

**THE IMPLEMENTATION STAGE OF ACTIVITY BASED  
COSTING SYSTEMS IN JORDANIAN MANUFACTURING  
SHAREHOLDING COMPANIES**

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**DOCTOR OF PHILOSOPHY  
UNIVERSITI UTARA MALAYSIA  
July 2012**

**THE IMPLEMENTATION STAGE OF ACTIVITY BASED COSTING SYSTEMS IN  
JORDANIAN MANUFACTURING SHAREHOLDING COMPANIES**

**By**

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**Thesis Submitted to  
Othman Yeop Abdullah Graduate School of Business,  
Universiti Utara Malaysia,  
in Fulfillment of the Requirement for the Degree of Doctor of Philosophy**



**Kolej Perniagaan**  
(College of Business)  
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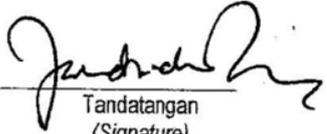
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## ABSTRACT

Activity Based Costing (ABC) adoption and implementation have been widely researched in developed countries. However, in developing countries like Jordan, research regarding these issues in general, and within the Jordanian manufacturing shareholding companies in specific, is still sadly limited. The present research attempts to increase the understanding of ABC implementation in Jordanian manufacturing shareholding companies. Toward this end, a questionnaire survey was administered with the primary aim to determine the current state of ABC adoption and implementation, to know the factors that motivate, facilitate and hinder ABC implementation, and to examine if these factors (type of sectors, size, diversity and level of overhead) have a significant influence on ABC implementation in Jordanian manufacturing shareholding companies. Data was analyzed using descriptive analysis, logistic regression analysis, and chi-square. In the second stage, semi-structured interviews on 13 companies were conducted to probe the significant results of the survey. Data was examined by using both within company and cross-company analysis, to determine the factors that influence ABC implementation. Findings indicate that ABC implementation among Jordanian manufacturing shareholding companies is quite satisfactory, with 19.5% stages of ABC implementation. Results from both questionnaire survey and semi-structured interviews show that fashion, forced decision, fad, and efficiency are factors associated directly with the implementation decision in Jordanian manufacturing shareholding companies. Top management support, non-accounting ownership, higher information technology, education, globalization of consumer, increased competition, growing costs, allocation problems, and inability of the traditional cost systems to provide relevant information in the new environment were found to facilitate and motivate the implementation of ABC. Findings show no relationship between type of sectors, size, diversity, and level of overhead, and ABC implementation. It can be concluded that both demand and supply factors influence the implementation of ABC within the Jordanian manufacturing shareholding companies.

**Keywords:** Activity-based costing (ABC), Developing countries, Manufacturing shareholding companies, Jordan

## ABSTRAK

Penggunaan dan pelaksanaan pengekoson berasaskan aktiviti (Activity Based Costing [ABC]) telah dikaji secara meluas di negara-negara membangun tetapi, di negara-negara kurang membangun seperti Jordan, kajian tentang isu ini secara umumnya dan bagi pegangan saham syarikat pembuatan di Jordan khususnya, masih terhad. Kajian ini bertujuan meningkatkan kefahaman tentang pelaksanaan ABC di pegangan saham syarikat-syarikat pembuatan Jordan. Bagi mencapai tujuan ini, satu tinjauan soal selidik telah dilakukan bagi menentukan keadaan semasa penggunaan dan pelaksanaan ABC, bagi mengetahui faktor-faktor yang memotivasi, memudah cara dan menghalang penggunaan dan pelaksanaan semasa ABC, dan menyelidik sama ada faktor-faktor ini (jenis sektor, saiz, kepelbagaian, dan tahap overhead) memberi pengaruh signifikan terhadap pelaksanaan ABC di pegangan saham syarikat pembuatan Jordan. Data telah dianalisis dengan menggunakan analisis deskriptif, analisis regresi logistik, dan chi-square. Pada peringkat kedua, temu duga separa berstruktur terhadap 13 syarikat dilakukan untuk mendapat maklumat lanjut tentang dapatan yang signifikan daripada tinjauan yang dilakukan. Data diteliti dengan menggunakan analisis dalam syarikat dan antara syarikat bagi menentukan faktor yang mempengaruhi pelaksanaan ABC. Dapatan menunjukkan bahawa pelaksanaan ABC dalam pegangan saham syarikat pembuatan Jordan agak memuaskan, dengan 19.5% tahap pelaksanaan ABC. Dapatan daripada tinjauan soal selidik dan temu duga separa berstruktur menunjukkan bahawa fesyen, keputusan terpaksa, keputusan terpaksa, fad, dan kecekapan merupakan faktor yang dikaitkan secara langsung dengan keputusan melaksanakan ABC di pegangan saham syarikat pembuatan Jordan. Sokongan pengurusan atasan, pemilikan tidak berkepentingan, teknologi maklumat yang lebih canggih, pendidikan, globalisasi pengguna, persaingan yang semakin sengit, kos yang semakin meningkat, masalah agihan, dan ketidakmampuan sistem pengekoson tradisional menyediakan maklumat relevan dalam persekitaran baharu didapati memudah cara dan memotivasi pelaksanaan ABC. Dapatan juga menunjukkan bahawa jenis sektor, saiz, kepelbagaian, dan tahap overhead tidak berhubung kait dengan pelaksanaan ABC. Oleh yang demikian disimpulkan bahawa faktor permintaan dan bekalan mempengaruhi pelaksanaan ABC bagi pegangan saham syarikat pembuatan Jordan.

**Kata kunci:** Pengekoson berasaskan aktiviti, Negara membangun, Pegangan saham syarikat pembuatan, Jordan

## ACKNOWLEDGEMENT

First of all, thanks to Allah. I dedicate this effort to the memory of my father Hasan, who is my wise teacher in this life.

This thesis could not have been completed without the unyielding support and insights of my supervisor, Associate Professor Dr. Faudziah Hanim Bt. Fadzil who have provided me with an example of high quality scholarship to which I aspire. My special thanks go to her for the motivation to do this study, undertaking the first important step of identifying an original topic, helping to develop appropriate techniques presently in vague and her close supervision at Universiti Utara Malaysia. To her, I owe an intellectual debt and a deep gratitude for sharing her knowledge.

My heartfelt thanks to Professor Dr. Zakaria Abas (Universiti Utara Malaysia), Associate Professor Dr. Zuaini Ishak (Universiti Utara Malaysia), Dr. Che Zuriana Muhamad Jamil (Universiti Utara Malaysia), and Associate Professor Dr. Nor Aziah (Universiti Utara Malaysia). My heartfelt thanks also to Associate Professor Dr. Husam Aldeen Al-Khadash (Middle East University for Graduate Studies) and Dr. Mahmoud Daoud (Hashemite University) from Jordan.

Last but not least, my warm thanks and appreciation goes to my kind hearted mother, brothers, sisters, brother-in-laws, sister-in-laws, uncles, and relatives for their constant love and support. I wish to thank all the people who have created and added to my knowledge and those who have taught and advised me and made notes on my research either directly or indirectly.

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## LIST OF ABBREVIATIONS

AA	Activity Analysis
ABB	Activity-Based Budgeting
ABC	Activity-Based Costing
ABM	Activity-Based Management
ACA	Activity Cost Analysis
ASE	Amman Stock Exchange
BSC	Balanced Score Card
CAM-I	Computer Aided Manufacturing-Internatic
CBJ	Central Bank Of Jordan
CEO	Chief Excutive Officcer
CIMA	Chartered Institute of Management Accou
CPA	Certified Public Accountant
<b>GDP</b>	General Domestic Product
GM	General Motors
HS	Harris Semiconductor
IS	Information System
IT	Information Technology
JD	Jordanian Dinar
JMFC	Jordanian manufacturing companies
KLSE	Kuala Lumpur Stock Exchange
QIZs	Qualifying Industrial Zones
RM	Ringgit Malaysia
ROI	Return on Investment
SPSS	Statistical Package for Social Sciences
TCS	Traditional Costing System
TQM	Total Quality Management
UK	United Kingdom
USA	United States of America
WCM	World-class manufacturing
WTO	World Trade Organization

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Background of the Study**

This chapter introduces the research agenda of the study and outlines the background of the study, problem statement, research question, research objectives, and significance of the study and organization of the study.

In recent years, most organizations have faced fast changes in their business environment. Management challenges have been intensified by the deregulation, in conjunction with the increasing global competition and reduction in product life cycles resulting from technological innovations (Abdel-Kader & Luther, 2008; Fei & Isa, 2010b; Narong, 2009; Raffish, 1990). Emergence of advanced manufacturing technologies has resulted in greater automation and changes in the cost structure. The cost structure changes involved direct labor costs being replaced by indirect costs (Cooper, 1988). As a consequence new management practices, such as just-in-time management philosophy, total quality management practices and activity based costing system have emerged.

Many researchers (e.g., Abdel-Kader & Luther, 2008; Askarany & Yazdifar, 2010; Johnson & Kaplan, 1987) asserted that management accounting practices is in crisis, because its implementation percentage is still low. They also mentioned the significant

innovation and the greatest interest in the area of activity-based costing (ABC). ABC emerged in the late 1980s as a mechanism for providing more accurate product/service cost information to support strategic decisions. During the 1990's it has been extended as a tool to control and manage costs more effectively.

Activity-based costing system received substantial attention by accounting researchers. This area of accounting has been studied from a wide range of perspectives. These include the drivers of adoption (Ahmadzadeh, Etemadi, & Pifeh, 2011; Al-Omiri & Drury, 2007; Anderson, 1995; Anderson & Young, 1999), factors associated with successful implementation (Al-Omiri & Drury, 2007; Fei & Isa, 2010a; Foster & Swenson, 1997; Majid & Sulaiman, 2008; McGowan & Klammer, 1997; Rahmouni & Charaf, 2010; Shields, 1995), benefits that have been associated with ABC adoption (Cagwin & Bouwman, 2002; Cohen, Venieris, & Kaimenaki, 2005; Kennedy & Graves, 2001; Sartorius, Eitzen, & Kamala, 2007), and barriers of ABC adoption and implementation (Abu Salama, 2008; Pierce & Brown, 2004; Sartorius et al., 2007). The rise of ABC adoption has been linked to the technological improvement and strong competition. These factors make traditional costing system unable to determine accurate costs of products and services (Raffish & Turney, 1991).

Numerous studies criticized traditional cost accounting systems because these systems adhered to the hypothesis that products or services are the main reason for creating costs (Cooper, 1988; Green & Flentov, 1991). Other researchers such as Datar and Gupta (1994) stated that costs are often allocated based on single-volume measures such as

direct-labor costs, or machine hours. They also argued for possibility of distortions due to this fact in determining or calculating many types of cost. Gunasekaran (1999) further added that traditional cost systems do not give an accurate measure for activity performance and the reports do not give us any information about the value added activities.

Previous studies (such as Innes, Mitchell, & Sinclair, 2000; Popesko, 2010; Turney, 1996) in their definitions, consider ABC to be the method of measuring cost and performance of activities and cost objects. The basis on which it assigns cost to activities is their use of resources. After that, it assigns cost to cost objects on the basis of their use of activities. However, the traditional cost accounting is different from it, due to the assumption that cost objects consume resources (Vongchavalitkul, 2010).

However, the studies on ABC system still take a central place in accounting studies. This place has been taken since the early empirical study of Cooper and Zmud (1990), who examined certain factors affecting implementation stage differently. Researchers have developed various interpretative perspectives to know and highlight the factors affecting ABC adoption and implementation (Maelah & Ibrahim, 2006, 2007; Malami, 1999; Shield, 1995; Swenson, 1995), and the stages of its implementation processes (Anderson, 1995; Brown, Booth, & Giacobbe, 2004; Gosselin, 1997; Krumwiede, 1998). However, most of these studies arrived to ambiguous, different, and divergent results.

Different studies defined ABC implementation in different ways. Some defined it as actual ABC implementation but others defined it either as actual implementation or desire of implementing it (Baird, Harrison, & Reeve, 2007; Sartorius et al., 2007). Furthermore, the basis for comparisons of factors influencing the implementation of ABC has differed in some studies. They compared companies adopting ABC with those not adopting ABC. Moreover, the adoption percentage of ABC in a range of different countries varies widely: some countries found an increasing trend in the adoption percentage of ABC, and other countries found a decreasing one. Even some researchers have reported wide variations in the same country (Askarany & Yazdifar, 2010; Booth & Giacobbe, 1997; Braid et al., 2004, 2007; Brown et al., 2004). So, it is difficult to evaluate the results from the different studies, particularly relating to usage percentages. It is also difficult for the ability of factors to discriminate between implementers and non-implementers, particularly when the term implementation had been subject to different definitions (Al-Omiri & Drury, 2007b).

Numerous studies stated that there is a need to segment ABC adoption to stages. This segmentation is necessary at the time of researching the success by examining ABC at sites maturity when the company starts ABC using as a normal system. The result of ABC implementation often is achieved during or after the using stage, specially, in financial performance improvement (Arnaboldi & Lapsley, 2005; Baird et al., 2004;; Fei & Isa, 2010a; Krumweide, 1998; Liu & Pan, 2007). Numbers of previous literature (such as Baird et al., 2004; Gosselin, 1997; Krumwiede, 1998) have segmented the ABC implementation to stages. The number of stages was done differently by different

researchers to suit the requirement of the study. More generally, this should be a consideration for any study examining a new system implementation (Fei & Isa, 2010b). Therefore, in the current study, the researcher will segment the adoption and implementation of ABC to several stages. These stages are: non-adoption, adoption, abandonment, implementation, and usage stage.

Many researchers (such as Al-Omiri & Drury, 2007a,b; Clarke, Hill & Stevens, 1999; Drury & Tayles, 2005) said although there are many differences between sectors, previous studies tested factors affecting the adoption and implementation of ABC without separating the industrial and financial sectors. They also did not separate manufacturing industries from non-manufacturing, in which ABC system has been adopted. This lack of separation may lead to ambiguous and vague results.

Previous studies (such as Al-Omiri & Drury, 2007b; Baird et al., 2007; Brown et al., 2004; Cohen et al., 2005; Kiani & Sangeladji, 2003; Krumwiede, 1998) used only questionnaire survey in their studies. They allowed the respondent to self-specify whether his/her company used (operated) an ABC system or not. Krumwiede (1998) and Al-Omiri and Drury (2007a) argued that studies which only used questionnaire survey arrived at a mistaken, overstated or ambiguous result, and do not provide proof that companies claiming to be ABC adopters are really ABC adopters. Following the above argument, for using the mixed method, the population of Jordanian manufacturing companies is chosen in this study as a major source of data.

In this research, mixed methods are used. Firstly, a questionnaire survey is designed to include suitable control questions that allow the researcher to check respondents' claims that their firms are implementing ABC systems are really ABC adopter or operators. Secondly, face-to-face interviews are carried out with adopter firms for additional clarification and explanations about ABC system. Therefore, the current study is able to corroborate if the respondents claiming to use ABC, are actually ABC users.

This study focuses on Jordan because of the new changes in Jordanian business environment, globalization and strong competition faced by the Jordanian companies which resulted in more multinational companies establishing joint ventures or regional offices in Jordan which in turn resulted in changes regarding management accounting practices in Jordan. These modifications are piloted by the need of the Jordanian companies to implement cost accounting innovations for the purpose of having a competitive edge in the market (Hutaibat, 2005).

### **1.1 Problem Statement**

Since the past two decades, Jordanian companies have been facing strong competition due to shortened product life cycles and new kinds of customers (Abu Mogli, 2008). In this environment, the number of products produced had increased with more complexity and diversity in the production process. While the use of technology in the production process had reduced direct labors cost, it increased overhead costs (Al-Khadash&Feridun, 2006; Hutaibat, 2005). Khaleel (2003) examined the limitations of traditional full absorption costing systems by implementing ABC as an alternative system in one of the

leading companies in the Jordanian manufacturing companies. The study showed a significant variation between product costs as a result of the implemented ABC. Some products were produced below cost while others above cost. The researcher recommended that Jordanian companies implement ABC to eliminate the products which causing loss.

Despite the many advantages of the ABC adoption, previous studies showed that ABC is implemented only by 20% to 30% of organizations (Askarany & Smith, 2008; Innes et al., 2000; Innes & Mitchell, 1995; Kaplan & Anderson, 2004; Stratton, Desroches, Lawson, & Hatch, 2009). In addition, other studies (e.g. Arnaboldi & Lapsley, 2003; Byrne, Stower & Torry, 2009; Chung, Schoch & Teoh, 1997; Faudzaih & Rababah, 2011, 2012; Rasiah, 2011; Velmurugan & Nahar, 2010) revealed that many companies adopting ABC are still at the early stage of ABC implementation. These studies also revealed that most attempts to implement it ended in the narrow application of ABC in trivial services or in unused systems. Moreover, there is rising evidence to suggest that most of these companies faced problems during the implementation of ABC and, in extreme cases, did not have success with it, which later resulted in abandoning the ABC system altogether. On the other hand, traditional costing system continues to be increasingly implemented in most companies (Al-Omiri & Drury, 2007b; Askarany & Smith, 2008; Innes et al., 2000; Marie & Rao, 2010). This raises a basic question why management accounting innovations, such as ABC, have been slow to be adopted in the ever evolving, fast-paced change in organizational and technological environment in the last two decades.

Several recent studies have started addressing the issue of ABC adoption by highlighting the degree of adoption, the reasons for implementing ABC, the problems connected with ABC adoption and implementation, and the critical success factors linking to its successful implementation (Askarany & Smith, 2008; Gosselin, 2006; Kaplan & Anderson, 2007; Rahmouni & Charaf, 2010). However, the empirical evidence of ABC research is problematic. Firstly, the degree of ABC implementation in different countries varies extensively; some countries show an increasing trend in ABC implementation while other countries show a decreasing one. Moreover, researchers in the same country have found extensively different results about the implementation percentage (Askarany & Yazdifar, 2010; Baird et al., 2004, 2007; Brown et al., 2004; Booth & Giacobbe, 1997; Stratton et al., 2009). In Jordan, Khasharmeh (2002) found that the implementation percentage of ABC were about 10% in Jordanian manufacturing shareholding companies. Al-Khadash and Feridun (2006) validated the result of Khasharmeh when they found that the implementation of ABC was about 10.6% in the same sector. On the other hand, Nasser, Morris, Thomas, and Sangster (2009) found the implementation was about 55.7%.

There are different interpretations of the term “implementation”. Some studies defined it as “actual ABC implementation”. Some other studies defined it as “consisting of either actual implementation or a desire to implement it”. Besides, the basis for comparing the factors influencing the implementation of ABC in some studies comparing companies adopting the implementation of ABC has differed with the studies companies not

adopting the implementation ABC. Therefore, comparing the findings from the various studies is difficult. Particularly, this is true when the comparison is related to usage percentages or ability of factors to discriminate between implementers and non-implementers when there are different definitions of the term “implementation” (Al-Omiri & Drury, 2007b). Secondly, studies showed wide variations with regard to the factors that motivated the implementation of ABC, the barriers and problems of ABC implementation, and critical success factors (Brown et al., 2004). This variation is often due to measuring success in different ways (Baird et al., 2007; Cohen et al., 2005; Drury & Tayles, 2005; Harrison & Killough, 2006; Swenson, 1995).

Due to inconsistencies in the existing findings, more investigations need to be carried out in Jordan. Fei and Isa (2010b) note that majority of empirical research has been carried out in the Western countries, but very few in developing countries on ABC adoption and implementation, especially those with rapid economic growth while, Hutaibat (2005) indicates that Jordan’s economy is rapidly growing, especially now that it is a member of the World Trade Organization (WTO), and has signed free trade agreements with various countries. Therefore, it is expected that changes will occur on management accounting practices and innovations in Jordan to compete more effectively. Companies need to plan, control, and make decisions about projects that will yield important results for their survival; this can only be done by using cost accounting innovations (Hutaibat, 2005). Furthermore, since more and more multinationals are setting up operations in the region, Jordanian manufacturing companies are expected to be increasingly influenced by foreign accounting practices. Although "cost accounting practice is not universally uniform"

(Luther & Longden, 2001, p. 315), it would be possible to adopt and implement certain practices from their foreign partners.

Based upon the discussion, it is argued that an empirical investigation, to determine the current state of ABC adoption and implementation and the main factors that influence ABC implementation as well as identifying the main barriers and problems associated with its implementation, is warranted.

## **1.2 Research Questions**

The current study seeks to find answers to the following research questions:

1. What is the current state of ABC implementation among Jordanian manufacturing companies?
2. For non-adopting companies, what are the main barriers or reasons for not adopting ABC?
3. For companies that adopted/abandoned ABC, what are the main factors against ABC implementation?
4. For companies that are currently implementing/using ABC, what are the factors that are directly associated with the implementation decision?
5. For companies that are currently implementing/using ABC, what are the main factors that motivate its implementation?
6. For companies that are currently implementing/using ABC, what are the main factors that facilitate its implementation?

7. For companies that are currently implementing/using ABC, what are the problems encountered during its implementation?
8. For companies that are currently using ABC, what is the degree of ABC success?
9. Do these factors (type of sectors, size, diversity and level of overhead) have significant influence on ABC implementation in Jordanian manufacturing shareholding companies?

### **1.3 Research Objectives**

The aim of the present research is to know the barriers and problems of ABC implementation in the Jordanian manufacturing shareholding companies. The objectives of this research are outlined below:

1. To examine the extent of ABC implementation system within the Jordanian manufacturing shareholding companies.
2. To identify the barriers or reasons for non-adoption of ABC system.
3. To determine the factors that against ABC implementation in the companies that adopted/abandoned ABC.
4. To identify the factors that are directly associated with the implementation decision of companies that are currently implementing/using ABC system.
5. To determine the main factors motivating the implementation of ABC system in companies currently implementing/using ABC.
6. To determine the main factors facilitating the process of ABC implementation in companies currently implementing/using ABC system.

7. To identify the problems faced during ABC implementation in companies currently implementing/using ABC system.
8. To ascertain the views of the user companies on the degree of success of ABC system.
9. To examine if these factors (type of sectors, size, diversity and level of overhead) have significant influence on ABC implementation in Jordanian Manufacturing Shareholding Companies.

#### **1.4 Significance of the Study**

The significance of this study stems from the fact that this study takes the ABC system in manufacturing companies of Jordan into account. These companies need to find a new method to reduce costs in the new environment (Kasharmeh, 2002). Therefore, this study presents an effort to fill a part of the gap in the literature and reduce the vagueness regarding the current state of ABC adoption and implementation among the Jordanian manufacturing companies.

This study will help to know the extent of ABC adoption within the Jordanian manufacturing sector by the segmentation of ABC adoption and implementation into different stages. This is the first contribution of this study. Most previous studies did not segment ABC adoption and implementation to stages. Previous researcher such as Liu and Pan (2007) and Fei and Isa (2010) recommended that future studies must specify the ABC implementation stage.

Secondly, most previous studies focused only on the implementation of ABC in Western developed countries such as Ireland (Clark et al., 1999; Pierce & Brown, 2004), UK (Innes et al., 2000; Innes & Mitchell, 1991, 1995), USA (Anderson, 1995; Groot, 1999) Australia (Booth & Giacobbe, 1997; Brown et al., 2004; Van Nguyen & Brooks, 1993) and New Zealand (Cotton, Jackman & Brown, 2003). The results of the current study have contributed in terms of obtaining knowledge in the area of the implementation of ABC, particularly in Eastern developing countries like Jordan.

As the third contribution, this study used a multi-attribute measure of ABC implementation success within the Jordanian manufacturing sector. Considering observed ABC maturity and usage stages, this multi-attribute comprises satisfaction with ABC implementation, ABC information characteristic rating, the degree of using ABC in decision making, and the overall success of ABC implementation. Most of the previous studies measured success at different stages and was not based on ABC maturity.

The fourth contribution is the development of a conceptual model of ABC implementation in manufacturing companies. It allows for the development of a more sophisticated understanding concerned with the factors catalysts, motivating, facilitating, and creating barriers to ABC implementation in the context of an Eastern developing country. It also contributes by cutting off various issues about the factors influencing the ABC implementation.

Finally, most of the previous studies have allowed the respondents' self-rating of their company on the basis of use or non-use of ABC. In this study, several control questions are included in the questionnaire to check the respondents' claims that they were operating an ABC system which is authentic. In addition, semi-structured interviews will be conducted with 13 companies representing Jordanian manufacturing companies' adoption and implementation stages for further explanation, supplementation, and discovering of new factors which may influence the ABC adoption and implementation. Therefore, compared to previous studies, this study has much higher probability that respondents claiming to use ABC provide authentic information of ABC users.

## **1.5 Organization of the Study**

This study contains six chapters. Chapter 1 contains the introduction of the study, including the background and problem statement, research questions, research objectives and significance of the study.

Chapter 2 includes the literature review which is organized according to major studies related to the problem described above. This chapter provides three parts of literature review: firstly an Overview of Costing Systems, then the Theory of ABC system and Empirical Literature.

Chapter 3 describes the research methodology employed to solve the research problems. It contains justification for the use of specific research designs and data collection method. It specifies the design and implementation for the quantitative and qualitative research

employed in this study. This chapter further provides three phases of the data collection methods: the first phase: the initial questionnaire survey, the second phase: the main questionnaire survey and the third phase: interviews.

Chapter 4 shows the quantitative data analysis. The study is based on the first and second phase of data collection method.

Chapter 5 shows the qualitative data analysis. This chapter provides the third phase of data collection method: interviews. Data analysis includes both within company analysis for each company, followed by the cross-company analysis, which includes an analysis of variations between companies.

Chapter 6 summarizes the conclusions and contributions of the research and also addresses the limitations, and present implications for future research. Figure 1.1 outlines the thesis structure.

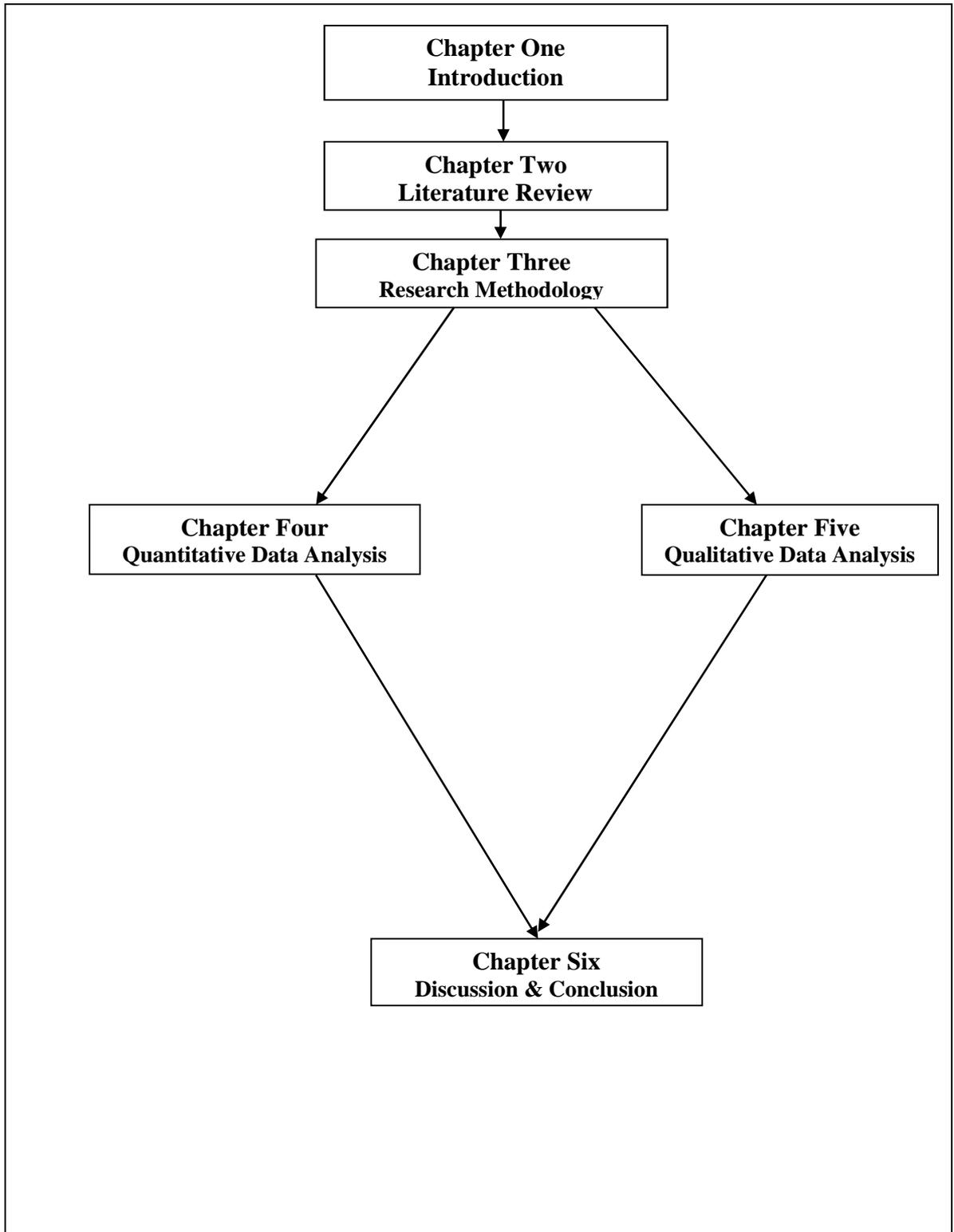


Figure 1.1:  
*Thesis Structure*

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

Activity-Based Costing (ABC) is a method of cost analysis. Many researchers (such as, Cooper, 1988; Cooper & Kaplan, 1991; Drury, 2000; Shield, 1995; Turney, 1996) suggested that ABC system is a reliable system that suits to calculate accurate cost for products and services. In addition, this system of costing served as a solution to the shortcomings associated with traditional costing systems (TCS).

