other variables had no significant differences at the different stages of the implementation of ABC. Similar to Proposition 1, it was likely that the distribution of data was rather wide: most standard deviation values are above 1 because the number of ABC users (n=12) was small. So, there were a few variables to reach statistical significance even if there was an underlying difference.

All in all, the development of ABC had affected the functional roles within an organisation, the accounting function, in particular. Organisational members had changed their behaviours to correspond with the ABC concept. Huber (1991) and Swieringa and Wierdsma (1992) state that the transformation of behaviour in an organisation promotes organisational learning. This indicates that members in the organisation had learning as to the implementation of ABC. Thus, the development of ABC is associated with organisational learning.

7.4.3 Proposition 3

Proposition 3: There will be significant differences between companies implementing ABC and companies abandoning ABC in their perceived reasons for adopting ABC.

Normally, the independent sample t-test is employed to test differences of means of two groups at a time and t-tests uneven class sizes have been recognised and allowed for in the analysis. Thus, the independent sample t-test was considered to be suitable for testing this proposition. According to Table 7.11, the proposition can be accepted for only two reasons (currently facing allocation problems and inability of the existing cost system to adapt to increased automation in the production process) at the 0.05 level of significance (the significance values = 0.037 and 0.050 respectively). This means that

there is no significant difference between adopters and abandoners in their perceived reasons for adopting ABC, except encountering cost allocation problems and inability of the existing cost systems to adapt to increased automation in the production/service process.

Table 7.11 Independent sample t-test for reasons for adopting ABC

Reasons for adopting ABC	T	df	Sig. (2-tailed)
- Inaccuracies of product cost of the traditional cost systems	.266	12	.825
- Increasing proportion of overhead costs	- 1.022	12	.327
- Increasing number of product variants	.144	12	.888
- Facing allocation problems	- 2.340	12	*.037
- Lack of decision-making information	- 1.924	12	.078
- Inability of the traditional cost systems to adapt to increased automation in the production process	- 2.182	12	*.050
- Inability of the traditional cost systems to provide information in the new environment	- 1.251	12	.235
- Increased competition	- 1.604	12	.135
- Growing costs	.692	11	.504
- The economic recession	- .346	12	.735
- Globalisation of consumer and producer markets	.484	11	.638
- Increased regulation	- .180	12	.860
- Restructuring	- .844	12	.415

Note: * At the .05 level of significance

Data drawn from Question 44 (reasons for adopting ABC).

As indicated in Table 7.12, the mean-values of the abandoners were significantly different and greater than the mean-values of the adopters for reasons concerning cost allocation problems and inability of the existing cost system to adapt increased automation. This suggests that the abandoners deemed these two reasons to be critically important reasons for adopting ABC while the adopters perceived these reasons as moderately important reasons and regarded reasons relating to growing costs and increased competition as very important reasons.

Table 7.12 Comparison of reasons for adopting ABC

Reasons for adopting ABC	N	Mean	S.D.	Std. error mean
- Inaccuracies of product cost of the traditional cost systems				
• Adoptors	12	3.67	.98	.28
• Abandoners	2	3.50	.71	.50
- Increasing proportion of overhead costs				
• Adoptors	12	3.08	.51	.15
• Abandoners	2	3.50	.71	.50
- Increasing number of products				
• Adoptors	12	3.08	.79	.23
• Abandoners	2	3.00	.00	.00
- Facing allocation problems				
• Adoptors	12	2.92	.90	.26
• Abandoners	2	4.50	.71	.50
- Lack of decision-making information				
• Adoptors	12	3.00	1.04	.30
• Abandoners	2	4.50	.71	.50
- Inability of the traditional cost systems to adapt to increased automation in the production process				
• Adoptors	12	3.25	.75	.22
• Abandoners	2	4.50	.71	.50
- Inability of the traditional cost systems to provide information in the new environment				
• Adoptors	12	3.42	1.16	.34
• Abandoners	2	4.50	.71	.50
- Increased competition				
• Adoptors	12	4.00	.85	.25
• Abandoners	2	5.00	.00	.00
- Growing costs				
• Adoptors	12	4.17	.83	.24
• Abandoners	2	4.00	.00	.00
- The economic recession				
• Adoptors	12	3.25	.97	.28
• Abandoners	2	3.50	.71	.50
- Globalisation of consumer and producer market s				
• Adoptors	12	3.17	1.19	.34
• Abandoners	2	3.00	.00	.00
- Increased regulation				
• Adoptors	12	2.83	1.19	.34
• Abandoners	2	3.00	1.41	1.00
- Restructuring				
• Adoptors	12	3.25	1.22	.35
• Abandoners	2	4.00	.00	.00

Note: - Data drawn from Question 35 (adoption of ABC) and Question 44 (reasons for adopting ABC).

- At the 0.05 level of significance.

As stated in Section 6.9.1 and shown in Table 7.12, in general, the critically important reasons that most Thai firms adopt ABC were increased competition, growing costs and inability of the traditional cost systems to provide information in the new environment, as well as inaccuracies of product cost of the traditional cost systems. The results indicate that Thai firms using ABC had recognised the inability of the traditional cost systems to provide information for management in the increasing competition and they found that the adoption of ABC was one of their solutions. According to Argyris (1977), 'organisational learning' is a process of discovering and correcting mistakes. If learning makes an organisation solve the problems in a creative manner, it is learning in the double-loop mode (Newman 2000). Therefore, these results suggest that Thai firms were learning in the double-loop mode on the grounds that they detected mistakes of the traditional cost systems and corrected them by adopting an innovation, such as ABC.

7.4.4 Proposition 4

It is well documented that the success of ABC is associated with Shields and Young's (1989) behavioural and organisational variables (Shields 1995; McGowan and Klammer 1997; Foster and Swenson 1997; Krumwiede and Roth 1997) which leads to Proposition 4.

Proposition 4: There will be significant differences in perceptions of the importance of behavioural and organisational variables at the different levels of ABC success.

These variables, based on Shields and Young's (1989) variables, include top management support, linkage of ABC to competitive strategies, linkage of ABC to

performance evaluation and compensation, sufficient internal resources, training, non-accounting ownership and clarity of the objectives of ABC.

A one-way ANOVA (analysis of variances) statistical test was employed to test this proposition. The results shown in Table 7.13 suggest that Proposition 4 can be accepted for only one variable: clarity of the objectives of ABC (at the 0.05 and 0.10 level of significance). That is, ABC users with different levels of ABC success had perceived the importance of the clear objectives of ABC implementation differently, but they did not have different perception levels of the importance of other variables to the successful implementation of ABC.

Table 7.13 One-way ANOVA test for behavioural and organisational variables and the levels of ABC success

Behavioural and organisational variables	Sum of Squares	df	Mean Square	F	Sig.
Top management support					
• Between groups	8.744	2	4.372	2.385	.142
• Within groups	18.333	10	1.833		
• Total	27.077	12			
Adequate resources					
• Between groups	5.359	2	2.679	2.593	.124
• Within groups	10.333	10	1.033		
• Total	15.692	12			
Link to competitive strategy					
• Between groups	3.103	2	1.551	1.330	.308
• Within groups	11.667	10	1.167		
• Total	14.769	12			
Clear and concise objectives					
• Between groups	6.117	2	3.058	4.488	.044
• Within groups	6.133	9	.681		
• Total	12.250	*11			
Link to performance evaluation					
• Between groups	.910	2	.455	.374	.697
• Within groups	12.167	10	1.217		
• Total	13.077	12			
Link to compensation					
• Between groups	1.269	2	.635	.249	.784
• Within groups	25.500	10	2.550		
• Total	26.769	12			
Non-accounting commitment					
• Between Groups	.141	2	7.051E-02	.032	.969
• Within Groups	22.167	10	2.217		
• Total	22.308	12			
Top management commitment					
• Between Groups	.397	2	.199	.118	.890
• Within Groups	16.833	10	1.683		
• Total	17.231	12			
Sharing information					
• Between Groups	1.436	2	.718	.371	.699
• Within Groups	19.333	10	1.933		
• Total	20.769	12			
Non-accounting ownership					
• Between Groups	.141	2	7.051E-02	.039	.962
• Within Groups	18.167	10	1.817		
• Total	18.308	12			
Providing education					
• Between Groups	.436	2	.218	.083	.921
• Within Groups	26.333	10	2.633		
• Total	26.769	12			
Design training					
• Between Groups	8.974E-02	2	4.487E-02	.024	.977
• Within Groups	18.833	10	1.883		
• Total	18.923	12			
Implementation training					
• Between Groups	.923	2	.462	.178	.840
• Within Groups	26.000	10	2.600		
• Total	26.923	12			

Note: Data drawn from Question 47 (level of ABC success) and Question 48 (factors).

The descriptive statistics for the importance of behavioural and organisational variables and the perception levels of ABC success are presented in Table 7.14. ABC users in each level of ABC success ('very poor', 'average' or 'good' level of ABC success) had perceived the importance of the clear objectives of ABC to the successful implementation of ABC differently. Since the number of ABC users in the 'very poor' group had fewer than two cases, the LSD post hoc test, which tests significant differences of specific pairs of means of the ABC success level (Morgan et al. 2001), could not be carried out.

At the same time, ABC users in all levels of ABC success did not give the importance of other variables to the successful implementation of ABC differently. This result shows that the clarity of the objectives of ABC implementation affected significant variation in the level of ABC success while other variables had no effect on the degree of ABC success.

Similar to Propositions 1 and 2, a possibility explaining this test results is the small number of ABC users. There were 14 users (12 adopters and 2 abandoners), but one user claimed that his firm was implementing ABC to the initial stage of installing and developing ABC. Thus, he could not assess the level of ABC success. The number of ABC users declined to 13. Consequently, there is just one variable (the clarity of the objectives of ABC) to achieve statistical significance.

Table 7.14 Descriptive statistics for behavioural and organisational variables and the levels of ABC success

Behavioural and Organisational factors	The level of success	N	Mean	S.D.	Min.	Max.
Top management support	Very poor	1	3.00	.	3	3
	Average	6	6.17	1.60	3	7
	Good	6	5.50	1.05	4	7
	Total	13	5.62	1.50	3	7
Adequate resources	Very poor	1	3.00	.	3	3
	Average	6	5.50	.84	5	7
	Good	6	5.17	1.17	4	7
	Total	13	5.15	1.14	3	7
Link to competitive strategies	Very poor	1	3.00	.	3	3
	Average	6	4.83	1.17	4	7
	Good	6	4.83	.98	4	6
	Total	13	4.69	1.11	3	7
Clear and concise objectives	Very poor	1	3.00	.	3	3
	Average	6	5.67	.82	5	7
	Good	5	5.20	.84	4	6
	Total	12	5.25	1.06	3	7
Link to performance evaluation	Very poor	1	6.00	.	6	6
	Average	6	5.33	1.37	4	7
	Good	6	5.83	.75	5	7
	Total	13	5.62	1.04	4	7
Link to compensation	Very poor	1	5.00	.	5	5
	Average	6	4.50	1.38	3	7
	Good	6	4.00	1.79	2	7
	Total	13	4.31	1.49	2	7
Non-accounting commitment	Very poor	1	5.00	.	5	5
	Average	6	4.83	1.47	3	7
	Good	6	4.67	1.51	3	7
	Total	13	4.77	1.36	3	7
Top management commitment	Very poor	1	5.00	.	5	5
	Average	6	5.67	1.51	3	7
	Good	6	5.50	1.05	4	7
	Total	13	5.54	1.20	3	7
Sharing information	Very poor	1	5.00	.	5	5
	Average	6	5.00	1.10	4	7
	Good	6	4.33	1.63	2	6
	Total	13	4.69	1.32	2	7
Non-accounting ownership	Very poor	1	5.00	.	5	5
	Average	6	4.83	1.47	3	7
	Good	6	4.67	1.21	3	6
	Total	13	4.77	1.24	3	7
Providing education	Very poor	1	4.00	.	4	4
	Average	6	4.17	1.83	2	7
	Good	6	4.50	1.38	3	6
	Total	13	4.31	1.49	2	7
Design training	Very poor	1	4.00	.	4	4
	Average	6	4.00	1.55	2	6
	Good	6	3.83	1.17	3	6
	Total	13	3.92	1.26	2	6
Implementation training	Very poor	1	5.00	.	5	5
	Average	6	4.00	1.67	2	6
	Good	6	4.00	1.55	3	7
	Total	13	4.08	1.50	2	7

Note: - Data drawn from Question 47 (the level of ABC success) and Question 48 (behavioural and organisational factors).

- The ABC success (Question 47) is classified into five levels: 'very poor', 'poor', 'average', 'good' and 'very good'.

The test result contrasts with the survey result of Shields (1995), who reports that this factor was not found to be significantly related to ABC success. Nevertheless, the result of this study is consistent with the findings by Krumwiede and Roth (1997), suggesting that this factor is an essential factor for the successful implementation of ABC, especially in the stage of developing and installing ABC.

As stated previously, the number of ABC users is small. Moreover, the use of the five categories of success level for testing Proposition 4 creates small-size cells. Alternatively, collapsing categories into two categories ('low' and 'high' success) may help solve this problem. Tables 7.15 and 7.16 show the relationship between the levels of ABC success ('low' and 'high' success) and the importance of behavioural and organisational variables. The results show that no variables affected significant variation in the level of ABC success. That is, ABC users in all levels of ABC success gave the importance of behavioural and organisational variables to the successful implementation of ABC indifferently. ABC users with both 'low' and 'high' success perceived that all behavioural and organisational variables were important toward the implementation of ABC (Table 7.16).

Table 7.15 Independent sample t-test for behavioural and organisational variables

Behavioural and Organisational variables	T	df	Sig. (2-tailed) *
Top management support	.246	11	.810
Adequate resources	-.036	11	.972
Link to competitive strategies	-.409	11	.690
Clear and concise objectives	.132	10	.897
Link to performance evaluation	-.681	11	.510
Link to compensation	.672	11	.516
Non-accounting commitment	.241	11	.814
Top management commitment	.103	11	.920
Sharing information	.904	11	.385
Non-accounting ownership	.266	11	.795
Providing education	-.415	11	.686
Design training	.229	11	.823
Implementation training	.164	11	.872

Note : * At the 0.05 level of significance
Data drawn from Question 48 (factors).

Table 7.16 Comparison of behavioural and organisational variables

Behavioural and Organisational factors	N	Mean	S.D.	Std. error mean
Top management support				
• Low success	7	5.71	1.89	.71
• High success	6	5.50	1.05	.43
Adequate resources				
• Low success	7	5.14	1.21	.46
• High success	6	5.17	1.17	.48
Link to competitive strategies				
• Low success	7	4.57	1.27	.48
• High success	6	4.83	.98	.40
Clear and concise objectives				
• Low success	7	5.29	1.25	.47
• High success	6	5.20	.84	.37
Link to performance evaluation				
• Low success	7	5.43	1.27	.48
• High success	6	5.83	.75	.31
Link to compensation				
• Low success	7	4.57	1.27	.48
• High success	6	4.00	1.79	.73
Non-accounting commitment				
• Low success	7	4.86	1.35	.51
• High success	6	4.67	1.51	.61
Top management commitment				
• Low success	7	5.57	1.40	.53
• High success	6	5.50	1.05	.43
Sharing information				
• Low success	7	5.00	1.00	.38
• High success	6	4.33	1.63	.67
Non-accounting ownership				
• Low success	7	4.86	1.35	.51
• High success	6	4.67	1.21	.49
Providing education				
• Low success	7	4.14	1.68	.63
• High success	6	4.50	1.38	.56
Design training				
• Low success	7	4.00	1.41	.53
• High success	6	3.83	1.17	.18
Implementation training				
• Low success	7	4.14	1.57	.59
• High success	6	4.00	1.55	.63

Note: - Data drawn from Question 47 (the level of ABC success) and Question 48 (factors).

- At the 0.05 level of significance.

-'Low success' includes 'very poor', 'poor' and 'average' levels of success.

-'High success' includes 'good' and 'very good' levels of success.

In addition, previously, the results in Table 6.28 suggest that behavioural and organisational variables, such as top management support, linkage to performance evaluation, non-accounting ownership, clarity of the objectives or adequate resources,

were regarded as important factors affecting the success of ABC implementation in Thai firms. Thus, the test results confirm Shields and Young's (1989) findings that the success of cost management, including ABC, is associated with behavioural and organisational variables, consisting of top management support, linkage to competitive strategies, linkage to performance evaluation and compensation, clarity of objectives, training in implementing ABC, non-accounting ownership and sufficient resources.

Moreover, the test results provide support for the findings by McGowan and Klammer (1997) that managers' perceptions of top management support, adequacy of training, linking of ABCM (activity-based costing management) to performance evaluation and clarity of objectives were positively related to the success of ABCM by measuring in terms of satisfaction.

All in all, Shields and Young's (1989) behavioural and organisational variables are important to the successful implementation of ABC in Thai firms although they, excluding the clarity of objectives, cannot sufficiently explain the difference of the degree of success of ABC implementation. Due to the small number of ABC users ($n=14$: 12 adopters and 2 abandoners), it was difficult to achieve statistical significance to test the propositions in this study even though there was a basis of difference. However, some expectations can be developed from the descriptive statistics.

7.5 Narrative Analysis

Seeing that the survey method has some biases, the current study also involved personal interviews to supplement the survey data. The personal interviews were conducted by consent of the participants. Out of 101 questionnaire respondents, 12 agreed to be interviewed to enrich the data. The personal interviews consisted of face-

to-face and telephone interviews. Due to inability to participate in the face-to-face interviews, some interviews were conducted by phone.

Out of 12 interviews, 4 were conducted by phone on account of location of some interviewees' offices outside the Bangkok region and unwillingness of participants to be interviewed face-to-face. The 12 interviewed firms comprise 3 firms without ABC knowledge, 3 non-adopters with intention to adopt ABC, 1 non-adopter without intention to adopt ABC, 1 abandoner and 4 adopters.

Sources of data for this section were transcripts of the taped interviews and detailed notes taken during conversations. These data were analysed after developing protocols for identification of material relevant to the survey questions. Then, themes and similar responses were identified. In addition, profiles of the interviewees were developed which facilitated further analysis.

Consequently, this section provides profiles of all interviewed firms by classifying into four groups: firms without ABC knowledge; firms with intention to adopt ABC; firms with ABC experiences; and firms implementing ABC. Besides, the details of each firm profile are provided in Appendix A. In addition, this section includes major results and findings, as well as discussions, from analysing the interview data and the confirmation of research model.

7.5.1 Profiles of interviewed firms

7.5.1.1 Profiles of firms without ABC knowledge

Companies A, B and C had never had knowledge of the ABC concept. They had never known what ABC is. Comparisons of firm profiles between firms without ABC knowledge are provided in Exhibit 7.1.

Exhibit 7.1 Profiles of firms without ABC knowledge

Firm profile	Company A	Company B	Company C
Company industry	Agribusiness group	Communication group	Communication group
Registered capital	100-500 million baht	5001-10000 million baht	501-1000 million baht
Number of employees	1001-1500 employees	More than 2000 employees	200-500 employees
Organisational structure	1. Organised by - functions - products 2. Focusing on - formalisation - high level of vertical differentiation	1. Organised by - functions 2. Focusing on - centralised decision-making authority	1. Organised by - functions - services - strategic business units (SBU) 2. Focusing on - formalisation - centralised decision-making authority
Current cost system: 1. Cost management techniques 2. Bases in cost allocation	- Job costing - Process costing - Actual costing - Labour hours - Machine hours	- Average costing - Costs of goods sold - Labour hours - Labour baht	- Standard costing - Costs of goods sold - Units of customer services
Changes since the crisis	- Apply ISO 9002	- Layoffs - Closure of some divisions	- Apply ISO 9002 - Improvement of flow of work - Rotation of employees - Reduction of working hours

Source: Questionnaire and interview data.

Note: Registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Even if Companies A, B and C had no knowledge of the ABC concept and had not adopted it yet, since the crisis, they had transformed their organisations, such as to adopt an innovation, like ISO 9002, or to reorganise, for their survival.

7.5.1.2 Profiles of firms with intention to adopt ABC

Companies D, E and F had knowledge of the ABC concept, but have not implemented it yet. However, these firms intended to adopt ABC in the future. They are classified as firms with intention to adopt ABC. Firm profiles of those firms are provided in Exhibit 7.2.

Exhibit 7.2 Profiles of firms with intention to adopt ABC

Firm profile	Company D	Company E	Company F
Company industry	Machinery and Equipment group	Building and Furnishing Materials group	Electrical Products and Computer group
Registered capital	100-500 million baht	501-1000 million baht	101-500 million baht
Number of employees	500-1000 employees	500-1000 employees	1001-1500 employees
Organisational structure	1.Organised by - functions - products - strategic business units (SBU) 2.Focusing on - high formalisation - high level of vertical differentiation - extremely centralised decision-making authority	1.Organised by -functions 2. Focusing on - high formalisation - high level of vertical differentiation - extremely centralised decision-making authority	1.Organised by -functions -products -strategic business units (SBU) 2. Focusing on - high formalisation - high level of vertical differentiation - high centralised decision-making authority
Current cost system:			
1. Cost management techniques	- Standard costing - Job costing	- Standard costing - Job costing - Process costing - Target costing	-Standard costing - Process costing
2.Bases in cost allocation	- Labour hours - Labour baht - Units of products - Direct materials	-Units of products	- Labour hours - Labour baht - Units of products
Changes since the crisis	- Rotation of employees - Reduction of working hours	-Layoffs -Change in marketing policies -Short cut of commanding lines	-Apply ISO 9002, coupled with TQM - Layoffs - Cancellation of overtime

Source: Questionnaire and interview data.

Note: Registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Similar to firms without ABC knowledge, since the crisis, although Companies D, E and F have not implemented ABC yet, they were required to reorganise or adopt an innovation, like ISO 9002, to survive during the crisis.

7.5.1.3 Profiles of firms with ABC experiences

Companies G and H had experiences with ABC. Company G had examined ABC and deemed it to be unsuitable for the company. Company G had not had any plan to implement ABC in the future. On the contrary, Company H had implemented ABC, but abandoned it temporarily. However, the company intended to implement it again in the future. Exhibit 7.3 present comparisons of profiles between firms with ABC experiences.

Exhibit 7.3 Profiles of firms with ABC experiences

Firm profile	Company G (A non-adopter)	Company H (An abandoner)
Company industry	Electrical Products and Computer group	Bank group
Registered capital	501-1000 million baht	5001-10000 million baht
Number of employees	201-500 employees	More than 2000 employees
Organisational structure	1. Organised by - functions - products 2. Focusing on - high centralised decision-making authority	1. Organised by - functions - products/services - geographical areas - strategic business units (SBU) 2. Focusing on - high formalisation - high level of vertical differentiation - high centralised decision-making authority
Current cost system:		
1. Cost management techniques	- Standard costing - Process costing	- Standard costing - Process costing
2. Bases in cost allocation	- Machine hours	- Labour hours - Direct materials - Units of products/services
Changes since the crisis	- Apply ISO 9002 - Layoffs	- Changes in operating system - Layoffs
Experiences with ABC	Company G had considered ABC, but it was deemed as unsuitable for the company because of inherent difficulties with ABC and lack of internal resources.	Company H had implemented ABC as a pilot project before 1997. Since the crisis, it had stopped implementing ABC temporarily because of transformation of its operating system, but it intended to adopt ABC again soon.

Source: Questionnaire and interview data.

Note: Registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Both Companies G and H had experiences with examination of ABC. ABC was deemed unsuitable for Company G while Company H had to stop implementing ABC temporarily to change its operating system to suit the changed environment. Similar to Company H, even if Company G had not adopted ABC, since the crisis, it had attempted to reorganise to fit the changed environment by layoffs and apply ISO 9002.

7.5.1.4 Profiles of ABC adopters

Companies I, J, K and L had adopted and implemented ABC until now. They are classified as adopters of ABC. Comparisons of profiles between adopters of ABC are provided in Exhibit 7.4.

Exhibit 7.4 Profiles of firms adopting ABC

Firm profile	Company I	Company J	Company K	Company L
Company industry	Energy group	Household and Goods group	Food and Beverage group	Textile Clothing and Footwear group
Registered capital	2001-5000 million baht	501-1000 million baht	100-500 million baht	101-500 million baht
Number of employees	500-1000 employees	1501-2000 employees	501-1000 employees	200-500 employees
Organisational structure	1.Organised by - functions - products - SBU 2.Focusing on - extreme formalisation - high level of vertical differentiation - highly centralised decision-making authority	1.Organised by -products -geographical areas -SBU 2.Focusing on - high formalisation - high level of vertical differentiation - highly centralised decision-making authority	1. Organised by -functions 2.Focusing on -high formalisation -decentralisation	1. Organised by -functions -products 2.Focusing on -extreme formalisation -low level of vertical differentiation -highly centralised decision-making authority
Current cost system:				
1. Cost management techniques	- Job costing - Target costing	- Standard costing - Job costing - Target costing	-Actual costing -Process costing -Target costing	-Standard costing -Process costing -Target costing
2.Bases in cost allocation	- Units of products - Average set-up time	-Labour hours -Machine hours -Units of products -Average set-up time	-Labour baht -Machine hours -Direct materials -Units of products -Average set-up time	-Labour hours -Labour baht -Direct materials -Units of products -Average set-up time
Changes since the crisis	-Apply ISO 9001 and 14001 -Adoption of ABC -Development of VBM (Value based management)	-Apply ISO 9001 -Adoption of ABC -Layoffs -Closure of some branches and some product lines	-Reduction of expenses and product costs by using substitutes with equivalent quality	-Apply ISO 9001 -Adoption of ABC -Layoffs -Closure of some divisions

(Continued)				
Firm profile	Company I	Company J	Company K	Company L
Experiences with ABC: 1.The initial year 2.The stage of ABC implementation	At the end of 1997 The stage of seamless integration with other organisational systems	1999 The stage of developing and installing ABC, including training employees	1995 The stage of implementing ABC as a part of normal operation	1999 The stage of implementing ABC as a part of normal operation
The development of ABC	<ul style="list-style-type: none"> -Top management supported innovations, including ABC -To inform the clarity of objectives of ABC implementation to employees -Brainstorming sessions about ABC design and process -To provide education and training about ABC for all supervisors 	<ul style="list-style-type: none"> -To provide an educating program about ABC for management -To collect data to analyse activities by the installing team and engineers -To provide training about ABC for middle managers and heads of departments 	<ul style="list-style-type: none"> -To survey job descriptions -To collect data to determine activities -To provide training about ABC for supervisors 	<ul style="list-style-type: none"> -To provide an educating program about ABC for managers and heads of departments -Brainstorming sessions in each department about identifying activities and cost drivers -To provide training about ABC for heads of departments

Source: Questionnaire and interview data.

Note: Registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Apart from adoption of ABC, since the crisis, Companies I, J and L had reorganised and adopted other innovations, such as ISO 9001 or 14001 and so on, to improve their management and operations to fit the changed environment. Company K had attempted to reduce expenses and product costs.

7.5.2 Major results, findings and discussions

7.5.2.1 Changes since the crisis

After the crisis, Companies A and C applied ISO 9002 in order to streamline the efficiency of operation and to build standards of products or services. Moreover,

Company C had reorganised with improvement of flow of work and rotation of employees, but no layoffs. On the contrary, Company B had reorganised by layoffs and closure of some divisions.

Similar to firms without ABC knowledge, all interviewed non-adopters of ABC (Companies D, E, F and G) had reorganised, such as layoffs or reduction of expenses by cancelling overtime (OT) or reducing working hours. Also, Companies F and G had applied ISO 9002 for developing efficiency of production and quality of products. The accounting manager of Company G said that 'ISO 9002 obliges employees to control quality of products strictly'. Similarly, the manager of Company F recalled that

In the past, only sample products had good and standard quality. The company could not control the quality of products when the company had the mass production. Consequently, the company received the rejection of a number of products from customers. ISO 9002 supports the company for the improvement of product quality leading to reduce the reject rate from customers (from 1% to 0.06%) and reduce stock of products (from 400 million baht to 200 million baht), as well as increase sales (15% per year since 1998).

Furthermore, Company F had implemented ISO 9002 coupled with TQM (total quality management) and intended to adopt ABC in the future. The accounting manager also said that

As the competitive environment had forced the company to upgrade the operation and the product quality by applying ISO 9002, which was a long-term project (from the end of 1997-2002), the company had to postpone the ABC project. However, I expect that ABC will be the next project because our management realises that ABC information will support TQM and ISO 9002.

This finding is in accordance with the finding by Norris (1997), suggesting that 'ABC complements TQM' and the evidence in the U.K. claimed by Krumwiede and Roth (1997).

For firms adopting ABC, since the crisis, all interviewed firms, excepting Company K, had changes in terms of reorganisation and the adoption of innovations. Like Company B, they had reorganised by layoffs and closure of divisions that did not make profits. Moreover, they had adopted some innovations. They had adopted ABC for improving standards of performance measurements and the accuracy of information for decisions, as well as cost control. According to the interview data from the accounting director of Company J,

In the past, Company J could not know the exact number of profit or loss of each business or factory. Also, the company could not know how much each factory had waste and in which process the waste occurred. The management felt that it wanted more clarity of information for decision-making and development of the efficiency of operation. Thus, the company has adopted ABC.

Similarly, the accounting manager of Company I recalled that

Due to increased cost and competition, the management felt that the company had lack of information for decisions and performance measurements. The company solved this problem by adopting ABC.

The interviewee of Company L also said that ‘ The company has adopted ABC in 1999 for cost control, performance measurements and continuous improvement, which leads to application of ISO 9001’.

In addition, firms adopting ABC had applied ISO 9001 for improving their efficiency of production and operation and upgrading the quality and standard of products. According to the interview data by the manager of Company L,

In the past, products of Company L did not reach standards of quality needed by customers. So, our customers required ISO 9001 to warrant the quality of products.

The interviewee of Company I said that ‘ In order to improve the efficiency of production and operation, apart from the adoption of ABC, the company had applied ISO 9001’. The director of Company J also supported that ‘ The application of ISO 9001 supports the company in increased reliability and quality of products, better standards of operation, cost control and waste reduction’. Importantly, the interviewees of Companies J and L said that ‘The implementation of ABC encouraged application of ISO 9001 more easily’. Especially, the accounting manager of Company I maintained that

ABC information will support other advanced management systems, such as VBM (value based management) which concentrates on activities that create value for an organisation, shareholders and stockholders.

Before the crisis, Company K had adopted ABC and ISO 9002 for improving the efficiency of performance and production process; therefore, it had rarely had any

changes since the crisis, other than reducing product costs by using substitutes with equivalent quality and reducing expenses. For Company H, an abandoner intending to implement ABC again, since the crisis, it had reorganised by layoffs, reduction of expenses and change in its operating system to centres in each district, instead of branches. The accounting director of Company H maintained that

Change in operating system entails the cancellation of ABC implementation temporarily. When the operating system is stable, the company will begin to implement ABC again as a pilot project at each centre.

Overall, since the crisis, all Thai firms had made several changes to fit the changed environment. Remarkably and similarly, they had reorganised and adopted innovations, as well as applying ISO 9001 or 9002. Thai firms had reorganised with layoffs and transformation of their operation in order to reduce costs and they had applied ISO 9001 or 9002 so as to develop the efficiency of production and their operation and to increase reliability and the quality of products/services. Apart from ISO 9001 or 9002, ABC seemed to be an outstanding innovation that several Thai firms had adopted. The implementation of ABC by Thai firms is designed to improve the accuracy of information for decisions, cost control, efficiency of operation and standard of performance measurement and to support ISO 9001 or 9002 and other management innovations.

The interview data showed that Thai firms were changing themselves to suit the changed environment. Kloot (1997) indicate that this changing process is organisational learning and it usually occurs when organisations are in a changed and competitive environment. Hence, this evidence seemed to show evidence of organisational learning in Thai firms.

In addition, the interview data showed that the crisis forced Thai firms to reform themselves to exist in the current environment. For example, some firms had adopted innovations, such as ABC, ISO 9001 or 9002 or TQM. Some firms had reorganised, such as layoffs or closure of some divisions. Some firms had done both. According to Hurst (1995), when an company faces an economic crisis, the crisis forces the companies to revive themselves, such as layoffs, closure of 'non-core' operations or examination of innovations, for their survival. Thus, the interview data present that Thai firms were learning to renovate themselves for survival in Hurst's (1995) 'the learning loop'.

7.5.2.2 The adoption of ABC

According to Nikomborrirak and Tangkitvanich (2000), the changes in the economy and the transformation of types of business operations entail a greater demand for accounting information. From the interview data, the demand for cost information by Thai management had changed since the crisis. Thai management needed more details, frequency and timeliness of information. Also, the management needed more clarity and accuracy of information. The manager of Company K said that 'The details, accuracy and timeliness of information support the management to determine price of products, provide marketing plans and make decisions for competition'. In addition, the accounting manager of Company L said that

Since the crisis, apart from more accurate and timely information, the company needs information provided by co-ordination of various departments in the company, such as the production, accounting and marketing departments.

Kloot (1994) indicates that when organisations change, information provided by management accounting systems must also be upgraded to support organisational learning for survival. The interview data showed that most Thai firms had experienced some problems with their traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information. When the demand for information by Thai management had changed and the traditional costing systems could not provide these data, several Thai firms had adopted ABC, which is an advanced cost management system that can provide these data, and a large number of Thai firms intended to adopt it in the future. This finding is in accordance with claims by Warwick et al. (1997) that ABC is a suitable method for providing beneficial cost information in the changed environment.

As mentioned previously, due to increased costs and competition, Thai management found that their companies lacked clear and accurate information for decisions and performance measurement, as well as development of efficiency of operations, and the traditional costing systems could not provide this information for them. They sought innovations that would solve their problems. They detected that ABC was one of innovations that could satisfy their need. According to Argyris (1977, p.116), 'organisation learning is a process of detecting and correcting error'. Thai firms' detecting error of the traditional costing systems and correcting error by adopting ABC were likely to show 'organisational learning'. In addition, Argyris (1993; 1999) states that correcting mistakes by altering the underlying policies, master programs or norms of an organisation promotes its learning in the double-loop mode, which may occur in the organisation as a result of a crisis precipitated by some event in the environment.

Newman (2000) also found that double-loop learning happened when performance was below desirable levels of the organisation and the organisation solved the problem in an innovative manner. Likewise, Stein and Vandenbosch (1996) found that double-loop learning occurred when the organisation adopted new principles, assumption and forms. Comparing the findings with those of Argyris (1993; 1999), Newman (2000) and Stein and Vandenbosch (1996), the interview data indicated that Thai firms' situation in an unusual solution was the adoption of ABC and Thai firms' adoption of ABC showed learning in the double-loop mode.

According to the interview data by the accounting manager of Company I,

Top management plays a major role in adopting innovations, including ABC, in our company. Top management's interest in the ABC concept was the starting point for adopting ABC in our company. When top management adopted ABC, it supported the installation and implementation of ABC.

The finding is consistent with the finding of Krumwiede and Roth (1997). They indicate that the powerful champion's support is essential, especially, in the 'adoption' stage of ABC implementation. In addition, this finding is consonant with the finding by Morakul and Wu (2001), reporting that the majority of decisions in Thai organisations is made by their top executives, and with Chimpoy (1999), that top executives have important roles in adopting ABC in Thai organisations. It was possible that this finding resulted from the collectivist culture of Thais. In the collectivism of the Thai society, a superior is assumed to be an initiator and decision-maker (Vivanichakul and Udomsri 1990).

7.5.2.3 The installation and implementation of ABC

In regard to the installation and implementation of ABC, the manager of Company I, which had implemented ABC for the whole organisation, recalled that

Before installing ABC, top management had provided conferences for key supervisors, such as managers and heads of departments, in order to inform clarity of objectives of ABC implementation and ask cooperation from them. Then, top management had set a team for installing ABC, consisting of teams from all departments. The installing team had provided education and training about ABC concepts, benefits and processes for all supervisors. In turn, the supervisors had provided training about the implementation of ABC for their subordinates.

Similarly, the director of Company J described the installation of ABC that

First, the company had provided education about concept and benefits of ABC for management in order to persuade it to accept ABC. Second, the company had set a team for installing ABC and a team for production planning. Both teams, together with engineers, had collected data to analyse activities and cost drivers. Third, the installing team had allocated resource costs to each activity and activity costs to products by audit and approval of heads of departments and internal auditors. Finally, the installing team had provided training and workshop about the processes of ABC implementation for middle managers and heads of departments. In turn, the heads of departments had provided training about the implementation for their subordinates.

The interviewee of Company L, which had implemented ABC in some departments, also described the installation of ABC.

Before installing ABC, management who has expertise in ABC had provided seminar to educate management and heads of departments about concept and benefits of ABC and goals of ABC implementation and to plan what the company wants from ABC. Then, management with ABC expertise had provided workshop about the implementation of ABC for heads of departments. The heads of departments had provided meeting in their departments in order to tell their subordinates about concept and benefits of ABC and to ask co-operation from them. Then, each department had brainstorming sessions about identifying activities and cost drivers. Finally, each head of department involving the implementation of ABC had trained the implementation of ABC for his subordinates.