This chapter discusses different approaches undertaken by ABC and TCS to allocate overhead costs, the limitations of the traditional system, and the claimed advantages and benefits of ABC. A comparison of both systems is also illustrated in this chapter.

An ABC system is an administrative innovation. It has changed the practice of management accounting. This chapter discusses the theories behind this innovation, as well as how and why innovations spread across organizations. These discussions would give an insight into factors influencing the adoption and implementation of ABC. This chapter also discusses the diffusion of innovation and management accounting change theories. It reviews the empirical studies concerned with ABC system and different perspectives to the factors influencing this system.

## **2.1 Overview of Costing Systems**

### **2.1.1 Traditional Costing Systems**

A traditional costing system (TCS) is also known as volume-based costing system (VBC), or conventional system. This system uses measures of output volume (such as the number of output units, direct labor hours, material costs, machine hours, and direct labor cost) as the basis for allocating overhead or indirect costs to cost objects (Cooper & Kaplan, 1988a; Johnson & Kaplan, 1987). This section discusses how the traditional costing system allocates the overhead costs to products.

#### **2.1.1.1 The Aims of Cost Allocation**

Many practitioners and researchers (such as Anderson, 1995; Drury, 2004; Foster & Swenson, 1995; Kaplan & Cooper, 1998) argued that cost allocation is very important because it helps in the valuation and assessments of inventory for external reporting purposes, for planning and monitoring the cost of activities and processes, and for various strategic decisions. Examples of such strategic decisions are: decisions to produce or buy some material and services important to different products or services in the firm, to price products and services, to add or remove various products and services, and to decide when to expand or contract the size of a segment of the company. Horngren, Datar, and Foster (2003) argued that cost allocations are also needed to support pricing when cost-plus pricing is used. This type of case is found in government contracts and in situations where costs must be justified before the reimbursement.

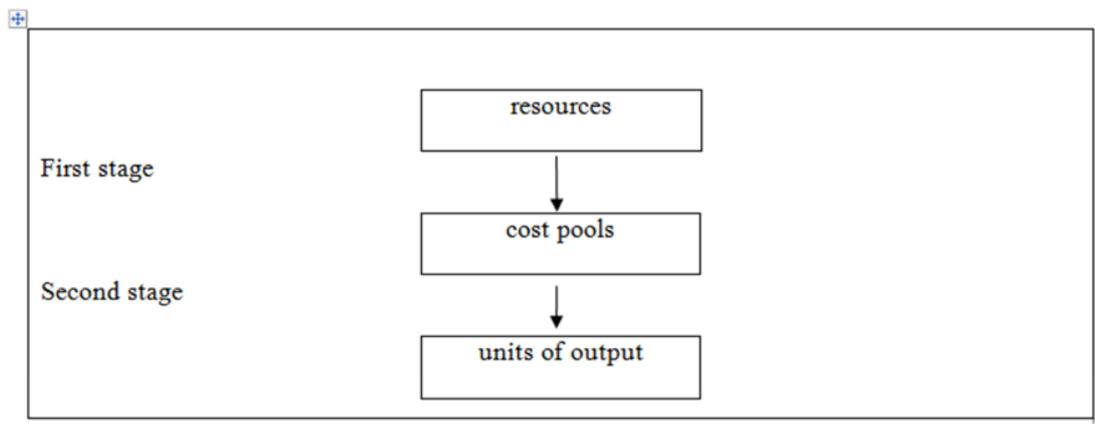
### **2.1.1.2 Predetermined Overhead Rates**

Hansen and Mowen (2000) stated that multiple types of manufacturing costs dropping into the indirect category will lead to many difficulties in assigning overhead costs. Some methods are needed to allocate or apportion overhead or indirect costs to the products manufactured. This is necessary especially in case of using huge technology which force the companies to shift from direct labor to machine. As a result, more indirect costs are needed to be allocated to products and services. The Chartered Institute of Management Accountants CIMA (1996) defined a predetermined overhead rate as a method of allocation or attribution of overhead costs to a product or service. For example, it can be based on direct labor cost, direct labor hours, or machine hours, CIMA-1996) provides a way to accomplish this system requirement.

### **2.1.1.3 Cost Allocation Stages in Traditional Costing Systems**

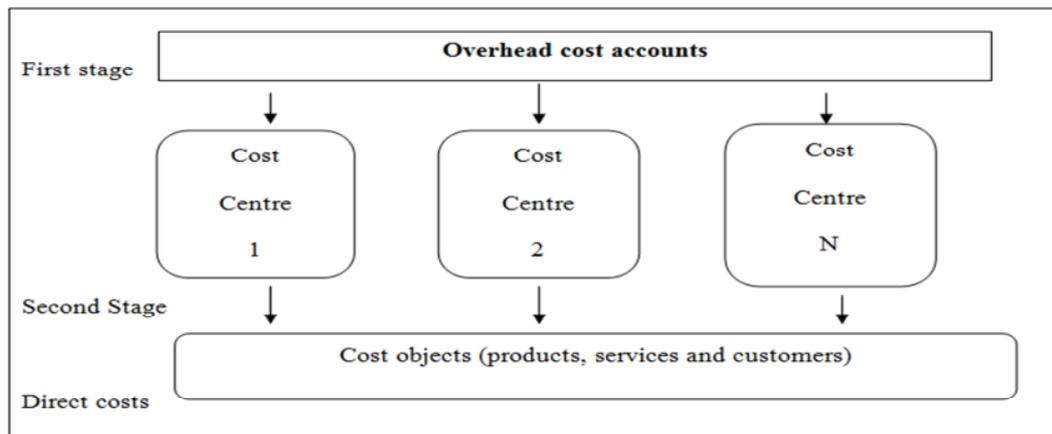
There are two stages to allocate indirect costs to products or services with a traditional costing system (Drury, 2004). In stage one, overheads are initially assigned to cost centers (departments), and in stage two, overhead costs centers are allocated to cost objects (e.g. products). Horngren et al. (2003) argued that applying the two-stage allocation process needs four steps. These four steps relate to the two stage of cost allocation in traditional costing system. The first step is assigning all manufacturing overheads to production and service centers, and then reallocating the costs assigned to service centers to production centers. The following step is computing separate overhead rates for each production cost centre, and finally assigning cost centre overheads to products or other chosen cost objects. Thus, steps one and two relate to stage one and steps three and four relate to the second stage of the two stage allocation process. Cooper, Kaplan, Lawrence, Morrissey,

and Oehm, (1992) and Drury (2000) provided an illustration of the two-stage process for traditional costing systems as shown below:



Source: Cooper, Kaplan, Lawrence, Morrissey, and Oehm, (1992)

Figure 2.1:  
*Two Stage Process for Traditional Costing System*



Source: Drury (2000:p.339)

Figure 2.2:  
*Two Stage Process for Traditional Costing System*

Figure 2.1 and Figure 2.2 show two stages of the cost allocation process under the traditional costing systems. In the first stage, overheads or indirect costs are allocated to cost centers (production and service departments) based on the first stage allocation bases

such as, number of employees, book value of items of plant and machinery, labor hours, and machine hours. Subsequently, those overheads allocated to service departments must be reallocated to production departments. In general, to reallocate service department costs to production departments, there are three methods. These are the direct method, the step-down or sequential method, and the reciprocal method (Drury, 2004).

In the second stage, the indirect costs which have been allocated and reallocated to production departments will be assigned to cost objects. These cost objects can be productions, services, and customers. A suitably selected allocation base is used to allocate this overhead costs to the cost objects. Usually, accountants may use time spent for particular products in each production centre, direct labor hours, or machine hours as the basis or cost driver for attributing overhead costs (Drury, 2000).

A conceptual view of the idea is presented in Figure 2.2. Drury (2000) stated that only one overhead rate is developed for each production department although the basis for these rates may differ between departments. Some production departments might use direct labor hours, or machine hours, as an allocation basis in the second stage allocation process. In this approach, the allocation bases are almost always related to production volume.

Hansen and Mowen (2000) suggested that TCS will provide accurate product costs in only three situations. These are if the production process is very simple, if it produces a few similar products and if each production department produces a single product

consuming all overhead or indirect resources within a department in the same proportion according to the allocation basis used. In these cases, TCS will also be a suitable and reliable method for cost allocation in the production departments. An example of an accurate system is: if Product X takes 30% of one indirect resource within a department, it must take 30% of all of the indirect resources within the department. Hansen and Mowen (2000) argued that the allocation basis must reflect this rate. However, they suggested that a single volume measure in the department is not enough to provide accurate product costs that can help managers in their decision makings.

#### **2.1.1.4 Limitations of TCS and the Recognition for a Need to Change**

During the 1980s the limitations of Traditional Cost Systems (TCS) began to be widely publicized by both academics and practitioners (Cooper, 1988; Cooper & Kaplan, 1988; Johnson & Kaplan, 1987). Drury (2004) claimed that TCS were designed decades previously when most companies manufactured a narrow range of products/services, and direct labor and materials were the dominant factory costs. Indirect costs (overheads) were relatively small, and the distortion arising from inappropriate overhead allocations was not significant. Information processing costs were high, and it was, for that reason, difficult to justify more innovative overhead allocation methods.

Johnson and Kaplan (1987) suggested that TCS may have been appropriate in the past when labor was a significant portion of product costs but the declining direct labor base, together with the rise of automation, competition and multi-product lines have rendered these systems obsolete.

Cooper and Kaplan (1987) claimed that the first major limitations of TCS arose from the use of volume related bases in the second allocation stage to assign costs from cost centers to products. They asserted that direct labor or order volume-based costs drivers failed to measure the consumption of non-volume based activities accurately and, hence, result in distorted product or service costs. Focusing on volume-based cost drivers leads to over-cost high volume products and services and under-cost low volume products or services (Anand, 2004; Cooper, 1988; Datar & Gupta, 1994).

To explain this Johnson and Kaplan (1987) argued that in a multi-product environment a number of low and high volume products are manufactured together in small and large-sized batches. Products that are manufactured in small batches may demand the same (if not more) amount of set-up, material movements, and similar support activities as their high volume counterparts. However, these activities do not vary with production volume, but with product diversity, complexity, and the number of production batches. In other words, different manufacturing volumes for different products can cause large variations in the product costs. In addition, these overhead resources tend to grow bigger in many industries when the number or duration of those non-volume-related activities increases.

Since the TCS allocates these non-volume-related overhead costs to products according to production volume, the products in the small batches will receive the same amount of overhead cost as their large-batch counterparts if both small and large batches require the same amount of direct labor. Consequently, high volume products will subsidize the cost of their low volume counterparts since most of the overheads regarding low volume products are charged to the high volume products because of volume-based cost drivers.

This leads TCS to producing distorted cost information in product costing, decision-making, and individual product profitability and, therefore, TCS are unable to cope with the modern developments in business environments (Anand, 2004; Drury & Tayles, 2000).

Cooper and Kaplan (1988) claimed that the second major criticisms of TCS are mainly related to the reporting of inaccurate costs information for decision-making (Smith, Abdhllah, & Abdul Razak, 2008). Drury and Tayles (1994) suggested that management accounting and costing accounting systems should generate information to meet the following purposes; namely, allocating costs between cost of goods sold and inventories for internal and external profit reporting; providing relevant information for planning control and performance measurement; and providing relevant information to help managers make better decisions. Drury and Tayles (1994) asserted that TCS are considered to be sufficiently accurate for the first two purposes and give inaccurate information for the latter purpose. TCS are considered to be sufficiently accurate for financial accounting and profit measurement purposes, since accurate measures of the resources consumed by individual products may not be necessary. The objective of the costing system here is to provide a reasonably accurate analysis of the total costs incurred during a period between cost of sales and inventories. Cooper and Kaplan (1988) argued that most of the companies implement TCS to meet financial inventory valuation requirements and to generate cost information for decision-making requirements. They claimed that such costs are accurate enough for financial accounting, but are totally

inadequate in terms of accuracy for decision-making (Anand, 2004; Thomson & Graefe, 1989).

Cooper (1988) suggested that traditional cost systems do a poor job of attributing the expenses of the support resources to the production. The product costs produced by such allocations as direct labor, materials purchases, or unit produced are distorted because products do not consume most support resources in proportion to their production volumes. Cooper (1987) added that the distortions in TCS are most severe in companies producing a diverse product mix in the form of size or volume. Moreover, he argued that as overhead has grown and new technologies introduced assigning overheads based on only 5 - 15% (the proportion of labor hours) of total costs is highly risky.

An alternative approach used in the traditional system, is provided by Variable or Marginal Costing, which overcomes the arbitrary nature of allocation in the case of fixed costs. Such a system concentrates on variable manufacturing costs, which are assigned to products and included in the inventory valuation (Horngren et al., 2003). Marginal costing is a costing method that includes only variable manufacturing costs – direct material, direct labor, and variable manufacturing overhead – in the cost of a unit of product, where on the other hand fixed overhead costs are assigned to the period in which they are incurred (Atkinson, Kaplan, Matsumura, & Young, 2007).

Cooper and Kaplan (1987) argued that the traditional academic recommendation in favour of marginal costing may have made sense when variable costs (labor, material and

some overhead) were a relatively high proportion of total manufactured cost, and when product diversity was sufficiently small. However, these conditions are no longer typical of many of current organizations. Increasingly, overhead (most of it considered “fixed”) is becoming a larger share of total manufacturing costs. Cooper and Kaplan (1987, p. 214) concluded that:

“Even if direct or marginal costing were once a useful recommendation to management, it is likely that direct costing, even if correctly implemented, is not a solution – and is perhaps a major problem – for product costing in the contemporary manufacturing environment”.

### **2.1.2 Activity-Based Costing System (ABCS)**

ABC is a costing system that assigns costs firstly to the activities then to products based on each products use of activities. This system is based on the concept that product consumes activities and activities consume resources (Cooper & Kaplan, 1991).

ABC has been researched from various perspectives and approaches. It does not have a commonly accepted definition. The definition of ABC is not clear. Companies can define it differently in terms of different methods, different method of calculations, and various purposes of use (Al-Omiri & Drury, 2007; Malmi, 1997; Shields 1995).

The Official Terminology of the Chartered Institute of Management Accountants (CIMA) defines ABC as:

“An approach to the costing and monitoring of activities which involves tracing resource consumption and costing final outputs. Resources are assigned to

activities and activities to cost objects based on consumption estimates. The latter uses cost drivers to attach activity costs to outputs". (CIMA, 1996, p. 20).

Hansen and Mowen (2000) use the following definition:

"A cost assignment approach that first uses direct and driver tracing to assign costs to activities and then uses drivers to assign costs to cost objects".

Finally, Baird et al. (2007) described ABC as a final level of activity management which can help to allocate overhead cost pool to the products or services.

All of the above definitions relate to the two-stage allocation process in Activity based costing system with costs being assigned to activities in the first stage and then activity costs to cost objects (typically products, services or customers) in the second stage. Although not explicitly stated, the definitions imply that costs are assigned to activities in the first stage, and cost objects in the second-stage, using cause-and-effect cost drivers. In contrast, traditional costing systems assign costs to cost pools in the first stage that are departmental based rather than activity based and, in the second stage, use volume-based cost drivers that are often not based on a cause-and-effect relationship to assign costs to cost objects.

#### **2.1.2.1 The Two-Stage Allocation Process in ABC**

Many studies suggested that ABC is more accurate than traditional costing system (Abdel-Kader & Luther, 2008; Dugdale, 1990; Innes & Mitchell, 1991; Kaplan, 1988; Krumwiede & Roth, 1997; Rasiah, 2011; Turney, 1996); Because TCS adopts small number

of volume allocation bases such as, direct labor hours, machine hours and material dollars to allocate indirect costs to products or services. On the other hand, ABC system typically utilizes multiple allocation bases, such as set-up hours, number of times ordered, number of times handled, and other transaction-related bases (Cooper, 1988).

ABC offers a fundamentally different approach from that of TCS. For instance, in TCS, most cost categories, which are considered as period costs, are regarded as product costs in ABC. Kaplan and Cooper (1998, p. 96) stated that:

“Almost all of the activities of a company were to support the production and delivery of goods and service; therefore, they should be regarded as product costs”.

The objective of ABC is to connect the cost of an activity to a product which demands that activity (Kaplan and Cooper, 1998). Therefore, it employs two stages to assign costs to products. In the first stage, costs of the activities are aggregated into a number of different but homogenous cost pools (Gosselin, 2006). In the second stage, costs that are collected in the cost pool are assigned to products by using cost drivers (Gosselin, 2006). In other words, ABC allocates overhead costs to products based on actions that cause costs to occur. In the initial stages, activities that are responsible for overhead cost consumption are established and costs that are consumed by these activities are identified. Following this, cost drivers are established to assign the activity costs to individual products or services. This process allows costs to be traced to products depending on the individual activities that they consume (Cooper, 1988a; Cotton & Jackman, 2002).

Previous studies such as Kaplan & Cooper (1998) said that ABC model does not really differ between a service and a manufacturing company. Previous studies such as Anderson (1995), Cooper et al. (1992), Foster and Swenson (1997), Krumweide (1998), Rasiah (2011) said that activity based costing system contain four basic steps. These are: identifying activities, assigning indirect costs to activities, identifying outputs, and linking activity costs to outputs.

#### **i. Step One: Identify Activities**

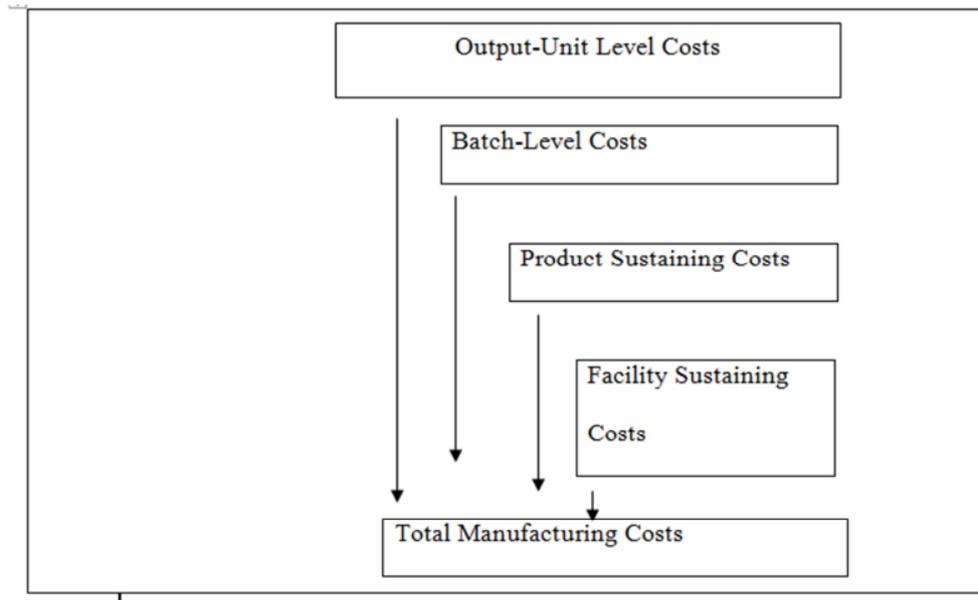
During the utilization of the ABC method, the company is viewed as a set of activities like work assignments or such. Every work performed in the company can be considered as an activity. Hence, these activities differ from one company to another since no two companies are identical. For instance, in a consulting company, some activities are planning an assignment, performing the service, securing the quality, following up the assignment performed, etcetera (Enow, Saitovic & Saliji, 2007) while for another firm it can be setting-up machines, purchasing materials and processing customer orders (Drury, 2000).

In this first initial step, the activities that are performed by the indirect and support resources of the company are identified and included in a dictionary (Kaplan & Cooper, 1998). For the purpose of not getting too detailed in this section, the following rule of thumb has to be followed: activities that need less than 5% of a resource capacity or a worker's time are excluded and an approximation of 10 to 30 activities per dictionary is considered to be appropriate. In addition, various activities should be independent on

their own for the costs to be distributed in an accurate way. It is imperative to keep in mind that for service firms during the identification of activities, the company can also carry out the determination and control of the efficiency of its internal activities although it is the customer who completely determines the demand for the operating activities (Kaplan & Cooper, 1998).

In cases when the customer begins demanding, which may later impact the use of resources, the firm should start determining the activities the customers will need. Through the mapping out of activities involving the process of provision of care, the firm can determine which choices the customers opt for, how much he requires from the service and the level of his/her involvement in the process (Zeithaml, Bitner & Gremler, 2003). But it is important that the costs will be depicted. Another aspect to keep in mind is the determination of the activities that are significant in the customer's point of view. And any activity that the customer does not deem significant is non-value added (Dirgam, 2006). Additionally, this is related to the fact that customer expectations are not easy to determine, although in some instances, the customers themselves are not aware of their preference (Dirgam, 2006). Activities have various features, so the activity hierarchy has to be outlined first and foremost as it forms a structure that creates calculations for the costs of different cost objects, or it helps in instances where the companies are desirous of exploring both their long-term and short-term decisions (Enow et al., 2007).

At this step a cost hierarchy technique is utilized to segregate the manufacturing costs into four categories (Atkinson et al. 2004;Cooper et al., 1992;Cooper & Kaplan, 1991; Horngren et al., 1997, 2003,2006 and Popesko, 2010) as illustrated in the Figure 2.3.



Source: Horngren, Datar and Foster (1997)

Figure 2.3:  
*Manufacturing Cost Hierarchy*

1. Unit-level activities: This category is directly associated with each individual unit of product or service, such as direct labor or machine hour. There is a positive association between the size of products and the costs of the activities.
2. Batch-level activities: This level is related to the costs of activities associated with group of units regardless of the number of products in each group; for instance, set-up costs, material movements, and purchase orders. This cost must be assigned to the activities associated with this group.

3. Product–sustaining activities: In this case, costs are allocated to activities supporting a specific product or service. These activities consume inputs that develop products or allow products to be produced or sold. Following are some examples: maintaining and updating product specifications and providing technical support for individual products and services, process engineering, product specifications or engineering change notices.
4. Facility-sustaining activities: Costs of this level are associated with the activities that are very important to support all the company processes. This level completes the production process. Cooper and Kaplan (1991) stated that most of these activities are administrative services. Examples of these activities are salary of management planning security, taxes, plant depreciation, building and grounds maintenance, heating and lighting. Adler (1999) argued that such activities should not be viewed as part of a product basis. This cost must be considered as common cost to all products and services because it is very difficult to assign to the individual products. It is shown as period costs in the income statement.

To explain more, Hansen and Mowen (2000) suggest that the following interview questions should be used to identify activities:

1. How many employees are in your department? (Activities consume labour)
2. Please describe what they do (enables activities to be identified)
3. Do customers outside your department use any equipment? (Activities consume resources in addition to labour)
4. What resources are used by each activity? (e. g. labour, materials, equipment, energy)

5. What are the outputs of each activity? (Helps identify activity drivers)

6. Who or what uses the activity output? ( Identifies the cost object)

When all of the activities have been identified, they are recorded in an activity dictionary that lists and defines every major activity performed for in the business unit.

### **ii. Step Two: Assigning Costs to Activity Cost Centers**

After the identification of activities, the next stage is the determination of the cost of each activity. Several resources can be directly attributable to activity center while others are shared by several activities. Resource cost drivers, based on cause-and-effect relationships, should be the ones to be utilized in the assignation of the joint costs to individual activities or interviews with staff managers who are capable of providing reasonable estimates of resources utilized by different activities (Horngren et al., 2003, 2006).

### **iii. Step Three: Determining the Cost Driver for Each Major Activity**

The main goal of this stage is the selection of the cost drivers that relate the activity costs to the company's cost objects (such as products/services). However, cost drivers are considered as activity cost drivers in this particular stage. According to Drury (2004), many factors must be kept in mind when selecting a suitable cost driver. Firstly, a provision of the costs in each activity cost pool should be present. Secondly, the cost driver should be able to be measured. Thirdly, the data should be easily obtainable and

identifiable with products. In other words, the costs of measurement should be taken into consideration (Needy, Nachtmann, Roztocki, Warner & Bidanda, 2003 & Popesko, 2010).

Along similar lines of study, Kaplan and Cooper (1998) carried out an identification of three types of activity cost drivers, namely: Transaction drivers; Duration drivers; and Intensity drivers. Transaction drivers, is one in which the number of purchase orders processed, number of customer orders processed, number of inspections performed and the number of set-ups undertaken, all contribute to the number of items an activity performs. This type of drivers are the cheapest but they are the most likely to be accurate as they make assumptions that the same quantity of resources is needed for every activity performed. This works accurately in cases when the variation in the amount of resources needed by individual costs objects is not much. However, if the case is not so, then duration drivers or intensity cost drivers should be utilized instead.

Duration drivers are ones in which the amount of time required is represented to perform an activity. For instance, this type includes set-up hours and inspection hours; simple products may need only shorter set-up times, while complex high precision products may require much more. Hence, utilizing this type of cost driver will lead to accuracy in the measurement of the activity resource consumption as compared to the former - transaction driver (number of set-ups), which only assumes equal amount of activity resources are consumed by both simple and complex products. Also, the utilization of set-up hour's results in the determination of more accurate product costs, but this will also lead to higher measurement costs.

Intensity drivers are those which directly charge for the resources used every time an activity is done. Duration drivers determine the average for performing an activity while intensity drivers involve direct charging on the basis of the actual activity resources that are used in a product. Therefore, intensity drivers are considered to be the most accurate activity cost drivers but they are also the most expensive regarding implementation and maintenance.

#### **iv. Step Four: Assign Costs to Products/Services**

In this step, the cost driver rate is calculated by the division of the cost of supplying the resource capacity to do the work over the quantity of work that the resources can perform (Kaplan & Cooper, 1998):

$$\text{Cost driver rate} = \text{expense/cost driver}$$

The equation presents the fact that when a company owns several products/services, the management should look at where similar type of activity is being used. The cost of this activity is then summed from each product/service and in totality, shows the expense part (Drury, 2000). This is followed by the division by the summation of cost drivers utilized in the activity in each product/service, given that they are similar drivers.

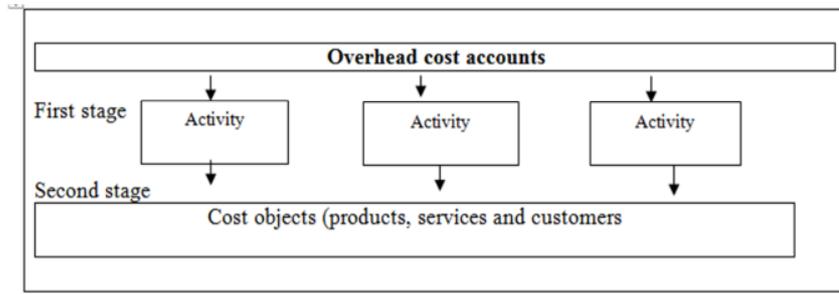
The cost driver rate is then considered as the expense per driver when desiring to calculate the actual indirect expense for a certain product/service – this is then multiplied by the number of drivers used by that particular cost object. Cost drivers are generally estimated from historical data as evidenced by Kaplan & Cooper (1998). Nevertheless, ABC should be utilized for the estimation of costs for the purpose of future activities so

that decisions can be carried out. Driver rates can be found from the budget expense data for the future periods' resources.

The cost driver rate in advance, at the onset and in real time can be calculated. Thus managers do not have to wait until the final period to determine the cost of each activity and this way, both the costs of resources and resources supplied, but unused can be estimated (Kaplan & Cooper, 1998).The last basic four steps can be summaries into two stage allocation processes. The first stage is the assigning overhead costs to the activities as defined before. This assigning is based on the suitable resource driver.

In the second stage of the ABC process, overhead costs are assigned to products or service activities during the production process. Cooper (1988) said that ABC system uses a number of second-stage bases or cost drivers to allocate indirect costs to cost objects. Some of these cost drivers are used to allocate costs whose consumption varies directly with the number of products produced. On the other hand, other costs are used to allocate costs whose consumption does not vary with quantity. Therefore, ABC systems use a greater number and a variety of second stage cost drivers than traditional costing system.

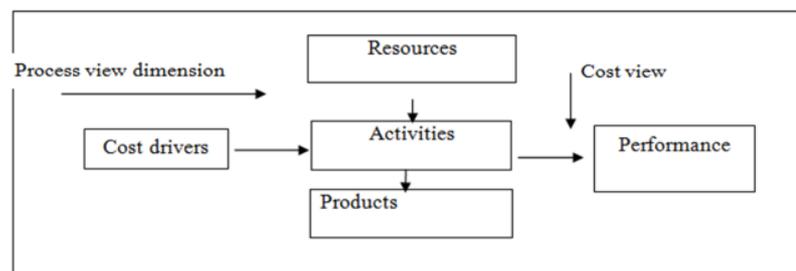
Figure 2.4 shows Two-Stage Allocation Procedure for ABC System. In the first stage overhead cost are assigned to activities which consume the cost.In the second stage, overhead costs are assigned to products or service activities during the production process.