Overall, in the installation and implementation of ABC, the interviewed firms had similar approaches. That is, before installing ABC, each company had provided conferences for managers and heads of departments so as to plan what the company wanted from ABC and indicate the clarity of objectives of ABC implementation. The company had set a team for installing ABC. This team had provided education about ABC concepts, benefits and processes for all managers and heads of departments. The installing team had brainstorming sessions about the design and processes of ABC implementation. Then, the installing team had provided training about the implementation of ABC for managers and heads of departments. In turn, the heads of departments had provided training about the implementation of ABC for their subordinates. This finding is consistent with the finding by Shields and Young (1989), suggesting that top management support is important for the implementation of cost management systems.

When they decide to use ABC, they become 'advocates' or 'sponsors' in implementing ABC by preparing the learning environments for all employees in their organisation.

This finding of the ABC implementation is also consistent with the links between Huber's constructs for learning and Argyris' double-loop learning shown by Kloot et al. (1999), that in double-loop learning, learning consists of obtaining new knowledge, wider sharing of information, multiple interpretations and development of new mechanisms for storing memory. Comparing to Kloot et al.'s (1999) links of learning, the adoption of the ABC concept by Thai firms showed knowledge acquisition. The brainstorming sessions about the design and processes of ABC and training presented the information distribution and interpretation in Huber's (1991) constructs. Finally, the storage of ABC information in reports for future use in operation showed the 'organisational memory' process in Huber's (1991) constructs.

According to Stein and Vandenbosch (1996), double-loop learning must begin at the individual level in the highest level of the organisation and then pervade the organisation and Argyris (1999) states that a 'learning procedure' of the highest-level managers is essential for double-loop learning. The interview data showed that the implementation of ABC by Thai firms had begun from top management's learning and then permeated throughout the organisation. So, the implementation of ABC by Thai firms supported learning in the double-loop mode.

According to the interview data, the implementation of ABC in Thai firms is also in accordance with Argyris and Kaplan's (1994) process of implementing an initiative, consisting of at least three different stages: education; sponsorship; and alignment of incentive. Providing the education about ABC concepts, benefits and process for all

managers and heads of departments of Thai firms can compare to the 'education' stage of Argyris and Kaplan's (1994) model. At the sponsorship stage, management had supported the installation and implementation of ABC and all heads of departments of Thai firms had provided training about the implementation of ABC for their subordinates. Apart from providing education and sponsorship, management had provided an environment to facilitate and encourage employees to use ABC. The director of Company K said that

Every three months, a supervisor of each division has held meeting within his division to train new knowledge for his subordinates and discuss their subordinates' working problems, as well as solve them.

The interviewee of Company I also reported that

The company has motivated employees to take part in the company's operation by providing a suggestion program, which offers a reward for each suggestion of employees relating to cost saving and efficiency of working. This program has encouraged employees to submit their suggestions about the improvement of their working efficiency within their divisions. In addition, the company has provided an incentive system by linking KPI (key performance indicates) to a compensation system. The company has given employees rights in purchasing the stock of the company based on employees' performance measurements.

This evidence seemed to show the alignment of incentive stage of Argyris and Kaplan's (1994) model. But, Argyris and Kaplan (1994) indicate that this process may not be successful on account of resistance from employees. All interviewees of firms implementing ABC maintained that their firms had rarely faced this problem because the

implementation of ABC was a main policy of their firms and the crisis was a factor forcing employees to accept the transformation to rescue their firms. The manager of Company I said that

Before implementing ABC, the company had provided conferences for employees in order to inform employees about clarity of objectives and the necessity of transformation, as well as request of co-operation from employees.

The interview data are consistent with the findings by Hofstede (1984b), suggesting that subordinates in the high-power-distance and collectivist cultures, such as Thai culture, tend to accept a supervisor's ideas and are willing to conform and by Brewer (1998), presenting that subordinates from high-power-distance cultures, including Thai culture, usually show less defensive behaviour in the implementation of ABC.

Moreover, the interview data showed that before implementing ABC, all firms implementing ABC attempted to indicate the need for change and to introduce the overall philosophy of ABC to employees through educational programs and training; that is one of the ways to create 'internal commitment' for employees. According to Argyris and Kaplan (1994) and Argyris (1999), resistance to change from employees may be overcome by creating 'internal commitment'. Therefore, it was likely that the implementation of ABC by Thai firms was without resistance from employees on account of the Thai culture, which facilitates the implementation of innovations, and creating 'internal commitment' for employees before implementing ABC.

As stated earlier, this study was also based on Shields and Young's (1989) model for the implementation of cost management systems. The interview data showed that typically,

the installation of ABC by Thai firms was associated with Shields and Young's (1989) behavioural and organisational variables. That is, top executives in Thai organisations had important roles in adopting innovations, such as ABC, and had supported their employees to use ABC by providing the educational programs about ABC concepts and benefits and by setting an installing team. These processes are related to 'top management support' and 'sufficient internal resources' variables of Shields and Young's (1989) model.

In addition, the installing team had brainstorming sessions for the clarity of the objectives of ABC among designers and users and for linkage of ABC to strategies in competition. Then, the installing team had provided training about the implementation of ABC for organisational members. Moreover, management had provided an incentive system to encourage employees to use ABC, such as linking KPI to a compensation system (variable involving the linkage of ABC to performance evaluation and compensation). Finally, employees, including non-accountants, were committed to use ABC information (non-accounting ownership variable). The findings support Shields and Young's (1989) model, suggesting that the successful implementation of cost management systems, including ABC, is contingent upon behavioural organisational variables.

7.5.2.4 Changes due to the implementation of ABC

The interviewees reported that the implementation of ABC had changed employees' behaviours and norms. According to the interview data by the manager of Company I,

Employees, including non-accounting employees, have more responsibility for collecting data, documentation and reports. Furthermore, they have to know the structure of accounting in order to set their working plans. That is, they are

required to identify plan descriptions, activities, accounting codes and expenses and to evaluate benefits that the company will gain. In addition, production supervisors have utilized more cost information in decision making about production.

Similarly, the director of Company K said that ‘ Accounting and production employees had had more responsibility of reports and documentation.’ and the interviewee of Company L indicated that

Since implementing ABC, employees have worked systematically and with teamwork and improved the efficiency of their performances by themselves. Moreover, employees, production employees in particular, have shown more interest in cost information and employed it more frequently for cost control and decisions.

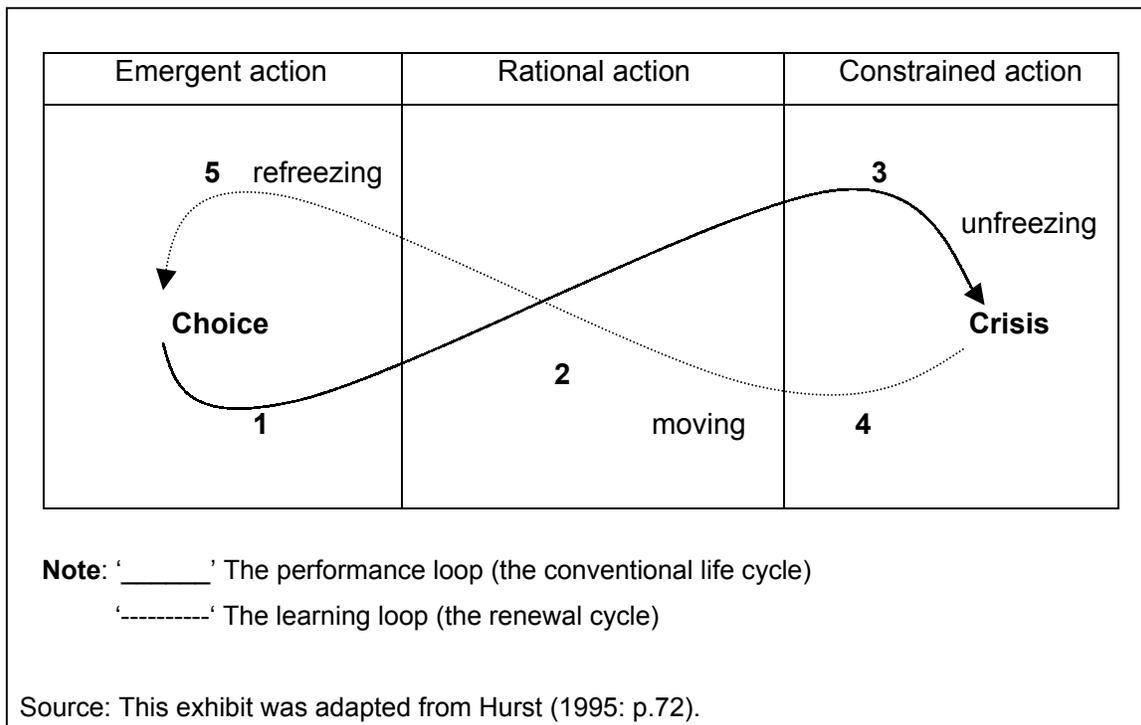
The interview data showed that employees in Thai firms had changed their behaviours due to the implementation of ABC. Huber (1991) and Swieringa and Wierdsma (1992) state that ‘organisational learning’ means the alteration of organisational behaviour. Therefore, this evidence shows that Thai employees had learning about the implementation of ABC.

7.5.3 Confirmation of research model

On the whole, the survey and interview data showed that when a business had been in economic recession, Thai firms had understood the changed environment and realized the necessity for major change. The Thai firms’ performances showed that they were in stage 3 of Hurst’s (1995) model and in the ‘unfreezing’ stage of Lewin’s organisational change model (refer to Exhibit 7.5). After that, Thai firms had attempted to change

themselves to suit the changed environment by reorganising (such as layoffs, transformation of operating system and so on) or adopting innovations (such as ISO 9001 or 9002, ABC and so on). These changes of Thai firms showed that Thai firms were learning to revive themselves for survival (stage 4 of Hurst's (1995) 'learning loop' or 'renewal cycle' and the 'moving' stage of Lewin's model).

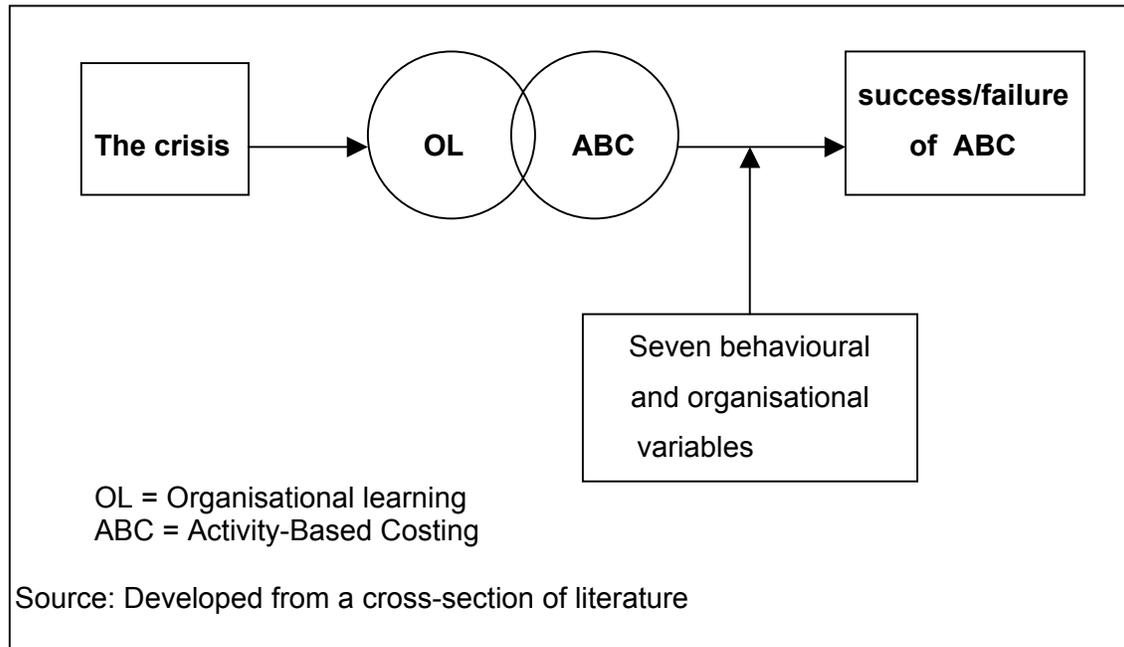
Exhibit 7.5 Hurst's model and Lewin's change model



From the survey and interview data, since the traditional costing systems could not provide accurate and adequate information for the competitive environment and ABC is an advanced cost management system, which is a part of the management systems, designed to provide accurate and clear cost information leading to develop the efficiency of performances in organisations, the adoption of ABC was an innovative solution for several Thai firms. Therefore, the adoption of ABC showed Thai firms' learning in the double-loop mode.

Seeing that the implementation of ABC affected the organisational behaviour of Thai firms, the development of ABC required organisational learning and the modification of their fundamental policies or norms to assure that the implementation of ABC would be accommodated within the organisation (stage 5 of Hurst's (1995) 'learning loop' and the 'refreezing' stage of Lewin's organisational change model). Shields and Young's (1989) behavioural and organisational variables, the clarity of objectives of ABC implementation, in particular, were important factors for the procedural revision of the successful implementation of ABC in Thai firms. These variables offered preparation of an organisation for the implementation of ABC by giving employees in the organisation opportunity to learn, share knowledge and understanding about ABC. In addition, they activated all functional employees to change their behaviours in order to achieve the implementation of ABC; for example, the employees had more commitment to use ABC information. Consequently, Shields and Young's (1989) behavioural and organisational variables seemed to be essential factors motivating an organisation to construct learning about ABC and leading it to achieve the implementation of ABC. All survey and interview data confirmed the research model cited earlier in Section 4.6 and shown in Exhibit 7.6.

Exhibit 7.6 Confirmation of research model



7.6 Summary

Since the economic crisis (1997), Thai firms have recognised the need for change and have reformed themselves for survival. Examples of transformation of Thai firms are the reorganisation and the adoption of innovations. These changes show that Thai firms are learning to transform themselves to fit the changed environment; that is, organisational learning. In addition, the crisis seems to be an important factor pushing Thai firms to rebuild organisations.

The adoption of ABC, which corrects some shortcomings of the traditional costing systems, shows learning of Thai firms in the double-loop mode. In implementing ABC, Shields and Young's (1989) behavioural and organisational variables are deemed to be important variables affecting the implementation of ABC in Thai firms and stimulating an organisation to establish learning about ABC.

Chapter 8

Conclusions, Limitations and Future Research

8.1 Introduction

The conceptual model of this research study was proposed in Chapter 4. This model is based on constructs that emerged from the existing literature (Chapters 2-4), including the relationships among external and internal factors. The propositions, posed in Chapter 5, and the model were tested with data for a sample of firms listed on the Stock Exchange of Thailand (SET) which operate in the Bangkok region (101 firms). The data have been examined with different statistical analyses according to the nature of the data. In Chapter 6, the implementation of ABC in Thailand and factors affecting the implementation of ABC were tested. In Chapter 7, organisational learning of Thai firms after the crisis and the relationship of ABC and organisational learning were examined. The results and discussions of the propositions, including interview data, were presented in that chapter.

In this chapter, conclusions about propositions, contributions and implication for theory and practice are provided and the key findings and the limitations are discussed. Some suggestions for future research opportunities are also provided in this chapter.

8.2 An Overview of the Research Questions

In 1997, a severe recession occurred in Thailand (Kunakorn 2000). A lot of businesses were closed down as a result of devaluation of the baht (Jolly 1998). The remaining companies had appreciated the necessity of change for survival when the economy was

in recession (Chau 1999). Adoption of an innovation might be a solution for an organisation in this crisis (Suwongwarn 1998). The ABC system was assumed to be an eligible innovation for Thai firms in this crisis since ABC is claimed to be able to provide more accurate cost information than the traditional cost systems and useful information for performance measurement, cost control and strategic decisions and to increase the competitive capability and profitability. In addition, Argyris and Kaplan (1994) claim that the implementation of an innovative initiative is affected by an organisation's capacity to learn. It was expected that the successful implementation of ABC was contingent on several variables, such as learning, behavioural or organisational variables. This study was designed to investigate how the economic crisis in 1997 affected the adoption and the implementation of ABC by Thai firms through a model of 'organisational learning'.

8.3 Conclusion about Propositions

8.3.1 Relationship of organisational learning and the crisis

It was expected that when a company was in a recessionary economy, it would learn to survive by adopting innovations, ABC, in particular. Proposition 1 stated that there would be significant variation in the degree of ABC adoption before and after the economic crisis of 1997. The results indicate that the degrees of ABC adoption before and after the economic crisis are not different.

Due to higher priorities for other projects (such as ISO 9001 or 9002) required by their customers, many Thai firms had delayed the project of ABC. However, nearly half of non-adopters had confirmed their intention to implement ABC in the future. Accordingly, it is expected that there will be a significant change in the ABC adoption rate in Thailand in the near future.

According to Sections 7.2 and 7.5, when Thai firms were in economic recession, they (including firms with and without intention to adopt ABC) had recognised the necessity for changes (stage 3 of Hurst's (1995) model and the 'unfreezing' stage of Lewin's organisational change model). Also, they had attempted to adapt themselves to the changed environment for their survival by reorganising or adopting innovations, such as ISO 9001 or 9002, ABC and so on (stage 4 of Hurst's (1995) learning loop and the 'moving' of Lewin's model). This evidence confirms Hurst's (1995) model that the economic crisis was a significant factor forcing Thai firms to build learning for survival (in terms of reorganisation or adoption of innovations) and this evidence indicates that the adoption of ABC was a type of Thai firms' organisational learning in the changed environment.

8.3.2 Relationship of organisational learning and the implementation of ABC

ABC is a management tool affecting the operations and behaviour of an organisation. Thus, it was expected that the development of ABC would involve transformation of behaviour in an organisation; that is, organisational learning. Proposition 2 stated that changes in different functional roles in a firm at the different stages of ABC implementation would vary significantly.

According to Section 7.4.2, information control by the accounting department and the functional role of the accounting department have significant differences at the different stages of the implementation of ABC. In addition, the implementation of ABC had made employees in non-accounting departments have more responsibility of collecting, reporting and using cost information.

This finding indicates that employees in the firm had learnt to implement an innovation, such as ABC, and changed their behaviours in accordance with the innovation. The alteration of behaviour in an organisation is a type of organisational learning (Swieringa and Wierdsma 1992). Consequently, this study suggests that the development and implementation of ABC were relevant to an organisation's learning process.

8.3.3 Reasons for adopting ABC

It was expected that the reasons for adopting ABC by Thai firms might differ from those in other countries, but might not be different among Thai firms. Proposition 3 stated that there would be significant differences between companies implementing and companies abandoning ABC in their perceived reasons for adopting ABC. The results indicate that there is no significant difference between adopters and abandoners in their perceived reasons to implement ABC, except encountering cost allocation problems and inability of the existing cost systems to adapt to increased automation in the production/service process.

The majority of Thai firms adopted ABC because of increased competition, growing costs and inability of the traditional cost systems to provide information in the new environment, as well as inaccuracies of product cost of the traditional cost systems. It seemed that the crisis was a significant environmental variable activating several Thai firms to adopt ABC. This study also suggests that information provided by the traditional cost systems was not sufficient for management in the current environment and the adoption of ABC was a solution in the changed environment. This evidence indicates that Thai firms detected mistakes of the traditional cost systems and corrected them by adopting ABC, an innovation. Seeing that discovering and correcting errors by transmuting master programs, underlying policies or norms promotes the double-loop

learning (Argyris 1993; 1999), this finding shows that Thai firms were learning in the double-loop mode.

8.3.4 Relationship of ABC success and behavioural and organisational variables

The implementation of ABC engenders behavioural and organisational change (Bhimani and Pigott 1992; Innes and Mitchell 1995b). Hence, it was expected that behavioural and organisational factors would be involved with the implementation and the success of ABC. The behavioural and organisational variables in this study were based on Shields and Young's (1989) theoretical model since these variables are relevant to employees and their preparedness to accept and work with ABC.

Proposition 4 stated that there would be significant differences in perceptions of the importance of behavioural and organisational variables at the different levels of ABC success. These variables include top management support, linkage of ABC to competitive strategies, linkage of ABC to performance evaluation and compensation, sufficient internal resources, training, non-accounting ownership and clarity of the objectives of ABC. The results indicate that the consensus and clarity of the objectives of ABC implementation among ABC designers and users effected on the degree of ABC success.

Although other Shields and Young's (1989) variables could not sufficiently explain the difference of the degree of ABC success, the results in Tables 6.28 and 7.16 suggest that they were important to the successful implementation of ABC because they all built environment and opportunity for employees to learn about ABC and motivated employees to work with it.

8.4 An Overview of ABC Implementation in Thailand

ABC is a mainstream topic in the management curricula at universities and a management innovation for Thailand at the current time. In addition, much literature claims huge benefits from ABC, surpassing those of the traditional cost systems. Thus, ABC had received substantial interest from Thai firms and seemed to be considered one of their alternatives in this turbulent time.

The rate of ABC adoption in Thailand was relatively high (35.64% of all respondent firms). Out of all respondents (101 respondents), nearly 39% had no knowledge of ABC. Excluding firms without ABC knowledge, the adoption rate of ABC was as high as 58% of all firms having ABC knowledge (62 firms; refer to Table 6.22).

Reasons for not adopting ABC were usually the higher priorities of other projects, the difficulties in technical aspects, and lack of internal resources, rather than ignorance of a new management system, while resistance from employees was an insignificant reason for not adopting ABC in Thailand.

Most users perceived that ABC was very important and necessary in the current environment. They also believed that it had played a part in helping their firms to survive in the changed environment on the grounds that they perceived many key areas of ABC benefits that supported their firms to be able to cope with the crisis. The benefits claimed were more accurate product/service costs, increase in competitive capability, cost control improvement, assistance in cost reduction, better performance measurement, encouragement of commitment to quality and continual improvement and increase in profitability.

They also showed that the success level of implementing ABC by their firms was favourable and the success of implementing ABC was concerned with behavioural and organisational variables, as opposed to technical variables. On the other hand, difficulties of implementing ABC that most users experienced were relevant to technical barriers (such as difficulties in gathering data or defining cost drivers), rather than behavioural barriers (such as resistance from employees or lack of top management support).

In regard to organisational learning, when the economy had been in recession, Thai employees had understood the changes in the external environment and the need to change and their firms had changed the policies to adapt to the changed conditions caused by the crisis. Furthermore, Thai firms had restructured, reorganised or tested new techniques to survive during the crisis. Thai firms' solving their problems in an innovative manner promoted learning in the double-loop mode, which is the learning in response to the changed and competitive environment. In addition, firms with intention to adopt ABC had greater double-loop learning than firms without intention did owing to greater changes in their policies to adapt to the changed conditions and greater learning to solve their problems by testing new techniques.

The implementation of ABC entailed many changes of behaviour in an organisation. For example, responsibility in other departments, other than the accounting department, and communication across functional areas had changed significantly. Additionally, the implementation of ABC had encouraged efficient use of cross-functional teams and employee's continuous improvement, as well as development of differentiated structures or rules. New knowledge acquisition (such as the ABC concept), sharing of information and multiple interpretations across diverse groups and development of new mechanisms

for storing memory that leads to continuous improvement present the organisation's learning in the double-loop mode. Accordingly, this study suggests that the implementation of ABC promoted learning in the double-loop mode. This study also suggests that the implementation of ABC in Thailand should encourage an increase in empowerment, job effort, teamwork and performance measurement.

8.5 Implications for Research Model

The research model (Exhibit 4.6) provides a useful conceptual framework for management when facing the crisis or planning to adopt and to implement ABC. This model suggests the adaptation of Thai firms for their survival during the crisis and develops the implementation of the theoretical ABC model in Thailand through 'organisational learning' theory.

First, the results indicate that when a business had been in economic recession, the existing firms had understood changes in the external environment and realized the need to change the crisis condition into the learning condition for their survival. Those firms attempted to learn and to seek how to change themselves to suit the changed environment. Some firms had learnt to restore themselves by reorganisation, such as layoffs or transformation of their operations, in order to reduce costs. Some firms had learnt to adopt innovations, such as ISO 9001 or 9002, ABC and so on, in order to develop the efficiency of their operation and management and to increase their ability to stay in the current businesses. These changes promote organisations' learning to survive in a crisis, according to Hurst's (1995) model. This study suggests that the crisis induced the organisations to construct learning for their survival.

Second, when the environment had been changed by virtue of the crisis, the demand for information by Thai management had changed and the traditional cost systems could not provide information for the new environment. Consequently, the adoption of ABC, which was a management innovation for Thailand, was one of several modes of the firms' organisational learning to develop innovative solutions and recover their ability during the crisis. Several Thai firms also confirmed that the reasons for adopting ABC were associated with the changed environment, such as increased competition, growing costs, restructuring during the crisis or the economic recession. Hence, the crisis seemed to take part in driving some firms to adopt ABC to cope with the recession.

Furthermore, Thai firms using ABC were satisfied with the gained benefits of ABC, especially increase in competitive capability, increase in profitability, cost control improvement and assistance in cost reduction efforts, and perceived worthiness of the ABC implementation. Particularly, most ABC users showed that ABC was important and necessary for them in the current environment and helped partly their firms to survive in the crisis. Therefore, this study suggests that the adoption of ABC was a mode of Thai firms' organisational learning and one of their solutions to cope with the crisis.

Third, the adoption of ABC was the learning of Thai firms to solve their management problems in an innovative manner. In addition, the implementation of ABC had developed the operations and management of the organisation and lead the organisation to continuous improvement, which encourages organisational members to find their recurring problems and to seek better ways to go forward to new levels of development. Thus, this study also suggests that the adoption and the implementation of ABC showed the learning in the double-loop mode, which is the learning mode that corrects mistakes by transforming underlying policies (Argyris 1999) or solves problems

in a new manner (Newman 2000). Several authors (Fiol and Lyles 1985; Kloot 1994; Argyris 1999) maintain that the double-loop learning enables the organisation to survive in periods of rapid change and in the long term.

Finally, the successful implementation of ABC was associated with Shields and Young's (1989) behavioural and organisational variables: top management support; linkage of the cost management system to competitive strategies; linkage of the cost management to performance evaluation and compensation; sufficient internal resources; training in designing, implementing and using cost management systems; non-accounting ownership; and consensus about and clarity of the objectives of the cost management systems. Especially, the clarity of objectives of the ABC implementation among ABC designers and users affected significant variation in the degree of ABC success. These behavioural and organisational variables created opportunity for employees in an organisation to learn about ABC and activated the employees to change their behaviours in accordance with the concept of ABC; that is, 'organisational learning'. Hence, this study suggests that the organisational learning played an important role to achieve the implementation of ABC and Shields and Young's (1989) behavioural and organisational variables were important factors preparing an organisation for learning about and implementing ABC.

Overall, this research study suggests that the crisis forced the organisations to build learning leading to adaptation of the organisation to the changed environment for their survival. Seeing that ABC could provide benefits that support Thai firms to cope with the crisis, several firms had adopted and implemented it, other than reorganised or restructured, and many firms not using ABC claim that they would adopt it in the near future. The adoption of ABC was one of Thai firms' innovative solutions and the

implementation of ABC generated modified behaviours and encouraged the organisation to continuous improvement. Therefore, the adoption and the implementation of ABC showed the learning in the double-loop mode, which is necessary in the rapidly changed environment. In addition, the successful implementation of ABC needed the organisational learning and Shields and Young's (1989) behavioural and organisational variables were essential variables catalysing the organisation to create the learning about ABC.

8.6 Contributions

First, in this study, an ABC conceptual model has been developed. It allows for the development of a more sophisticated understanding concerned with the factors influencing the success of ABC implementation based in an eastern developing country. Most previous studies focused only on the implementation of ABC in western developed countries. The results of this study make a contribution to existing knowledge in the area of the implementation of ABC, especially in eastern developing countries like Thailand.

Second, the model has been tested to explain a significant set of relationships between the implementation of ABC and organisational learning theory. Most previous studies (such as Shields 1995; Anderson 1995; Gosselin 1997; Krumwiede 1998) have focused only on the implementation of ABC. No earlier study investigates the role of an additional variable, organisational learning, to lead to adaptation of ABC theory. This study suggests that the successful implementation of ABC is partly contingent on the level of organisational learning.

Third, this study is an empirical study concerned with organisational learning. Previous studies involving organisational learning have lacked empirical investigation. Therefore, this research advances the understanding of organisational learning by empirically testing a model engaging in organisational learning and ABC.

Finally, this thesis has also demonstrated the value of an empirical study of the relationship between the adoption of ABC and the economic crisis through theoretical models of organisational learning. Previous studies, like Hurst (1995), have only focused on an organisation's learning on account of the crisis or recession, but not concerned with the adoption of management innovations. The results of the study by Hurst (1995) only indicate that when the business is in an economic recession, a company learns to survive by restoring itself, but his model does not specify which way to restore the company. Hurst's (1995) model was applied in this study and the results support Hurst's (1995) theory in that a company in a recessionary economy is forced by the crisis to learn to survive by reorganisation, restructuring or adoption of innovations. However, this study contributes to Hurst's (1995) theory in that the adoption of ABC, an management innovation, is a type of the company's organisational learning, other than reorganisation or restructuring, during the crisis and the adoption and the implementation of ABC promote the learning in the double-loop mode, which is necessary for survival in periods of rapid transformation and in the long term.

8.7 Limitations and Suggestions for Future Research

Some limitations should be noted when interpreting the results of this study. The limitations, however, present opportunities for future study.

8.7.1 Sample coverage

The scope of the study is limited by its sample size which included only public companies listed on the Stock Exchange of Thailand (SET) operating in the Bangkok region. This limitation may restrict the generalizability of the findings. The findings of this study may have been different if a broader range of firms had been selected. In addition, the results of this study may have been different if managers from the government sector had been included. Therefore, there is a need to find ways to increase the coverage of surveys so as to obtain a more comprehensive picture of Thai firms' perceptions of ABC.

8.7.2 Response rate

Even if a 35% overall response rate is acceptable for survey research, the number of firms using ABC was very small (14 firms). It was difficult to conduct meaningful statistical tests. The discussions concerning the implementation of ABC in this study mainly relied on description as the means to communicate the survey results. The results may have been different if the response rate had been higher and the number of ABC users had been larger. In addition, the implications for this study may have been enhanced if the number of interviewees had been expanded. It is expected that the number of firms using ABC will be much larger soon since a lot of firms showed their plans for or interest in the adoption ABC in the near future.

8.7.3 Framework

The framework only provides the ideas on how the economic crisis affected the adoption and the implementation of ABC through a model of organisational learning and how the behavioural and organisational variables affect the implementation of ABC. Indeed, the crisis could affected the adoption of innovations other than ABC, and other variables, such as contextual variables, may affect the implementation of ABC in Thailand. Hence, it is worth extending the study to look at these particular issues.

BIBLIOGRAPHY

Abonyi, G.1999, 'Thailand: From Financial Crisis to Economic Renewal', *Economics and Finance Working Papers*, March, Institute of Southeast Asian Studies, Singapore.

Adler, R.W.1999, *Management Accounting: Making It World Class*, Butterworth-Heinmann, Oxford.

Adler, R.W., Everett, A.M. and Waldron, M.2000, 'Advanced Management Accounting Techniques in Manufacturing: Utilization, Benefits, and Barriers to Implementation', *Accounting Forum*, Vol.24, No.2, June, pp.131-148.

Akathaporn, P., Novin, A. M. and Abdolmohammadi, M.J.1993, 'Accounting Education and Practice in Thailand: Perceived Problems and Effectiveness of Enhancement Strategies', *The International Journal of Accounting*, Vol. 28, pp.259-272.

Anderson, S.W.1995, 'A Framework for Assessing Cost Management System Changes: The Case of Activity-Based Costing Implementation at General Motors, 1986-1993', *Journal of Management Accounting Research*, Vol.7, Fall, pp.1-51.

Anderson, S.W. and Young, S.M.1999, 'The Impact of Contextual and Process Factors on the Evaluation of Activity-Based Costing Systems', *Accounting, Organisations and Society*, Vol.24, pp.525-559.

Anonymous 1998a, ' Thai Authorities Shut Down 56 Companies', *Banker*, January, Vol.148, No.863, p.49.

Anonymous 1998b, 'Triton's Reorganisation', *Oil & Gas Journal*, 27 July 1998, p.13.

Anonymous 1998c, 'Privatisation in Thailand: Program Likely to Be Slow Despite Acceleration Policy', *East Asian Executive Reports*, Vol.20, No.2, pp.9-15.

Anonymous 1998d, 'Big Losses', *The Thai Post*, 27 September 1998, p.5.

Anonymous 1998e, 'The First Ten Months: More Than Thousand Companies Wind Up', *Chulalongkorn Review*, October-December, Vol.11, Issue.41, pp.134-135.

Anonymous 1999, 'Thai Economic Crisis and Direction of the Eighth Plan Revision', *Thai Board of Investment Papers*, Vol.8, No.2, 10 July 1999.

Argyris, C.1977, 'Double-Loop Learning in Organisations', *Harvard Business Review*, September-October, pp.115-125.

Argyris, C.1993, *Knowledge for Action*, Jossey-Bass Publishers, San Francisco.

Argyris, C.1999, *On Organisational Learning*, 2nd ed., Blackwell Publish, Oxford.

Argyris, C. and Kaplan, R.S. 1994, 'Implementing New Knowledge: The Case of Activity-Based Costing', *Accounting Horizons*, September, pp.83-105.

Argyris, C. and Schon, D.A.1996, *Organisational Learning II*, Reading, N.J: Addison-Wesley.

Armitage, H. and Nicholson, R.1993, 'Activity-Based Costing: A Survey of Canadian Practice', *CMA Magazine*, March, p.22.

Ask, U., Ax, C. and Jonsson, S.1996, 'Cost Management in Sweden: From Modern to Post-Modern', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Atkinson, A.A., Banker, R.D., Kaplan, R.S. and Young, S.M.1995, *Management Accounting*, Prentice-Hall, New Jersey.

Atkinson, A.A., Balakreshnan, R., Booth, P., Cote, J.M., Groot, T., Malmi, T., Roberts, H., Uliana, E. and Wu, A.1997, 'New Directions in Management Accounting Research', *Journal of Management Accounting Research*, Vol.9, pp.80-101.

Bailey, J. 1991, 'Implementation of Activity-Based Costing Systems by UK Companies', *Management Accounting*, February, pp.30-32.

Ballas, A. and Venieris, G.1996, 'A Survey of Management Accounting Practice in Greek Firms', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Barbato, M., Collini, P. and Quagli, A.1996, 'Management Accounting in Italy: Evolution within Tradition', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Baxandale, S.J.1999, 'Activity-Based Costing for A Claims Processing Operation', *CPCU Journal*, Summer, Vol.52, Issue.2, pp.84-89.

Baydoun, N., Nishimura, A. and Willett, R.1997 (eds.), 'Reflections on the Relationship between Culture and Accounting Practices in the Asia-Pacific Region', in *Accounting the Asian Pacific Region*, John Wiley & Sons, Singapore.

Bedeian, A.G. and Zammuto, R.E.1991, *Organisations Theory and Design*, Dryden Press, Orland.

Bello, W., Cunningham, S. and Poh, L.K.1998, *A Siamese Tragedy: Development and Disintegration in Modern Thailand*, Zed Book, London.

Bhimani, A.1996, 'Management Accounting in the UK Reflection on Research, Practice and the Profession', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Bhimani, A. and Pigott, D.1992, 'Implementing ABC: A Case Study of Organisational and Behavioral Consequences' *Management Accounting Research*, Vol.3, pp.119-132.

Bjornenak, T.1997, 'Diffusion and Accounting: The Case of ABC in Norway', *Management Accounting Research*, Vol.8, pp.3-17.

Booth, P. and Giacobbe, F.1997, 'Activity-Based Costing in Australia Manufacturing firms: Key Survey Findings', *Management Accounting Issues Report by the Management Accounting Centre of Excellence of ASCPA*, No.5, March 1997, pp.1-6.

Borden, J.P.1990, 'Review of Literature on Activity-Based Costing', *Journal of Cost Management*, Vol.4, Issue.1, Spring, pp.5-12.

Brewer, P.C.1998, 'National Culture and Activity-Based Costing Systems', *Management Accounting Research*, Vol.9, pp.241-260.

Briers, M. and Chua, W.F.2001, 'The Role of Actor-Networks and Boundary Objects in Management Accounting Change: A Field Study of An Implementation of Activity-Based Costing', *Accounting Organisations and Society*, Vol.26, pp.237-269.

Brimson, J.A.1991, *Activity Accounting: An Activity-Based Costing Approach*, John Wiley & Sons, New York.

Brooks, A. and Oliver, J.1993, 'Activity-Based Costing Systems in Service Oriented Organisations: Some Field Study Evidence', *Management Accounting Research Conference*, San Diego, USA, Unpublished.

Bruggeman, W., Slagmulder, R. and Waeytens, D.1996, 'Management Accounting Changes: The Belgian Experience', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Bukovinsky, D., Sprolidge, H. and Talbott, J.2000, 'Activity-Based Costing for Sales and Administrative Costs', *The CPA Journal*, Vol.70, Issue.4, April, pp.70-72.

Chamchoy, S.1997, 'Unemployment: Problems in the IMF Economy', *Thai Farmer Bank Research Center*, Issue.4, November, p.4.

Chareonwongsak, K.1999, 'The Thai Economy: Recovery Or Not', *School of Economic and Finance Working Paper*, April, University of Western Sydney, Nepean, Sydney.

Chau, B.1999, 'Putting Back the Pieces', *Asia Business*, Vol.35, Issue.4, April, pp.22-25.