Source: Cooper, Kaplan, Lawrence, Morrissey, and Oehm, (1992)

Figure 2.4:  
*Two-Stage Allocation Procedure for ABC System*

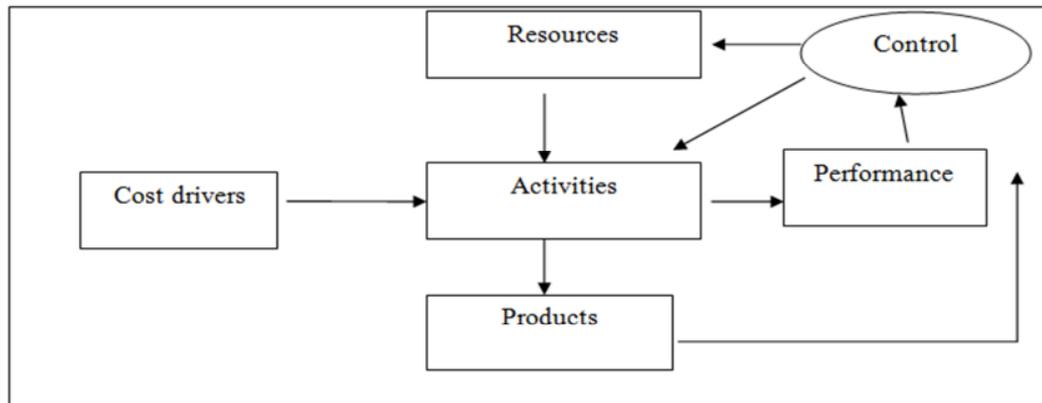
Turney and Stratton (1992) suggested that the new ABC model contains two dimensions of cost view and process view. The cost view dimension is concerned with cost allocation by two stages mentioned above, but process view is concerned with the process by providing financial and non-financial information which are necessary for continuous improvement, especially the performance measurement of the activities. Figure 2.5 shows the Two Dimensions Model for ABC System:



Source: Turney and Stratton (1992)

Figure 2.5:  
*Turney and Stratton (1992) Two Dimensions Model for ABC System*

Dirgam (2006) added that the control process is neglected in the activity based costing system model. He argued that control represent feedback for information obtained in the last model as shown in Figure 2.6:



Source: Dirgam (2006)

Figure 2.6:  
*Dirgam (2006) New Model for ABC System*

### 2.1.2.2 The Benefits of ABC Implementation in Manufacturing Companies

Numerous articles described the potential benefits enjoyed by organizations from adopting ABC system. According to Innes et al. (2000), this system can in turn guide to increased profits. As for the strategic potential benefits, Narayanan and Sarkar (2002) provided empirical evidence indicating that ABC influences strategic managerial decisions. They interviewed the top and mid-level managers in steel industries in the USA and found that the managers were able to implement process improvements after implementing ABC. They discontinued non-beneficial products and stopped serving non-beneficial customers. These measures resulted significant cost savings and subsequent improvement of the bottom line.

With regard to operational benefits, Pierce and Brown (2004), in their survey of 550 Ireland companies from different sectors found that ABC provides more in-depth

analysis, value adding decisions, and efficiency value-based reporting. Furthermore, ABC provides more accurate product cost, improved product profitability, and better evaluation of capital investment. The findings also indicate that ABC would be used to understand cost drivers, to influence product cost through design, to facilitate pricing strategy, and to improve customers' profitability and companies' efficiency.

The results appear to be consistent with Shields's (1995) study in the USA. In that study, 75% of the respondents perceived that there is a financial benefit derived from implementing ABC. On the basis of the earlier discussion, it appears that ABC adoption leads to better decisions and finally to an enhanced bottom line.

The above arguments shows that ABC are used for many purposes such as product costing, pricing decisions, customer profitability, improvement in financial performance and budgeting.

#### **2.1.2.2.1 Product Costing**

The use of ABC information for the purpose of product costing is the most widely used ABC system and it often leads to the formation of the basis of the product pricing as well as product profitability. This owes to the fact that the activity cost analysis is almost identical to the standard costing method, and hence, it makes companies inclined to extend existing cost analysis for revision of the underlying cost drivers linking it to the basic business processes (Anand, 2008; Hicks, 2005). This is significant to the manufacturing sector as the environment is characterized by increased competitiveness

and the level of product differentiation is required to enhance and sustain market share which needs the acquisition of effective information linked to the costs of improving and coming up with such products and services (Anand, 2008; Fennema et al., 2005; Hicks, 2005; Swenson, 1998).

Through the analysis of the activities and their attribution to individual products and services, there is a great chance of increasing effectiveness and efficiency through the use of ABC. Efficiency can be enhanced through the elimination of duplication and useless activities, and hence, leading to the enhancement of work flows and staff training while effectiveness depends on the carrying out the right activities efficiently. Through the attribution of costs to the activities, management is able to prioritize certain activities requiring concentration for the purpose of enabling working practices to be transformed into efficient and effective practices, whereby costs are reduced and performance is improved (Kaplan & Atkinson, 1998; Kaplan & Cooper, 1998).

#### **2.1.2.2.2 Pricing Decisions**

Most costing systems are utilized for the production of increased accuracy that are linked to product costs and pricing. In addition, some experiences provide some distortion of products costs which leads to reduced product pricing through ABC use (Anand, 2008; Fennema et al., 2005; Gunasekaran & Sarhadi 1998). Along these lines, Innes and Mitchell (1995) asserted that the variation present in the comparison with conventionally calculated unit costs and the systematic cross subsidization that are reported in most cases gives significant value to the importance of pricing decisions (Hicks, 2005). Additionally,

Innes and Mitchell (1991) stated that the provision of ABC of more relevant product costs results in the following:

1. Improved product and pricing methods that can be carried out through the available more realistic information of product profitability
2. An enhanced understanding of the product line profitability of particular product groups with significant concentration on management to decrease costs
3. Costs characterized by accuracy presenting all overhead costs that are related to the product.

#### **2.1.2.2.3 Customer Profitability Analysis**

According to Narayanan and Sarkar (2002), customer profitability analysis is generally carried out through the calculation of profit acquired from a particular customer. Along similar lines, Khajavi and Nazemi (2006) refer to this technique as a customer account. Eventually, the overall profits and loss account are analyzed to create individual profit statement for every single customer (Cooper & Kaplan, 1991; Dearman & Shields 2001; Khajavi & Nazemi, 2006). On the other hand, Innes & Mitchell (1995a) asserted that this kind of analysis has enabled the revision of the profile of customer profitability and provided an encouragement for strategic decisions on pricing, service, distribution, promotion and policies (Anand, 2008; Dodd & Lavelle, 2002; Sievanen & Tornberg, 2002).

#### **2.1.2.2.4 ABC and Improvement in Financial Performance**

Although Cooper and Kaplan (1992) suggested that the main aim to ABC implementation is to increase profit not to give accurate cost allocation, the literature review indicated that a small number of studies had examined the impact of ABC on financial performance (Banker, Bardhan, & Chen, 2008;Nasser et al., 2009;Zaman, 2009).

Ittner, Lanen, and Larcker (2002) conducted cross sectional surveys in US manufacturing companies and found positive association between ABC and higher quality level and improvement in cycle time and quality, and they found indirect association between improvement in cycle time and quality and cost reduction. In addition, they also found no significant direct association between ABC and return on assets ROA.

Similarly, Cagwin and Bouwman (2002),Ittner et al. (2002)have conducted a cross sectional mail survey of responses from 210 internal auditors in USA companies to know if there is any positive association between ABC and improvement of financial performance in the company following the implementation of ABC. They measured the financial performance by using the change in return on investment ROI and tested the following three hypotheses:-

1. There is a positive association between the extent of ABC use and relative improvement in financial performance (compared with other firms in the industry).
2. The association between the extent of ABC use and relative improvement in financial performance is impacted by specific enabling factors.

3. A firm's relative improvement in financial performance (compared with other firms in the industry) is positively associated with the level of ABC success.

From the above hypotheses testing, they found that there is a positive association between ABC and financial performance but not significant. In other words, there is no direct association between ABC and ROI. But they found statistically significant net improvement in financial performance when ABC is used with enabling factors such as information technology importance of costs, absence of excess capacity, and a competitive environment, and also when ABC is used with other initiatives, such as TQM and JIT. Although Cagwin and Bouwman (2002) found no company statistical results about the third hypothesis, it appears that the variables are relatively good proxies for improvement in performance associated with use of ABC.

Kennedy and Affleck-Graves (2001) conducted an event-study by matching 37 companies that implemented ABC between 1988 and 1996 with the same number of non-implementing companies in UK. Three samples resulted by matching the market capitalization, market to book value ratio and net total asset. Buy-and-hold returns were computed for the ABC implementing companies and non-implementing for the three-year. They found a three-year return of 61% for the ABC implementing companies compared with 34% for their non-implementing counterparts. The outcome was significant at the 5% level. They also found a difference between the ABC companies and non-ABC companies under a range of accounting based performance measures such as return on shareholder equity, operating and turnover/assets employed. However, many

factors may impact this performance, meaning that the relation between ABC and financial performance may be indirect or mediated by other variables.

In this regard, Innes and Mitchell (1990) said it is very difficult to expect a relation between management accounting action and performance because many factors may influence the relation. The authors added that any kind of change or innovation requires time to improve the financial performance.

Banker et al. (2008) conducted a survey in US manufacturing companies to examine if there is indirect association between ABC and financial performance by examining the role of world-class manufacturing practices; WCM as a mediating variable between ABC and financial performance. They found positive indirect association between ABC and improvement in financial performance; by enhancing the capabilities of WCM practices, WCM will improve its financial performance.

World-class manufacturing practices include continuous process improvement, just-in-time manufacturing (JIT), competitive benchmarking, total quality management (TQM), and worker autonomy through the use of self-directed work teams. Advanced manufacturing practices provide the capabilities required countering rapid changes in customer demand, and improving levels of inventory, cost efficiencies, increasing flexibility of production facilities through the use of planning and preparation software, and improving overall company output (Banker, Bardhan, Chang, & Lin, 2006).

Zaman (2009) through an explanatory study in Australia, found that perception of ABC contains four factors. They are overall performance, strategic cost allocation method, increased efficiency and increased effectiveness. The regression outcomes are significant at the 5% level. This perception of ABC in conditions of strategic cost allocation method, increased efficiency and increased effectiveness has significant effect on firms' performance.

#### **2.1.2.2.5 Budgeting**

Activity-Based Budgeting or ABB is a novel method for building an enhanced continuing management process (Gupta & Galloway 2003; Innes & Mitchell, 1995; Stevens, 2004) and it is an approach that has its basis from the framework of ABC (Blekker, 2002; Brimson, Antos&Collins, 1999; Cokins, 2001; Cooper & Slagmulder, 2000; Gupta& Galloway, 2003; Stevens, 2004).

The aim of ABB is to authorize the supply of required resources for the performance of activities in order to carry out the budgeted production and sales volume. This technique is considered as the opposite of ABC product costing. With the latter, resources that are appropriated for activities and activity cost drivers are utilized to assign activity costs to cost objects like products, services or customers. On the contrary, ABB has the cost objects as the initial point and their budgeted output are used to determine the required activities which are in turn utilized for the estimation of the resources needed for the budget period (Brimson et al., 1999). ABB also presents as the basis for determining the amount of resources needed for the achievement of the budgeted level of activity. The

result of a survey taken from UK organizations by Innes and Mitchell (1995) revealed that 20% of the respondents are ABC users and majority of them (59%) utilized an activity-based approach for budgeting. On the other hand, 76% of respondents who are ABB users rated the provision of more realistic budgets which is the main benefit of ABB. ABB follows the following stages:

1. Provides an estimation of the production and sales by individual products as well as customers;
2. Provides an estimate of the demand for organizational activities;
3. Pinpoints the resources needed for the performance of organizational activities;
4. Provides an estimate for each resource and the quantity needed to meet the demand; and finally,
5. It carries out adjustments with regards to the capacity of resources in order to align them to the estimated supply.

The first stage of ABB is similar to that of conventional budgeting. In the stage following the initial one, ABB provides an estimation of the quantity of activity cost drivers need for every activity. A standard cost data including a bill of activities is recorded for each product, specifying various activities and the amount of activity drivers that are needed for the production of a particular number of products (Brimson et al., 1999; Cooper & Slagmulder, 2000). The estimation of the resources needed for the performance of the quantity of activity drivers are carried out in the third stage. For example, if the number of customer orders that are needed to be processed is estimated at 20,000, and it normally

takes 15 minutes to process, then 5, 000 labour hours supply is needed for customer processing activity.

The estimation of the resources in the third stage is used for the estimation of the total resources needed for each type of resource used by an activity in the fourth stage. In case of flexible resources, whereby the supply can be aligned to meet the quantity asked for, the quantity resources provided will be similar to the one demanded. Nevertheless, customer processing labour may be considered as a cost function. Having in mind that each person employed is contracted to work 1,500 hours per year, then 3.33 persons ( $5,000/1500$ ) will be the quantity of resources needed but due to the acquisition of resources in bulk amounts, then four persons are more appropriate to be employed (Brimson et al., 1999).

The last stage is where the estimates of the quantity of resources that are needed to be supplied for each resource are compared with the quantity of resources that are currently being used. In cases whereby the estimated supply of resource goes beyond the current capacity, additional spending must be provided that remains within the budget in order to receive the additional resources. On the other hand, if the demand for the resources is much less than the projected supply, the budgeting process should encourage management to either redeploy or decrease the resources that are not needed (Brimson et al., 1999; Cooper & Slagmulder, 2000; Gupta & Galloway, 2003).

According to Brimson et al. (1999) and Gupta and Galloway (2003), the significant difference between traditional budgeting and ABB lies in the fact that ABB generally concentrates on the factors that drive the costs and of the determination of the relationships that exist among the drivers that make the activities possible and not just confine itself to historical expenditure. Additionally, ABB distinguishes between the analysis involving cost/benefit and value of activities from more mechanistic budgeting exercises and thus decreasing the complexity of the budgeting process through its concentration on the management of business as opposed to just the concentration on the costs incurred (Anand, 2008; Kennedy & Affleck-Graves, 2001).

### **2.1.2.3 Limitation of Activity Based Costing**

Many researchers have written a great deal on the ABC advantages with considerable lack of awareness about its limitation. Al-Omiri (2003) indicated that ABC has many disadvantages as traditional costing system. For instance, to calculate unit product costs, batch level costs contain different group of units. The scenario is the same for product sustaining costs as it also contains a number of products produced. However, some of these products do not consume this cost and as a result, this will lead to wrong products costs. This is why more care is required in explaining ABC unit cost. Friedman and Lyne (1995) stated if the cost drivers are unique and different, method of cost driver could produce different product costs. Consequently, the decision in this situation may not be optimal.

Additional limitations are recognized by Drury (2000), which relates to the idea of reporting unused capacity. He said that unused capacity should not be allocated to

products or service, they must be considered as a period costs. Abdullah (1994) and Kaplan & Cooper (1998) argued that most of the factories tend to determine the cost of products before or during production life cycle for the purpose of measuring profitability. But some of these products have a long product life cycle and it is unreasonable to wait for the production process to finish knowing its profitability. Abu Elhijaa (2001) stated that using ABC may conflict with the Revenue Realization Principle and the Conservatism Principle.

### **2.1.3 Jordan's Business Environment and Economy**

This section mainly discusses the fundamental changes that the Jordanian business environment has witnessed over the last two decades. It provides a brief understanding of some of the issues that may influence management accounting innovations in Jordan such as ABC system implementation.

The section begins by exploring Jordan's economy from a number of standpoints, including the business environment in the country, together with new changes that have occurred. It also provides background information about the manufacturing industry. Finally, the section highlights the status of accounting in Jordan, the education and profession of accounting in the country, and the status of activity based costing system in Jordanian companies. The following overview is vitally important since it provides the reader with valuable information about the study context and further develops his/her understanding of the research area.

### **2.1.3.1 The Jordanian Economy and Jordanian Manufacturing Shareholding Companies**

The Jordanian economy is characterized as being market-oriented but it comprises of both private and public sectors and both sectors play a crucial role in the economy of Jordan, with the government also playing a crucial part in the economic regulation and the attraction of foreign investment. As a result, the manufacturing shareholding sector is considered today as one of the major potential economic sectors that the country should concentrate on developing for the achievement of economic growth (Central Bank of Jordan, 2007). The manufacturing shareholding sector is mainly privately owned and is characterized by small and medium sized companies (Hutaibat, 2005). The Jordanian manufacturing shareholding sector is a part of public shareholding companies. A public shareholding company in Jordan may be formed by two or more shareholders whose liability is limited to their respective share of the company's equity. The minimum authorized capital is set at a minimum JD 500,000. The subscribed capital must exceed JD 100,000 or 20 percent of the authorized capital.

Jordanian manufacturing shareholding sector contains 92 companies classified as the chemical, electrical, engineering and construction, food and beverages, glass and ceramic, tobacco and cigarettes, paper and carton, pharmaceutical and medical, printing and packaging and textiles and leathers industries, and mining and extraction industries.

Jordan's manufacturing shareholding companies were successful in establishing export markets bringing in the most sought after revenue into the country. There is no doubt that the overall contribution of the manufacturing shareholding companies to the Jordanian Gross Domestic Product (GDP) for 2005 rated at about 20% (Ministry of Planning

Report, The Economic Indicators 2009, Amman, Jordan, 2009). Consequently, this type of exports contributed around 93.5% of the national exports. According to a report, the total number of manufacturing establishments numbered to 21, 000 and they employ over 173, 000 employees; this represents around 48% of the total number of employees in Jordan as a whole (Ministry of Planning Report, The Economic Indicators 2009, Amman, Jordan, 2009).

At the onset of the 1990's, Jordan became a member of the World Trade Organization (WTO), and signed the Free-Trade Agreement with different parties, implying that Jordan has transformed into a prospective ground for the manufacturing sector's development and expansion (Central Bank of Jordan, 2007). Jordan's membership into WTO has precipitated the country's need to develop its economic sectors particularly the manufacturing shareholding companies as this is the core philosophy that runs a free market economy (Ministry of Industry and Trade, 2007).

In addition, Jordan's manufacturing shareholding companies have developed and grown to almost 21% of the GDP by 2006 as a consequence of the United States–Jordan Free Trade Agreement which was ratified in 2001 by the U.S. Senate. This agreement resulted in the setting up of around 13 qualifying industrial zones (QIZs) all over the country (Ministry of Industry and Trade, 2007). The QIZs generally provide duty-free access to the U.S. market and produces various manufacturing products particularly ready-made garments. In 2006, the QIZs were attributed to almost US\$1.1 billion in exports based on the statements from the Jordanian government (Ministry of Planning Report, The

Economic Indicators 2009, Amman, Jordan, 2009). In other words, Jordan's accession to the WTO resulted in more multinational companies establishing joint ventures or regional offices in Jordan and this resulted in changes regarding management accounting practices in Jordan. These modifications will be piloted by the need of the Jordanian companies to implement cost accounting innovations for the purpose of having a competitive edge in the market.

Significant economic growth in Jordan over the last two decades has resulted in a major increase in the number of accountants and currently the open economy is transforming into an export-oriented economy leading to major demands upon the accounting profession particularly in the light of their expertise and practicality. It is recommended that companies plan, control and makes decisions regarding projects that will result in the guarantee of their survival and this can be carried out only through the utilization of cost accounting innovations (Hutaibat, 2005).

Moreover, the fact that an increasing number of multinationals are setting up business in the region, is reason enough for Jordanian manufacturing companies to expect to be affected by foreign accounting practices. And in fact, even though "cost accounting practice is not universally uniform" (Luther and Longden, 2001, p. 315), certain practices can be adopted and implemented in the context of Jordanian manufacturing shareholding companies.

### **2.1.3.2 Accounting Education in Jordan and ABC in the Jordanian Companies**

In Jordan, the accounting course has its basis on the accounting theory and practice of the United States where most Jordanian academicians have graduated from (Hutaibat, 2005). Therefore, most Jordanian accountancy programs such as management accounting courses basically have similar course outlines as well as course titles to their American counterparts. In addition, most teaching and studies entailed in the management accounting in Jordanian Universities only “translates and introduces” western methodologies of management accounting (EI-Issa, 1990). According to Abu Elhijaa (2001), the responsibility in spreading and improving the awareness of Western management innovations and its advantages falls on academic institutions.

In the Jordanian Manufacturing Shareholding Sector, ABC is considered as the new cost accounting system (Al-Khadash & Feridun, 2006) and is known in the academicians’ echelons of students who were educated abroad as early as the 1990s (Hutaibat, 2005). As a result, ABC entered Jordanian literature in the early 1990s and became widespread in the country. Nevertheless, the discussions and debates surrounding the topic were confined at the conceptual and theoretical levels as opposed to the application level at that time (Khasharmeh, 2002). Eventually, in the middle of 1990s and early millennium, the ABC concept became widespread and was advocated through seminars, conferences as well as journals (Khasharmeh, 2002). But it has been asserted that the consideration of ABC within the Jordanian companies emerged from the company policies hailing from U.S.A or U.K. (Arafat, 2002; Hutaibat, 2005).

Along similar lines of study, Khaleel (2003) examined the limitations of traditional full absorption costing systems by implementing ABC as an alternative system in one of the leading companies in the Jordanian manufacturing companies. The study showed a significant variation between product costs as a result of the implemented ABC. Some products were produced below cost while others above cost. The researcher recommended that Jordanian companies implement ABC to eliminate products which causing loss.

Similarly, according to Al-Khadash and Feridun (2006), the level of awareness of the importance of utilizing management accounting innovations like ABC has been revealed to be significantly greater in financial managers in Jordan's manufacturing shareholding companies. Moreover, the authors assert that Jordanian manufacturing companies generally provide a suitable environment for the purpose of management accounting innovations adoption like ABC systems as they possess both funding and human resources.

## **2.2 Theory**

### **2.2.1 Diffusion of Innovations Theory**

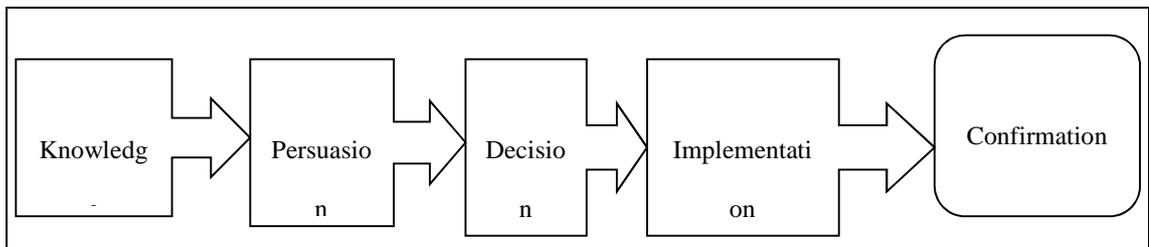
Environmental changes and shifting from using direct labor to using technology by most companies, led to increase of overhead rate and distortion in products cost. This situation has made traditional costing system unable to calculate accurate cost of product and service, and the information from this system has become more aggregated and too late to be suited for decision makers (Cooper, 1988; Johnson & Kaplan, 1987).

Johnson and Kaplan (1987) suggested that the revolution in industry and production technology need revolution in cost accounting systems like the use of activity based costing system. With respect to research relating to the adoption and implementation of management accounting innovations (such as ABC systems) it is important to know the theories derived from the literature of adoption and diffusion of innovation. Insights into how and why innovations diffuse across firms provide an insight into the factors influencing or motivating the implementation and diffusion of ABC systems.

Previous studies such as Bradford and Kent (1977) defined diffusion as a method or process by which an innovation is communicated through certain channels over time among the members of a social system. Diffusion is a special type of communication concerned with the spread of messages that are perceived as new ideas. However, they defined the innovation as a new idea, or old idea perceived as new by the individual or other unit of adoption. From the two definitions above, the Diffusion of Innovations can be defined as a theory of how, why, and at what rate new ideas and technology spread through cultures (Rogers, 1962). Studies on the diffusion of innovations were firstly related to medical drugs (Coleman, Kats, & Menzel, 1966) and new teaching methods. Researchers such as Carlson (1965) suggested that many innovations diffuse in similar patterns.

Roger (2003) provided distinction between innovation decision process (implementation process) and diffusion process. He said that implementation process happens within individuals but diffusion process happens within a society. Implementation process

contains five steps to adopt the innovation. This process ranges from first knowledge of an innovation to confirmation and even to the results of an innovation-decision. Figure 2.7 shows the five stages of the innovation process. The innovation-decision stage is a process whereby an adopter (individual or organization) passes from the first knowledge of an innovation to forming an attitude towards the innovation; the adopter then moves to a decision to adopt or reject, which may lead to the implementation of the innovation and finally to the confirmation of this decision.



Source:Rogers (2003), p. 170

Figure 2.7:  
*Roger's Adoption Process Stages*

The five stages are:

- **Knowledge stage:**here adopters become aware of an innovation through the different sources available in the social system;
- Persuasion stage:** the adopters become interested in the innovation and develop a mental acceptance, or make a decision to reject the innovation.
- **Decision stage:** the adopter engages in activities that lead to a choice to adopt or reject the innovation; this is the feasibility stage where the adopter assesses the benefits of the

innovation application and its anticipated future situation, then decides whether or not to implement it.

- **Implementation stage:** the adopter makes full use of the new innovation and applies it on a small or full scale in order to determine its utility in his/her own situation.
- **Confirmation stage:**(the last stage of the innovation adoption process) when the adopters seek support for the innovation-decision that has already been made in the previous stages and use the new innovation continuously and on a full-scale basis, applying any improvements for upgrades.

The adoption process of activity-based costing innovations varies greatly in the Jordanian Manufacturing Shareholding Companies, compared with the process described above. The evidence shows that some companies are at the adoption or implementation stage while others are not yet even at the knowledge stage (Al-Khadash and Feridun, 2006; Khasharmeh, 2002) and there are numerous factors influencing these variations. Therefore, the current study will examine which factors facilitate and motivate the decision to adopt and implement ABC within the Jordanian Manufacturing Shareholding Companies.

#### **2.2.1.1 Type of Innovation**

Numerous studies (such as Aiken, Bacharach, & French, 1980; Zmud, 1984; Damanpour, 1992) suggested that the distinction between innovation types is very important. This is due to the fact that this innovation has different attributes, and also their processes of adoption are not the same and the factors or variables which affect this type are different. Evan (1966) mentioned two types of innovations: technical and administrative innovations. Technical innovation is related to the basic work activity of the company,

and administrative innovations are related to company structure and administrative processes of the company. This is more directly related to the management. Most of the previous studies focused on the technical innovation compared to administrative innovation (Aitken et al., 1980; Daft, 1978). These authors also added that technical innovation adoption percentage was higher than administrative innovation adoption percentage.

Researchers often mentioned other types of innovations such as process, product, radical and incremental innovations. Process innovations mean adding new elements in the company process, for example, task specifications, input materials, and information used to produce a product or to support a service. Product innovations relate to new products or services to meet the required market. Finally, radical innovations are those that represent fundamental changes in the activities of the company and represent clear departures from existing practices (Dewar & Dutton, 1986; Utterback & Abernathy, 1975).

### **2.2.1.2 Elements of Diffusion Innovation Theory**

Roger's (1995) Definition of diffusion contains four elements in the diffusion of new ideas. These elements are:

#### **1. Innovation**

Diffusion scholars such as Askarany and Yazdifar (2007); Roger (1995) recognise five qualities to determine why certain innovations spread more quickly than others, and which attributes determine adoption percentage. These attributes are: -

a) Relative Advantage:

This attribute attempts to know the degree by which the new innovation can gain relative advantages to the company. It also can be defined as the degree to which it is perceived to be better than what it supersedes. Rogers (2003) said that the relative advantage of an innovation can be measured by using some tools. For example, task done in a quicker and easier way can improve the quality of service, increase the effectiveness of the task, and can achieve greater control over work processes.

b) Compatibility: This attribute tries to know the degree to which the new innovation is consistent with existing values and past experiences, and need potential adopters. Roger (1995) claimed that for any innovation or new idea, the adoption percentage for an incompatible innovation with the values and norms of a social system will be slower compared to a compatible one.

c) Complexity: This attributes try to know the degree to which the new innovation can be understood by the members of social system. Roger (1995) said that if the new innovation was easy to understand and use, it will adopt more rapidly than innovations that require the adopter to develop new skills and understandings. Roger (1995) added that people are different in their abilities to understand any new innovation or idea.

d) Trialability: This attributes try to know the degree by which the new innovation can be experimented on a limited basis. It also refers to the possibility of implementing the innovation on a trial basis before full implementation (Rogers 1995, 2003). Also, he

claimed that new innovation that is experimented on a limited basis, in general, will be adopted more quickly than innovations that are not tried.

e) Observability: This attributes try to know the degree to which the results of an innovation or new idea are visible and clear for all members in the social systems. According to Moore and Benbasat (1991), if the benefits of innovation are clear, these can be easily reported. Moreover, if the adoption or use of the innovation enhances the profile and reputation of the company, this will encourage others such as friends and neighbors to adopt it.

## **2. Communication Channels**

Communication is the process which can allow for participants to share their information among them in order to arrive to a new idea or new knowledge. Communication channel is concerned about the method of sending or exchanging information. Roger (1995) said that interpersonal channels are more effective in forming and changing attitudes toward a new idea, and thus it has an effect on the decision to adopt or reject the innovation. However, mass media channels are more effective in creating knowledge of innovations, and they are influential in the adoption or rejection of an innovation or new idea. This influence is less than the interpersonal channels because in this case the persons' evaluation of any new idea is through the opinions of near-peers who have adopted the innovation.

### **3. Time**

Time contains three perspectives that influence innovations which are as follows:

- a) Innovation-decision process
- b) The degree of adoption by the company or units with time compared to other members of a social system.
- c) Innovation's percentage of adoption.

### **4. Social System**

A social system is defined as a group participating in solving same problem to establish a common goal. The members of a social system may contain individuals, informal groups, organizations, and/or subsystems.