Chen, G., Firth, M. and Park, K.2001, 'The Implementation of Benefits of Activity-Based Costing: A Hong Kong Study', *Asia Review of Accounting*, Vol.9, No.2, pp.23-37.

Chenhall, R.H. and Langfield-Smith, K.1998a, 'The Relationship between Strategic Priorities, Management Techniques and Management Accounting: An Empirical Investigation Using a Systems Approach' *Accounting, Organisations and Society*, Vol.23, No.3, pp.243-264.

Chenhall, R.H. and Langfield-Smith, K.1998b, 'Adoption and Benefits of Management Accounting Practices: An Australian Study', *Management Accounting Research*, Vol.9, pp.1-19.

Chimploy, N.1999, *Activity-Based Costing for Operating Budget of Electricity Generating Authority of Thailand, Case Study: Mae Moh Power, Lampang*, Master Thesis, Chiang Mai University, Chiang Mai.

Chung, L.H., Schoch, H.P. and Teoh, H.Y.1997, 'Activity-Based Costing in Singapore: A Synthesis of Evidence and Evaluation', *Accounting Research Journal*, Vol.10, No.2, pp.125-141.

Cobb, I., Innes, J. and Mitchell, F.1992, *Activity Based Costing: Problems in Practice*, CIMA, London.

Cooper, R.1988, 'The Rise of Activity-Based Costing Part One: What is an Activity-Based Cost System?', *Journal of Cost Management*, Summer, pp.45-50.

Cooper, R.1990, 'Implementing an Activity-Based Costing System', *Journal of Costing Management*, Spring, pp.33-42.

Cooper, R.1994, *Thais Mean Business*, Times Books International, Singapore.

Cooper, R. 1997, "Squeeze Play", *Journal of Accountancy*, January, Vol.183, Issue.1, pp.46-48.

Cooper, R. and Kaplan, R.S.1988, 'Measure Costs Right: Make the Right Decision', *Harvard Business Review*, September-October, pp.96-103.

Cooper, R. and Kaplan, R.S.1991, 'Profit Priorities from Activity-Based Costing', *Harvard Business Review*, May-June, pp.130-135.

Cooper, R. and Turney, P.B.B. 1990, 'Internally Focused Activity-Based Costing Systems', in *Measure for Manufacturing Excellence*, edited by Kaplan, R.S., Harvard Business School Press, Boston.

Cooper, R.B. and Zmud, R.W.1990, 'Information Technology Implementation Research: A Technological Diffusion Approach', *Management Science*, Vol.36, No.2, pp.123-139.

Cooper, R., Kaplan, R.S., Maisel, Lawrence S., Morrissey, E. and Oehm, R.M.1992a, *Implementing Activity-Based Costing Management: Moving from Analysis to Action*, IMA, Montvale.

Cooper, R., Kaplan, R.S., Maisel, Lawrence S., Morrissey, E. and Oehm, R.M.1992b, 'From ABC to ABM', *Management Accounting*, November, pp.28-31.

Crave, M. and Meyer, J.1993, 'Focusing on True Costs in a Service Organisation- Firemen's Fund Took a 'Snapshot' of Operating Expenses to Develop a Clearer Picture of Its Product, Customer and Activity Costs', *Management Accounting*, February, pp.41-45.

Cummings, T.G. and Worley, C.G.1993, *Organisation Development and Change*, (5th edition), West Publishing, St.Paul.

Dachasakulsom, C.1990, 'Cultural Organisation', *Chulalongkorn Business Journal*, Vol.12, Issue.48, March, pp.13-19.

Damanpour, F.1987, 'The Adoption of Technological, Administrative and Ancillary Innovations: Impact of Organisational Factors', *Journal of Management*, Vol.13, No.4, pp.675-688.

Dervitsiotis, K.N.1998, 'The Challenge of Managing Organisational Change: Exploring the Relationship of Re-engineering Developing Learning Organisations and TQM', *Total Quality Management*, Vol.9, Issue.1, February , pp.109-112.

Dessler, G.1995, *Managing Organisations*, Dryden Press, Orelands.

Dixon, N.1994, *The Organisational Learning Cycle*, edited by Pedler, M., McGraw-Hill Book, London.

Dugdale, D.1990, 'The Uses of Activity-Based Costing', *Management Accounting*, October, pp.36-38.

Eskildsen, J.K. and Dahlgaard, J.J.1999, 'The Impact of Creating and Learning on Business Excellence', *Total Quality Management*, Vol.10, Issue.4, July, pp.523-530.

Ferrara, W.L.1994, 'The New Cost Management Accounting: More Questions than Answer', in *Activity-Based Management in Action*, edited by Romano, P.L., IMA Publication, Montvale.

Fiol, C.M. and Lyles, M.A.1985, 'Organisational Learning', *Academy of Management Review*, Vol.10, No.4, pp.803-813.

Foster, G. and Swenson, D.1997, 'Measuring the Success of Activity-Based Costing Management and Its Determinants', *Journal of Management Accounting Research*, Vol.9, pp.109-141.

Foster, G. and Young, S.M.1997, 'Frontiers of Management Accounting Research', *Journal of Management Accounting Research*, Vol.9, pp.63-77.

Francis, G.2001, *Introduction to SPSS for Windows*, 3rd edition, Pearson Education Australia, Sydney.

Friedlander, D.1984, *Pattern of Individual and Organisational Learning*, Jossey-Bass, San Francisco.

Fulmer, R.M.1994, 'A Model for Changing the Way Organisations Learning', *Planning Review*, May-June, pp.20-24.

Garvin, D.A.1993, 'Building a Learning Organisation', *Harvard Business Review*, July-August, pp.78-91.

Glad, E.1993, 'Implementation Considerations for an ABC System', *Management Accounting*, July-August, pp.29-32.

Gosselin, M.1997, 'The Effect of Strategy and Organisational Structure on The Adoption and Implementation of Activity-Based Costing', *Accounting, Organisations, and Society*, Vol.22, No.2, pp.105-122.

Haas, D.F.1979, *Interaction in the Thai Bureaucracy: Structure, Culture, and Social Exchange*, Westview Press, Colorado.

Hataiseree, R.1998, 'Thai Economic Crisis: The Causes, Affects and Trends', *Chulalongkorn Review*, Vol.10, Issue.38, January-March, pp.19-57.

Hofstede, G.1984a, *Culture's Consequences: International Differences in Work-Related Values*, Sage Publications, Newbury Park.

Hofstede, G.1984b, 'Cultural Dimension in Management and Planning', *Asia Pacific Journal of Management*, January, pp.81-99.

Holzer, H.P. and Tremblay, D.1973, 'Accounting and Economic Development: The Cases of Thailand and Tunisia', *The International Journal of Accounting*, Vol.9, No.1, pp.67-80.

Hooke, G., Warr, P., Shaw, B., Ffode, A. and Brassard, C.1999, *Agriculture in Times of Crisis: Impacts in South East Asia of the Economic Crisis*, Australian Agency for International Development, Canberra.

Horngren, C.T., Foster, G. and Datar, S.M.1997, *Cost Accounting: A Managerial Emphasis*, (9th edition), Prentice Hall, New Jersey.

Hossain, M. and Adams, M.1997, 'Accounting Regulation and Practice in Thailand', in *Accounting the Asian Pacific Region*, edited by Baydoun, N., Nishimura, A. and Willett, R., John Wiley & Sons, Singapore.

Hosseini, A., Khan, Z. and Sharifi, M.1997, 'A Survey of Cost Management Practices among the United States and Canadian Companies' in *Reports of the 9th Asian-Pacific Conference on International Accounting Issues*, edited by Peyvandi, A., Tai, B.Y., Chartabsorn, O. and Tanbamai, U., 23-26 November 1997, Bangkok.

Huber, G.P.1991, 'Organisational Learning: The Contributing Process and the Literatures', *Organisation Science*, Vol.2, No.1, February, pp.88-115.

Hurst, D.K.1995, *Crisis & Renewal: Meeting the Challenge of Organisational Change*, Harvard Business School Press, Boston.

Huse, E.F.1980, *Organisation Development and Change*, West Publishing, St.Paul.

Innes, J. and Mithchell, F.1991, 'ABC: A Survey of CIMA members', *Management Accounting (UK)*, Vol.69, October, pp.28-30.

Innes, J. and Mitchell, F.1993, *Activity-Based Costing Management: A Case Study of Development and Implementation*, CIMA, London.

Innes, J. and Mitchell, F.1995a, 'Activity-Based Costing', in *Issue in Management*, edited by Ashton, D., Hopper, T., and Scapens, R.W., Prentice Hall, London.

Innes, J. and Mitchell, F.1995b, ' A Survey of Activities-Based Costing in the UK's Largest Companies', *Management Accounting Research*, Vol.6, pp.137-153.

Innes, J. and Mitchell, F. 1995c, 'ABC: A Follow-Up Survey of CIMA Members', *Management Accounting*, July-August, pp.50-51.

Innes, J. and Mitchell, F.1998, *A Practical Guide to Activity-Based Costing*, Kogan Page, London.

Israelsen, P., Anderson, M., Rohde, C. and Sorensen, P.1996, 'Management Accounting in Denmark: Theory and Practice', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Jacobs, S.1998, 'Today's Thailand: Positive Impacts amid the Crisis', *The Thai Board of Investment Papers*, Vol.6, 15 January 1998, No.4.

Johnson, H.T.1990, 'Beyond Product Costing: A Challenge to Cost Management's Conventional Wisdom', *Journal of Cost Management*, Vol. 4, Issue.3, Fall, pp.15-21.

Johnson, H.T. and Kaplan, R.S.1991, *Relevance Lost: The Rise and Fall of Management Accounting*, Harvard Business School Press, Boston.

Jolley, A. 1998, 'The Anatomy of the Crisis', Crisis in East Asia: Global Watershed or Passing Storm', *Conference Report*, March 10,1998, Centre for Strategic Economic Studies, Victoria University of Technology, Melbourne.

Jones, C., Currie, W.L. and Dugdale, D.1993, 'Accounting and Technology in Britain and Japan: Learning from Field Research', *Management Accounting Research*, Vol.4, pp.104-137.

Joye, M.P. and Blayney, P.J.1990, *Cost and Management Accounting Practices in Australian Manufacturing Companies: Survey Results*, Monograph No.7, Accounting and Finance Foundation, The University of Sydney.

Kanchananga, S.1979, *Thai Culture Social Customs and Manners Thai Sports*, Kanchananga, Bangkok.

Kanter, R.M., Stien, B.A. and Jick, T.D.1992, *The Challenge of Organisational Change: How Companies Experience It and Leader Guide It*, The Free Press, New York.

Kaplan, R.S.1988, 'One Cost System Isn't Enough', *Harvard Business Review*, January-February, pp.61-66.

Kaplan, R.S.1990a, *Measures for Manufacturing Excellence*, Harvard Business School Press, Boston.

Kaplan, R.S.1990b, 'The Four-Stage Model of Cost Systems Design', *Management Accounting*, February, pp.22-26.

Kaplan, R.S.1992, 'In Defence of Activity-Based Cost Management', *Management Accounting*, November, pp.58-63.

Kim, L.1998, 'Crisis Construction and Organisational Learning: Capability Building in Catching-up at Hyundai Motor', *Organisation Science*, Vol.9, No.4, July-August, pp.506-520.

Kitivacharapon, S. and Guao-prasertwong, J.2000, 'Production Cost Estimation in The Printing Industry by Activity-Based Costing', *Journal of Engineering*, Vol.53, Issue.3, March, pp.59-68.

Klausner, W.J.1993, *Reflection on Thai Culture*, 4th edition, Bangkok.

Kloot, L.1994, 'Looping the Loop: New Directions for the Learning Organisation', *Australian Accountant*, Vol.66, Issue.6, July, pp.26-27.

Kloot, L.1997, 'Organizational Learning and Management Control Systems: Responding to Environmental Change', *Management Accounting Research*, Vol.8, pp.47-73.

Kloot, L., Italia, M., Oliver, J. and Brooks, A.1999, *Organisational Learning and Management Accounting Systems: A Study of Local Government*, University of New South Wales Press, Sydney.

Kock, S.1995, 'Implementation Considerations for Activity-Based Costing Systems in Service Firms: The Unavoidable Challenge', *Management Decision*, Vol.33, No.6, pp.57-63.

Kofman, F. and Senge, P.M. 1993, 'Communities of Commitment: The Heart of Learning Organisations', *Organisational Dynamics*, Vol.22, Issue.2, Autumn, pp.4-23.

Krumwiede, K.P. 1998, 'The Implementation Stages of Activity-Based Costing and The Impact of Contextual and Organisational Factors', *Journal of Management Accounting Research*, Vol.10, pp.239-277.

Krumwiede, K.P. and Roth, H.P.1997, 'Implementing Information Technology Innovations: The Activity-Based Costing Example', *S.A.M. Advanced Management Journal*, Vol.62, Issue.4, Fall, pp.4-13.

Kullven, H. and Mattsson, J.1994, 'A Management Control Model Based on the Customer Service Process', *International Journal of Service Industry Management*, Vol.5, No.3, pp.14-25.

Kunakorn, K.2000, 'The Restructuring of the Thai Economy under the IMF Financial Package', *Thai Board of Investment Papers*, Vol.7, No.1, 29 April 2000.

Kunpanichakit, D.1993, 'Activity-Based Costing: Strategic Information for Executives', *Conference Monograph*, 14 February 1993.

Lebas, M.1996, 'Management Accounting Practice in France', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Leightner, J.E.1999, 'Globalisation and Thailand's Financial Crisis', *Journal of Economic Issues*, Vol.33, Issue 2, June, pp.367-373.

Letza, S.R. and Gadd, K.1994, 'Should Activity-Based Costing Be Considered as the Costing Method of Choice for Total Quality Organisations?', *The TQM Magazine*, Vol.6, No.5, pp.57-63.

Libby, T. and Waterhouse, J.H.1996, 'Predict Change in Management Accounting Systems', *Journal of Management Accounting Research*, Vol.8, pp.137-151.

Lichtenstein, B.M.B.2000, 'Generative Knowledge and Self-Organised Learning', *Journal of Management Inquiry*, Vol.9, No.1, March, pp.47-54.

Lippitt, G.L., Langscth, P. and Mossop, J.1986, *Implementing Organisational Change*, Jessey-Bass, San Francisco.

Lipshitz, R. and Popper, M.1996, 'Building Learning Organisations: The Design and Implementation of Organisational Learning Mechanisms', *Journal of Applied Behavioural Science*, Vol.32, Issue.3, September, pp.292-305.

Lwin, T.1998, 'Structural Re-adjustments and Corporate Strategies: Thailand', *Executive Journal*, Vol.18, No.1, January-March, pp.26-34.

MacArthur, J.B.1992, 'Activity-Based Costing: How Many Cost Drivers Do You Want?', *Journal of Cost Management*, Vol.6, Issue.3, Fall, pp.37-41.

MacGregor, A., Hossain, M. and Yap, K.1997, 'Accounting in Malaysia and Singapore: Culture's Lack of Consequences?', in *Accounting the Asian Pacific Region*, edited by Baydoun, N., Nishimura, A. and Willett, R., John Wiley & Sons, Singapore.

McGowan, A.S. and Klammer, T.P.1997, 'Satisfaction with Activity-Based Costing Management Implementation', *Journal of Management Accounting Research*, Vol.9, pp.217-237.

Miller, J.A.1996, *Implementing Activity-Based Management in Daily Operations*, John Wiley & Sons, New York.

Mills, R. and Cave, M.1990, 'Overhead Costs Allocation in Service Organisations', *Management Accounting*, June, pp.36-37.

Moghaddam, J.M.1997, 'Activity-Based Costing and Performance Measurement System', *the 9th Asian-Pacific Conference on International Accounting Issues*, 23-26 November 1997, Bangkok.

Morakul, S. and Wu, F.H.2001, 'Cultural Influences on the ABC Implementation in Thailand's Environment', *Journal of Managerial Psychology*, Vol.16, No.2, pp.142-158.

Morgan, G.1998, *Images of Organisation: The Executive Edition*, Sage Publications, Thousand Oaks.

Morgan, G.A., Griego, O.V. and Gloeckner, G.W.2001, *SPSS for Windows: An Introduction to Use and Interpretation in Research*, Lawrence Erlbaum Associates, New Jersey.

Morrow, M. (ed) 1992, *Activity-Based Management: New Approaches to Measuring Performance and Managing Costs*, Woodhead-Faulkner, New York.

Neilson, E. 1997, *Collaborate Technologies and Organisational Learning*, Idea Group Publishing, Hershey.

Ness, J.A. and Cucuzza, T.G.1995, 'Tapping the Full Potential of ABC', *Harvard Business Review*, Vol.73, Issue 4, July-August, pp.130-138.

Newman, K.L.2000, 'Organisational Transformation during Institutional Upheaval', *Academy of Management Review*, Vol.25, Issue 3, July, pp.602-619.

Nguyen, H.V. and Brooks, A.1997, 'An Empirical Investigation of Adoption Issues Relating to Activity-Based Costing', *Asian Review of Accounting*, Vol.5, No.1, pp.1-18.

Nicholls, B.1992, 'ABC in the UK: A Status Report', *Management Accounting*, May, pp.22-23, 28.

Nidhiprabha, B.1998, 'Economic crises and the Debt-deflation Episode in Thailand', *Asean Economic Bulletin*, Vol.15, Issue.3, December, pp.309-319.

Nikomborirak, D. and Tangkitvanich, S.2000, 'Corporate Governance in Thailand: From Crisis to Recovery', in *Restoring East Asia Dynamism*, edited by Masuyama, S., Vandembrink, D. and Yue, C.S., Seng Lee Press, Panjang.

Norkiewicz, A.1994, 'Nine Steps to Implementing ABC', *Management Accounting*, Vol.76, Issue.10, pp.28-33.

Norris, G.1997, 'The Formation of Managers' Views of ABC and Their Impact on the Outcome of Its Use: A Grounded Theory Case Study', *Accounting Research Journal*, Vol.10, No.2, pp.180-200.

O'Guin, M.C.1991, *The Complete Guide to Activity-Based Costing*, Prentice Hall, New Jersey.

Oliver, J. 1994, *Activity-based Costing in A Service Organisation*, Master Thesis, Victoria University of Technology.

Otley, D.T.1980, 'The Contingency Theory of Management Achievement and Prognosis' *Accounting, Organisations and Society*, Vol.5, No.4, pp.413-428.

Pallant, J. 2001, *SPSS Survival Manual*, Allen and Unwin, Nest.

Pedler, M., Burgoyne, J. and Boydell, T.1997, *The Learning Company: A Strategy for Sustainable Development*, McGraw-Hill Publishing, Cambridge.

Phillips, J.J.1996, *Creating the Learning Organisation*, American Society for Training and Development, Alexandria.

Phongpaichit, P. and Baker, C.1998, 'Thailand's Crisis: Neo-Liberal Agenda and Local Reaction', *Thammasat Economic Journal*, Vol.16, No.3, September, pp.26-49.