#### **2.2.1.3 The Different Perspectives to Innovation Research**

Innovation diffusion has been studied from a wide range of perspectives. As mentioned before, the studies on the diffusion of innovations were related firstly to medical drugs (Coleman et al. 1966) and new teaching methods. Researchers such as Carlson (1965) suggested that many innovations diffuse in similar patterns. Wolfe (1994) found that most literatures contain three visible streams developing somewhat sequentially. These three streams are concerned with the general phenomenon of organizational innovation. But the researchers focused differently to these streams to suit their different research topics and questions. The three perspectives of this research are:

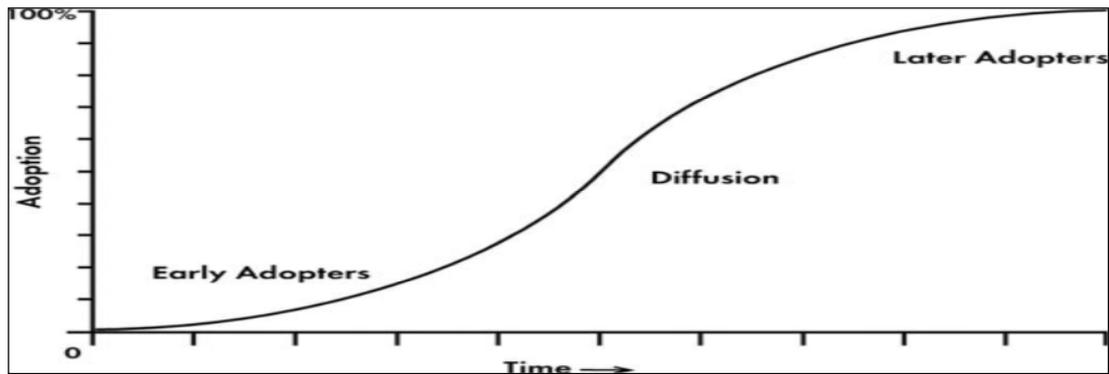
1. Diffusion of innovation research (DOI).
2. Organizational innovativeness research (OI).

### 3. Process Theory Research (PT).

#### **2.2.1.3.1 Diffusion of Innovation Research (DOI)**

The major aim of diffusion innovation theory is to speak, clarify, or predict rates and patterns of innovation adoption over time and/or space. The research question is: what is the pattern of diffusion through a population of possible adopter organizations? The diffusion innovation tries to know the innovation attributes presumed to affect innovation (e. g. relative advantage, compatibility, and complexity). It also tries to segment the adopters who have different characteristics that may determine their decision to adopt. Examples of such characteristics are: innovators, early adopters, early majority, late majority, and laggards (Cooper & Zmud, 1990).

Rogers (1995) stated that at first, the adoption decisions will start slowly, and the number of adopters will not be high due to the uncertainty about the results of the new innovation. After this stage, the price of the new technology will drop and the innovation establishment will be cheaper causing a surge in demand (Attewell, 1992). Consequently, the number of adopters will increase rapidly as many firms will start adopting this innovation and the contagion will be very wide. In the final stage, the adoption of the innovation will be saturated and the number of new adopters will decrease, this being representative of the upper plateau on the “S” as shown in Figure 2.8.



Source: Bjornenak (1997), p. 6

Figure 2.8:  
*S-Curve of Innovation Diffusion*

Jensen (1982) argued that diffusion innovation theory fails to provide behavioral explanation why some firms are quicker to adopt than others. This theory focuses on innovation at the aggregate level. Moreover, it does not give any concern to individual organization adoption decision.

#### **2.2.1.3.2 Organizational Innovativeness Research**

On the other side, the objective of organizational innovativeness (OI) research is to discover the factors determining an organization's tendency to innovate. OI theory focuses to the individual firm as a unit of analysis. The research question is, "what determines organizational innovativeness?" Early adopters are contrasted with late adopters to generate a list of factors that relate to early adoption. There are five adopter categories, or classifications of the members of a social system on the basis of their innovativeness. Following is the brief discussion of these categories:

a) Innovators: These types of innovators like adventurers are willing to take risks. Thus, the innovators are the first individuals to adopt a new idea. Roger (1995) described them to be usually youngest in age, have the highest social class, have great financial lucidity, very social, have closest contact to scientific sources, and interact with other innovators. The innovator plays an important role in the diffusion process because they get new ideas for the system for supporting the system.

b) Early Adopters: Roger (1995) said that the early adopters are more integrated with the system or innovation than are the innovators. Whereas innovators are cosmopolites, early adopters are localities. This type is the second fastest category of adopters who adopt the new idea after the innovators. These individuals have the highest degree of opinion leadership among the other adopter categories. They are typically younger in age, advanced in education, have more financial lucidity, and are socially more forward compared to the late adopters.

c) Early Majority: This category of individuals adopts the new idea taking a varying degree of time. They are more than the innovators and early adopters and usually are slower in the adoption process. They usually contact with early adopters to collect some information, and show some opinion leadership.

d) Late Majority: This category of individuals adopts the new idea or innovation after the average member of the society. They are late because they have a high level of skepticism about an innovation, and usually they have very little financial lucidity, below average social status. They are in contact with others in the late majority and early majority. In addition, they have a very little opinion leadership.

e) Laggards: This category of individuals is the last to adopt an innovation. Individuals in this category are different from the previous categories. They do not have opinion leadership. These individuals usually hate the change to any new innovation. Usually they focus on traditions and have lowest financial flexibility, lowest social status, oldest of all other adopters. They just contact with their family and close friends and have very little or no opinion leadership.

Most research studies concerning organizational innovativeness depended on a regression model that attempts to expound the variance in the dependent variable (Mohr, 1982). As the dependent variable, organizational innovativeness, has generally been operationalized as a composite score on the basis of the number of innovations adopted by an organisation. Factors such as firm size, profitability of an innovation, innovation champions inside the firm, production type, degree of centralisation, proportion of specialists and intensity of competition have been associated with innovation adoption (Bjornenak, 1997; Kimberly & Eviansko, 1981; Krumwied 1998; Wolfe, 1994).

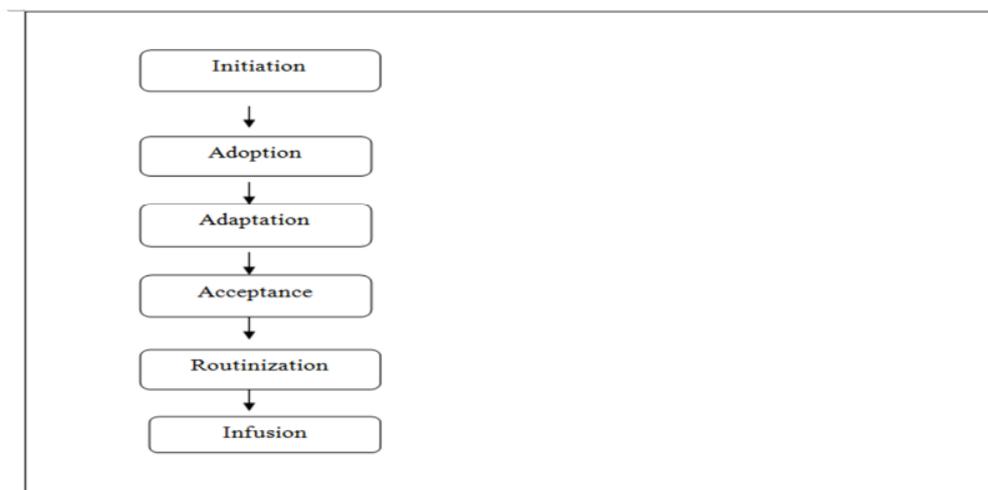
#### **2.2.1.3.3 Process Theory Research**

Process theory research of organizational innovation tries to explain and clarify the nature of innovation process. Unit of analysis of process theory research is the innovation process itself. This theory tries to find an answer to the following research question: what are the processes that organizations go through in implementing innovations to determine organizational innovativeness? These theories try to answer why and how innovations emerge, grow, develop, and probably end.

In this regard, Lewin (1952) presented organizational change theory model, which is categorized as a series of three steps:

- (1) Unfreezing;
- (2) Moving (or change); and
- (3) Refreezing.

Cooper and Zmud (1990) adopted Lewin's model in IT implementation process consisting six sequential stages: initiation, adoption, adaptation, acceptance, routinization, and infusion. Also researchers depended on the IT stage model to describe each stage of ABC implementation process. Figure 2.9 shows Cooper and Zmud (1990) Model of the IT Implementation Process.



Source: Cooper and Zmud (1990)

Figure 2.9:  
*Model of the IT Implementation Process*

1. Initiation: This stage occurs when the company feels problems at the conventional approach. This will make pressure to change from TCS, creating the possibility of using a new system.
2. Adoption: This stage occurs when there is approval from top management to implement the new system and involves the decision to invest necessary resources for the implementation.
3. Adaptation: In this stage new system will be developed and installed, for example, in ABC implementation this means the implementation team will analyze the costs and link them to activities. After that, the team will identify cost drivers and trace these activities to outputs, such as products and services.
4. Acceptance: Organizational members are induced to be committed to IT application usage, and the IT application will be employed in the work.
5. Reutilization: In this stage the new system will be used as a part of normal activities in the company and it will be used by different departments except the accounting/finance function for decision making.
6. Infusion: In this stage, the new system will be integrated with other organizational systems, advantages of which will increase the organizational effectiveness of the new system.

Anderson (1995) used the first four stages of the Cooper and Zmud (1990) stage model as a structure for describing the implementation of ABC. This description was based on the case study at the general motors' company. He found evidence to support the theoretical model. He also found that technological factors impact the successful implementation

of ABC. The search for the factors that influence the ABC implementation success was guided by the information technology (IT) and organizational change literature, as well as subjective evidence of factors that influence the success of ABC implementation.

However, Bjornenak (1997) suggested that diffusion of innovation research gives an explanation of how and why an innovation diffuses over time. On the other side, organizational innovativeness tries to determine the differentiating uniqueness that separates the early and late adopters. Process theory research helps to distinguish the stages and processes contained in organizational innovation.

#### **2.2.1.4 Implementation and Culture**

Most companies can plan comprehensive strategies, but have difficulties in implementing them because the assumptions which the plans were based on are out of line with the company's prior assumption. However, when the culture is made explicit and taken into account, both planning and implementation can be made more realistic and acceptable to members. During periods of uncertainty or time limitation, companies may encounter difficulties in making or implementing decisions and policies. When spontaneous responses are required under vague circumstances for appropriate feedbacks, then culture can be used as a compass and a set of "guiding principles" in aiding organizational members by pointing to the right direction (Sathe 1985; Supitcha & Frederick, 2001).

#### **2.2.1.5 Culture**

Culture has always been considered as being significant to organizational and management accounting studies as it is a contributory factor that influences human

attitudes and behaviours. In this regard, Beres and Portwood (1979) claim that individuals are not normally born with culture but they acquire it through learning process whereby for the sake of survival, the state of the environment is taken into consideration. Culture is generally defined as the symbolic expressive element of human behaviour (Frost, 1991). In addition, culture's impact on people is to a slight degree and is most of the time hidden until the people's beliefs and values are revealed to be incompatible (Sathe, 1985). According to Hofstede and Bond(1984), value is considered to have a broad inclination to opt for particular states of affairs over others. In addition, Hofstede (1983) believes that organizations possess value systems which form a part of their organizational or corporate culture. The author added that there exist 50% of dissimilarities among work related value patterns of the organizational workforce. In this regard, Davidson and Thompson (1980) believe that beliefs are considered as the cognitive element of a person's attitude where each belief shows a piece of information that an individual has about a particular object. On the other hand, Smith (1980) asserted that the more knowledgeable an individual is, the quicker he will be able to perceive the change and the easier he will find to redefine these beliefs to suit his needs and interests.

#### **2.2.1.6 Alternative Explanations of Innovation Diffusion**

Abrahamson (1991) concluded that there are different perspectives of the diffusion innovation. The most popular perspective is pro-innovation biases. Pro-innovation biases are presumptions that any new innovation will diffuse if this innovation achieve benefits to the organization. He argued that new innovation will disappear if the organizations found it non-beneficial. Abrahamson (1991) opposes this idea because there are many

firms which may adopt new idea without expected benefit. Some even may reject a beneficial idea. He assigns some perspectives that may take the role when the firms will imitate other firms' decisions to adopt technically inefficient administrative technologies or imitate other firms' decisions to abandon technically efficient technologies. These four perspectives are:

### **1. Efficient-Choice**

Under this perspective, the level of uncertainty about the aim of a company or the measurement of the technical efficiency of an innovation will be very little. In these conditions companies will sensibly choose the innovation that can allow them to achieve their aims. The general assumption in innovation diffusion literature is that adopters of an innovation are rational and make independent and technically efficient choices (Gosselin, 2006). This efficient-choice perspective reinforces pro-innovation biases because it suggests that a rational adopter never decides to adopt a technically inefficient administrative technology or reject a technically efficient administrative one (Gosselin, 2006; Rogers, 2003).

This perspective builds on the idea of performance gaps. Performance gaps are discrepancies between a company's goals and what it can attain (Abrahamson, 1991). Malmi (1999) suggested that the rapid changes in the environment may cause performance gaps in the company. Companies with similar goals are likely to respond to the performance gaps by implementing the same efficient administrative technologies (innovations). But companies which do not encounter these gaps, or have

different goals, will not implement these new innovation. Innovations are adopted when they help to decrease performance gaps found due to the changes in the new environment (Abrahamson, 1991). Sometimes they are adopted when they help to accomplish different management requirements. As the theories based on the efficient-choice perspective suggests, companies decide the adoption and rejection of innovations themselves. Therefore, their behavior is not imitative.

## **2. Forced-Selection Perspective**

Under this perspective, a number of companies with controlling power can force other companies to adopt or diffuse new administrative technologies. These influential companies may have interest to force another company to adopt a technically inefficient administrative technology. This can also happen for the case of an efficient technology to be abandoned. These are often regardless of companies' confrontation to adopting or rejecting the new innovation.

Based on this perspective, researchers argued that the legitimate authority of government allows forcing the diffusion of innovations. For instance, based on forced-selection perspective, accountancy professionals will determine the best method for cost allocation, pricing decisions, inventory valuation and income measurement. Malmi (1999) suggested that forced selection assumes that adopting companies face a situation of no option. Their motives play no function in illuminating the diffusion and rejecting innovations.

### **3. Fashion Perspective**

According to the fashion perspective, an organization will try to imitate other companies outside the same organizational group. Uncertain circumstances can link their aims and technical efficiency. Under this perspective, the organization will also be concerned with strong or superior companies to imitate. Their concern with the innovation which they tend to adopt will be very little. Although fashion setters do not have coercive authority to force companies to imitate or go after them, their capability to influence stems from their capacity to motivate companies to trust their option of innovation and follow them. The administrative technologies created by the fashion conditions companies may or may not be efficient (Abrahamson, 1991).

Therefore, they may encourage the adoption of efficient technologies and rejection of inefficient technologies. On the other hand, they may choose only those they think of as profitably marketable, despite their technical efficiency in the companies.

### **4. Fad Perspective**

Under fad perspective, diffusion of innovation will be adopted when companies within a group follow other companies within that group. This is different from fashion perspective, which occurs when companies follow other companies outside the group. Companies imitate other companies in order to comply with the developing norms (Malmi, 1999; DiMaggio & Powell, 1983). Fad process is a condition where companies with low reputation on certain characteristics will follow the innovation of the more reputed companies (Abrahamson, 1991).

Abrahamson and Rosenkot (1993) give another explanation of the fad process. They explain that companies inside a group may face bandwagon pressures. These are the diffusion processes forwarded to companies to adopt an innovation. This pressure is a result of a bandwagon pressure caused by the sheer number of companies that have implemented the innovation. And it is not because of their individual appraisal of the innovation's efficiency or returns.

Previous studies suggested two stages of fad perspectives encouraging the innovation to diffuse. Firstly, rational decision-making will control. In this stage, the organization adopts the innovation after appraisal of the technical efficiency. The second stage returns to bandwagon effect, which happens when group of companies that compete with each other have adopted the innovation.

This encourages non-adopter to adopt the innovation by imitating these companies because the value of this innovation will increase. The stakeholders' requirement may also cause pressure to adopt the innovation. Non-adopter can imply that management of the company does not put sufficient weight to its aims and is not able to discover ways to attain these aims efficiently. This can push them to end their contribution to the company, with considerable amount of negative penalties (Meyer & Rowan, 1977).

Malmi (1999) suggested that the fad or fashions have negative connotations, and does not build rational decision and that innovation adoption within a group does not necessarily take the form of a fad. Perhaps, over the time, information is exposed from early adopters

helping the late adopters to adopt an economically rational decision in a technical economic sense. Figure 2.10 shows Abrahamson's four perspectives:

		<b>Imitation processes do not impel the diffusion</b>	<b>Imitation processes impel the diffusion or rejection</b>
<b>Outside-Influence Dimension</b>	<b>Organizations within a group determine the</b>	<i>Efficient - choice</i>	<i>Fad</i>
	<b>Organizations outside a group determine the diffusion and rejection</b>	<i>Forced selection</i>	<i>Fashion</i>

Source: Abrahamson(1991), p. 591

Figure 2.10:  
*Imitation-Focus Dimension*

### 2.2.1.7 Diffusion Innovation Supply Side

There are two sides to diffusion process: demand side and supply side. Researchers, such as Bjornenak (1997), stated that most organizations require persuasion to adopt an innovation. This persuasion may be in the form of awareness and expression. For example, the adopters or consultants may perform an important function as drivers of the diffusion process. He also provided attention to the importance of different resources such as books, articles, media seminars, and conferences, as the infrastructure in the diffusion process. These infrastructural elements may account for telling and convincing possible adopters.

According to Abrahamson (1996), there is a positive association between the number of publications and the innovation. He suggested that an increase in the number

of publications should precede and lead the adoption of an innovation. Clarke et al. (1999) studied the state of management accounting practices in Ireland. The data were collected by a questionnaire mailed to 511 Irish manufacturing companies. They found ABC systems were not as widely used within Irish companies as within companies in the USA, the UK, and Canada because "the practice of management accounting in Ireland is marginalized". In other words, Irish management accountants work as record-keepers rather than innovators and decision-facilitators possibly due to supply and demand barriers. For instance, universities do not supply business companies with creative and problem-solving graduates (accountants and managers), whilst companies and professional bodies do not change demand in the education of accountants and managers. Also, the results indicate that ABC was not well understood by Irish management accountants. However, Malmi (1999) suggested that researchers must incorporate both the supply and demand side to interpret the diffusion process.

#### **2.2.1.8 Diffusion of innovation Literature Applied to ABC Empirical Studies**

Few studies in the literature described the diffusion of innovation such as ABC. For example Malmi (1999) conducted his study in Finnish companies to find ABC adoption rates during the period 1986-1995. He identified three phases: the initial phase, the take-off phase, and later phase representing the period after 1992. Malmi tried to discover which of the factors influence the ABC adoption decisions. He examined nine factors containing six efficient-choice factors, one is forced selection factor and two are fashion and fad factors.

Malmi (1999) arrived in the initial phase that most factors return to the efficient-choice group. He also studied the supply side and arrived that consultants do not have important position in the initial phase. At that time he found no education and courses offered for ABC. In addition, there was no appropriate software for ABC, no local firms to imitate and a there was lack of knowledge and awareness of ABC. Therefore, the adoption rates is not attributed to fad or fashion perspectives in this phase. Malmi found that most of the adoption decisions were adopted by efficient-choice perspective not by forcing or any imitating decisions.

In the second phase, Malmi (1999) found that the factors influencing the adoption decision are from fashions perspectives and rational choice (efficient-choice). Also, he suggested that consultants have a role in the adoption of innovation in some organizations. The trend of publishing articles about ABC in this phase is increasing. However, he found that fad perspectives do not influence the adoption decision; rather the force toward the innovation adoption comes from outside groups.

Regarding the later phase, during the period after 1992, Malmi arrived to the conclusion that organization implemented ABC because their headquarters implemented it. He also stated that the influence of efficient-choice factors on ABC adoption is more than that of the imitation in this late phase. He added that availability of computers and IT in this phase will help to create suited software and decrease the costs of ABC system installation.

Previous research suggested that fashion-setting companies may be able to influence the adoption decisions, especially when the firms start to get information from other companies. Both positive and negative information may reduce rational decision making in the institutions (DiMaggio & Powell, 1983). Malmi also suggested that after take-off stage, efficient choice and fad perspectives illustrate adoption behavior in a company. Force factors for the ABC adoption comes from inside the group of the adopter companies.

Beside Malmi, numerous studies (such as, Innes & Mitchell, 1997) examined Abrahamson's four perspectives to know which of these perspectives influence the innovation adoption. They found that most of these companies were adopting ABC based on efficient-choice, not based on imitation to reduce the costs. In London, Kennedy and Affleck-Graves (2001) added that better financial performance was evident for the companies that were using ABC and this was the indication of the rational choice as the basis for implementing the decisions. Ballas and Vineris (1996) found that four companies from 23 Greek companies adopted ABC because the parent companies were adopting it. However, above argument indicates no reliable connection between Abrahamson's four perspectives and the ABC adoption.

Many studies conducted research on the process innovation theory. The research was also extended to the segment of ABC adoption and non-adoption based on the idea that ABC is an innovation. Gosselin (1997) argued that innovation process is generally related to four characteristic stages: adoption, preparation, implementation and reutilization. Gosselin

concluded that in adoption stage, the organization will take the decision to adopt or reject the new idea, and then the organization will need to prepare resources to support the innovation (preparation). After the implementation stage innovation will be a part of continuous practice (reutilization).

Gosselin (1997) segmented activity management into three levels: activity analysis, activity cost analysis and activity based costing system. He argued that activity analysis and activity cost analysis are technical innovations because they focus mostly on processes and activities. He also added that ABC is an administrative innovation because ABC innovation may guide to new administrative actions, policies, and organizational structures. Rogers (1995) said that technical innovations are easier to adopt and implement in organic organizations. Damanpour (1991) also found that mechanistic structure facilitates the implementation of administrative innovations. However, Gosselin's study also found that the company's strategy plays a positive role for an innovation in the activity management department. Organizational structure affects the ability of the company to implement innovations. Organic organizations are more evident to adopt activity analysis and activity costing, but mechanistic organizations are found to be more successful in the ABC adoption and implementation.

Askarany (2009) said that he conducted two surveys in 2003 and in 2007 in Australia, to know the diffusion and extent of management accounting innovations such as activity based costing, activity based management, strategic management accounting, benchmarking, balanced scorecard, target costing, and the relation between

these innovations and organizational satisfaction. Askarany in Australia found that the adoption rate of ABC in 2003 is 19% and in 2007 it is 23.4%. Similar trend was also found for another management accounting innovation. One exception is target costing, which fell from 55.8% to 17.9%. This observation could be an interesting subject for additional investigations. Although the researchers concluded about a lack of association between management accounting innovations and satisfaction, the results of the second study in 2007 found a positive association between the satisfaction and management accounting innovations except for the case of target costing. One possible reason behind the change of outcome after the four year period (from 2003 to 2007) could be the increase in awareness, education, and experiences of new innovations implementations. Askarany recommended future research to shed light on the factors behind the positive results discussed above during 2003 to 2007 in Australia.

## **2.2.2 Management Accounting Change**

### **2.2.2.1 Factors Influencing the Process of Change in Management Accounting**

The literature review shows the difference in the concept between innovation and change. Bradford and Kent (1977) and Firth (1996) argued that an innovation means adoption of a new idea or previous idea in a new circumstance, or in a new setting. But change is not necessarily to be new innovation or new idea. Zaltman, Duncan and Holbek (1973) argued that:

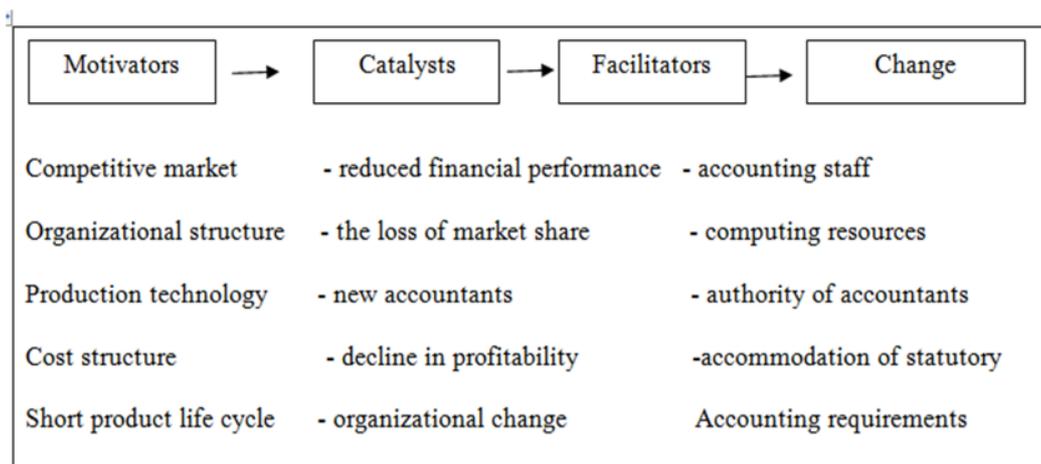
“Although [all] innovations imply change, not all change involves innovations since not everything an organization adopts is perceived as new” (p. 158).

Despite the difference between these two concepts, the factors affecting the process of change in management accounting are also affecting the innovation adoption process. In their study of seven companies in the electronic sector, Innes and Mitchell (1990) found three types of factors influencing management accounting change process. These factors are facilitators, motivators and catalysts.

Facilitator factors provide managers with the favorable conditions that are necessary but not sufficient by themselves for a management accounting change. It makes the management accounting changes easier and more successful. Some examples of these facilitators are: the availability consultants, training and availability of adequate resources such as accounting staff and computing resources. Second type is motivator factors which influence to change in general manner. Some examples of these motivators factors are: the competitiveness of the market, the product cost structure, and production technology. The last type of factors includes the catalyst factors which are directly linked to the changes. Examples of these factors are poor financial performance, loss of market share, new accountants, and decline in profitability. These factors are also explained by Abrahamson's (1991) model.

These groups of factors were thought to be linked in the sense that the motivators provided the impetus for the emergence of catalysts, whilst the facilitators paved the way for subsequent change initiatives. Particular attention was paid to changes in product costing and performance measurement practice. Changes in these practices were mainly

ascribed to technical factors, such as the need for more accurate cost estimates and more timely and non-financial performance information in increasingly competitive and dynamic environments. Figure 2.11 shows the process of change in management accounting as introduced by Innes and Mitchell (1990).



Source: Innes and Mitchell (1990) p, 14

Figure 2.11:  
*The Process of Change in Management Accounting*

However, the change in management accounting emerges from the catalyst factors. Motivator factors provide the drive and encourage the emergence of the catalysts. However, facilitators aid to make the change easier and successful. Innes and Mitchell (1990) argued that the interaction of the three factors (Motivators, Catalysts, and facilitators) will encourage and determine the natural process of change and developments in management accounting.

Previous studies (such as Awasthi, 1994; Brausch, 1992; Cobb, Hillier & Innes, 1995; Kasurinen, 2002) argued that any change may face many barriers and problems before or

during the implementation. Cobb et al.(1995), in their study on management accounting system change in banks, found many barriers and problems during the implementation of ABC, which mostly led to failure of the change process, such as resistant attitudes to change or changing priorities during the change process.

Cobb et al. (1995) also focused on the central role of certain key individuals to overcome the barriers of implementation. They criticized Innes and Mitchell's framework because it neglected barriers and problems of change. Their focus in the framework is only on the change process outside the organization is therefore a limitation when determining the change happening inside the organization. Another limitation is the neglected authority of individuals on this change. Leaders with momentum for change can help to overcome the barriers and problems bring about the change.

Figure 2.12 shows the Cobb et al. (1995) accounting change model. Cobb et al. (1995) seems superior to models that regard change as being caused by either individual actions or organizational structures. However, Cobb et al. (1995) stated that the objective of their model is not to explain diffusion, but to explain the change caused by either individual actions or organizational structures.