Phongpaichit, P. and Baker, C.2000, *Thailand's Crisis*, Silkworn Books, Bangkok.

Player, R.S. and Keys, D.E. 1995, 'Lessons from the ABM Battlefield: Getting off to the Right Start', *Journal of Cost Management*, Vol.9, Issue.1, Spring, pp.26-38.

Preepriyavat, V.1998, 'How to Privatise by not Selling Nation', *Chulalongkorn Review*, Vol.11, Issue.43, April-June, pp.56-71.

Puntasen, A.1998, 'A Review of the Economic Crisis: Lessons for Sustainable Development in ASEAN', *Thammasat Economic Journal*, Vol.16, No.3, September, pp.5-24.

Rabibhadana, A.1993, 'The 1993 Year-End Conference: Who gets what and how? : Challenge for the Future', *Synthesis Papers*, Vol.4, Chon Buri.

Raffish, N.1991, 'How Much Does That Product Really Cost: Finding Out May Be As Easy As ABC', *Management Accounting*, March, pp.51-54.

Redman, W. 1998, 'Cost Management Plans Can Be As Easy As ABC', *Internetweek*, Issue.730, August, p.28.

Roberts, M.W. and Silvester, K.J.1996, 'Why ABC Failed and How It May Yet Succeed', *Journal of Cost Management*, Vol.9, Issue 4, Winter, pp.23-35.

Saez-Torrecilla, A., Fernandez, A., Texeira-Quires, J. and Vaquera-Mosquero, M.1996, 'Management Accounting in Spain: Trends in Thought and Practice', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Salner, M.1999, 'Preparing for the Learning Organisation', *Journal of Management Education*, Vol.23, Issue.5, October, pp.489-509.

Scherrer, G.1996, 'Management Accounting: A German Perspective', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Sekaran, U.2000, *Research Methods for Business: A Skill-Building Approach*, John Wiley & Sons, New York.

Senge, P.M.1992, *The Fifth Discipline: The Art and Practice of the Learning Organisation*, Random House Australia Pty Ltd., Milsons Point.

Senge, P.M., Roberts, C., Ross. R.B., Smith, B.J. and Kleiner, A.1994, *The Fifth Discipline Fieldbook: Strategic and Tools for Building a Learning Organisation*, Nicholas Brealey Publishing, London.

Serbshon, K.1994, *Culture and Communicating Behaviour in Organisation*, Chulalongkorn University Press, Bangkok.

Shanahan, Y.P. and Dance, K.M.1997, 'Activity-Based Costing Implementation: Building on the Framework through an Examination of Organisational Experience', *Accounting Research Journal*, Vol.10, No.2.

Shields, M.D.1995, 'An Empirical Analysis of Firms: Implementation Experiences with Activity-Based Costing', *Journal of Management Accounting Research*, Vol.7, Fall, pp.148-164.

Shields, M.D.1997, 'Research in Management Accounting by North Americas in the 1990s', *Journal of Management Accounting Research*, Vol.9, pp.3-57.

Shields, M.D. and McEwen, M. 1996, 'Implementing Activity-Based Costing Systems Successfully', *Journal of Cost Management*, Vol.9, Issue.4, Winter, pp.15-22.

Shields, M. and Young, S.M.1989, 'A Behavioural Model for Implementing Cost Management Systems', *Journal of Cost Management*, Winter, pp.17-27.

Shim, E. and Stagliano, A.J.1997, 'A Survey of US. Manufacturers on Implementation of ABC', *Journal of Cost Management*, Vol.11, Issue.2, March-April, pp.39-41.

Sikes, J.1998, 'TPI Agrees on Debt Restructuring Deal, Plans, Sale of Non-core Units', *Chemical Week*, Vol.160. Issue.40, p.22.

Sikes, J.1999, 'Thailand: Still Struggle to Find Its Feet', *Chemical Week*, Vol.10, 3 February 1999, pp.10.

Simachokdee, V.1997, 'Re-engineering for Survival of Organisations', *Chulalongkorn Review*, Vol.10, Issue.37, October-December, pp.72-83.

Smith, M.2000, 'Innovation Diffusion', *Management Accounting*, June, pp.40-41.

Soeters, J. and Schreuder, H.1988, 'The Interaction Between National and Organisational Cultures in Accounting Firms', *Accounting, Organisations and Society*, Vol.13, No.1, pp.75-85.

Stata, R.1989, 'Organisational Learning-The Key to Management Innovation', *Sloan Management Review*, Spring, pp.63-73.

Stein, E.W. and Vandenbosch, B.1996, 'Organisational Learning during Advanced System Development: Opportunities and Obstacles', *Journal of Management Information Systems*, Vol.13, Issue. 2, Fall, pp.115-136.

Suwongworn, T.1998, 'Outlook: Organisation Renewal', *Executives*, August, pp.86-90.

Suzuki, K. and Asada, T.1997, ' The Reality and the Future of Activity-Based Costing in Japanese enterprises ', in *Reports of the 9th Asian-Pacific Conference on International Accounting Issues*, edited by Peyvandi, A., Tai, B.Y., Chartabsorn, O. and Tanbamai, U., 23-26 November 1997, Bangkok.

Swenson, D.1995, ' The Benefits of Activity-Based Costing Management to the Manufacturing Industry', *Journal of Management Accounting Research*, Vol.7, Fall, pp.167-180.

Swieringa, J. and Wierdsma, A.1992, *Becoming a Learning Organisation: Beyond the Learning Curve*, Addison-Wesley Publishing, Cambridge.

Teeraparppun, V.1998, 'Moral and Thai Economic Crisis', *Executives*, Issue.2, April-June, pp.35-38.

The ADB Report 1999,December, ADB Co.Ltd, pp.5-9.

The Bangkok Business 1998, 7 March, p.19.

The East Asia Analytical Unit 2000, *Transforming Thailand: Choices for the New Millennium*, edited by Duffy, A., Green Advertising, Barton.

Ticehurst, G.W. and Veal, A.J.1999, *Business Research Methods: A Managerial Approach*, Longman, Sydney.

Toommanon, V.1996, 'Application of Activity-Based Costing', *Class Handout Monograph*, Chulalongkorn University, Bangkok.

Toommanon, V.1997a, 'Activity-Based Costing', *Rom-Saithong Journal*, South East Asia University, Vol.7, No.3, October-November, pp. 8-11.

Toommanon, V.1997b, 'Activity-Based Costing', *Management Accounting*, Sukchothai-thummatirach University Press, Bangkok.

Toommanon, V.2000, *Activity-Based Costing*, Transcribed Monograph, 13 August 2000.

Touret, R.1989, *Thailand*, Euromoney Publication, London.

Triwannakit, S. 1997, 'To Accelerate Exporting: Surviving Way of Thai Economy', *Thai Farmer Bank Research Centre*, Issue.5, December, p.1.

Trutassanawin, V.1998, 'HRM in Companies Creating Technology', *Executives*, January-March, Vol.18, Issue.1, pp.66-69.

Turney, P.B.B.1990, 'Ten Myths About Implementing an Activity-Based Costing System', *Journal of Cost Management*, Vol.4, Issue 1, Spring, pp.24-32.

Turney, P.B.B.1991, 'How Activity-Based Costing Helps Reduce Costs', *Journal of Cost Management*, Vol.4, Issue.4, Winter, pp.29-35.

Turney, P.B.B.1992, 'ABM Puts ABC Information to Work', *Management Accounting*, January, pp.15-20.

Turney, P.B.B. 1996, *Activity-Based Costing: The Performance Breakthrough*, Kogan Page, London.

Unger, D. 1998, *Building Social Capital in Thailand*, Cambridge University Press, Cambridge.

Vance, C.M., McClaine, S.P., Boji, D.M. and Stage, H.D.1992, 'An Examination of the Transferability of Traditional Performance Appraisal Principles Across Cultural Boundaries', *Management International Review*, Vol.32, No.4, pp.313-326.

Vatikiotis, M. and Granitsas, A.1998, 'Face to Face', *Far Eastern Economic Review*, 2 April 1998, pp.44-45.

Vikkunen, J. and Kuutti, K.2000, 'Understanding Organisational Learning by focusing on Activity Systems', *Accounting Management and Information Technologies*, Vol.10, pp.291-391.

Virtanen, K., Malmi, T., Vaivio, J. and Kasanen, E.1996, 'Drivers of Management Accounting in Finland', in *Management Accounting: European Perspectives*, edited by Bhimani, A., Oxford University Press, Oxford.

Vivanichakul, N. and Udomsri, C.1990, *Business Research Method Discipline*, Chulalongkorn University Press, Bangkok.

Waeytens, D. and Bruggeman, W.1994, 'Barriers to Successful Implementation of ABC for Continuous Improvement: A Case Study', *International Journal of Production Economics*, Vol.36, pp.39-52.

Warwick, D., Reeve, R. and Feltrim, A.1997, 'Accounting and Organisational Influences on the Usefulness of Cost Information: An Empirical Study', *Accounting Research Journal*, Vol.10, No.2, pp.152-164.

Weathersby, G.B. 2000, 'Successful Learning', *Management Review*, Vol.89, Issue.2, February, pp.6-7.

Winn, H.1998, 'Thai Break', *Accountancy*, Vol.121, No.1256, April, pp.24-26.

Wongcha-um 1997, 'Increment of Efficient Management: Problem of Development of Thailand', *Chulalongkorn Review*, Vol.10, Issue.39, October-December, pp.11-17.

Yakhou, M. and Dorweiler, V.P.1995, 'Advanced Cost Management Systems: An Empirical Comparison of England, France and the United States', *Advances in International Accounting*, Vol.8, pp.99-127.

Zikmund, W.G.1997, *Business Research Methods*, (5th ed.), Harcourt Brace, Orland.

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Appendix A

Profiles of interviewed firms

Profile of Company A

Company A (without ABC knowledge)

Company industry: a manufacturer and an exporter of frozen fruits and vegetables. Company A is a multi-national company, but 65% of all stock is owned by Thais.

Paid-up registered capital: 100-500 million baht

Number of employees: 1,001-1,500 employees

Organisational structure: Company A's structure is organised by functions and products. Additionally, organisational structure has highly hierarchical levels (vertical differentiation) and depends on regulations or standards of job (formalisation).

Company environment: Company A has high capital equipment intensity and intensity of competition. Since the company has seldom introduced new products, it has less than 20 types of products.

Current cost system: Company A has used job and process costing in its cost management system. It has estimated product costs every month by using an actual costing method and allocated indirect costs to departments by using labour and machine hours.

Changes since the crisis: Company A has begun to apply ISO 9002 in 1999 in order to have systematic operation and save costs because ISO 9002 makes production process more efficient and eliminates waste.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company B

Company B (without ABC knowledge)

Company industry: a distributor and an installer of communicating equipment and mobile phones, as well as an operator of communicating patent.

Company B is a multi-national firm, but 40% of all stock is owned by Thais.

Paid-up registered capital: 5,001-10,000 million baht

Number of employees: more than 2,000 employees

Organisational structure: Organisational structure is organised by functions and focuses on centralised decision-making authority.

Company environment: Company B has extreme capital equipment intensity and high diversity in products or services. In terms of products, the company has 51-100 types of products or services and has occasionally introduced new products or services.

Current cost system: Since Company B is not a manufacturer, its existing cost system comprises costs of goods sold for mobile phone and communicating equipment and costs of service for installing communicating equipment. Labour hours and labour baht are employed in allocating indirect costs to services.

Changes since the crisis: Company B has reorganised by layoffs and closer of some divisions. In addition, the company aggregated responsibility centres in order to transfer power in decision-making to top management. For example, accounting division of each responsibility centre was aggregated to a corporate accounting division.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company C

Company C (without ABC knowledge)

Company industry: a provider of communicating services through satellite and a distributor of communicating equipment. Company C is not a wholly Thai-owned company: 90% of stock is owned by Thais.

Paid-up registered capital: 501-1,000 million baht

Number of employees: 200-500 employees

Organisational structure: Structure of company C is based on functions, services and strategic business units (SBU). In addition, organisational structure focuses on centralised decision-making authority and regulations or standards of job (formalisation).

Company environment: Company C has extreme capital equipment intensity, high variation in technical complexity among services and high diversity in services, as well as, high competitive intensity in industry. In terms of products, the company has 20-50 types of products or services and has occasionally introduced new products.

Current cost system: Company C has used job costing in its cost management system and estimated service costs by utilising a standard costing method. The existing cost system of Company C comprises costs of good sold for communicating equipment and costs of services for installing communicating equipment.

Changes since the crisis: Company C has reorganised by rotation of employees and improvement of flow of working, as well as reduction of working hours in order to reduce costs. In addition, the company has begun to apply ISO 9002 in some divisions, such as repairing and maintaining divisions, in order to build standard and to warrant for service of the company.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company D

Company D (with intention to adopt ABC)

Company industry: a manufacturer of equipment and machines for food industries. The company designs and manufactures, as well as installs, equipment and machine. Company D is a multi-national company, but more than 50% of stock is owned by Thais.

Paid-up registered capital: 100-500 million baht

Number of employees: 501-1,000 employees

Organisational structure: Organisational structure of Company D is based on functions, products and strategic business units (SBU). Additionally, the company has organisational structure with high level of vertical differentiation and formalisation. Moreover, organisational structure focuses on centralised decision-making extremely.

Company environment: Company D has extreme flexibility of manufacturing facility and high diversity in products. In terms of products, the company has produced 20-50 types of products and seldom introduced new products.

Current cost system: Company D has used job costing in its cost management and estimated product costs by using a standard costing method. The accounting department of the company has provided bills of material, including working hours and overhead costs, from assessing structure of products by engineers. Company D has used labour hours, labour baht, direct materials and units of products to allocate overhead costs to products. When finishing one job, the accounting department compares actual costs to estimated costs. Installing costs depend on estimating hours of instalment.

Changes since the crisis: Company D has reorganised by rotation of employees and reduction of working hours so as to reduce expenses.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company E

Company E (with intention to adopt ABC)

Company industry: a manufacturer of ceramics for floors and walls. Company F is a multi-national company, but 13.67% of all stock is owned by Thais.

Paid-up registered capital: 501-1,000 million baht

Number of employees: 501-1,000 employees

Organisational structure: Organisational structure of Company E is organised by functions and focuses on centralised decision-making authority extremely. In addition, it has organisational structure with high level of vertical differentiation and formalisation.

Company environment: Company E has high diversity in products, capital equipment intensity and competitive intensity in its industry. The company has occasionally introduced new products. But, it has less than 20 types of products.

Current cost system: Company E has used job and process costing in its cost management systems and allocated overhead costs to products by using units of products. Moreover, the company estimated product costs by using a standard costing method. Variances between standard costs and actual costs have been transferred to production costs and sought causes of variances. Due to utilising technology from overseas, Company E has taken information from overseas to be benchmarking in order to determine target costing.

Changes since the crisis: Company E has reorganised by layoffs and short cut of commanding lines.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company F

Company F (with intention to adopt ABC)

Company industry: a manufacturer of compressor motors and parts of compressor motors. Company G is not a wholly Thai-owned firm: 73.17% of all stock is owned by Thais.

Paid-up registered capital: 101-500 million baht

Number of employees: 1,001-1,500 employees

Organisational structure: Organisational structure is based on functions, products and strategic business units (SBU). Additionally, organisational structure focuses on centralised decision-making authority, a high level of vertical differentiation and formalisation.

Company environment: Company F has high capital equipment intensity. The company has produced less than 20 types of products and introduced new products very often.

Current cost system: Company F has used process costing system and a periodic cost accumulation system to evaluate monthly inventory by transferring the variance to the cost of goods sold. The product cost is forecasted on information from the raw material purchasing department. Labour hours, labour baht and units of products are used to allocate overhead costs to product costs.

Changes since the crisis: Company F has applied ISO 9002, coupled with TQM, at the end of 1997 in order to upgrade the quality of products and follow the requirement of customers. So, the company has delayed the ABC project. In addition, had reorganised by layoffs and cancellation of overtime so as to reduce expenses.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company G

Company G (without intention to adopt ABC)

Company industry: a manufacturer of cable and electronic wires. Most materials are imported from overseas. Company G is a multi-national firm: 51% of stock is owned by Thais.

Paid-up registered capital: 501-1,000 million baht

Number of employees: 201-500 employees

Organisational structure: Organisational structure of Company G is organised by functions and products and focuses on centralised decision-making authority.

Company environment: Company G has high diversity in products and capital equipment intensity, as well as high competitive intensity in its industry. In terms of products, the company has produced more than 500 types of products and seldom introduced new products.

Current cost system: Company G has employed process costing in its cost management system and estimated product costs by using a standard costing method. Also, the company has used machine hours to allocate overhead costs and adjusted variances between standard costs and actual costs into production costs every three months.

Experience with ABC: Company G had considered ABC, but it was deemed as unsuitable for the company because the nature of ABC is too elaborate and complex. It is hard to collect data and identify activities and cost drivers. Also, Company G lacks internal resources to install and operate, such as human resources and experts. Moreover, ABC has increased responsibility of documents to non-accounting employees and its implementation needs co-operation and participation of all employees, especially non-accounting employees. Thus, it is hard for the company to implement ABC.

Changes since the crisis: Company G has applied ISO 9002 at the end of 1997 in order to develop efficiency of production and to control the quality of products. In addition, the company has reorganised by layoffs to reduce costs.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company H

Company H (an abandoner)

Company industry: a banking firm

Company H is not a wholly Thai-owned company: 60% of all stock is owned by Thais.

Paid-up registered capital: 5,001-10,000 million baht

Number of employees: more than 2,000 employees

Organisational structure: Organisational structure of company H is based on functions, products/services, geographical areas and strategic business units (SBU). Moreover, organisational structure focuses on centralised decision-making authority, high level of vertical differentiation and formalisation.

Company environment: Company H has extreme intensity of competition in its industry. In addition, the company has high variation in technical complexity among products/services, complexity of production/service process and diversity in products/services, as well as high capital equipment intensity. In terms of products/services, Company H has 21-50 products/services and has occasionally introduced new products/services.

Current cost system: Operation of Company H is based on centres of each district. Centres of each district have charged costs with business units or branches that use services of centres. Company H has used process costing in its cost management system and estimated costs by using a standard costing method. Labour hours, direct material and units of products/services are utilised in allocating indirect costs.

Experience with ABC: Company H had implemented ABC as a pilot project before 1997. The company had implemented it with a stand-alone system and in-house consultants and software. Now, it stopped implementing ABC temporarily because there are changes in its operating system. But, Company H intends to adopt ABC again soon.

Changes since the crisis: Company H has reorganised by change in its operating system. In the past, operation of company H was based on branches. To date, its operation is based on centres of each district. Each centre has expertise in operation and economic of scales which support the reduction of costs in operation.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company I

Company I (an adopter)

Company industry: a mining company

Company I is not a wholly Thai- owned firm, but 90% of all stock is owned by Thais.