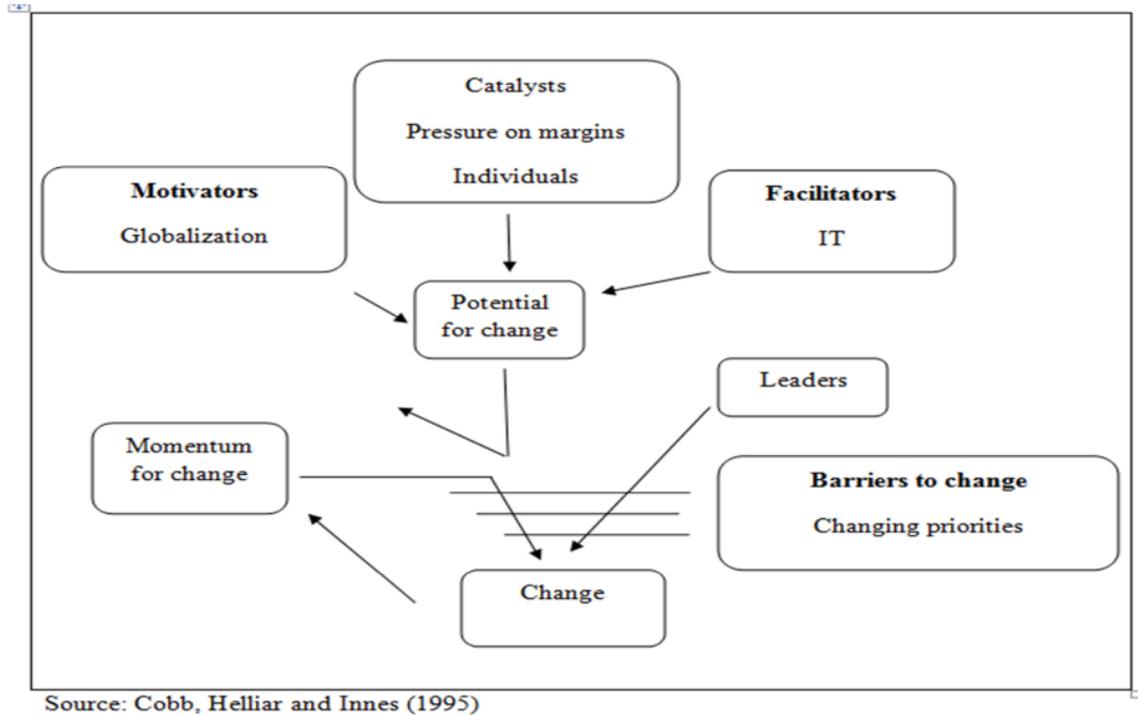
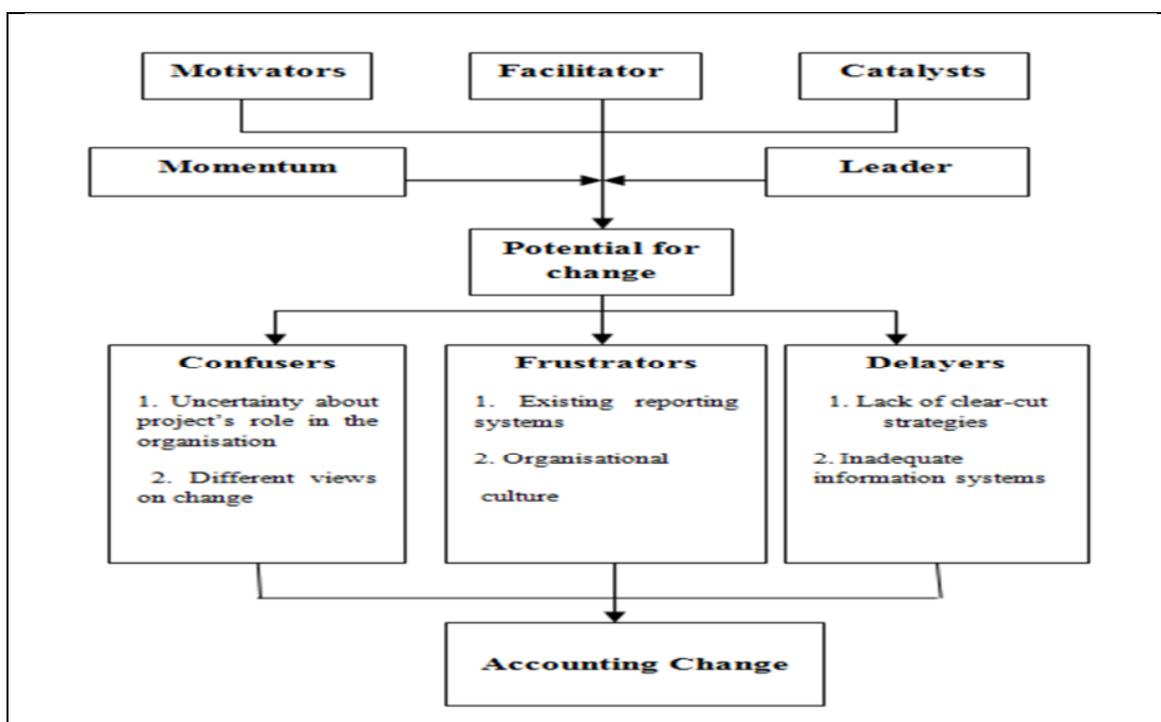


Figure 2.12:  
*Accounting Change Model*

Kasurinen (2002), while studying the implementation of BSC in a Finnish manufacturing company by case study, added a final refinement to Cobb et al. (1995) model. He segmented the problems and barriers of change to three categories. These categories are “confuses”, “delayers” and “frustrates”. Confuses factors “disrupt” the case project; for example, the disagreement between the project objectives of the department and the business unit management, linked with doubts about the project’s future role in the organization. Secondly, “delayer” factors are more technical and temporary in nature and often relate to the new managing technology in question and inadequate information systems. Thirdly, “frustrate” factors relate to the factors that “suppress” the change effort in the organization. The following diagram shows Management Accounting Change Model Based on Kasurinen (2002).

Figure 2.13 illustrates the difference of leaders' role between models of Cobb et al. (1995) and Kasurinen (2002). According to Cobb et al. (1995), it is a method to overcome the barriers, while according to Kasurinen, leader and momentum will help to create the potential for change. They also agree to the role of barriers in the change. However, Kasurinen classified these barriers in three categories.



Source:Kasurinen(2002)

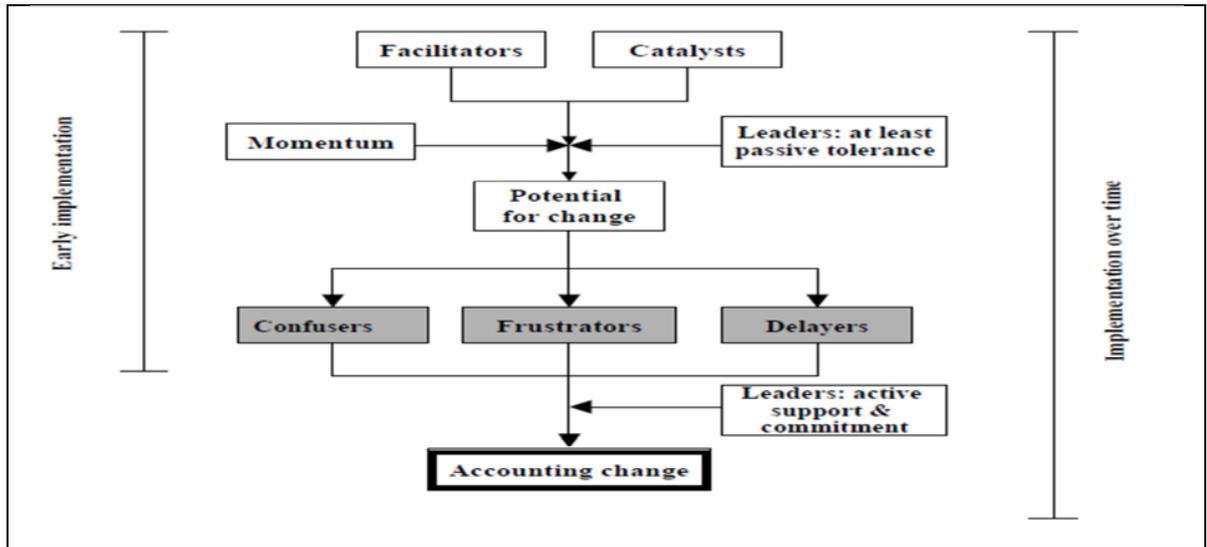
Figure 2.13:  
*Management Accounting Change Model*

Wenisch (2004) conducted a case study in Sweden's large sized multinational companies. The empirical data describes five years of BSC adoption and implementation process in five business divisions. Wenisch (2004)'s study is an extension of Kasurinen (2002)'s model that investigated the impact of implementation types (top down or bottom up) on the change process. He also investigated the level of success of the firms. The difference

between bottom-up and top-down implementation became even clearer when considering the role of leaders. Kasurinen's model contains a precondition for leaders to create a potential for change in the early implementation process, but Wensich (2004)'s study shows that the role of leaders is significantly more complex and that it changes over time and it influences all implementation stages.

Wensich (2004) found that during the top-down implementation process, most of the factors influence the change process and are considered facilitators such as IT-support and catalyst factors that can be directly associated with change; for instance, fashion perspective. Wensich also found lack of motivator factors that influence the change in a general manner like globalization. This type of factors is not experienced by the change implementation division. This is due to the change process having been enforced in a top-down manner, where motivators would instead have an impact on the initial adoption decision on the top management level.

Figure 2.14 below shows Wensich (2004)'s model based on Kasurinen and Cobbe et al.'s model but focuses specifically on a top-down BSC implementation in large sized companies.



Source:Wenisch (2004)

Figure 2.14:  
*Accounting Change Model for Top-Down Implementation*

In this regard in ABC management accounting change,Nasseret al. (2009) conducted their study only by questionnaire survey in Jordanian industrial sector to know the implementation percentage and factors influencing the implementation.They found the implementation percentage to be 55.7%. Nasser et al. (2009) neglect the role of catalyst factors on the adoption and implementation of ABC and they also used only questionnaire survey to examine these factors while previous studies suggested that only questionnaire do not provide proof that companies saying to be ABC adopters are really ABC adopters, and it provides ambiguous results(Al-Omiri & Drury, 2007a).

However, most previous studies do not explain the diffusion of innovation(change) inside the organization.In addition, studies do not give clear evaluationto the success or failure after implementing ABC system. Kasurinen (2002) and Wenisch (2004) recommended

that future studies must explain and evaluate the success and failure in the implementation of management accounting innovations such as ABC and BSC.

In the current study, the researcher will explain the success and failure measured by using different attributes. The measurement of the success is done after segment adoption and implementation to stages and measurement of the success is done at the using stage at site of ABC maturity. While all the previous studies have used one or more measures, they have not segmented or measured success at site of ABC maturity. This is why their results were vague and inaccurate.

## **2.3 Activity-Based Costing (ABC) Systems: Empirical Literature**

### **2.3.1 The Extent of Activity Based Costing System Implementation**

Studies on the adoption and implementation of activity based costing suggests that the adoption percentage of ABC is increasing in different countries in the world, especially in developed countries (Baird et al., 2004; Cohen et al., 2005; Kaplan & Anderson, 2004; Kiani & Sangeladji, 2003; Sapp, Crawford, & Reibischke, 2005). In the USA, UK, Australia, Greece and Ireland, for example, surveys between the early 1990s and 2005 have indicated an increasing trend of ABC adoption percentage. For example, Kiani and Sangeladji (2003) found that the adoption percentage of ABC in US manufacturing companies has increased from 25% to 52%.

In European countries such as, UK, the adoption percentage has increased from 6% (Innes & Mitchell, 1991) to 20% (Innes & Mitchell, 1995) or to 23% (Tayles & Drury, 2001).

Similarly in Canada, Armitage, and Nicholson (1993) claimed that the adoption percentage is 14%, whereas Husseini et al. (1997) found this percentage in Canada is 20% in the same companies. In Ireland, Clarke et al. (1999) found the adoption percentage to be 12% in manufacturing firms but Pierce and Brown (2004) found the adoption percentage in this country to increase to 27.9%. Similar results are found in Australia; the adoption percentage was 12% in manufacturing companies (Booth & Giacobbe, 1997) which increased to 56% (Chenhall & Smith, 1998). Askarany (2009) argued that this increment to be to 19% in 2003. Further increase was evident in 2007 to 23.4%. Overall, the surveys from 1997 to 2005 suggest adoption percentage of ABC is between 12.7% and 56% in these five developed countries, USA, UK, Australia, Canada and Ireland.

However, although a number of researchers evidence the increment in ABC system adoption percentage, there are a number of researchers suggesting that this percentage stagnates after high levels of initial increase and that many companies still uses traditional costing systems (Roztocki, 2004; Cohen et al., 2005; Lawson, 2005). Numbers of researchers, such as Innes et al. (2000) and Askarany and Smith (2008) suggested that ABC is implemented only between 20% and 30% of companies. For example, Cohen et al. (2005) claim that ABC adoption percentage in the UK (New Zealand) has dropped from 19.5% to 17.5% in the last ten years, Lawson (2005) observed that the ABC adoption percentage in USA in the healthcare industry is unchanged between 1994 (seven healthcare organizations, or 16%) and 2004 (five healthcare organizations, or 14%).

Clarke et al.(1999) conducted a mail survey which was sent to the 511 company in the Business and Finance (1995) listing of Ireland's top 1,000 companies based on annual sales. The aim of this study was to know the situation and practice of management accounting such as ABC in Ireland and its adoption percentage compared with different developed countries such as US, UK and Canada. They also aimed to know the adoption problem and barriers to change that may explain differing adoption percentages of ABC in Ireland versus the US, UK, and Canada. The questionnaire was sent to the chief management accountant in each company. The number of respondents was 208 out of 511. The result showed that the adoption percentage of ABC is 12%, percentage of assessing ABC is 20%, percentage of rejected ABC is 13%, and percentage of not considering ABC is 55%. This finding was lower than the result if the adoption percentage in the US, Canada, and the UK. Clarke et al. claimed that this variation in the result could be a result of using different sectors in different studies. For example, adoption percentage of ABC between manufacturing and non-manufacturing can be different. They suggested that it is important to distinguish among different sectors.

Bescons, Chavin, Gosselin and Yoshikawa(2001) found the adoption percentages rather low in Japan, which is about 7%. Joshi (2001) found the ABC adoption percentage in India to be 20%. In China, Lai and Pan (2007) surveyed 82 Hong Kong logistics companies and found the adoption percentage of ABC to be 20.7%. Similarly in Malaysia, Abdul Rahman, Morshidi, and Omar (2003) found that 18.3% of the small and medium industries adopted ABC system, but Maelah and Ibrahim (2006) found 36.11% of Malaysian manufacturing companies adopting ABC.

Finally, in Jordan a local study done by Khasharmeh (2002) about the practice of ABC in Jordanian manufacturing companies in 2002 revealed that only 10% of Jordanian manufacturing companies use the ABC system. It also revealed that 75% of the respondents agree and 25% strongly agree that the use of ABC improves the company's performance. In Jordan also Al Khadash and Feridun (2006) conducted a survey on the Jordanian manufacturing companies. Their study was on the impact of strategic initiatives in management accounting on company financial performance. The strategic initiatives were ABC, TQM and JIT. The aims of this study was to know the level of using ABC, JIT and TQM in the Industrial Jordanian Shareholding companies, the effect of awareness on the Companies implementation percentage, and the associations between companies' financial performance and the level of using this management accounting strategic initiatives. The result of this study showed that 26.8% took this initiative and 73.2% did not do so out of the 56 companies under study. The researchers defined ABC as actual implementation, not merely the desire to implement. They found 6 companies (11%) implementing ABC. Furthermore, it is evident through a review of empirical studies that the awareness level of the imperative use of this strategic initiative is great among the financial managers, but such a great level however, is not linked to the level of these initiatives' adoption. In addition, a significant positive relationship is found between the usage of ABC, JIT and TQM and financial performance improvement.

The results of these studies showed that although academics and management accountants have demonstrated a great deal of interest in ABC, the diffusion process for ABC has not been as intense as may have expected and showed different results of the

adoption rate of ABC system. The differing levels of adoption and implementation rate found for the same country may be attributed to the difference in the definition of ABC in terms of the desire to adopt ABC and the actual ABC adoption. Bryne et al. (2009) argued that there is an accounting lag between development theory and the implementation of ABC in practice. The low adoption percentage may also be attributed to the fact that the level of ABC success is lower than was originally envisaged (Drury & Tayles, 2005). Finally the existence of many different forms of activity management used by different firms could also have contributed to the different results obtained by different studies (Baird et al., 2007). Table 2.1 shows the Extent of ABC adoption and implementation in different countries which were used by different studies.

Table 2.1:  
*The Extent of ABC Adoption in Different Countries*

<b>Study</b>	<b>Research method</b>	<b>Implementation stages</b>	<b>Adoption percentage</b>
Innes and Mitchell (1995)	The UK largest 1000 companies mfg and non – mfg company	Considering, using and rejecting	19.5%
Gosselin (1997)	Mail survey at 161 Canadian mfg firms in Canada	Adoption and implementation of AM (AA, ACA and ABC) Not considered, considering, considered then rejected, approved for implementation, analysis,	ABC 47.8% 49%

Krumwiede (1998)	Survey of US 225 firms	getting acceptance, implemented then abandoned, acceptance, routine systems, and integpercentaged system	From 41% in 1995 to 49% in 1996
Sulaiman, Ahmad and Mohd-Alwi (2002)	66 manufacturing services companies in Malaysia	Initiation and adoption, design, implementation and using	28%
Lai, Ngai, and Cheng (2005)	82 Hong Kong logistics companies	Not segmented	20.7%
Kasharmeh (2002)	40 Jordanian industrial companies	Not segmented	10%
Lawson (2005)	36 US healthcare organizations	Not segmented	14%
Cohen Venieris and Kaimenaki (2005)	Survey of 570 Greece mfg, retail and service	ABC adopter Supporter Deniers and unawares	40.9%
Baird, Harrison and (2004)	Survey of 400 firms in Australia	adoption of activity management (Activity Analysis, Activity Cost Analysis and Activity-based Costing)	(86 and 82%, respectively)  More than the more complex activity-based costing (78%)

Sartorius, Eitzen and Kamala (2007)	Mixed method survey at south Africa companies	Not segmented	11.6%
Clarke, Hill and Stevens (1999)	Mail survey at 511 manufacturing firms, 204 responses were received	Not segmented	12%
Abdul Rahman, Morshidi and Omar (2003)	survey	Not segmented	18.3%
Maelah and Ibrahim (2006)	Mail Survey at 1257 mfg company in Malaysia respondents percentage was 11 percent equal 108 company	Not segmented	36.11%
Pierce and Brown(2004)	Survey to 550 company 23.3percent response percentage	Consider, non consider, rejecting and users	27.9%
Askarany (2009)	501 CPA Australia members employed in different sectors in 2003, responds percentage 25percent	Not segmented	19%
Askarany (2009)	501 CPA Australia Members employed in different sectors in 2007, responds percentage 20percent	Not segmented	23.4%
Shim and Sudit(1997)	US Fortune 1000 companies	Not segmented	25%
Kiani and Sangeladji (2003)	Largest 500 US industrial companies	Not segmented	52%

Pavlatos and Paggios (2009)	85 Greek hotel firms	consideration, adoption, using and rejecting	23.5%
Chenhall and Smith(1998)	Manufacturing firms	Not segmented	56%
Innes and Mitchell (1991)	720 Financial and Manufacturing firms	Not segmented	6%

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### 2.3.2 The Extent of ABC in Jordanian Manufacturing Shareholding Companies

For the Jordanian Manufacturing Companies, ABC is the new cost accounting system (Al-Khadash & Feridun, 2006). It is known among Jordanian academics who have studied abroad since the early 1990s (Hutaibat, 2005). ABC came into Jordanian literature in the early 1990s and thereafter began to be discussed. However, these discussions tended to stay at conceptual and theoretical levels and there were not any sufficient and comprehensive studies about its application level at that time. In the mid 1990s and early 2000s, the ABC concept was widely discussed in Jordan through seminars, conferences and journals (Khasharmeh, 2002). The consideration of ABC in the Jordanian Manufacturing Shareholding Companies emerged from parent company policies in the U.S.A. or the U.K. (Arafat, 2002; Hutaibat, 2005).

In this regard, Al-Khadash and Feridun (2006) claimed that the awareness level of the importance of using management accounting innovations such as ABC is found to be significantly higher among the financial managers in the Jordanian Manufacturing Shareholding Companies. Furthermore, they added that Jordanian Manufacturing

Shareholding Companies offer a good environment to adopt new management accounting innovations such as ABC systems because they have both the funding as well as the human resources.

The first study to examine the level of ABC implementation in the Jordanian Manufacturing Shareholding Companies was carried out by Khasharmeh (2002). His study population consisted of all the Jordanian Manufacturing Shareholding Companies which were listed on the Amman Stock Exchange at the end of 2001 (40 companies). According to his results, 4 out of 40 Jordanian manufacturing companies used the ABC system (implementation percentage of ABC were about 10%).

The second study carried out by Al-Khadash and Feridun (2006) aimed to investigate the link between ABC as management accounting innovations and the improvement in corporate financial performance of 56 industrial shareholding companies. The study population consisted of all the Jordanian Industrial Shareholding Companies which were listed at Amman Stock Exchange at the end of 2003. Telephone interviews were conducted with all Jordanian Manufacturing Shareholding Companies (56 companies in total) to identify those companies which applied the management accounting innovation. It was found that six companies out of 56 had implemented ABC (implementation percentage of ABC were about 10.6%).

The third study carried out by Nasser et al. (2009) conducted their study only by questionnaire survey in Jordanian industrial sector to know the implementation rate and

factors influencing the implementation. They found the implementation percentage to be 55.7%. It should be noted that neither studies segmented ABC to stages.

The previous studies showed different results of the implementation rate of ABC system. The results of all these surveys have to be considered cautiously since there is no single definition of ABC (Baird et al., 2004). Gosselin (2007) showed that there may be some confusion among the survey respondents about what exactly ABC is. Furthermore, respondents working in companies that have not implemented ABC may not be inclined to respond to ABC surveys. In other words, it is possible that most ABC surveys overestimate the ABC implementation rates.

### **2.3.3 The Reasons for Adopting ABC (Motivator and Catalyst Factors)**

The extensive environmental change has encouraged many companies to change and redesign their business and competitive strategies, particularly cost management system, in order to achieve the competitive edge in the marketplace. Successful companies are those that are able to get better quality, lower costs and efficiency of operations and eliminate products and services that cause losses (Cooper, 1988; Innes & Mitchell, 1991; Kaplan, 1988; Krishnan, 2006).

In addition, many industrial firms have shifted from labor intensive to machine intensive in production. This shift has resulted in the increase of overhead cost, which needs accurate cost allocation to products. Many firms have shifted from traditional cost accounting to activity based costing system. ABC provides more accurate overhead cost

allocation (Innes & Mitchell, 1995). In this regard researchers (such as Kruemwield, 1998; Cokins, 1999; McGowan & Klammer, 1997 ; Shield, 1995) noted that ABC was developed as a practical solution for problems associated with traditional costing system and incapability of the conventional cost systems to supply high quality information in the new environment.

Furthermore, another general reason for adopting ABC in increasingly competitive environment is the competitors are using ABC, which may lead to the customer requirement for the purpose of enhancing product quality (Chongruksut, 2002; Maelah & Ibrahim, 2006). Majid and Sulaiman (2008), in their case study in Malaysia, argued that the advice from parent company or headquarters is another important reason behind adoption or implementation of activity based costing system.

According to Cooper (1991), the growing costs and diversity of products is a major cause to adopt and implement the ABC. Cohen et al. (2005) and Harrison and Killough (2006) added that support for the other management practices such as TQM and JIT is important reasons to adopt the activity based costing system. Campbell, Brewer and Mills (1997) found that the reasons for adoption of ABC are; it can assist and provide accurate information to aid manager in their decision-making. Chongruksut (2002) studied the adoption of ABC systems in different sectors in Thailand by survey method and found that financial crisis of Thailand in 1995 and the economic recession played a main role in the activity based costing adoption.

Brierly (2009) developed and tested a model of the factors motivating the ABC considerations in 854 companies in the British manufacturing industry. This model was tested by ordinal regression analysis with the level of considerations for ABC as the dependent construct and the level of competition, the level of product customization, the percentage share of the manufacturing overhead costs to total manufacturing costs and operating unit size as independent constructs. The results indicate that, operating unit size has a significant influence on the level of consideration of ABC. The non-significant effect of the other constructs indicates that the level of competition, product customization, manufacturing overhead percentage do not impact on the decision to consider ABC. This result was consistent with Brown et al. (2004) who found that technological factors, such as product customization and cost structure are not related to whether operating units considered ABC. Furthermore, they found insignificant effect of environmental factors, such as competition. Van Nuyen and Brooke (1997) argued that there is a positive association between the motivator factors such as change in cost structure, competition and ABC adoption. In this regard, Booth and Giacobbe (1998) and Cooper (1988) also found a positive association between level of overhead and ABC adoption.

Previous studies such as Shield (1995) tried to link between ABC adoption and environmental factors such as globalization, deregulation, and customer demand. He found that the changing of these factors will lead to change in management accounting practices. AL-Omiri and Drury (2007a) also found a positive association between the competition and ABC adoption. Innes and Mitchell (1990), in their case study, found that

the change in external environment such as globalization and lower operating costs for competitors are the motivators for management accounting change. Brierly (2009) recommended future research in longitudinal approach to see when and how their consideration have been completed. He also recommended future research to include the effect of organizational factor to ABC consideration.

In Iran, Ahmadzadeh et al. (2011) conducted a questionnaire survey in Iranian companies which are listed in Tehran Stock Exchange using the logistic regression model from 57 companies (33.5%) as respondents in the sample. This research seeks to examine if the organizational factors such as organization size, industry type, cost structure, the importance of cost information, and products and services diversity have a role in motivating the implementation of Activity-Based costing (ABC). The results of this study found a positive association between cost structure, the importance of cost information and products and services and ABC implementation. It also found a negative association between the type of industry, organization size and product and services diversity and ABC implementation. Ahmadzadeh et al. (2011) recommended that future research should examine some variables to know their influence on adoption and implementation of Activity-Based costing (ABC). These variables are: competition, level of fixed costs, organizational life cycle stage, economical crisis, top management support, quality of information technology, resistance to change by providers, users of accounting information and lack of relevant employees' skills.

The review of literature above indicates that the researchers differentiated between two types of factors, catalysts which are associated directly with change such as competitors using ABC, pressure from government or other regulatory authorities, and advice from parent or headquarters. However, Abrahamson (1991) classified these factors to four perspectives: efficient choice, forced selection, fad, and fashion (see section 2.2.1.6). Motivators factors which influence the change in general manner such as changes in cost structure, shortcomings of the existing cost system, and change in business environment.

However, literature shows that there are different perspectives to the reasons that generate or motivate the companies to adopt ABC (Brown et al; 2004; Sartorius et al., 2007). Booth and Giacobbe (1997) argued that the researchers used different methods in different sectors to test these variables. Table 2.2 below shows the reasons for adopting ABC from various researchers.

Table 2.2:  
*Reasons for Adopting ABC in Different Countries*

Reasons for Adopting of ABC	Study
Increased competition	Cooper (1988) ; Booth (1997); Chongruksut, (2002); Krishnan (2006); Maelah and Ibrahim (2006); AL-Omiri and Drury (2007)

Problems associated with traditional costing system	Shield (1995); McGowan and Klammer(1997); Kruemwield (1998) and Cokins (1999)
Growing costs	Cooper, (1991)
Incapability of the traditional cost systems to supply suited information in the new environment	Shield (1995); McGowan and Klammer (1997); Kruemwield (1998); Cokins (1999)
Lack of decision-making information	Campbell,Brewer, and Mills (1997)
Parent company or headquarters.	Majid and Sulaiman (2008)
Increasing proportion of overhead	Innes and Mitchell (1995);Ahmadzadeh,Etemadi, and Pifeh (2011)
Increasing number of products	Cooper (1991)
The competitors were using ABC	Majid and Sulaiman, (2008)

Support for other management practices such as TQM and JIT .	Cohen, Venierisand, and Kaimenaki (2005); Harrison and Killough(2006)
Globalization and deregulation	Innes and Mitchell (1990); Shield (1995)
ABC fad or fashions	Abrahamson (1991); Bjornenak,(1997); Gosselin (1997); Malmi (1999);Majid and Sulaiman, (2008)
The economic recession	Chongruksut (2002)

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### **2.3.4 The Reasons for Non-Adoption of ABC**

Despite the advantages of ABC over Traditional Accounting Systems, the adoption percentage of ABC in different countries is still not very satisfactory (Askarany & Yazdifar, 2007). Many studies (such as Baird et al., 2007; Clarke et al., 1999; Cohen et al., 2005; Innes et al., 2000; Pierce & Brown, 2004) described the reasons for non-considering or non-adoption of ABC.

Innes et al. (2000) found that most common reasons for not considering ABC were the lack of its suitability to the company's business, the existence of a cost management system that operated satisfactorily, and the lack of top management support. In this regard, Pierce and Brown (2004) conducted a survey in different sectors in Ireland (manufacturing, service and financial sector organizations) to investigate the state

of implementation of activity based costing systems. The questionnaire was sent by post to a named individual in each company, identified from professional accounting institutes' listings and holding a position as head of management accounting, head of finance or chief executive.

The results of Pierce and Brown (2004) are divided into three parts. The first part relates to the factors that inhibit the implementation of the system. These include the lack of support, experience, training and resources, software support, human resource availability, and perceived complexity. The second category relates to reasons for rejecting the system. These include the lack of significant difference in the product costs compared with the traditional systems, which results in the current system to be seen as a better management tool, and lack of relevance to the business. The findings also indicate that there is difficulty in establishing the key cost drivers and indeterminate benefits. The last category is related to reasons for never considering the system. These include satisfaction with current system, lack of knowledge and experience, simplicity of the manufacturing process, small size of organization, and the irrelevance of ABC to the nature of the business.

A study by Cobb, Innes and Mitchell (1992) found that the major difficulties perceived by UK companies considering the adoption of ABC were the amount of work involved in installing the system combined with a lack of suitable accounting staff resources, lack of computer resources, and difficulties in selecting suitable cost drivers. Regarding the companies which had rejected ABC, Cobb et al. (1992) identify the following issues:

difficulty of collecting data on cost drivers, difficulty of linking cost drivers to individual product lines, and other higher priorities. Furthermore, they indicate that those companies adopting ABC faced some difficulties during the initial ABC implementation stage, including: the choice of activities, the selection of cost drivers, as well as the uncertainty over using ABC for stock valuation for external financial reporting.

In Ireland, O'Dea and Clarke (1994) conducted semi-structured interviews with multinational firms operating in Ireland to know the factors associated with the implementation of ABC, and the difficulties that may be encountered. The results indicate the reasons for non-consideration of ABC. These are: the small percentage of overhead costs in the cost structure, low product diversity, the uncertainty whether ABC would have any impact on decision-making, and the belief that existing cost systems are satisfactory for product costs and measuring performance. In Ireland, Chung et al. (1997), Clarke et al. (1999), and Gosselin (1997) also found that the major barriers to the adoption and implementation of ABC were lack of adequate resources and lack of experiences.