Paid-up registered capital: 2,001-5,000 million baht

Number of employees: 501-1,000 employees

Organisational structure: Organisational structure of company I is based on functions, products and strategic business units (SBU). Additionally, organisational structure has extreme formalisation and high level of vertical differentiation. Moreover, it focuses on highly centralised decision-making authority.

Company environment: Company I has high flexibility of manufacturing facility and capital equipment intensity, but no complexity of production processes and diversity of products. In terms of products, Company I has less than 20 types of products and has occasionally introduced new products.

Experience with ABC: Company I has begun to implement ABC at the end of 1997. ABC has been implemented for the whole organisation without a stand-alone system, external consultants and a commercial software. Now, the company is reaching the highest stage of ABC implementation (the stage of seamless integration with other organisational systems). The implementation of ABC is aimed at more accurate information for decisions, cost control and improvement of standard of performance measurement.

Implementation of ABC: -An important starting point of ABC implementation is top management support. Top management of Company I has shown interest in and supported all new knowledge or innovations, including ABC.

- Before implementing ABC, Company I had provided conferences for employees in order to inform the clarity of objectives of ABC implementation to employees and ask cooperation from employees.

- The company had set a team for installing ABC, consisting of teams from all departments. This team had brainstorming as to design and process of ABC implementation. Then, the installing team had provided education and training about ABC concepts, benefits and process for all supervisors.

- In turn, the supervisors had provided training about implementation of ABC for their subordinates.

Company I (continued)

Changes since the crisis: Company I has adopted ABC at the end of 1997 in order to get more accurate information for decisions and improve standards of performance measurement. Also, the company has applied ISO 9001 and 14001, as well as TQM, so as to improve quality of products, production, safety and environment. In addition, the company is developing VBM (value based management), which is a new management technique focusing on activities that create value for an organisation, shareholders and stockholders, in order to improve efficiency of working.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company J

Company J (an adopter)

Company industry: a manufacture of furniture and kitchenware
 Company J is not a wholly Thai-owned firm: 75% of all stock is owned by Thais.

Paid-up registered capital: 501-1,000 million baht

Number of employees: 1,501-2,000 employees

Organisational structure: In the past, organisational structure of Company J was based on functions. Power of decisions was concentrated on a sole top manager. After implementing ISO 9001 and ABC, organisational structure of Company J is based on product lines, geographical areas and strategic business units (SBU). In addition, the organisational structure concentrates on centralised decision-making authority and has high formalisation and level of vertical differentiation.

Company environment: Company J has extreme diversity in products and intensity of competition in industry. Also, the company has high variation in technical complexity among products. In terms of products, Company J has often introduced new products. Thus, it has a large number of types of products (201-500 types).

Experience with ABC: In the past, Company J could not know the exact number of profit or loss of each business or factory. The company knew just volumes and costs of production of each factory, but the company could not know how much each factory had wasted and in which process the waste occurred. So, top management felt that it wanted clarity of information to make decisions and to develop efficiency of operation. The top management sought key performance indicators in order to determine the maximum volume of waste that the company has accepted.

Hence, the top management has adopted concept of ABC to apply with the company in 1999. The main aims of ABC implementation are clarity of information for decisions and development of operating efficiency. It has implemented ABC without a standard alone system in all divisions of the company. Now, the company is reaching the stage of developing and installing ABC, including training employees. External consultants and commercial software have also been utilised in instalment and development of ABC.

Company J (continued)

Implementation of ABC:-Company J had provided conferences for educating in the concept and benefits of ABC to management. The objective of education is to convince the management of ABC and persuade it to accept ABC.

- When the management adopted ABC, it had set up a team for installing and implementing ABC and a team for production planning. Both teams have studied details of processes in factories and separated budgets and expenses. They have attempted to separate production lines and to seek direct expenses and overhead costs of each production line in order to evaluate costs of each production line. Then, both teams, together with engineers, have collected data to analyse activities and cost drivers. The team of installing and implementing ABC has allocated resource costs to each activity and activity costs to products by audit and approval of managers of departments and internal auditors.

- Also, Company J has provided training and workshops about the process of implementing ABC for middle managers and heads of departments who have participation in management and have responsibility of controlling profit and loss of departments. In turn, the heads of departments have provided training about implementation of ABC for their subordinates.

Changes since the crisis: Company J has reorganised by layoffs, closure of some branches and product lines that didn't make profits and rearrangement of functions and responsibility of employees. The company has begun to implement ABC in 1999 in order to develop efficiency of operation and improve decision-making. In 2000, Company J has set a Q.A.(Quality Assurance) division so as to lead to ISO 9001. In 2001, the company has applied ISO 9001 for increase in reliability and quality of products, increase in standards of operation, cost control and cost reduction.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company K

Company K (an adopter)

Company industry: a manufacturer of canned food, which is made from fish
Company K is a wholly Thai-owned company.

Paid-up registered capital: 100-500 million baht

Number of employees: 501-1,000 employees

Organisational structure: Organisational structure of Company K is based on functions and high formalisation. Also, it focuses on decentralisation.

Company environment: Company K has high diversity in products and intensity of competition in industry. Thus, the company has often introduced new products. However, the company has not had many types of products (less than 20) in the present time.

Experience with ABC: Company K had the goal to be a member of the Stock Exchange of Thailand (SET) in 1995 and members of SET are required to reorganise accounting and internal control systems. In order to reach the standards of SET, the company had to reorganise its accounting system. In the reorganisation of the accounting system, Company K adopted an ABC system for developing the efficiency of performance and the accuracy of information. Now, Company K is reaching the stage of implementing ABC as a part of normal operation (the routinization stage). In addition, ABC has been implemented in some divisions or departments without a stand-alone system and external consultants, as well as commercial software.

Implementation of ABC: Company K had set up a team of installing ABC in order to set an ABC system and train users. The installing team had surveyed job descriptions of production employees, flow and stages of their operation and their documentation. Then, the installing team had gathered data to determine activities, activity costs, cost drivers and forms of working papers that production employees are required to provide. In addition, the installing team had provided a flow chart of all production jobs in the factory and presented it to factory managers and presented details of jobs of each department to supervisors. Training about implementation of ABC had been provided for supervisors of departments. In turn, the supervisors had provided training about implementation of ABC for users in their departments.

Company K (continued)

Changes since the crisis: Since Company K has implemented ABC and ISO 9002 before the crisis, the company has rarely had any changes since the crisis, except attempting to reduce costs by using substitutes with equivalent quality.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Profile of Company L

Company L (an adopter)

Company industry: a manufacturer of nylon fibre

Company L is a multi-national company, but 52.80% of all stock is owned by Thais.

Paid-up registered capital: 101-500 million baht

Number of employees: 200-500 employees

Organisational structure: Organisational structure of Company L is based on functions and products. Additionally, it focuses on extreme formalisation and highly centralised decision-making authority.

Company environment: Company L has extreme diversity in products and intensity of competition in industry. Also, the company has high complexity of production processes and capital equipment intensity. In terms of products, Company L has 51-100 types of products and has occasionally introduced new products.

Experience with ABC: Company L began to implement ABC in 1999 for performance measurement and continuous improvement leading to ISO 9001. The company has implemented ABC with a stand-alone system and in-house consultants and software in some departments, such as production and stock departments, by reaching the stage of routinization, in which ABC has been used as a part of normal operation.

Implementation of ABC:-Company L provided seminars to educate managers and heads of departments relating to implementation of ABC, the concept and benefits of ABC and the goals and design of implementation of ABC by management who has expertise in ABC. Then, the company had provided conferences for the managers and heads of departments in order to plan what the company wants from ABC.

-The head of each department had provided meetings to tell their subordinates about concept and benefits of ABC and to ask co-operation from them. Then, each department had brainstorming about identifying activities and cost drivers. The head of each department had trained his subordinates about implementing ABC.

Company L (continued)

Changes since the crisis: Company L has reorganised by layoffs and closure of some divisions that did not make profits. In 1999, the company has begun to implement ABC for performance measurement and continuous improvement in order to lead to ISO 9001. In 2000, the company has applied ISO 9001 for upgrading and warrant the quality of products.

Note: Paid-up registered capital and number of employees are reported within 'ranges' to preserve anonymity.

Appendix B

Ethics approval letter from Victoria University

31 July 2001

Dear Participants,

I am working towards a Doctor of Philosophy degree through the School of Accounting and Finance at Victoria University. The research project being undertaken seeks to assess the relevance of the adoption of an activity-based costing (ABC) system and its implementation by Thai businesses and the economic crisis (1997) through the theoretical models of organisational learning. To ensure the validity of results a reply to the attached questionnaire would be greatly appreciated.

You are invited to participate in this project. While your co-operation in completing the questionnaire is valued, your participation is voluntary. The results will be used only in an aggregated form and therefore your anonymity and the confidentiality of your responses are assured. The completed questionnaires will be securely stored and available only to the supervisors and myself. The only people to have access to the codes are myself and my supervisors.

The results will be contained in the thesis which will be available at the Victoria University of Technology library. It is also hoped that aspects of the results will be published in aggregate in various professional and academic journals.

Your participation would be appreciated and I look forward to receiving your completed questionnaire by the end of 22 August 2001. Should you have any queries regarding the project or questionnaire, please feel free to contact me on 001-613-9813 0823 or e-mail: wiriya.chongruksut@research.vu.edu.au or my senior supervisor, Professor Robert Clift on e-mail: Bob.Clift@vu.edu.au. Your reply can be returned to my collection base in 229 Thapae Road, Amphur Muang, Chiang Mai, Thailand 50100 in the prepaid envelope supplied.

Thank you in anticipation of your co-operation.

Yours faithfully,

Wiriya Chongruksut

Appendix C

English questionnaire material

Questionnaire

Title: The Adoption of Activity-Based Costing (ABC) in Thailand

In 1997, Thailand was the first country in East Asia hit by the economic crisis and the value of the baht dropped more than 50% on 2 July 1997. This economic crisis entailed a lot of difficulties, such as losses from the exchange rate or greater competition, and a lot of changes to Thai firms. Hence, Thai firms have had to change their strategies and management to be able to compete and survive this crisis. Activity-based costing (ABC) is the advanced management accounting and information management system, which focuses on measuring the cost and performance of activities, products and customers, for Thai firms in the current time. ABC may help Thai firms to improve their management and create competitive opportunities. Therefore, this research is aimed at examining the relevance of the ABC model to Thailand and the economic crisis. There have also been suggestions that implementation is affected by the sources and strength of support, the level of education and competence of the people involved and the organisation's attitude to the solving of problems, that is, its philosophy of organisational learning.

Your answers in this questionnaire will be treated in the strictest confidence and no information gained from this survey will be identified with any particular person or organisation.

Section 1: Demography

1. What is your gender?
 - a) Male
 - b) Female
2. In which of the following age group do you belong?
 - a) 20-30 years old
 - b) 31-40 years old
 - c) 41-50 years old
 - d) 51-60 years old
 - e) More than 60 years old

3. Please indicate the highest level of education achieved.
- a) Secondary school
 - b) Undergraduate
 - c) Graduate
 - d) Post graduate
4. Where did you achieve the highest level of education?
- a) In Thailand
 - b) Overseas, please specific the country _____
5. How long have you worked in the accounting or finance area?
- a) Less than 5 years
 - b) 5-10 years
 - c) 11-20 years
 - d) More than 20 years
6. Please indicate your membership(s) of **each** of the following professional accounting organisations.

	Yes	No
a) The Institute of Certified Accountants and Auditors of Thailand (ICAAAT)	()	()
b) Institute of Internal Auditors Thailand (IIAT)	()	()
c) The American Institute of Certified Public Accountants (AICPA)	()	()
d) The Chartered Institute of Management Accountants (CIMA)-UK	()	()
e) The Institute of Certified Accountants (ICA)-UK	()	()
f) The Australian Society of Certified Practising Accountants (ASCPA)	()	()
g) The Institute of Chartered Accountants (ICA)-Australia	()	()
h) The Australian Society of Accountants (ASA)	()	()
i) Other (please specify)_____	()	()

7. Have you ever had foreign training or work experience?
- Yes
 - No
8. Please describe the extent to which you agree or disagree with each statement by circling the number linked to the descriptor.

	Strongly Disagree						Strongly Agree
a) You tend to worry about expressing disagreement with your superiors or powerful others.	1	2	3	4	5	6	7
b) You feel that it is your function to carry-out superiors' instructions.	1	2	3	4	5	6	7
c) Your ideas are mainly controlled by powerful others.	1	2	3	4	5	6	7
d) In order to have your plans work, you make sure that they fit in with the desires of people who have power over you.	1	2	3	4	5	6	7
e) You tend to worry that your ideas and opinion are not accepted by others.	1	2	3	4	5	6	7
f) You prefer team-based work arrangements over individualized work arrangements.	1	2	3	4	5	6	7

Section 2: Company Characteristics

9. Please classify your company according to the following industry groups?

- | | |
|--|---|
| (1) Agribusiness | (16) Insurance |
| (2) Bank | (17) Jewellery and Ornament |
| (3) Building and Furnishing
Materials | (18) Machinery and Equipment |
| (4) Chemicals and Plastics | (19) Mining |
| (5) Commerce | (20) Packaging |
| (6) Communication | (21) Pharmaceutical Products
and Cosmetics |
| (7) Electrical, Products and
Computer | (22) Printing and Publishing |
| (8) Electronic Components | (23) Professional Services |
| (9) Energy | (24) Property Development |
| (10) Entertainment and
Recreation | (25) Pulp and Paper |
| (11) Finance and Securities | (26) Textiles Clothing and
Footwear |
| (12) Food and Beverages | (27) Transportation |
| (13) Health Care Services | (28) Vehicles and Parts |
| (14) Hotel and Travel Services | (29) Warehouse and Silo |
| (15) Household and Goods | (30) Other (please put in
details)_____ |

10. Please indicate the number of employees in your company:

- a) Less than 200
- b) 200-500
- b) 501-1,000
- c) 1,001-1,500
- d) 1,501-2,000
- e) More than 2,000

11. Please indicate paid-up registered capital of your company.

- a) Less than 100 million baht
- b) 100-500 million baht
- c) 501-1,000 million baht
- d) 1,001-2,000 million baht
- e) 2,001-5,000 million baht
- f) 5,001-10,000 million baht
- g) More than 10,000 million baht

12. Is your company a wholly Thai-owned company?

- a) Yes
- b) No

13. Please describe the organisational structure of your company by circling the number linked to the descriptor.

	Not at all	Slightly	Moderately	Significantly	Extremely
a) Centralized decision-making authority.	1	2	3	4	5
b) Several hierarchical levels of organisational structure (Vertical differentiation).	1	2	3	4	5
c) Dependence on regulations or standards of job	1	2	3	4	5
d) Other (please put in details) _____	1	2	3	4	5

14. Please indicate how your organisational structure is organised.

	Yes	No
a) By functions	()	()
b) By products/ services or line of products/ services	()	()
c) By geographical areas	()	()
d) By strategic business units (SBU)	()	()
e) Other (please specify) _____	()	()

Section 3: Environment of your company

Using the following five-point scale, for items 15-20, select the descriptor which best describes each attribute of your environment by circling the number linked to the descriptor.

	None	Slight	Moderate	Significant	Extreme
15. Variation in technical complexity among your products/services	1	2	3	4	5
16. Complexity of production/ service processes	1	2	3	4	5
17. Diversity in products/ services	1	2	3	4	5
18. Flexibility of manufacturing/ service facility	1	2	3	4	5
19. Capital equipment intensity	1	2	3	4	5
20. Intensity of competition in your industry	1	2	3	4	5

21. 'How important do you perceive each of the following product/service characteristics offered by your firm to be?'

Please indicate your response by circling the number linked to the descriptor.

	Not important	Little important	Medium important	Very important	Critically important
a) Price	1	2	3	4	5
b) Quality	1	2	3	4	5
c) Cost	1	2	3	4	5
d) Variety of products/services	1	2	3	4	5
e) Reliability	1	2	3	4	5
f) Delivery performance	1	2	3	4	5
g) Other (please specify)	1	2	3	4	5

22. How frequently are new products/services, or major design changes, introduced?

- a) Seldom
- b) Occasionally
- c) Fairly often
- d) Very often

23. How many products/ services are produced by your company?

- a) Less than 20
- b) 20-50
- c) 51-100
- d) 101-200
- e) 201-500
- f) More than 500

24. Please indicate the **types** of cost management techniques used by your firm.

	Yes	No.
a) Standard costing	()	()
b) Job costing	()	()
c) Process costing	()	()
d) Target costing	()	()
e) Other (please specify) _____	()	()

25. Please indicate the level of importance of **each** of the following factors in product/service pricing by circling the number linked to the descriptor.

	Not important	Little important	Medium important	Very important	Critically important
a) Product/ service cost	1	2	3	4	5
b) Customers	1	2	3	4	5
c) Competitors	1	2	3	4	5
d) Other (please specify) _____	1	2	3	4	5

26. Which budget setting method has your firm used?

- a) Top-down
- b) Bottom-up
- c) Participative
- d) Other (please specify)_____

27. Please indicate the level of importance of the budget to **each** of the following functions by circling the number linked to the descriptor.

	Not important	Little important	Medium important	Very important	Critically important
a) Cost control	1	2	3	4	5
b) Performance evaluation	1	2	3	4	5
c) Compensation	1	2	3	4	5
d) Operational planning	1	2	3	4	5
e) Decentralised decisions	1	2	3	4	5
f) Other (please specify) _____	1	2	3	4	5

28. Please indicate the level of importance of **each** of the following factors in allocating overhead costs in your firm by circling the number linked to the descriptor.

	Not important	Little important	Medium important	Very important	Critically important
a) Product/ service cost control	1	2	3	4	5
b) Product/ service pricing	1	2	3	4	5
c) External reporting	1	2	3	4	5
d) Production/ service planning	1	2	3	4	5
e) Product/ service addition /deletion	1	2	3	4	5
f) Departmental evaluation	1	2	3	4	5
f) Managers' performance evaluation	1	2	3	4	5
g) Other (please specify) _____	1	2	3	4	5

29. In your firm, which of the following bases are used to allocate overhead costs to products/ services?

	Yes	No.
a) Labour hours	()	()
b) Labour baht	()	()
c) Machine hours	()	()
d) Direct materials	()	()
e) Units of production/customer service	()	()
f) Average set-up times	()	()
g) Other (please specify)_____	()	()

30. How would you break down total company costs into the following categories?

a) Direct material	_____	%
b) Direct labour	_____	%
c) Production/ service overhead	_____	%
d) Non-production/service overhead	_____	%
Total	<u>100</u>	%

31. In the near future, how do you expect the proportion of overhead costs to total manufacturing/ service costs to vary in your firm?