Numerous studies (such as, Awasthi, 1994; Chongruksut, 2002; Cohen et al., 2005; Groot, 1999; Innes et al., 2000) suggested that ABC is very complex and there are many barriers such as internal resistance, lack of top management support, human resource availability, lack of knowledge, expressed satisfaction with current systems, and claimed lack of resources such as a qualified work force, time, and effort (Innes & Mitchell, 1995, 2002; Krumwiede, 1998).

Askarany and Yazdifar (2007) in their study in Australia explained the reasons why ABC adoption percentage is very low. They concluded two surveys, which found the main reasons of not implementing ABC. The reasons were; lack of appropriate cost accounting skills and adequacy of current system. Sartorius et al. (2007) conducted a survey in South Africa to study the implementation of ABC. They conducted their study in different sectors. The results reported the problems and reasons for not implementing ABC. The findings report that difficulty with identifying and defining activity and cost drivers was the most effective reason for not implementing ABC. Furthermore, the results showed that satisfaction with current systems, inadequate marketing of ABC, and negative advertising about ABC were other reasons for the non adoption of ABC systems.

In developing countries, Alabbadi and Areiqat (2010) conducted a mixed method on six private Jordanian universities to know if they have the ability to implement activity based costing system (ABC) and activity based management (ABM), and to know the implementation expected benefits and the reasons for non-implementation. They reached to the conclusion that Jordanian universities have the ability to implement ABC because of the availability of the needed information for implementing, and the availability of the systems that could help them in decision making to decrease costs. They also found that the most common reason for non-implementation of ABC and ABM is complexity and because the universities do not have skill and experience. So they recommended the universities to adopt the external experiences, increase training program, and to implement ABC side by side with TCS for a period of time to improve or evaluate the benefit of the new system.

Finally, some companies have not adopted ABC because of their perception that ABC is less accurate than traditional costing system or that ABC is a mere fad or fashion (Abrahamson, 1991; Bjornenak, 1997; Chung et al., 1997; Gosselin, 1997; Malmi, 1999). Consistent result was evident in Majid and Sulaiman (2008). They found that in the companies still at the initiation and adoption stage, top management was afraid that ABC is not effective and it is a fad and would thus, finally lose its innovation. As a consequence, they were fairly reluctant to spend the company's resources on putting ABC into practice; they considered higher priorities for other changes. Table 2.3 summarizes the reasons for non-adoption of ABC.

Table 2.3:  
*Reasons for Non-Adoption of ABC*

Reasons for not-adopting ABC	Researcher
Too complex and time-consuming	O'Dea and Clarke (1994); Pierce and Brown (2004); Alabbadi and Areiqat (2010)
Difficulties in selecting appropriate software	Innes and Mitchell (1995); Pierce and Brown (2004)
Lack of expertise to implement ABC	Groot (1999); Innes, Mitchell, and Sinclai (2000); Chongruksut (2002); Pierce and Brown (2004); Cohen, Venieris, and Kaimenaki (2005); Sartorius, Eitzen, and Kamala (2007); Alabbadi and Areiqat (2010)

Consultants too costly	Awasthi (1994); Chongruksut (2002)
Lack of awareness of ABC	Askarany and Yazdifar (2007); Sartorius, Eitzen, and Kamala (2007)
Costly to switch to ABC	O'Dea and Clarke (1994)
Higher priorities of other changes or projects	Majid and Sulaiman (2008)
Lack of internal resources	Cobb, Innes and Mitchell (1992); Pierce and Brown (2004)
Lack of management policies	Sartorius, Eitzen and Kamala (2007)
Lack of top management support	Groot (1999); Innes and Mitchell (2000); Chongruksut (2002); Cohen, Venieris and Kaimenaki (2005)
Less complexity in products/services	Pierce and Brown (2004)
Have relative small proportion of overheads	O'Dea and Clarke (1994); Pierce and Brown (2004)
Total manufacturing/service costs	Pierce and Brown (2004)
No intensity of competition	O'Dea and Clarke (1994) ; Sartorius, Eitzen and Kamala (2007)
Resistance from employees	Awasthi (1994); Innes and Mitchell (1995; 2002); Krumwiede (1998); Groot (1999);Innes, Mitchell and Sinclair (2000); Chongruksut (2002); and Cohen, Venieris and Kaimenaki (2005)

Satisfied with the current system	Askarany and Yazdifar (2007); O’Dea and Clarke (1994); Pierce and Brown (2004); Groot (1999); Innes, Mitchell and Sinclair (2000); Chongruksut 2002; Cohen, Venieris and Kaimenaki (2005)
Lack of experience, training and resources	Chung, Schoch and Teoh (1997); Gosselin (1997)
Human resource availability	Cobb, Innes and Mitchell(1992); Groot (1999); Innes, Mitchell and Sinclair (2000); Chongruksut (2002); and Cohen, Venieris and Kaimenaki (2005)
Manufacturing process is simple	Pierce and Brown (2004)
Small size of organization,	Pierce and Brown (2004)
The uncertainty as to whether ABC would have any impact on decision-making,	O’Dea and Clarke (1994); Cobb, Innes and Mitchell (1992)
ABC is not relevant to the nature of the business	Bjornenak (1997); Gosselin (1997); Chung, Schoch and Teoh(1997); Malmi (1999);Majid and Sulaiman(2008)
They were quite reluctant to spend the company’s resources on putting ABC into practice,	Chung, Schoch, and Teoh (1997); Gosselin (1997); Majid and Sulaiman(2008)
Difficulties in choosing cost driver	Cobb, Innes, and Mitchell (1992); Pierce and Brown (2004)

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### **2.3.5 Problems of ABC Implementation**

Despite the advantages of ABC over Traditional Accounting Systems, the implementation of ABC in developed countries often suffers from many problems (Cohen et al., 2005). Several problems may be faced by the companies during the implementation of ABC, especially at the first stage of implementation. Innes and Mitchell (1995) noted that one of the problems relates to the cost of implementing ABC. However, Maheshwari and Maheshwari (1995) argued that advantages of ABC are more significant than its cost and today there are many easy software packages which can be used to develop ABCs using the available data.

Numerous studies (such as Abed & Li, 2008; Brown et al., 2004; Chongruksut, 2002; Cohen et al., 2005; Cobb et al., 1992; Groot, 1999; Innes et al., 2000, & Sartorius et al., 2007) suggested that ABC is very complex and there are many administrative and technical difficulties such as internal resistance, lack of top management support, human resource availability, lack of knowledge, and expressed satisfaction with current systems. Technical difficulties also include the problem of identification of cost driver. Other difficulties include the identification and selection of activities, assigning resources to activities, assigning costs to products and the problems of collecting the necessary data (Cohen et al., 2005).

Many studies stated that most of ABC problems related to the systems issues include: data collection difficulties, inadequate computer software, amount of work and time needed (Brown et al., 2004; Clarke et al., 1999; Innes et al., 2000; Innes & Mitchell, 1995;

Krumwiede, 1998). This is consistent with Majid and Sulaiman (2008) who studied the ABC system in two companies in Malaysia. They found some problems in the implementation process. For example, firstly, they found the cost of buying unique software to the company's specific operations is very high. Additional costs were incurred when the software had to be upgraded from time to time. In case of another company, which is still at the initiation and adoption stage, the problem was the lack of top management support because the managers were afraid that ABC is not effective; it is a fad, and the company would ultimately lose its innovation. As a result, they were fairly reluctant to spend the company's resources after operating ABC in practice. More than that, quick change in technology was faced while implementing ABC system in the company. By the time the working committee finished studying and understanding the process flow and activities of existing products, there were new products or services being introduced by the company. As a result, new process flows would then be charted. Previous literature (such as, Anderson, 2002; Arnaldi & Lapsley, 2005) argued that the technical factors such as identifying activities, assigning resources to activities, selecting cost drivers, and assigning costs to products were neglected in the previous studies. Table 2.4 summarizes these problems.

Table 2.4:  
*Problems Encountered during the Implementation of ABC*

<b>Problems of ABC implementation</b>	<b>Study</b>
Technical Variables such as: <ul style="list-style-type: none"> <li>• Identifying and aggregating activities,</li> <li>• Assigning resources to activities,</li> <li>• Selecting cost drivers,</li> <li>• Assigning costs to products</li> </ul>	Innes and Mitchell (1990, 1995, 1998); Clarke, Hill and Stevens (1999); Groot(1999); Innes, Mitchell and Sinclair (2000); Chongruksut (2002); Pierce and Brown (2004); Cohen, Venieris and Kaimenaki(2005), Sartorius, Eitzen, and Kamala(2007)
Behavioral and Organizational variables such as: <ul style="list-style-type: none"> <li>• Internal resistance,</li> <li>• Lack of top management support,</li> <li>• Human resource availability,</li> <li>• Lack of knowledge,</li> <li>• Satisfaction with current systems</li> </ul>	Anderson (1995); Shields (1995); Clarke, Hill and Stevens (1999); Chongruksut (2002); Pierce and Brown (2004); Cohen, Venieris and Kaimenaki(2005), Sartorius, Eitzen and Kamala (2007), Abed and Li (2008).
Systems Issues, such as : <ul style="list-style-type: none"> <li>• Data collection difficulties,</li> <li>• Inadequate resources such as computer software,</li> <li>• Amountof work and time needed</li> </ul>	Clarke, Hill and Stevens (1999); Pierce and Brown (2004); Innes and Mitchell (1995); (2002); Krumwiede (1998) and Pierce and Brown(2004) ; Majid and Sulaiman, (2008)

### **2.3.6 Implementation Stages of ABC System**

ABC is an administrative innovation (Shields, 1995). At first, implementation researchers focused on a factor-based approach. More recently, researchers have recognized that the implementation of ABC is better explained by studying the process stages as well as specific factors (Agbejule, 2006). Only a few studies (such as, Anderson, 1995; Cohen et al., 2005; Gosselin, 1997; Krumwiede, 1998 ;) have segmented ABC implementation to stages.

ABC is an information technology (IT) innovation, which provides accurate information for managers to make their decisions. Accordingly, managers need to understand the stages of the IT implementation process for implementing ABC successfully. The IT implementation process is categorized into six sequential stages: initiation, adoption, adaptation, acceptance, reutilization, and infusion (Cooper & Zmud, 1990). Researchers adapted IT stage model to describe each stage of ABC implementation process. Anderson (1995) used the first four stages of the Cooper and Zmud (1990) stage model as a structure for describing the implementation of ABC by case study at the General Motors. He found evidence supporting the theoretical model. He also found that technological factors impact the successful implementation of ABC. The search for factors that influence ABC implementation success was guided by information technology (IT) and organizational change literature.

Besides Anderson (1995), Gosselin (1997) also studied the relationship between ABC adoption, strategy, and organizational structure by conducting a mail survey of 161

Canadian manufacturing companies. He separates "activity management" practices into three levels: activity analysis, activity cost analysis, and ABC. The implementation of ABC is separated into two stages, adoption and implementation. The study found evidence that ABC adoption is associated with strategy and with vertical differentiation. Implementation is associated with centralized decision making and formalized job procedures, but not with strategy or vertical differentiation. Gosselin also found the adoption percentage for activity analysis was the highest between three levels and the adoption and implementation percentage for ABC was the lowest among the three levels of activity management practices. Gosselin showed that factors effecting the adoption of ABC implementation stages are different between the two stages: adoption and implementation.

Krumwied (1998) studied the implementation stages of ABC and the impact of contextual and organizational factors. He surveyed U.S manufacturing firms to study how contextual factors, such as size of firms, and organizational factors, such as top management support, and training affect each stage of the ABC implementation process. He segmented the adoption and implementation of ABC to ten stages. These stages were: Not considered, Considering, Considered then rejected, Approved for implementation (adoption), Analysis, Getting acceptance, Implemented then abandoned, Used somewhat, Used extensively, and Integrated with another system. The researcher found different factors to affect the various stages of ABC adoption and implementation. He also found that the degree of importance of each factors varies with the stage of implementation. He

concluded that firms considering or implementing the ABC system should take organizational and contextual factors into account. Table 2.5 shows these stages.

Table 2.5:  
*Krumwiede (1998) ABC Implementation Model*

	Name of stage	Definition of the stage
A	Not Considered	ABC has not been seriously considered. Use either single or departmental / multiple plant-wide allocation methods only.
B	Considering	ABC is being considered and implementation is possible. However, implementation has not been approved.
C	Considered then Rejected	ABC has been considered (not implemented) but was later rejected as a cost assignment method.
D	Approved for Implementation	Approval has been granted to implement ABC and devote / spend the necessary resources, but analysis has not yet begun.
E	Analysis	ABC implementation team is in the process of determining project scope and objectives. Collecting data and / or analyzing activities and cost drivers.
F	Getting Acceptance	Analysis is complete and ABC model has project/ implementation team support, but ABC information is not yet used outside of accounting department for decision making.
G	Implemented then Abandoned	ABC was implemented and analysis performed but is not being pursued at this time.
H	Acceptance	Occasionally used by non-accounting upper management or departments for decision-making. General consensus among non-accounting department that model provides more realistic costs. Still considered a project or model only with infrequent updates.

I	Routine System	Commonly used by non-accounting upper management or departments for decision making and considered normal part of information system.
J	Integrated System	ABC is used extensively and has been integrated with the primary financial system. Clear benefits can be identified, such as: non value-added activities, identified, process performance improved. Products priced better and strategic/ operating decisions improved.

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*Source:* Krumwiede (1998)p. 242-243

Brown et al.(2004) conducted a cross-sectional survey in Australia to know the impact of seven organizational and technological factors on the adoption and implementation of activity based costing system, they segmented ABC adoption and implementation to ten stages. Table 2.6 shows these stages.

Table 2.6:  
*Brown et al. (2004) ABC Implementation Model*

Stage	Name of stage	Definition of the stage
A	Not Considered	ABC has not been seriously considered. We use either single or departmental / multiple plant-wide allocation methods only.
B	Initiation/Evaluating	ABC is being evaluated and implementation is possible, but implementation has not yet been approved.
C	Evaluated then Rejected	ABC has been evaluated (but not implemented) and was later rejected as a cost assignment/ management method.
D	Evaluated and Approved for Implementation	Approval has been granted to implement ABC and devote/spend the necessary resources, but analysis (see next stage) has not yet begun.
E	Analysis	ABC implementation team is in the process of determining project

		scope and objectives, collecting data and /or analyzing activities and cost drivers.
F	Getting acceptance	Analysis is complete and ABC model has project/implementation team support, but ABC information is not yet used outside of the project/implementation team for decision-making.
G	Implemented then Abandoned	ABC was implemented and analysis performed but it is not being pursued at this time.
H	Restricted Use	Used by accountants for internal accounting purposes, but has not been accepted by non-accounting upper management or departments for decision-making. It is still considered a project model only with infrequent updates.
I	Used somewhat	Occasionally used by non-accounting upper management or departments for decision-making. General consensus among non-accounting departments is that the model provides more realistic costs. However, it is still considered a project model only, with infrequent updates.
J	Used extensively	Commonly used by non-accounting upper management or departments for decision making and considered a normal part of the information system. Clear benefits can be identified, such as: non-value adding activities identified, process performance improved, products priced better and strategic

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*Source:* Brown et al.(2004) p. 333

Brown et al.(2004) said that the first four stages (Not Considered, Evaluating, Evaluated then Rejected and Evaluated and Approved for Implementation) are related to the

adoption decision, and that the last six stages (Analysis, Getting acceptance, Implemented then Abandoned, Restricted Use, Used somewhat and used extensively) are related to the implementation decision. Brown et al. (2004) argued that different factors affect the adoption or non-adoption of ABC and the impact of these factors is different from one stage to another.

Arnaboldi and Lapsely (2005) conducted a case study on the UK health care industry. They segmented the implementation of ABC into four stages to study how different factors affect these stages. These stages are: initiation and adoption, design, implementation, and use of information.

Cohen et al. (2005) conducted a questionnaire survey on 88 Greek leading companies to know the ABC adoption percentage in Greek companies, Cohen et al. (2005) conducted their study in three types of sectors (manufacturing, retail and services) then he categorized ABC adoption and implementation to four stages which are ABC adopters, ABC supporters, ABC deniers and ABC unawares. Although the terms of Cohen et al. (2005) were different from previous studies terms, the definitions have the same meaning. The following table shows these stages:-

Table 2.7:  
*Cohen et al. (2005) ABC Implementation Model*

<b>Name of the stages</b>	<b>Definition of the stages</b>
ABC adopters	Companies that have adopted ABC
ABC supporters	Companies that consider ABC adopting as a future system or intend to adopt ABC in the future.
ABC deniers	Companies that do not consider ABC adopting and do not have a possibility to adopt ABC in the future.
ABC unawares	Companies that still have complete ignorance of the ABC system.

*Source:* Cohen et al. (2005)

In the current study, the researcher will segment ABC adoption and implementation to five stages. Table 2.8 shows these stages.

Table 2.8:  
*ABC Implementation Stages in the Current Study*

<b>Stage</b>	<b>Name of stage</b>	<b>Definition of the stages</b>
A	Non- Adoption stage	The stage interprets as: The Company do not gets approval from top management to invest the resources necessary for implementing ABC.
B	Adoption stage	The stage interprets as: The Company gets approval to invest the resources necessary for implementing ABC.
C	Implementation stage:	The stage describes as: The companies have begun implementing ABC systems, and the company in the process of forming a team of ABC implementation, determining project scope and objectives, designing training and workshops, collecting data or/and analyzing activities and cost drivers and organizational members' commitment to use ABC.
D	Usage stage	This stage means: the implementation of ABC was finished and the companies have starting using of ABC information as a part of daily practices or integrating with other systems.

E	Abandonment stage	This stage defines as: ABC was stopped the implementation of ABC at an early pilot testing or was implemented and analysis performed but is not being pursued at this time.
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Some of the previous studies did not segment the adoption and implementation. Moreover, the definition of the implementation differed from one study to another. The previous studies showed difficulties in comparing the findings from various studies, particularly relating to usage percentages or ability of factors to discriminate between implementers and non-implementers when the term of implementation have been subject to different definitions (Al-Omiri & Drury, 2007).

### **2.3.7 ABC Success**

Many studies suggested that worldwide ABC adoption percentage is very low (Kennedy & Bull, 2000). Researchers suggested many reasons to this percentage. One reason could be ABC adopters not finding it successful in delivering predictable net benefits. If ABC implementers could find it unsuccessful, then that could justify the low adoption percentages (Byrne et al., 2009).

Previous studies found some variable to measure ABC success (Barid et al., 2007). Examples of ABC success measures tested in prior studies include use and satisfaction of ABC system, (Swenson, 1995) and workers satisfaction (McGowan & Klammer, 1997). McGowan (1998) stated that staff or users satisfaction may be the most critical success factor because it can lead changes in decision making. Also management evaluation and dollar improvements are success measures used by some of the previous studies (Kennedy & Affleck-Graves, 2001; Shields, 1995).

McGowan (1998) and Byrne et al. (2009) used ABC technical characteristics rating in comparison with traditional costing system to know the level of ABC success. The compared characteristics were: accuracy, accessibility, reliability, timeliness and understandability.

Barid et al. (2007) and Shields (1995) said that the definition of success was problematic as the literature is not clear about what success means, and discussions with ABC experts during construction of the survey did not result in agreement about a tangible definition. The approach that Shields (1995) adopted was to allow the user to percentage the degree of success with whatever definition they deemed applicable. He adopted a limited number of the success measures. McGowan and Klammer (1997) criticized Shield's study because he adopted just management evaluation to overall success and dollar improvement as a success measure and he did not separate between ABC implementation stages.

Some studies such as Anderson (1995) and Krumwiede (1998) measured success as the attainment of a particular stage of implementation. However, this approach of measuring success received many criticisms by researchers such as Barid et al. (2004) because it measures success as the series of an organization from one stage of activity management implementation to the next.

Swenson (1995) surveyed 50 managers in 25 USA manufacturing sector firms to know the success level of ABC information to support decision making by using the satisfaction measure. He found that the managers were satisfied with their ABC system because this system led to improve their cost management systems. They are also using activity based costing system based information to support decision making process.

In their study, Foster and Swenson (1997) used different attributes around four measures to know the level of success in 166 sites of 132 companies. However, they did not segment adoption and implementation to stages. This means that they did not focus on the ABC maturity at using stage. The measures used are ABC information, decision actions, dollar improvement and management evaluation to the overall success of ABC. Firstly, as supported by Innes et al. (2000), ABCS information can help the managers in the area of decision making, determine accurate cost of products or services, determine the customer profitability, pricing decisions, measure performance, plan and budget. Secondly, decision actions are also aided by ABC information. According to Innes and Mitchell (1995), if ABC information can lead to change of decision making, the system is successful, but if the ABC information cannot change the decision this means the system is not successful. Thirdly, the measure of dollar improvement resulting from ABC is an open dollar comparison of revenues and costs with and without using activity based costing system during specified period (Kruehwiel, 1998; Shields, 1995). Finally, management evaluation can measure the overall success of ABC. This measure is typically based on an unspecified description as to how success is to be interpreted (McGowan & Klammer, 1997; Swenson, 1995). However, Foster and Swenson's measure

did not differentiate between different stages of ABC implementation. Numerous studies stated that there is a need to segment ABC adoption when researching success by examining ABC maturity. The result of ABC implementation may be achieved after the using stage in the form of improvement in financial performance. Table 2.9 summarizes ABC success measures used in literature.

Table 2.9:  
*ABC Success Measures used in the Previous Studies*

ABC success measures	Study
Satisfaction	Swenson(1995)
Employees satisfaction	McGowan and Klammer (1997)
Management evaluation to overall success	Shields (1995); Swenson (1995); Kennedy and Affleck-Graves (2001)
Areas in which ABC information was used	Innes and Mitchell (2000)
Increase in firm value	Kennedy and Affleck-Graves (2001)
Dollar improvements	Shields (1995); Foster and Swenson (1997)
Use ABC information in decision making,	Foster and Swenson(1997); Innes and Mitchell (2000)
ABC information technical characteristics rating	McGowan (1998), Byrne et al. (2009)

### **2.3.8 Critical Success Factors (Factors Facilitates ABC Implementation)**

A number of surveys have been conducted to attempt identifying critical success factors. There are many studies relevant to the successful implementation of ABC (such as Broun et al., 2004; Krumwied, 1998; Maelah & Ibrahim, 2006; Shield, 1995). Shields (1995) found success to be strongly connected with behavioral and organizational

variables such as top management support, adequate internal resources and training, but not to technical variable such as the type of software or the nature of the system. According to Anderson (1995), the factors influencing implementation are context specific. His conclusion was the varying influence across the stage of implementation, of specific organization and technical factors, individual and task characteristics, and environmental factors on the implementation success.

Krumwied (1998) conducted a study on the U.S manufacturing firms on how various contextual and organizational factors influence the stages of the ABC implementation. The contextual factors include the potential for cost distortion or size of firms. The organizational factors include top management support, training or non-accounting ownership and education. He found different factors to influence various stages of ABC adoption and implementation. He also found that the degree of influence is different in different stages of implementation. Therefore, this study recommended that organizational and contextual factors are taken into account while considering or implementing the ABC system. This result was consistent with Arnaboldi and Lapsley (2005) who found that the process of ABC implementation to have four main stages. They examined the different factors facilitating the adoption and implementation of ABC during the implementation stages in health care organizations. However, they excluded the competition factors because their study was based in the public sector. These factors include top management, strategy, resource, external consultant, team size, team competencies, team heterogeneity, process complexity, training, and ABC champions.

However, technical, contextual, behavioral and organizational variables may not be adequate to explain the factors influencing ABC success implementation. Therefore, Velmurugan and Nahar (2010) and Fie and Isa (2010a) have suggested that new variables should be considered to investigate factors influencing ABC success. Velmurugan and Nahar (2010) said there is no identification of common factors contributing to the successful implementation of ABC by those companies which have been using ABC for an extensive period of time.

Some of the more notable researchers in the field such as Baird, et al. (2004); (2007) and Brewer (1998) also revealed that the dimensions of national cultures could have an impact on the level of ABC success. Brewer (1998) made use of Hofstede's taxonomy of work-related cultural values in the examination of the association between national culture and Activity-Based Costing system. He applied Hofstede (1983)'s work to the case of Harris Semiconductor (HS), which has carried out the implementation of ABC in Malaysian and United States plants. The findings revealed that the level of ABC success in Malaysia was comparably higher than U.S owing to the characteristics of high-power-distance and collectivistic culture in Malaysia. Moreover, in addition to national culture, corporate culture factors have also been tested by previous research. On the other hand, Baird et al. (2004) carried out an investigation of the association between the level of ABC adoption and the organizational variables of size and decision usefulness of cost information and business unit culture. The findings revealed no significant association between ABC adoption and decision usefulness, cultural dimensions of outcome orientation and tight versus loose control.

In a related study, Baird et al. (2007) carried out an examination of the association between success of activity management practices and organizational factors comprising of top management support, training, link to performance evaluation and compensation, and link to quality initiatives, as well as organizational culture comprising of outcome orientation, team orientation, attention to detail, as well as innovation. The results revealed that two organizational factors namely top management support and link to quality initiatives, held the explanation of the differences in success of activity management practices, such as ABC. Likewise, two organizational culture factors namely, outcome orientation and attention to detail were related with ABC success. They claim that organizational factors had stronger associations with ABC in comparison with organizational culture.

In France, Rahmouni and Charaf (2010) conducted a study by mixed method; data were collected through mail questionnaires and interviews with French financial controllers. From the sample of 2395 companies, 1493 companies were eliminated because they were not appropriate for the analysis that they intended to perform. After the initial mailings, three follow-ups were made by e-mail, phone and fax. There were 66 answers received in total (out of 902 sent), resulting in the response percentage of 7.3%. This was followed by five semi-structured interviews to collect more in-depth information about specific variables.

The aims of Rahmouni and Charaf (2010)'s study was to know which organizational and technical factors are associated with the success of ABC implementation, to provide some answers to the ABC paradox and to improve a new measuring scale for the perceived complexity of the ABC project.

The results of the study show that the success of ABC implementation depends on two factors in French companies: training and the perceived complexity of the information technology. Also, French cost controllers think that the ABC method is too complex for a management accounting system compared to the conventional method. Furthermore, a large number of French companies had already implemented this full costing approach; therefore, it will reduce the extent of the diffusion and success of ABC in France. Rahmouni and Charaf (2010) recommended for future research to take into account other important variables that have been ignored in this article but are likely to impact the success of ABC projects. The most important ignored variables are related to resistance to change and cultural variables.

The following discussion will explain each factor mentioned in the literature in more detail:-

#### **a) Top management Support**

Shields(1995) said that top management support has an important role in ABC adoption and implementation. Cooper et al. (1992) explained the strong relation between corporate strategy and adequate resources and top management support. Gunasekaran (1999)

added that top management support is very important to the adoption and implementation of ABC especially at implementing and using stages because the support from top management will facilitate the implementation by giving time for the preparation and purchasing of software, providing training programs, and investments in resources for ABC implementation. In the context of China, Fie and Isa (2010b) made use of a questionnaire survey in Chinese manufacturing firms in an attempt to examine the role of behavioral and organizational factors in the adoption and implementation of ABC. One hundred and six completed questionnaires were utilized for data analysis and findings revealed that top management support is found to be the sole factor that is positively and significantly linked with ABC success. This implies that top management support can positively impact ABC success in Chinese manufacturing firms and implies that the stronger the top management support of the ABC implementation, the higher will be the level of ABC success. It was also revealed that if the firms' top management provide support to ABC implementation, this will be manifested in their clear commitment to utilize information provided by ABC as the core of their decision making.

### **B) Non-Accounting Ownership**

Non-accounting ownership is the participation of employees who are not accountants to design ABC and use of it is information (Maelah & Ibrahim, 2006; Maelah & Ibrahim, 2007). It can give necessary economic information for people during the organization in addition to the accountants. When non-accountants (such as top executives, operating employees or design engineers) are committed to using ABC information, the

implementation of ABC has been shown to be effective. Non-accounting ownership also can help to promote ABC and makes it more successful (Cooper et al., 1992).

### **c) Training**

Training has an important role in successful implementing and use of ABC system. Actually, training programs relate to the implementation including design and usage stages of ABC (Krumwiede, 1998). Shields (1995) argued that this training phase has an important role in ABC success. Training in the implementation stage of ABC system will help the company team to understand the best method of installing the ABC system. However, in the usage stage of ABC, training will help the users to know how to interpret the system information and how to employ it for target goals. Maelah and Ibrahim (2006) argued, if the company training was insufficient and the team or users do not understand their work exactly or how to deal with the new system, the risk that companies may fail to successfully implement ABC will increase. In addition, McGowan and Klammer (1997) suggested that there is a positive association between the adequacy of training and user satisfaction. Rahmouni and Charaf (2010) in France, found a positive association between training and ABC implementation success.

### **d) Champion**

Champion is an individual within the firm who promotes and tries to convince top management and other employees in the firm to implement ABC by advocating the benefits of ABC. Arnaboldi and Lapsley (2005) argued that a champion will facilitate the

implementation by making awareness about the new costing systems and its benefits. They added that champion can influence the different stages of ABC, especially in the implementing stage.

#### **e) Information Technology**

The literature review shows the relation between information technologies and successful ABC adoption and implementation. Cooper (1988) argued that high quality of information technology may encourage the managers and make them very comfortable to implement ABC. The results from different studies show the influence of information technology on ABC varies. For example, Krumwiede (1998) argued that strong information technology in the company might push the managers to reject or abandon ABC. However, she did not deny that IT can facilitate the implementation process. Anderson (1995) suggested that the level of information technology has important effects on the costing system design. For instance, the measurement cost associated with using additional cost drivers depends on whether the data required by that driver is already available, or has to be specifically determined. IT can also give detailed data relating to cost driver, information of which is needed by more sophisticated costing systems. However, firms having strong IT have databases to provide detailed data and information needed for activity analysis and easier time management in implementing and maintaining ABC (Rahmouni & Charaf, 2010).