- a) To increase substantially
- b) To increase slightly
- c) To be stable
- d) To decrease slightly
- e) To decrease substantially
- f) Do not know

32. How satisfied are you with your current overhead cost allocations and overall product/service costing system?

- a) Very satisfied, no improvement required.
- b) Reasonably satisfied, although some improvement may be useful.
- c) Needs improvements, but is still usable.
- d) Dissatisfied, system requires major improvement.

Section 4: ABC Implementation

Before answering the following questions, please read the following definitions.

Activity-based costing (ABC) is an information system that maintains and processes data on a firm's activities and products/service. ABC identifies the activities performed, traces cost to these activities and then traces the cost of activities to products/services according to activities consumed.

Adopters of ABC are defined as companies that have implemented ABC or are currently implementing ABC.

33. Have you heard about an activity-based costing (ABC) system?
- a) Yes
 - b) No (please go to question 64)
34. How did you first learn about ABC?
- a) University
 - b) Seminars or conferences
 - c) In-house training
 - d) By reading (such as books, journals and so on)
 - e) Other (please put in detail)_____
35. Has your company adopted ABC?
- a) Yes (please go to question 36).
 - b) Yes but the company has abandoned (please go to question 37).
 - c) No (please go to question 61)

36. If your firm has **adopted** ABC, at which of the following stages is your implementation of ABC?
- a) Investing/ developing the infrastructure needed to facilitate change and support ABC.
 - b) Developing and installing ABC, as well as training employees.
 - c) Implementing ABC as a pilot project.
 - d) Full implementation of ABC.
 - e) Internal commitment of organisational members to use ABC.
 - f) Using ABC as a part of daily practices.
 - g) Seamlessly integrated with other organisational systems.

(Please go to question 38)

37. If your firm has **ever adopted** ABC in the past, at which stage did your implementation of ABC **stop**?
- a) Investing/ developing the infrastructure needed to facilitate change and support ABC.
 - b) Developing and installing ABC, as well as training employees.
 - c) Implementing ABC as a pilot project.
 - d) Full implementation of ABC.
 - e) Internal commitment of organisational members to use ABC.
 - f) Using ABC as a part of daily practices.
 - g) Seamlessly integrated with other organisational systems.
38. When was ABC first contemplated?
- a) Before 1997
 - b) 1997
 - c) 1998
 - d) 1999
 - e) 2000
 - f) 2001

39. Who initiated the idea of ABC adoption?
- a) Top management
 - b) Accounting/ Finance managers
 - c) Production managers
 - d) Customer service managers
 - e) Administrative managers
 - f) Other (please specify)_____
40. Has your company used ABC for the whole organisation at one time or in selected divisions/ departments?
- a) The whole organisation
 - b) In selected divisions
41. Is/ Was the ABC system a stand-alone system?
- a) Yes
 - b) No
42. Did your company use external consultants in the adoption process?
- a) Yes
 - b) No
43. What software have you used?
- a) Activa
 - b) Hyper ABC
 - c) TR/ ACM
 - d) Profit Manager Plus 3
 - e) CASSO
 - f) CMS-PC
 - g) Net Prophet II
 - h) DaCapo Process Manager (DPM)
 - i) Oros Version 1.1
 - j) Easy ABC Plus version 2.6
 - k) Other (please specify)_____

44. Please indicate the level of importance of each of the following factors in the decision to adopt ABC by circling the number linked to the descriptor.

	Not important	Little important	Medium important	Very important	Critically important
a) The inaccuracies of product/ service cost of the traditional cost systems	1	2	3	4	5
b) Increasing proportion of overhead costs	1	2	3	4	5
c) Currently the increasing number of product/ service variants	1	2	3	4	5
d) Currently facing allocation problems	1	2	3	4	5
e) Currently lack of decision-making information (such as non-financial information)	1	2	3	4	5
f) Inability of the traditional cost systems to adapt to increased automation in the production/ service process	1	2	3	4	5
g) Inability of the traditional cost systems to provide relevant information in the new business environment	1	2	3	4	5
h) Increased competition	1	2	3	4	5
i) Growing costs, including production costs and administrative costs.	1	2	3	4	5
j) The pressures from the economic recession (such as unstable currencies)	1	2	3	4	5
k) Globalisation of consumer and producer markets	1	2	3	4	5
l) Increased regulation (such as investment)	1	2	3	4	5
m) Restructuring	1	2	3	4	5
n) Other (please put in details)	1	2	3	4	5

45. Please indicate how frequently the ABC information is used for **each** of the following areas by circling the number listed the descriptor.

	Seldom	Occasionally	Fairly often	Often	Very often
a) Planning	1	2	3	4	5
b) Decision making	1	2	3	4	5
c) Performance measurement	1	2	3	4	5
d) Cost Control	1	2	3	4	5
e) Other (please specify)	1	2	3	4	5

46. Please indicate how frequently you believe the ABC information is used for decision making in **each** of the following areas by circling the number linked to the descriptor.

	Seldom	Occasionally	Fairly often	Often	Very often
a) Top management	1	2	3	4	5
b) Accounting/ Finance managers	1	2	3	4	5
c) Production/ service managers	1	2	3	4	5
d) Design engineering	1	2	3	4	5
e) Marketing managers	1	2	3	4	5
f) Administrative managers	1	2	3	4	5
g) Other (please specify)	1	2	3	4	5

47. Please rate the success of implementation of ABC for your company.

- a) Very poor
- b) Poor
- c) Average
- d) Good
- e) Very good

48. 'In your opinion, your company has succeeded in the implementation of ABC on the grounds that.....'

Please indicate your response by circling a number on the scale 1 to 7 where

1 represents 'strongly disagree' and 7 represents 'strongly agree'.

	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	
a) ABC initiative has the strong active support of top management.	1	2	3	4	5	6	7	
b) Upper management has provided adequate resources, such as time and commitment, to the ABC implementation effort.	1	2	3	4	5	6	7	
c) ABC has been closely tied to the competitive strategies of your company.	1	2	3	4	5	6	7	
d) When the ABC initiative began, the objectives of ABC implementation were clearly understood both by designers and users.	1	2	3	4	5	6	7	
e) ABC data have been used for performance evaluation.	1	2	3	4	5	6	7	
f) Compensation systems in the company are designed to motivate employees to implement ABC.	1	2	3	4	5	6	7	
g) Operating departments or departments outside the accounting department (such as production/service and so on) have shown commitment for ABC success.	1	2	3	4	5	6	7	
h) Top management or senior managers have a clear commitment to use ABC information as the basis for decision making.	1	2	3	4	5	6	7	
i) The accountants have shared their ownership of information with non-accountants.	1	2	3	4	5	6	7	
j) The non-accounting/ finance groups (such as production/service groups, marketing groups, engineer groups and so on) are committed to use ABC information.	1	2	3	4	5	6	7	
k) Education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided.	1	2	3	4	5	6	7	
l) Sufficient training about the design and objectives of ABC is being provided.	1	2	3	4	5	6	7	
m) Sufficient training about implementing ABC is being provided.	1	2	3	4	5	6	7	

Section 5: ABC Benefits

49. 'What benefits did your company **expect to gain** from the adoption of ABC?'

Please indicate your response by circling a number on the scale 1 to 7, where 1 represents 'strongly disagree' and where 7 represents 'strongly agree'.

	Strongly Disagree						Strongly Agree
a) More accurate product/service costs	1	2	3	4	5	6	7
b) Better overhead cost allocation	1	2	3	4	5	6	7
c) Assistance in product/service design and product/service mix	1	2	3	4	5	6	7
d) Increase in profitability	1	2	3	4	5	6	7
e) Assistance in cost reduction efforts	1	2	3	4	5	6	7
f) Cost control improvement	1	2	3	4	5	6	7
g) Better performance measurement	1	2	3	4	5	6	7
h) Elimination of waste by providing visibility of non-value-added activities.	1	2	3	4	5	6	7
i) Encouragement of commitment to quality and continual improvement	1	2	3	4	5	6	7
j) Management attention to interdependencies of departments	1	2	3	4	5	6	7
k) Breakdown of barriers between different functional areas	1	2	3	4	5	6	7
l) Provision of more accessible and timely information	1	2	3	4	5	6	7
m) Increased customer satisfaction	1	2	3	4	5	6	7
n) Increase in the effectiveness of budgeting by identifying the cost/ performance relationship of different service levels	1	2	3	4	5	6	7
o) Provision of behavioural incentives to improve manufacturing/ service excellence	1	2	3	4	5	6	7
p) Decision-making improvement (such as product /service pricing decision, market segment decision and so on)	1	2	3	4	5	6	7
q) Increase in competitive capability	1	2	3	4	5	6	7
r) Improvement in shareholder value	1	2	3	4	5	6	7

50. 'What **actual benefits to date** has your company gained from implementing ABC?'

Please indicate your response by circling a number on the scale 1 to 7, where 1 represents 'strongly disagree' and where 7 represents 'strongly agree'.

	Strongly Disagree						Strongly Agree
a) More accurate product/service costs	1	2	3	4	5	6	7
b) Better overhead cost allocation	1	2	3	4	5	6	7
c) Assistance in product/service design and product/service mix	1	2	3	4	5	6	7
d) Increase in profitability	1	2	3	4	5	6	7
e) Assistance in cost reduction efforts	1	2	3	4	5	6	7
f) Cost control improvement	1	2	3	4	5	6	7
g) Better performance measurement	1	2	3	4	5	6	7
h) Elimination of waste by providing visibility of non-value-added activities.	1	2	3	4	5	6	7
i) Encouragement of commitment to quality and continual improvement	1	2	3	4	5	6	7
j) Management attention to interdependencies of departments	1	2	3	4	5	6	7
k) Breakdown of barriers between different functional areas	1	2	3	4	5	6	7
l) Provision of more accessible and timely information	1	2	3	4	5	6	7
m) Increased customer satisfaction	1	2	3	4	5	6	7
n) Increase in the effectiveness of budgeting by identifying the cost/ performance relationship of different service levels	1	2	3	4	5	6	7
o) Provision of behavioural incentives to improve manufacturing/ service excellence	1	2	3	4	5	6	7
p) Decision-making improvement (such as product /service pricing decision, market segment decision and so on)	1	2	3	4	5	6	7
q) Increase in competitive capability	1	2	3	4	5	6	7
r) Improvement in shareholder value	1	2	3	4	5	6	7

For item 51-55, please indicate your response by circling a number on the scale 1 to 7, where 1 represents 'strongly disagree' and where 7 represents 'strongly agree'.

	Strongly Disagree							Strongly Agree	
	1	2	3	4	5	6	7		
51. You are satisfied with the benefits of ABC that your company has gained.	1	2	3	4	5	6	7		
52. In your opinion, the ABC system is important in the current environment.	1	2	3	4	5	6	7		
53. In your opinion, the ABC system was worth implementing.	1	2	3	4	5	6	7		
54. The ABC system is necessary for your company in the changed environment.	1	2	3	4	5	6	7		
55. In your opinion, the ABC system has taken part in helping your company to survive.	1	2	3	4	5	6	7		

Section 6: Problems of ABC Implementation

56. What problems has your company encountered during the implementation of ABC?

Please indicate your response by circling the number on the line by each item.

	Not important	Little important	Medium important	Very important	Critically important
a) A higher priority of other changes/ projects.	1	2	3	4	5
b) Resistance to change.	1	2	3	4	5
c) High cost of implementing ABC.	1	2	3	4	5
d) Lack of top management support.	1	2	3	4	5
e) Lack of software packages.	1	2	3	4	5
f) Lack of commitment and cooperation among departments.	1	2	3	4	5
g) Involves a great deal of work.	1	2	3	4	5
h) Takes up a lot of managers' time.	1	2	3	4	5
i) Takes up a lot of computer staff's time.	1	2	3	4	5
j) High cost of ABC consulting.	1	2	3	4	5
k) Difficulty in gathering data on cost-drivers.	1	2	3	4	5
l) Difficulty in defining cost drivers.	1	2	3	4	5
m) Difficulty in designing system.	1	2	3	4	5
n) Difficulty in identifying activities.	1	2	3	4	5
o) Lack of knowledge of data requirement and collection.	1	2	3	4	5
p) Necessary change of culture and mind-set.	1	2	3	4	5
q) Changing environment.	1	2	3	4	5
r) Integration with the current accounting system.					
s) Other (please put in detail)	1	2	3	4	5

Section 7: Organisational Learning

This section is intended to generate information about the relationship between the adoption of ABC and its implementation by Thai businesses and the Thai economic crisis (1997) and the theoretical models of organisational learning.

57. "How has your organisation adapted to the changed conditions since the Thai economic crisis?"

Please indicate your response by circling the number linked the descriptor.

	Not at all	Slightly	Moderately	Significantly	Extremely
a) Your company has changed its policies to adapt to the changed conditions caused by the crisis.	1	2	3	4	5
b) Employees, including management, in your company have understood the changes in the external environment and the need for change.	1	2	3	4	5
c) Your company has restructured or reorganised to survive.	1	2	3	4	5
d) Employees of your company have analysed problems or mistakes in your company.	1	2	3	4	5
e) Employees generated solutions by testing new techniques or procedures.	1	2	3	4	5
f) Employees received training in the new techniques or procedures.	1	2	3	4	5
g) Employees have altered their behaviours in accordance with the new techniques or procedures.	1	2	3	4	5
h) Employees have performance improvement in mind when using the new techniques or procedures.	1	2	3	4	5

58. "How has your company changed since implementing ABC?"

Please indicate your response by circling the number on the scale 1 to 7, where 1 represents 'strongly disagree' and 7 represents 'strongly agree'.

	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	
a) The ABC system has caused the modification of fundamental norms or policies.	1	2	3	4	5	6	7	
b) The implementation of ABC has developed the differentiated structure.	1	2	3	4	5	6	7	
c) The implementation of ABC forced changes in overall rules.	1	2	3	4	5	6	7	
d) The implementation of ABC has involved the transformation of strategic management.	1	2	3	4	5	6	7	
e) The implementation of ABC has increased communication across functional areas.	1	2	3	4	5	6	7	
f) The ABC information has encouraged efficient use of cross-functional teams and working groups.	1	2	3	4	5	6	7	
g) The implementation of ABC has encouraged the breakdown of departmental barriers.	1	2	3	4	5	6	7	
h) Since implementing ABC, the accounting department has retained access and control over information.	1	2	3	4	5	6	7	
i) Since implementing ABC, the production departments have had independent decision-making.	1	2	3	4	5	6	7	
j) The implementation of ABC has increased responsibility in other departments (such as production/service department) other than accounting department.	1	2	3	4	5	6	7	
k) Since implementing ABC, employees have had to monitor their activities for continuous improvement.	1	2	3	4	5	6	7	
l) Since implementing ABC, fairness of performance evaluation criteria of your company has increased.	1	2	3	4	5	6	7	
m) The adoption of ABC has changed the role of the accounting function.	1	2	3	4	5	6	7	
n) The adoption of ABC has changed the role of the non-accounting managers(such as factory managers, customer service managers and so on).	1	2	3	4	5	6	7	
o) The adoption of ABC has changed the role of the authority of organisation.	1	2	3	4	5	6	7	

59. "How has your implementation of ABC influenced **each** of the following areas?"

Please indicate your response by circling the number linked to the descriptor.

	No changes	Minor changes	Moderate changes	Significant changes	Very significant changes
a) Process	1	2	3	4	5
b) Pricing strategy	1	2	3	4	5
c) Strategic focus	1	2	3	4	5
d) Product/service mix	1	2	3	4	5
e) Customer segments	1	2	3	4	5
f) Distribution channels	1	2	3	4	5
g) Incentive compensation	1	2	3	4	5
h) Other (please put in detail)	1	2	3	4	5

60. "How have the following functional areas changed after implementing ABC?"

Please indicate your response by circling the number linked to the descriptor.

	No changes	Minor changes	Moderate changes	Significant changes	Very significant changes
a) Accounting/ finance department	1	2	3	4	5
b) Production/ service department	1	2	3	4	5
c) Marketing department	1	2	3	4	5
d) Administrative department	1	2	3	4	5
e) Other (please specify)	1	2	3	4	5

If your company has not adopted ABC, please answer the following questions.

61. Please indicate **reasons** that your company has not implemented ABC or is not currently implementing ABC by circling the number linked to the descriptor.

	Not important	Little important	Medium important	Very important	Critically important
a) Satisfied with the current system.	1	2	3	4	5
b) No significant problems with current costing system.	1	2	3	4	5
c) Lack of awareness of ABC development.	1	2	3	4	5
d) Lack of expertise to implement ABC.	1	2	3	4	5
e) Ambiguity of ABC benefits in literature.	1	2	3	4	5
f) Costly to switch to ABC.	1	2	3	4	5
g) Consultants too costly	1	2	3	4	5
h) Too complex and time-consuming	1	2	3	4	5
h) Higher priorities of other changes or projects.	1	2	3	4	5
i) Lack of internal resources to install and operate.	1	2	3	4	5
j) Lack of top management support.	1	2	3	4	5
k) Resistance from employees and other management.	1	2	3	4	5
l) Difficulties in selecting cost drivers.	1	2	3	4	5
m) Difficulties in collecting data on the cost drivers.	1	2	3	4	5
n) Difficulties in selecting appropriate software package.	1	2	3	4	5
o) No intensity of competition.	1	2	3	4	5
p) Less complexity in products/ services and processes.	1	2	3	4	5
q) Have relative small proportion of overheads in total manufacturing/service costs.	1	2	3	4	5
r) Lack of management policies.	1	2	3	4	5
s) Other (please put in detail)	1	2	3	4	5

62. Has ABC ever been examined in your company and deemed not suitable?

- a) Yes
- b) No

63. Do you expect or plan to implement ABC in the future?

- a) Yes
- b) No

64. "How has your organisation adapted to the changed conditions since the Thai economic crisis?"

Please indicate your response by circling the number linked the descriptor.

	Not at all	Slightly	Moderately	Significantly	Extremely
a) Your company has changed its policies to adapt to the changed conditions caused by the crisis.	1	2	3	4	5
b) Employees, including management, in your company have understood the changes in the external environment and the need for change.	1	2	3	4	5
c) Your company has restructured or reorganised to survive.	1	2	3	4	5
d) Employees of your company have analysed problems or mistakes in your company.	1	2	3	4	5
e) Employees generated solutions by testing new techniques or procedures.	1	2	3	4	5
f) Employees received training in the new techniques or procedures.	1	2	3	4	5
g) Employees have altered their behaviours in accordance with the new techniques or procedures.	1	2	3	4	5
h) Employees have performance improvement in mind when using the new techniques or procedures.	1	2	3	4	5

In order to follow up issues raised in this investigation and to improve the quality of my data. I hope to interview some of the respondents to this questionnaire, probably in October 2001. If you are willing to be interviewed, would you please fill in the form below.

Company name: _____

Your name: _____

Telephone number: _____

Thank you very much for your participation

Appendix D

Thai questionnaire material