#### **f) Consultant**

Literature shows that consultants have the main role in facilitating the implementation and use of ABC. Many researchers (Arnaboldi & Lapsely, 2005; Broun et al., 2004; Innes et al., 2000) explained that consultants facilitate the implementation of ABC by using their experiences to determine activities and cost drivers, and improve the software package. This may lead to time reducing and more accurate cost allocation.

#### **g) Education**

The literature shows that education is very important to understand the objectives of ABC implementation by both designer and users. Broun et al. (2004) added that ABC education will help to ensure that accountants have acknowledged and have skills to implement the system and get an opportunity to change. Krumwied (1998) and Shields (1995) found that the education about the objectives of ABC implementation, benefits of ABC, and the problems of implementation will facilitate the process of implementation. They added that there are different resources for the purpose of education, such as books, lectures, training and articles.

Setting up of ABC may have some troubles, but the enhanced knowledge about ABC is valuable to this process for the companies. The implementation issues such as percentage of ABC implementation, the reasons for implementing ABC, the problems associated with ABC, and the critical success factors of the implementation differ widely. Many scholars (such as, Dugdale & Jones, 1997; Innes & Mitchell, 1997; Sartorius et al., 2007) stated that the previous studies have used different measures for both the dependent and independent variables. The adoption or non-adoption of ABC

systems has been used as the dependent variable. The terms 'adoption' and 'non-adoption' have been subject to different interpretations with some studies defining adoption as actual ABC implementation and others defining it as actual implementation or a desire to implement. The studies have also generally allowed the respondents to self-specify whether their organization operate an ABC system despite the fact that there is also some disagreement as to whether systems described by survey respondents as ABC are really ABC systems.

### **2.3.9 Chapter Summary**

This chapter explains both traditional costing system and activity based costing system. Both systems have two cost allocation stages. Traditional costing system assumes that products and services cause costs. It uses limited number of volume cost drivers such as direct labor hour or machine hour to allocate indirect costs to products or services. But activity based costing system assume that activities consume resource and products or services (cost objects) consume activities. ABC uses various types and more suitable cost drivers, so it is more accurate than TCS.

This chapter also explains diffusion innovation theory and management accounting changes. The ABC adoption and implementation are considered as a new change in management accounting. This follows by explaining different perspectives used to categorize diffusion of innovation research, and alternative perspectives to acceptance or abandonment of ABC innovation.

This chapter also highlighted the factors and barriers of ABC adoption and implementation mentioned in the previous studies. These factors include facilitator factors, which give managers with the required favorable conditions but are not enough for a management accounting change by themselves. These include consultants, training, and availability of adequate resources. The second type is the motivators. These factors affect the changes in a general manner. For example, the competitiveness of the market, the product cost structure and production technology. The last type is catalysts, which is directly linked with the changes. Examples of these factors are poor financial performance, the loss of market share. There are also many barriers and problems encountered in the implementation, as mentioned in the previous studies. These problems include behavioral and organizational difficulties, such as, internal resistance, lack of top management support, technical difficulties like identification of cost driver, systems issues like inadequate computer software (Brown et al., 2004; Clarke et al., 1999; Innes et al., 2000; Innes & Mitchell, 1995; Krumwiede, 1998).

Finally, this chapter also explains the success and its measures mentioned in the literatures such as satisfaction, employee's satisfaction, dollar improvements, decision action, management evolutions and use ABC information (Foster & Swenson, 1997; Shields, 1995).

## **CHAPTER THREE**

### **RESEARCH FRAMEWORK AND METHODOLOGY**

#### **3.0 Introduction**

Researchers (such as Creswell, 2003; Neuman, 1997; Sekaran, 2003) suggested that suitable methodology and data collection method affect research results. The use of any methodology, more specifically, any data collection method depends on the aim, the scope, the budget, the research population of the study, and the resources available for the study (Sekaran, 2003).

This chapter discusses the research model and hypotheses development, data collection and research methods used in the study. The first phase of the discussion contains initial questionnaire and second phase contains the main questionnaire design, classification of questionnaire sections, population of study, selection of the respondents, reliability and validity. The third phase contains the interview processes and interview analysis methods.

#### **3.1 Research Framework**

The development of the research framework in this study is based on the theoretical framework of management accounting change models that were introduced by Innes and Mitchell (1990); these being catalysts, motivators and facilitators. Cobb et al. (1995) and Kasurinen (2002) developed this further by adding factors that hindered, delayed, or even

prevented change, thereby functioning as barriers. The following discussion explains the research framework of the current study in more detail.

### **3.1.1 Factors Related to Creating the Potential for Change**

Innes and Mitchell's (1990) model contain three types of factors; the first one being, motivator factors influencing the implementation of ABC in general manner. This includes changes in cost structure, shortcomings of the existing cost system, and change in business environment. Catalyst factors which associate directly with the implementation decision. Abrahamson (1991) classified these factors to efficient-choice, force decision, and fad or fashion (see section 2.2.1.6). Finally, the facilitator factors, which provide managers with the favorable conditions that are necessary but not sufficient by themselves for a management accounting change, such as training, consultant, top management support, non-accounting ownership, internal champion support, education and IT, (see section 2.3.8). As a result, the interaction of these three types of factors (catalysts, motivators, and facilitators) can create the potential for change in a company and, while catalysts are regarded as the generators of change, the potential for change will not occur without the presence of facilitators and motivators.

### **3.1.2 Factors Related to Creating Barriers to Change**

During the process of implementing ABC, a company could face problems or difficulties related to change implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, or even preventing change. Thus, the current study will determine the barriers to change that may

explain the differing implementation percentage of ABC in the Jordanian manufacturing companies.

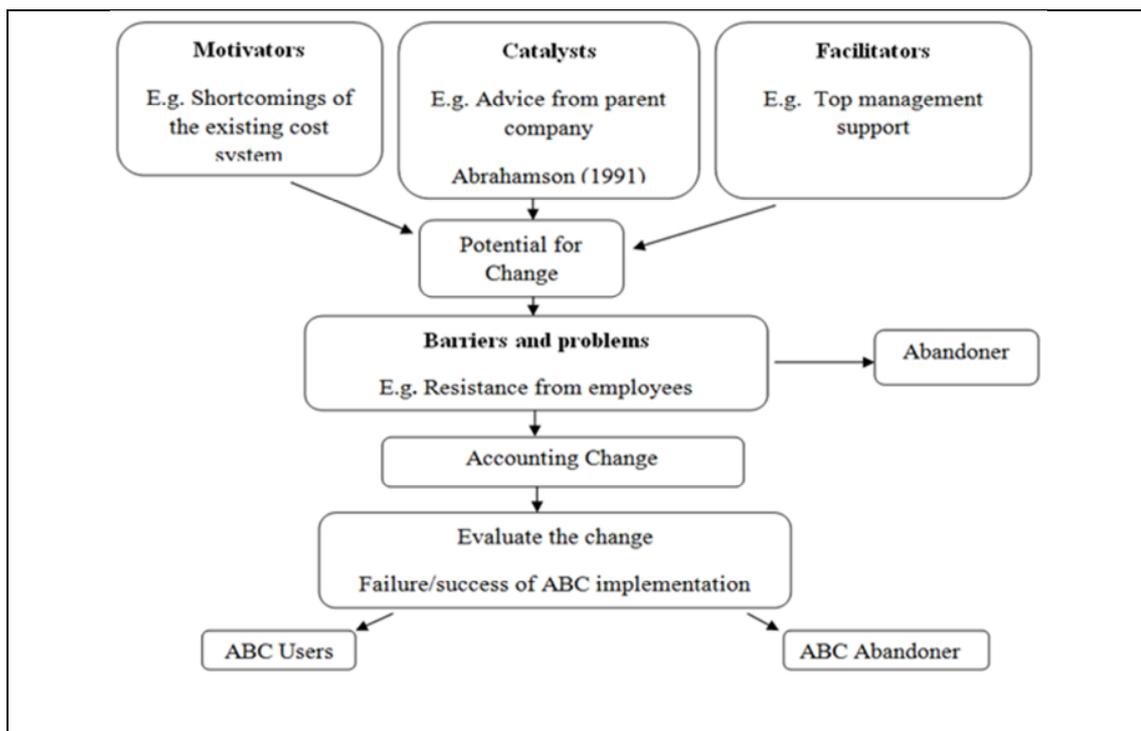
### **3.1.3 Evaluating the Change (Success or Failure of Change)**

Three main approaches to measure ABC implementation success have been used in previous studies. The first uses management evaluations of overall success (see McGowan & Klammer, 1997; Shields, 1995; Swenson, 1995). This approach has been criticized for relying too heavily on a limited number of success attributes, with McGowan and Klammer (1997), for example, relying on just one question relating to managers' satisfaction with ABC implementation. Additionally, this approach does not distinguish between the various stages of ABC implementation.

The second approach measures success as the attainment of a particular stage of implementation (see Anderson, 1995; Krumwiede, 1998a). Krumwiede (1998a), for example, identifies 10 stages of implementation from consideration through acceptance and reutilization to an integrated system. This approach is inconsistent with Baird et al. (2004) and Gosselin (1997).

The third approach measures success using multiple attributes (see Anderson & Young, 1999; Foster & Swenson, 1997). For example, Foster and Swenson (1997) in their study of the determinants of ABC success, developed a broad-based measure that required respondents to evaluate the overall success of ABC, the use of ABC for decision-making, the decisions taken with ABC information, and the dollar improvements resulting from

ABC. They found that the explanatory power of each determinant was greater when the broader success measure was used. However, Foster and Swenson's measure also did not distinguish between different stages of ABC implementation. As a result, the current study will use a multi-attribute approach to the measurement of ABC implementation success within the Jordanian Manufacturing Shareholding Companies, and this multi-attribute approach is consisted of satisfaction with ABC implementation, ABC information technical characteristics rating, the extent of using ABC in decision-making and the degree of success of ABC implementation. The research framework is shown in Figure 3.1.



Source: Innes & Mitchell (1990), Cobb et al. (1995), Kasurinen (2002)

Figure 3.1:  
*Research Framework*

Figure 3.2 below shows the research framework to answer the research question number 9; this framework shows the relationship between company sector, company size, product diversity, and level of overhead cost as an independent variables and ABC implementation as a dependent variable.

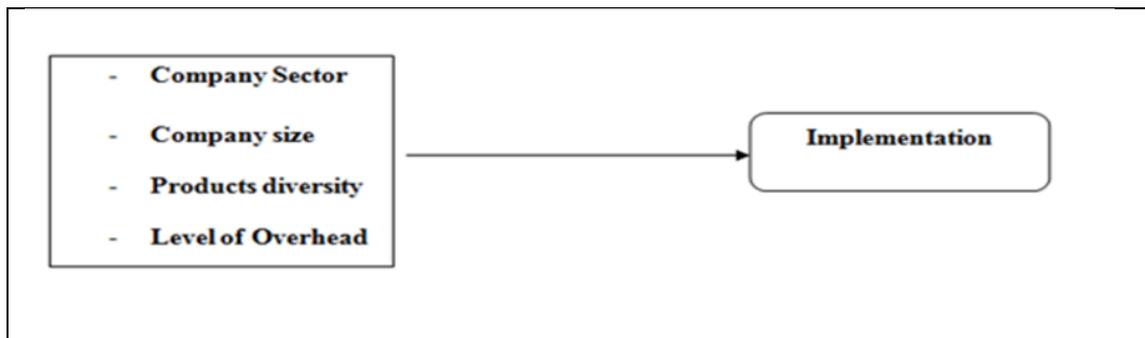


Figure 3.2:  
*Research Framework to Answer the Research Question Number 9*

### **3.2 Hypotheses Development**

Even though there has been a considerable amount of research relating to ABC, there were several factors that prompted further research on this topic. First, the term 'implementation' has been subject to different interpretations with some studies defining it as 'actual ABC implementation' and others defining it as 'consisting of either actual implementation or a desire to implement it. Furthermore, the basis for comparisons of factors influencing the implementation of ABC have differed with some studies comparing those firms that have actually implemented ABC with those that have not and others comparing firms that have considered the implementation of ABC with those that have shown no interest in ABC. It is, therefore, difficult to compare the findings from the various studies, particularly relating to usage rates or the ability of factors to

discriminate between implementation/non-implementation when the term 'implementation' has been subject to different definitions.

Second, difficulties can apply in distinguishing between ABC and non-ABC systems and some researchers have questioned whether systems described by survey respondents as ABC really are ABC systems (Dugdale & Jones, 1997). Previous surveys have mostly allowed the respondents to self-specify whether their organizations operated an ABC system. Suitable control questions that allow the researcher to check respondents' claims that their organizations are operating ABC systems have rarely been incorporated in previous questionnaire surveys. Dugdale and Jones conclude that their findings suggest that survey claims for ABC adoption may be mistaken, exaggerated or ambiguous.

However, the development of the research hypotheses in this research is based on the theoretical framework of management accounting change and diffusion of innovation theory. The theoretical and empirical research suggests a number of variables that may affect ABC implementation. Descriptive analysis and hypotheses are used in this research to know the influence of most of these factors to ABC implementation.

In the following sections the main hypotheses are described. It's focusing on the hypotheses relating to the ninth objective which related to company characteristics factors influencing the implementation /non-implementation of ABC systems. The research hypotheses address company characteristics factors which includes (i) Industry

type (ii) company size (Number of Employees) (iv) Products diversity (Number of Product) (v) level of overhead costs. However, this study intends to find out whether the independent variables have a significant relationship on the implementation of ABC systems, Therefore In the following sub-sections the literature is drawn off to develop hypotheses relating to each of the above factors. The findings of the statistical tests relating to these hypotheses are presented in Chapter 4. Table 3.1 shows a summary of the independent variables used in the present study.

Table 3.1:  
*Summary of Independent Variable*

<b>Variable</b>	<b>Definition</b>
Company Sector	Type of sector
company size	Number of employees
Products diversity	Number of product
Level of Overhead	Degree of potential cost distortion

### **3.2.1 Company Sector**

Shields (1997), argues that the design and effectiveness of cost accounting information and systems are conditional on characteristics of industries. The diffusion of innovation literature, also implies that organizations within an industry sector may imitate other organizations. Therefore, the imitation process may result in similar accounting systems being adopted within specific business sector. ABC was initially introduced in manufacturing organizations. Thus, mimicking behavior suggests that manufacturing

organizations may be more likely to adopt sophisticated costing systems (Al-Omiri & Drury, 2007). Therefore, the following hypothesis is formulated:

*Hypothesis 1:* There is a positive relationship between type of sector and ABC implementation.

Based on the Department of Statistics Reports and Ministry of Industry and Trade in Jordan, they classified the eleven type of sectors which have the same characteristics into three groups, first one was called the engineering sector, and this group includes two sectors, namely: electrical, and engineering and construction industries. The second one was called the processing sector, and this group includes four sectors, namely: chemical industries, medical industries, glass and Ceramic industries, and Mining and Extraction industries. The last one is called consumers product sector, and this group includes five sectors, namely: food and beverages, tobacco and cigarettes, textiles, leathers and clothing, paper and carton industries, and printing and packaging, the benefit of this classification it will make the data analysis valid. Therefore, the following hypotheses is formulated as branches to the main hypothesis:

*Hypothesis 1a:* There is a positive relationship between type of sector - Engineering sector and ABC implementation.

*Hypothesis 1b:* There is a positive relationship between type of sector - Processing sector and ABC implementation.

*Hypothesis 1c:* There is a positive relationship between type of sector - Consumers sector and ABC implementation.

### **3.2.2 Company size**

Krumwiede (1998) pointed out that the reasons for the significant size effect in prior ABC implementation research are unclear. A possible reason for this is that larger firms have relatively greater access to resources to experiment with the introduction of innovative systems such as ABC. Several surveys have also indicated that an important factor limiting the implementation of innovation of ABC is the prohibitive cost (Inns & Mitchell, 1995; Shields, 1995). As larger firms have more resources to develop innovative systems, it is also more likely that they will be able to adopt and implement more sophisticated costing systems or any innovation. Larger firms also have a larger network of communication channels and the necessary infrastructure for adopting ABC and they may have a larger and more diversified range of activities leading to greater product, service and customer diversity. This situation may create the need for more sophisticated costing systems such as ABC to measure resource consumption by different cost objects (Bjørnenak, 1997; Brown et al., 2004). In empirical research, Brown et al. (2004) found that the number of employees was positively related to whether operating units were considering or had considered ABC. However, there is a range of factors that could be used to describe company size, such as number of employees, annual sales, total revenue, net worth, total assets and capital. Askarany and Smith (2008) recommended that companies are most commonly classified by size according to the number of employees and size of capital. Therefore, the number of employees is used to measure the company size in the present study. Therefore, the following hypothesis is formulated:

*Hypothesis2:* There is a positive relationship between the size of the organization - Number of Employees and ABC implementation.

### **3.2.3 Products Diversity**

Product diversity leads to a higher potential for cost distortion and applies when products consume activity resources in different proportions. Greater product diversity requires more sophisticated costing systems to capture the variation in resource consumption by different products. Cooper (1988b) point out that product diversity includes support, process and volume diversity. Support diversity refers to varying support given to each product by various support departments whereas process diversity refers to differences in consumption among all identifiable activities relating to product design, manufacture, and distribution. Volume diversity occurs when products are manufactured in different batch sizes thus affecting how batch level costs should be assigned to products. The more complex the production process the more complex the costing system that is required to model it (Malmi, 1999). Product diversity determines production process complexity resulting in more activities being required to manufacture them. Thus, to measure the resource consumption of different products in a complex setting, sophisticated costing systems are required. Based on the above discussion the following hypothesis is formulated:

*Hypothesis3:* There is a positive relationship between the levels of products diversity- Number of products and ABC implementation.

### **3.2.4 Level of Overhead**

When higher levels of overhead costs are incurred to produce products, it is argued that there is a greater need to use product costing systems to capture those costs in product costs (Bjørnenak, 1997). When overhead costs (excluding facility-level costs) make up a high proportion of total product costs, Kaplan and Cooper (1998) consider that ABC should be used. In research into the consideration for ABC, Brown et al. (2004) did not observe a significant effect for overhead costs to value added costs on operating units that were considering or had considered ABC versus those that had not considered it. In contrast, Booth and Giacobbe (1998) found that operating units with a higher rate of overhead costs to value added costs in operating units had shown an interest in ABC. Operating units with a higher rate of manufacturing overhead costs to total manufacturing overhead costs would be expected to be more likely to have implemented or to be implementing ABC. Based on the above discussion the following hypothesis is formulated:

*Hypothesis 4:* There is a positive relationship between the level of overhead in an organization's cost structure and the implementation of ABC.

### **3.3 Research Design**

According to the complexity of the topic, researchers have presented several definitions for research design and, even though their definitions differ, they agree on the essential conditions for research design. First, the design is a plan for selecting the sources and types of information used to answer the research question. Second, it is a framework for

specifying the relationship between the study variables. Third, it is a blueprint that outlines each procedure from the hypothesis to analysis of the data (Cooper & Emory, 1995). The design provides answers for such questions as: What techniques will be used to gather data? What kind of sampling will be used? How will time and cost constraints be dealt with? No simple classification system is available to define all the variations of research design.

According to Cooper and Emory (1995), seven different perspectives can be used to classify research design. They are:

1. The degree to which the research problem has been crystallized (the study might be exploratory or formal);
2. The method of data collection
3. The purpose of the study (the research might be descriptive or causal);
4. The time dimension (research might be cross-sectional or longitudinal);
5. The topical scope, breadth and depth of the study (for example, the research may be a Case study or a statistical study);
6. The research environment (most business research is conducted in a field setting although laboratory research is not unusual; simulation is another category);
7. The subjects' perceptions of the research (e. g. Does the study observe the natural behaviour of the participants?) .

In order to classify the design of this study, the relationship between this research and the above perspectives is discuss below.

### **3.3.1 Degree of Problem Crystallization**

According to Sekaran (1992, p. 95), a study might be classified as either exploratory or formal, with the former being 99 undertaken when we do not know much about the situation at hand". Alternatively, Hussey and Hussey (1997, p. 10) state that exploratory research " is conducted into a research problem or issue when there are very few or no earlier studies to which we can refer for information about the issue or problem". Extensive preliminary work has to be done to gain familiarity with the phenomena relating to the situation and to understand what is happening before a model can be developed and a rigorous design set up for complete investigation. Exploratory studies are, thus, important for obtaining a good grasp of the phenomena of interest and for advancing knowledge through good theory building (Sekaran, 1992). The immediate purpose of exploration is usually to develop hypotheses or questions for further research. The formal study begins where the exploration leaves off. It begins with a hypothesis or question and involves precise procedures and data source specifications. The main goal of a formal research design is to test the hypothesis or answer the research questions. This research contains both exploratory and formal elements. It is considered exploratory because the picture about some ABC phenomena, such as reasons for not adopting ABC, is not clear. Given that some hypotheses related to the company characteristics from the theoretical literature are also formulated, this research can also be considered to represent a formal study.

### **3.3.2 Method of Data Collection**

Deciding on the appropriate research methodology is an essential part in defining the steps to be taken toward the completion of the research (Saunders, Lewis, & Thornhill 2000). The methodology itself outlines all the essential steps to be followed in gathering and analysing the data for research (Hussey & Hussey, 2003). The use of multiple research methods (triangulation) is vital in the management accounting studies in general and ABC particularly. For instance, the combination of quantitative and qualitative research methods in ABC research has received significant attention (Anderson & Young, 1999; Chongruksut, 2002; Foster & Swenson, 1997; Maelah & Ibrahim, 2006). The importance in combining both quantitative and qualitative research has been demonstrated in that it has been practised by many practitioners and academic alike, as the use of more than one method improves the depth and quality of data gathered (Creswell, 2003; Saunders et al., 2000; Sekaran, 2003).

A multi-method approach (combination of questionnaire survey and semi-structure interviews) will be used in this research study. This study therefore conducted in two sequential stages using mixed methods of data collection and analysis. It is hoped that the combined will make significant contributions.

The first stage is a quantitative study. Questionnaire survey will be developed. The primary aims are to determine the current state of ABC adoption and implementation and examined the factors that catalysts, motivate and facilitate and create barriers to ABC implementation.

In survey studies the researcher questions the subjects and collects their responses by personal or impersonal means. Examples include personal interviews, telephone interviews, self-administered questionnaires, mailed questionnaires, e-mail questionnaire services, or a combination of personal and impersonal techniques to collect the data. In this study, a personal delivery and collection will be used to collect the data in this stage.

In the second stage, qualitative interview will be used to probe the significant results of the questionnaire survey. The interviewees will be conducted among companies that have adopting, implementing and using ABC. The aims are to explain the barriers of ABC adoption and implementation, the factors that catalysts motivate and facilitate the implementation of it, and the problems encountered during the process of implementing it (See Section3.5).

### **3.3.3 Purposes of the Study**

Some of the purposes of the study can be classified descriptive and others as causal. The main objective of a descriptive study is to learn the who, what, when, where and how of the topic (Cooper & Emory, 1995). The objective of a causal study is to find out why. This is used when it is necessary to establish a definitive 'cause-effect' relationship. Some of the aims of this study are to ascertain ABC implementation percentage, the applications of ABC and the level of success. Thus, part of this research can be classified as descriptive. On the other hand, some aims of the research include determining why some firms do not adopt ABC. ABC has a value as the literature review has advocated but many firms have not yet adopted ABC. This research also focuses on examining the

impact of certain factors on the decision to implement or not implement ABC. Therefore, elements of this research can also consider being a causal study.

#### **3.3.4 The Time Dimension**

Research may be cross-sectional or longitudinal. In cross-sectional research data are gathered just once, perhaps over a period of days, weeks or months, in order to answer a research question (Sekaran, 1992). In longitudinal research the data gathering is repeated over an extended period of time in order to answer a research question. This research has been carried out at one point in time, so it is considered to be cross-sectional.

#### **3.3.5 The Topical Scope**

Research can be either statistical or case study based. Statistical research is designed for breadth rather than depth. It attempts to capture a population's characteristics by making inferences from a sample characteristic. Hypotheses are tested quantitatively. Case studies place more emphasis on a full contextual analysis of fewer events or conditions and their interrelations. This study is considered to be statistical and case study because descriptive analyses are used and hypotheses are developed and statistically tested, followed that case study is used for more confirmation and explanation.

#### **3.3.6 The Research Environment**

Studies can be classified as field studies or laboratory studies. Field studies occur under actual environmental conditions. Laboratory studies are usually conducted under

simulated or artificial conditions. This study is, therefore, classified as a field study because it has been conducted under actual environmental conditions.

### **3.3.7 The Subjects' Perceptions**

The usefulness of the research outcomes may be reduced when people participating behave differently when they perceive that their behavior is being studied and researched (Cooper and Emory, 1995). When subjects believe that something out of the ordinary is happening, they may behave less naturally. The participators in this research were aware of the study's objectives. They were informed in a covering letter what the study was trying to achieve and it was hoped that this would evoke their co-operation.

## **3.4 Research Methodology and Research Methods**

It is not easy to distinguish between research methodology and research methods and there is little consensus between researchers about the two terminologies because the difference between them is not always clear (Sekaran, 2003). Hussey and Hussey (2003) claimed that some authors use the two terms interchangeably. They pointed out that research methodology refers to the overall approach of the research process that involves theoretical underpinning or formulation, data collection and analysis. Research method relates to a specific technique or procedure for data collection and analysis, which mostly depends on the methodology used. Furthermore, Creswell (2003) used the term 'Strategy of Inquiry' rather than 'Methodology' (Creswell, 1998, cited in Creswell, 2003, p.13), while in Saunders et al. (2000), used the terms 'Research Method' or 'Strategy of Inquiry' were used. However, in the current study, the term 'Methodology' is used to

provide specific direction for procedures in research design, data collection, and the term links the use of methods to the research outcomes while, the term 'Method' is used for a technique or procedure that is used to gather and analyze data in the current study.

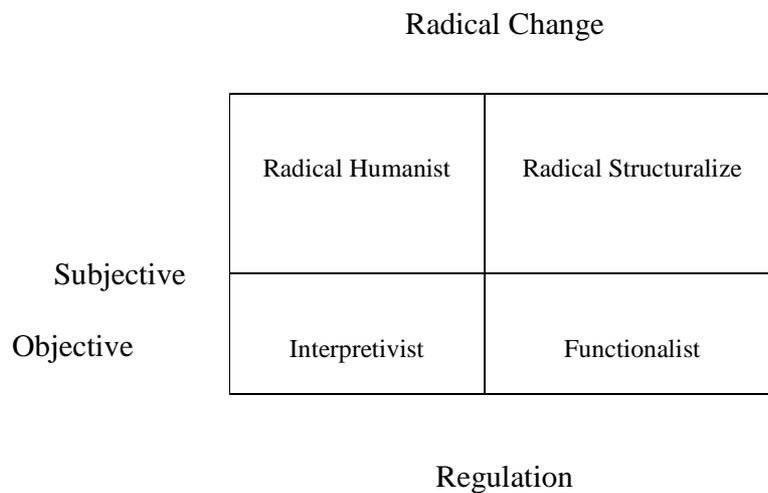
Any methodological position consists of two elements; ontology and epistemology. Guba and Lincoln, (2005) stated that Ontology refers to the nature of the world around us; in particular, that slice of reality which the scientist chooses to address. They suggested two extreme positions; realism, which postulates that the universe is comprised of objectively given, immutable objects and structures that exist independent of the observer's appreciation of them. The other extreme is relativism or instrumentalism, which holds that reality, is a subjective construction of the mind. Therefore what is subjectively experienced as an objective reality exists only in the observer's mind. An epistemological issue is concerned with the question of what is regarded as acceptable knowledge in a discipline, in other word, the nature of knowledge. Burrell and Morgan (1979) defined epistemology through two streams of knowledge; positivistic and anti-positivistic. The positivistic approach explains and predicts what happens in the social world by searching for regularities and causal relationships between its constituent elements. On the other hand, the anti-positivistic approach shows that the social world is essentially relative and can only be understood from the point of view of individuals who are directly involved in the activities under study.

Saunders et al. (2000) argued that the way in which a researcher thinks about the development of knowledge is dominated by two views; positivism and phenomenology.

Creswell (1994) argued that there are two paradigms (perspectives); phenomenology and positivism. Phenomenology can be seen as the research of human experiences that are examined through the detailed descriptions of the people being studied. Creswell (2003) argues that the steps for data analysis may be less structured and the outcome will typically be made up of a descriptive narrative.

On the other hand, Sobh and Perry (2006) stated that the positivism perspective is based on the assumption that there is an 'existing truth in the world' and that this truth can be revealed through scientific method. Positivism is a scientific approach to research where the researcher acts as an objective analyst. The methodology is usually highly structured to facilitate replication and the results are quantifiable. Statistical analysis can be conducted and the researcher is independent of the subject of the research. Because the focus of this research is on the systematic and statistical measurement of the relationship between variables, positivism acts as a guiding philosophy for this work (Perry et al., 1999).

Burrell and Morgan (1979) argued that assumptions regarding the nature of social science could be thought of in terms of the subjective/objective dimension, and assumptions about the nature of society in terms of a regulation/radical change dimension, which results in a 2 x 2 matrix. Thus, four different research paradigms were introduced by Burrell and Morgan (1979) namely; functionalism, interpretivism, radical structuralism, and radical humanism (see Figure 3.3). Each of the four paradigms has fundamentally different assumptions concerning the nature of social science and the nature of society.



Source: Burrell and Morgan (1979) p. 22)

Figure 3.3:  
*Burrell and Morgan's Four Paradigms*

Burrell and Morgan (1979) differentiated between the four paradigms (perspectives) as follows: functionalist paradigm is concerned with providing explanations of the status quo, social order, social integration, consensus, need satisfaction, and rational choice. It depends on the idea of a real ontology where the social world is separated from the researcher. The interpretivist paradigm seeks explanation within the realm of individual consciousness and subjectivity, and within the frame of reference of the perspective, so it can be said that this paradigm perceives the world as it is but explains it within the researcher's consciousness. The radical structuralize paradigm has a view of society and organizations, which emphasizes the need to overthrow or transcend the limitations placed on existing social and organizational arrangements by assuming that contemporary society is characterized by conflicts and contradictions that generate some radical change through political and economic crises and revolutions. The radical humanist paradigm

seeks radical change, emancipation, and potentiality. It stresses the role that different social and organizational forces play in understanding change. It simply assumes that the consciousness of the researcher is dominated by ideological superstructures with which he/she interacts, and therefore, seeks ways to overcome them. Based on the four research paradigms (perspectives) introduced by Burrell and Morgan (1979), this study leans towards the functionalist (positivism) paradigm.

### **3.5 Data Collection Methods**

Previous researchers and practitioners (such as, Bouma & Ling, 2004; Collis & Hussey, 2003; Creswell, 2003; Neuman, 1997; Sekaran, 2003) suggested that most social science research in management accounting is conducted by using one of the two research approaches: quantitative research and qualitative research.

The requirement of the selection of the appropriate data collection methods is to enable the objectives of the research to be achieved. In the current study, mixed methods, qualitative for a small number of companies and a quantitative for a relatively large number of companies, are available to examine the diffusion of ABC. Ryan et al. (2002) claimed that each method, tool and technique has its unique strength and weakness. In other words, there is an expected relation between the data collection method which is employed and the result obtained (Collis & Hussey, 2003).

Following explanations are given for these two research approaches (quantitative and qualitative). The strengths and weaknesses of each are also identified.

### **3.5.1 Quantitative Approach**

Quantitative approach is usually based on questionnaire method or experimental method of data collection followed by the use of scientific method to analysis in the numerical form (Bouma & Ling, 2004; Collis & Hussey, 2003; Sekaran, 2003). In general, quantitative method tries to respond the questions starting with 'what', 'how' and 'how many' (Creswell, 1998). Normally, in this method, the percentage and frequency, or proportion, of responses is determined. In other words, the quantitative approach or questionnaire involves collecting numerical data that can be tabulated, charted, graphed and analyzed using suited statistical methods (Creswell, 1998; Roberts, 1999; Sekaran, 2003).

In quantitative approach, questionnaire must be sent to all population in the sample of the study to collect complete and comprehensive data about the research variables in order to quantify the relationships among these variables. This involves the test of hypotheses derived from determinant theories that may be accepted or rejected on the basis of comparative and statistical analyses (Bouma & Ling, 2004; Collis & Hussey, 2003). According to Sekaran (2003), the quantitative approach is a deductive method; it starts from general theory and ends with specific or small observations. In other words, the researcher firstly determines the theory which could explain the phenomenon, then collects necessary data to examine or test the hypotheses. Creswell (2003) stated that the technique of traditional quantitative method is questionnaire or survey, face-to-face, administered by mail or more recently by the internet, to collect information about the phenomenon or population.

### **3.5.2 Qualitative Approach**

This method is a process of investigation to know or understand a social or human problem from different perspectives in a natural setting with the goal of building a complex holistic picture of the phenomenon of interest (Mason, 2002).

According to Carson, Gilmore, Gronhaug, and Perry (2001), the purpose of qualitative researchers is collecting information from large number of context stripped cases and seeking statistical significance. Another difference of qualitative researchers is they work with small sample of studies to collect in depth information about the sample or phenomenon of the study. Cassel, Buehring, Symon, and Johnson (2006) said that the qualitative approach is:

“... useful as aids or tools to help the respondents think about their own worlds and consider, possibly for the first time, the way they construct their reality”  
(p.71).

Many researchers (such as Carson et al., 2001; Gummesson, 2000; Maxwell, 1996; Sekaran, 2003) suggested that qualitative approach is inductive research of the phenomenon or reality in nature. Usually, qualitative researchers and practitioners use field work research method, observations and primary case studies within natural settings. Qualitative approach is concerned with qualities and non-numerical characteristics (Black, 1999; Carson et al., 2001). Creswell (2003) said that the qualitative research gives more abilities to the researchers to describe the phenomenon

and also shows how the observations drive the researcher to analyze and isolate variables by using the induction in the research. This approach also shows how, in turn, these variables may be developed into a theory. Creswell (2003) and Sekaran (2003) stated that the qualitative approach usually involves collecting a great deal of non-numerical form of information about a small number of people or organizations. Also, in business research, qualitative approach provides the researchers a more real basis for analysis and explanation.

Moreover, researchers (such as, Hussey & Hussey, 1997) criticized qualitative approaches because it suffers from the shortcoming relating to rigor and subjectivity. The limitation is also in the form that the results are not generalisable. Another problem of qualitative research is using Likert-type scales, or reliability tests are not possible because data sets do not contain multiple measures (Sekaran, 2003).

In sum, two approaches of research methods, quantitative and qualitative, vary in terms of study or population size, in the measures and statistical techniques. For instance, to determine relationships and differences among large samples of target populations, the researcher must use mathematical measures and statistical techniques by adopting quantitative research method. Highly structured quantitative research involves designing questions with a choice of specific responses so that the responses can be measured and analyzed mathematically. But qualitative approach is less formally structured than quantitative approach and uses smaller samples than in quantitative approach. The data

gathered using qualitative techniques are subjective and non-quantifiable (Flicks, 2002; Sale, Lohfeld, & Brazil, 2002)

Each type of general method may involve various specific techniques for collecting data. For example, a general quantitative method may be operationalised through experiment and/or survey. A basic qualitative method can be followed by simple observations, and/or by interview. Based on the methods of data collection, Hussey and Hussey (1997) classified research into two types: observation and survey. However, Zikmund (2003) expands this classification to four basic types: observation, surveys, interview method, and secondary data based studies. Each type will be described in brief.

**Observation methods:** observation methods contain collecting information about peoples' behavior without their knowledge or without asking them. As a result, it supplies rich data and insights into the nature of the phenomena being observed (Ryan, Scapens, & Theobald, 2002).

**Survey method:** is a research method in which data is collected from a sample of people by using questionnaire (Zikmund, 2003; Sekaran, 2003; Collis & Hussey, 2003). Many researchers (such as, Zikmund, 2003; Sekaran, 2003; Collis & Hussey, 2003) said while survey methods provide quick, inexpensive, flexible, efficient and accurate means of assessing information about the population, they may contain some drawbacks.

**Interview method:** this method adopts the discussion between two or more people (Saunders et al., 2000). The use of interviews can help researchers to collect reliable and valid data suited to his/her research questions and objectives (Saunders et al., 2000; Collis & Hussey, 2003).

**Secondary data study:** this method uses previously collected data. It is collected and recorded by a third party prior to the current needs of the researcher (Zikmund, 2003). These sources may be academic journals, text books, websites, company reports and the newspapers.

Collis and Hussey (2003) and De Vaus (2007) argued that it is difficult to decide which method is the best. The best method depends on the purpose of the study (the research might be descriptive or causal), sample size and distribution, time and money available, and the environment and conditions under which the study is conducted (Collis & Hussey, 2003; Sekaran, 2003; Zikmund, 2003). The next section discusses the suitability of the approach and methodology selected for this study via combination of quantitative and qualitative methods of data collection.

According to Sekaran (2003), combination of quantitative and qualitative methods will help in overcoming the disadvantages of both methods. He also stated that data collection through different methods and from multiple sources lends rigor to research. De Vaus (2007) suggested that each method, or approach and technique have its unique strength and weakness. In other terms, there is a strong relation between the data collection

method which is used and result obtained by this method (Collis & Hussey, 2003). Saunders et al. suggested that using a multi-method approach in research by combining quantitative and qualitative approach will obtain two main advantages. Firstly

“Different methods can be used for different purposes in a study. You may wish to employ case study methods, for example interviews, in order to get a feel for the key issues before embarking on a survey. This would give you confidence that you were addressing the most important issues”.(p. 98)

Secondly, collecting data through multi-methods will give deeper understanding to the phenomenon especially to the change in accounting systems

Creswell (1994) added that the:

“Use of multiple methods may provide a means of not only achieving the objectives of generalizability and limiting interview bias but also of enhancing the meaningfulness of the measures to those completing the survey. This is at the heart of issues relating to construct validity”. (p. 7)

Creswell (2003) argued that through multi-methods it is possible to triangulate data and provide completeness, confirmation, richer detail results, and new lines of thinking. In the previous studies of ABC using the mixed method, both quantitative and qualitative approaches are used to obtain better understanding and to create a source of triangulation.

Researchers (such as, Foster & Swenson, 1997; Innes & Mitchell, 1990) suggested that using mixed methods as a triangulation will help researchers to obtain deeper information about ABC adoption and implementation. Anderson and Young (1999) used mixed method to know the influence of contextual and process factors on the evaluation of ABC. This method involved both surveys and personal interviews for data collection purpose. The interviews were designed to supplement, clarify and interpret the survey data.

Also, Foster and Swenson (1997) examined the level of ABC implementation success and impact of different factors to ABC implementation process, by collecting data through a mail survey and field study. Chongruksut (2002) employed several data collection methods, including questionnaire and structured interviews in his study of adoption and implementation of ABC in Thailand. Maelah and Ibrahim (2006) in Malaysia conducted a mixed method to know the factors which influence ABC's successful adoption and implementation. Rahmouni and Charaf (2010) in France conducted a mixed method to know the factors which influence ABC success. In developing countries, Alabbadi and Areiqat (2010) employed a mixed method in Jordanian private universities.

Several researchers explain how quantitative and qualitative methods can be combined (Collis & Hussey, 2003; Creswell, 2003). Creswell (2003) claimed that there are four strategies for using both quantitative and qualitative methods.

1. Qualitative methods may be employed to aid in the interpretation of quantitative research results. Creswell (2003) argued that a qualitative method can support by examining more detail unexpected results arising from a quantitative method.
2. Qualitative methods may be employed to aid in the construction of quantitative measures and instruments.
3. Quantitative methods may be employed to support the qualitative research results. This strategy can be employed to test the elements of a theory emerging from the qualitative phase, and to create qualitative results for different samples.
4. Qualitative and quantitative methods can both be used equally, and the results combined.

In accordance with the first strategy above the present study was separated into two distinct stages:

1. A quantitative stage employing a two questionnaire survey, and
2. A qualitative stage employing personal interviews.

Based on Creswell (2003) aims for using mixed methods within a single study, the main aim of mixed method approach using both quantitative and qualitative in the current study are explained as follows:

Firstly, the current study completely fits the complementary method. As defined by Creswell (2003):

"A complementary, seeks elaboration, enhancement, illustration clarification of the results from one method with the results from the other method".(p. 259)

So, the findings from personal interviews will be employed to enhance and elaborate, or to illustrate and interpret the findings from the questionnaire survey (Gillham, 2000; Yin, 2003). Motivation, catalysts, facilitation and barriers to ABC implementation that were not illustrated in detail by the quantitative stage can be illustrate in more detail in the qualitative stage. Secondly, data collection with multiple methods allows triangulation of data, and provides both completeness and confirmation of overall findings (Sekaran, 2003).

Finally, researchers (such as, Krumwiede, 1998) argued that studies which used only questionnaire survey are subject to mistakes, overstatement or ambiguous results, and may not provide the proof that the response claiming that the company to be ABC adopters comes from real ABC adopters. Also, using only questionnaire survey may not easily explain and illustrate the factors that motivate, catalyze, facilitate and that create barriers to ABC adoption and implementation. In the current study, the researcher used the following series of steps to employ the mixed method:-

Firstly, initial questionnaire survey will be conducted in each company in order to determine the current state of ABC adoption and implementation and each stage for within the sector. Secondly, the main questionnaire survey will be conducted within a particular sector to review the extent of usage of ABC, to identify the factor catalysts, motivating, facilitating and to know barriers to adopting and implementing ABC among Jordanian manufacturing companies, and finally to evaluate the degree of success of ABC. Thirdly, personal interviews will be conducted to clarify the understanding, to add

further information about ABC, and to identify the factors that influence the decision to adopt and implement ABC.

### **3.6 The First Phase: The Initial Survey**

#### **3.6.1 Objectives of the Initial Survey**

Initial questionnaire survey will help to overcome the problem of adoption definition as previous studies defined it as actual ABC implementation (Cagwin & Bouwman, 2002; Shields, 1995). Other studies defined it as either actual implementation or the wish for implementation (Cohen et al., 2005). In addition, this problem led to different results regarding the adoption percentage in different studies, and identification of different factors. Also, this problem led to difficulties in comparing the results from the different studies (Drury & Tayles, 2005).

Initial questionnaire survey was conducted in the Jordanian manufacturing to determine the category of adoption and implementation for each company. The adoption of ABC implementation was used as a basis to categorize the companies into stages (Krumwiede, 1998). The researcher segmented ABC adoption and implementation stages in the questionnaire to five stages. These stages are non-adopter, adopter, implementer, users, and abandoners. The researcher defined the stages in the questionnaire and requested the respondents to determine their situation about ABC system by choosing one stage from the initial questionnaire.

### 3.6.2 Administration of the Initial Questionnaire

Initial questionnaire was sent to all the Jordanian manufacturing companies and included two main questions. The aim of the first question was to request the respondents to determine one category from the five in order to explain the situation of the company about ABCS. Secondly, the initial survey was used as a participation form, giving the respondent decision to participate in the interview.

This process took place from 22<sup>th</sup> October to 9<sup>th</sup> December 2010. Ninety-two questionnaires were distributed and Eighty-two questionnaires were returned, giving a percentage of response of 89%. This was followed-up with a phone call and by a personal appointment to improve the response percentage. The following Table 3.2 shows the results of this survey.

Table 3.2:  
*Number of Companies in each Category of ABC Implementation Stages*

Name of the Stage	Number of the Companies
Non-adopters	48
Adopters	14
Implementers	9
Users	7
Abandoners	4
<b>Total</b>	<b>82</b>

### **3.7 The Second Phase: The Main Questionnaire Survey**

#### **3.7.1 Questionnaire Survey**

The main questionnaire survey was conducted in this sector to review the extent of usage of ABC, to identify the factors facilitating, catalyzing, and motivating, and to know barriers to adopting and implementing ABC among Jordanian manufacturing companies, and to evaluate the level of ABC success. Sekaran (1992, p 200) defined a questionnaire as:

“A pre formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives; a questionnaire is an efficient data-collection mechanism when the researcher knows exactly what is required and how to measure the variables of interest”.

In the social science field, the questionnaire is the most frequently used method (Saunders et al., 2000). As a response to highly directed questions, it is a highly structured method of collecting specific information (Fowler, 2009). A questionnaire consists of a list of questions taking the form of closed-ended or/and open-ended questions. Normally, questionnaires are used to explore attitudes and opinions about certain issues. It is used to obtain data that are not available within the public domain (Hussey & Hussey, 1997).

The questionnaire survey is one of the most extensively used techniques that have been used to investigate the diffusion of ABC and to identify the factors influencing its

adoption and implementation (Gosselin, 2006; Innes & Mitchell, 1991; Shield, 1995). The use of questionnaire is applicable for both descriptive and explanatory research. In descriptive research, it allows the researcher to identify and describe the variability in different phenomena. But for explanatory research, it allows the researcher to investigate and explain relationships between variables (Saunders et al., 2000).

The use of questionnaire in this research is also consistent with the views of Sekaran (2003) and Saunders et al. (2000). The reasons for using this method of data collection are detailed as follows:

1. Questionnaire is the most common method of data collection. This method assures the anonymity of respondents and enables them to respond more freely and at their convenience. The data gathered by this method are believed to be representative of the respondents' knowledge of the subject. This has a positive effect on the credibility of the research.
2. In terms of time and financial resources, it is suitable for an individual researcher with limited resources;
3. A large numbers of respondents can be distributed with the questionnaire. Thus, a wider range of respondents gives greater credibility to the data collected;
4. A great deal of information can be obtained without taking much time. The problems of the interviews bias and variability inherent in face-to-face techniques are also limited in this method.

### **3.7.2 Questionnaire Design for the Current Study**

Nachmias and Nachmias (1996, p.98) defined survey research design as:

“A plan that guides the investigator in the process of collecting, analyzing, and interpreting observations. It is a logical model of proof that allows the researcher to draw inferences concerning causal relations among the variables under investigation”.

Designing a good survey involves selecting the proper instrument and questions to meet the research purposes, testing them to make sure they can measure the intended purpose, and presenting them in an easy format which respondents can understand and participate in effectively (Saunders et al., 2000; Trochim, 2006).

In designing the questionnaire for the current study, the procedures and guidelines discussed by Sekaran (2003) were carefully considered, in particular, in terms of the number of questions, the range of response categories, and the clarity of the instructions given.

Sekaran (2003) suggested that, in order to help the potential respondents to fill out the questionnaire without need for assistance, the questions must be as easy as possible, short and precise. Moreover, she suggested that the questions on self-administered questionnaires must be closed-ended ones. Closed-ended questions may facilitate respondents' completion of the questionnaire (Trochim, 2005). Also, closed-ended

questions are quicker and easier than open-ended questions for the respondents to complete (Hussey & Hussey, 2003; Trochim, 2005). Therefore, the current study has employed this type to design all questions. In addition, all questions were adopted from past studies. Each question in the questionnaire represents a component of the research model. The questions were selected based on their theoretical importance as well as their potential relevance to practice.

Different styles of questions were used in the questionnaire, namely, 5 point scale style and multiple-choice style. Sekaran (2003) and Trochim (2006) identified a number of benefits of incorporating different styles of questions into the questionnaire. One is that it provides the questionnaire with the necessary flexibility. Another is that it avoids undue uniformity in the questionnaire and attracts the respondent's attention. The research study employs five-point Likert scales throughout the questionnaire for all statements requiring scaling. This is done to keep the respondents' minds and feelings more focused on the statements in the questionnaire and to enable them to indicate the extent to which they agree or disagree with a variety of statements.

The reasons for ABC implementation and the factors that facilitate and motivate the process of ABC implementation in this study are measured using a multi-item scale. A multi-item scale comprises two or more items that measure the same factor (Fowler, 2002; Sekaran 2003). According to Hussey and Hussey (2003) and Saunders et al. (2000) multi-item scales provide a more sensitive measurement of the factor.

The section of the questionnaire requiring the respondents' personal information was placed at the end of the questionnaire. The main purpose was to enable the respondents to proceed to answering the questions immediately after reading through the covering letter of the questionnaire, which provided guidance to the respondents. On the very last page of the questionnaire, the researcher thanked the respondents and provided them with a blank page to make any comments about the questionnaire and/or research study (Fowler, 2002).

### **3.7.3 Questionnaire Classification with Operative Definition and Measurements**

The questionnaire contains six parts. Each part consists of several questions on particular aspects of ABC adoption and implementation. These parts are: company characteristics, barriers or reasons for non-adoption of ABC, factors against ABC implementation, ABC implementation, level of ABC success, and demography questions. The aim of this segmentation is to facilitate answering questions by respondents as well as the statistical analysis of the data gathered by the researcher.

The questions in the first and final sections (company characteristics and demography questions respectively) were designed to seek general information about respondents and their companies. Therefore, these questions were used for all respondents. The six sections are detailed as follows:

**First Section:**-This section covers company characteristics such as industry type (question 1), numbers of employees (question 2), numbers of products (question 3), and

level of overhead (question 4). These questions investigate whether these factors were associated with the implement or non-implement of ABC. Evidence from Bjornenak (1997), Chung et al. (1997), and Cohen et al. (2005) implies that the cost structure of a company and the characteristics of product/service and production, influence the capability of the company to use ABC.

**Second Section:**-This covers the reasons for non-adoption of ABC. These factors are known from the literature as barriers to the adoption of ABC. There are 21 potential reasons covered in this section. The researcher determines the importance of these factors based on the literature review. For each reason, the respondents will be asked to indicate their agreement rated on a five-point scale ranging from 1 = strongly disagree to 5 = strongly agree. The questions in this section are adopted from Broun et al. (2004), Chung et al. (1997), Cohen et al. (2005), Gosselin (1997), and Innes and Mitchell (1991).

**Third section:** -This section deals with the factors against the implementation of ABC. There are 12 potential factors impacting the implementation of ABC in this section. The researcher took these factors from the literature review. These factors are also to be forwarded to those who abandoned or adopted ABC but are not currently implementing it. The researcher also added additional questions in the questionnaire for those who abandoned ABC system. The additional questions were regarding their abandonment stage and about additional reasons to this abandonment decision. For each factor, the respondents are asked to indicate their agreement rating on a five-point scale ranging

from 1 = strongly disagree to 5 = strongly agree. The questions in this section are adopted from Broun et al. (2004), Cohen et al. (2005), Innes and Mitchell (1991).

**The fourth section:** -This section is directly forwarded to those who are implementing and using ABC. The intention is to discover the data about the implementation of ABC. Thus, the questions in this section will contain four questions relating to companies' experience with ABC which are detailed next.

1. This type covers the factors that motivated the process of ABC implementation. In this study, the factors were defined as factors that influenced implementation of ABC in a general manner. The specific measures of motivators included the following factors: changes in cost structure (3 items), shortcomings of the existing cost system (5 items), and change in business environment (3 items). These questions contained 11 potential items. The researcher depends on the literature review on the factors motivating the process leading to the implementation of ABC to get all these items. For each item, the respondents are asked to indicate their agreement rating on a five point scale ranging from 1 = strongly disagree to 5 = strongly agree. These questions are adopted from Abernethy et al. (2001), Gosselin (1997), Krumwiede (1998), and Nasser et al. (2009).
2. Catalysts factors are defined as factors associated directly with the implementation decision, which are known as the reasons for implementing of ABC in the literature. These questions cover 10 potential factors found in the

literature review. These factors are adopted from Chongruksut and (2002)Malmi (1999).

3. Factors that facilitated the process of ABC implementation. These factors provide managers with the favorable conditions that are necessary but not sufficient by themselves for a management accounting change. The specific measures of facilitation examined in the current study covered the following factors: top management support (3 items), non-accounting ownership (3 items), internal champion support (2 items), education (2 items), training (2 items), consultants (3 items), and higher information technology (2 items). These questions contained 17 potential items resulting from the literature reviews for factors that facilitated the process of implementing ABC. For each factor, the respondents were asked to indicate their agreement rating on a five point scale ranging from 1 = strongly disagree to 5 = strongly agree. These questions were adopted from Innes and Mitchell (1991), Krumwiede (1998), Maelah and Ibrahim (2006), and Shields (1995)
  
4. During the process of implementing ABC, a company could face problems or difficulties related to change implementation in practice or resistance to change from the employees. These questions include 16 factors and are measured by a five-point scale started from 1 = strongly disagree to 5 = strongly agree. This question was adopted from Broun et al. (2004), Cohen et al. (2005), and Innes and Mitchell (1991).

**Section five** is used to assess the degree of ABC success among user companies. It comprises of three questions. The aim of the first question is to measure the level of success of ABC implementation based on the management evaluation to overall success. This question was adopted from Foster and Swenson (1997) and Shields (1995). The second question is related to the ABC information characteristic rating. This measure contains 5 items adopted from Booth and Giacobbe (1997) and Bryne et al. (2009). Third question is the areas in which ABC information are used. This question provides a list of 7 purposes for which ABC information can be used. The respondents were asked to indicate whether ABC was used for each purpose. This question was adopted from several studies (such as, Anand et al., 2005; Innes & Mitchell, 2000; Pavlatos & Paggios, 2009). The fourth question measures the satisfaction with ABC. This question, containing 3 items, was measured by a five-point scale starting from 1 = very unsatisfied to 5 = very satisfied and was adopted from Foster and Swenson (1997) and Swenson (1995).

The final section is related to the personal information of the respondents such as education, work experience and current position in the company. Table 3.3 shows the Classification of Factors in the Questionnaire it is contains six parts. Each part consists of several questions on particular aspects of ABC adoption and implementation.

Table 3.3:  
*Classification of Factors in the Questionnaire*

Section	Factors determined in the questionnaire
<b>One</b>	<p><b>Questions for all respondents</b></p> <p>Company characteristics</p> <p>Company sector, number of employees, number of products, and level of overhead</p>
<b>Two</b>	<p><b>Factors determined for non-adoption of ABC</b></p> <p>a. Barriers or Reasons for not adopting ABC</p>
<b>Three</b>	<p><b>Factors determined for ABC adoption and abandonment</b></p> <p><b>1.1</b> Factors against the implementation or using of ABC</p> <p><b>1.2</b> Question relating for stage of abandonment and additional reasons to this abandonment.</p>
<b>Four</b>	<p><b>Factors determined for ABC implementation</b></p> <p>Experience with ABC implementation:</p> <p><b>1.1</b> Factors that facilitate the process of ABC implementation</p> <p><b>1.2</b> Factors that motivate the process of ABC implementation</p> <p><b>1.3</b> factors catalysts (association directly with implementation decision).</p> <p><b>1.4</b> Problems of ABC implementation</p>
<b>Five</b>	<p><b>Factors that determined the success of ABC implementation</b></p> <p><b>2.1</b> The level of ABC success (management evaluation to overall success)</p> <p><b>2.2</b> ABC information technical characteristics rating</p> <p><b>2.3</b> The usage of ABC information</p> <p><b>2.4</b> The degree of satisfi</p>
<b>Six</b>	<p><b>Questions for all respondents</b></p> <p>Personal information of the respondents</p>

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Source: Anand et al. 2005, Bjornenak 1997, Broun et al. 2004, Chung et al. 1997, Cohen et al. 2005 Foster and Swenson 1997, Gosselin 1997, Innes et al., 2000, Innes and Mitchell 1991, Krumwiede 1998, Malmi 1999, Shields 1995, Swenson 1995, and the Author.

### **3.7.4 Content of the Final Version of the Questionnaire**

Three setof questionnaire were designed based on the six sections from the questionnaire which were defined in the initial survey. The objectives of designing three setof questionnaire were to motivate the respondents to answer all questions and to reduce the number of pages for each questionnaire (Smith, 2003). In addition, this is also aimed at saving the respondents' time and helping them to focus on specific questions in a particular category that best described his/her business unit's current situation. This method will help to collect more specific and accurate data from the questionnaire.

#### **- Set One: Questionnaire for Non-Adopters of ABC**

The first setof questionnaire was designed to know the reasons that may explain why the non-adopting companies had not-adopted ABC. The questionnaires were sent to the chief financial managers/heads of cost accounting departments to give reasons explaining their decisions for notadopting ABC.

#### **- Set Two: Questionnaire for Adopters and abandoners of ABC**

The second setof questionnaire was sent to chief financial managers/heads of cost accounting departments in companies that had adopted or abandoned ABC but not currently implementing. They were asked to give the reasons and factors explaining their decisions for not-implementing ABC.

**- Set Three: Questionnaire for Implementers and Users of ABC**

The third set of questionnaire was designed to examine the factors that facilitated the implementation stage of ABC, the factors that motivated the implementation of ABC, the factors that acted as catalysts to the implementation of ABC, and the problems faced in ABC implementation process.

Table 3.4 shows the contents of the three sets of questionnaire.

Table 3.4:  
*Contents of Three Sets of Questionnaire Survey*

<b>Set of the questionnaire</b>	<b>Content of the questionnaire</b>	<b>Number of the questions</b>
Set One: Non adopter Companies	<ol style="list-style-type: none"> <li>1. Personal questions</li> <li>2. Questions about company characteristics.</li> <li>3. Question relating to barriers or reasons for non-adopting ABC</li> </ol>	4 questions 4 questions 1 question
Set Two: Adopter and abandoned Companies	<ol style="list-style-type: none"> <li>1. Personal questions</li> <li>2. Questions about company characteristics.</li> <li>3. Question relating factors that impact against ABC implementation</li> <li>4. Question relating for stage of abandonment and additional reasons to this abandonment.</li> </ol>	4 questions 4 questions 12 questions  1 question
Set Three: Implementer and User Companies	<ol style="list-style-type: none"> <li>1. Personal questions</li> <li>2. Questions about company characteristics.</li> <li>3. Question relating to factors that motivate ABC implementation</li> <li>4. Question relating to factors that catalyze ABC implementation</li> <li>5. Question relating to factors that facilitate ABC implementation</li> <li>6. Question relating to problems encountered during ABC implementation</li> <li>7. Questions relating to the level of ABC success</li> </ol>	4 questions 4 questions 1 question  1 question 1 question 1 question  4 questions

Source: The Author

### **3.7.5 Administering the Questionnaire**

The collection questionnaire data process took place from 12<sup>th</sup> December 2010 to 15<sup>th</sup> February 2011. Ninety-two questionnaires were distributed and eighty-two accepted Questionnaires werereturned, giving a rateof response of 89%. Personal delivery and collection are chosen in the current study.

Hussey and Hussey (1997)and Saunders et al. (2000) suggested that collecting the data for a questionnaire survey involved four main methods, namely: face-to-face interviews, self-administered questionnaires, e-mail questionnaire surveys, and telephone surveys. Self-administrated by personal delivery is the most suitable method to collect the data in the current study. Personal delivery and collection was chosen for the following reasons: First, the headquarters of the majority of the companies (82 companies out of 92 based on Amman Stock Exchange Report, 2007) were located in the capital (Amman). Therefore, personal delivery and collection was a suitable way of distributing the questionnaire in terms of time and cost. Second, data collection by either telephone or face-to-face was considered infeasible due to the expected associated high costs.

Third, data collection based on e-mail surveys was ruled out because the response percentage is normally low. Furthermore, because a major part of the study is concerned with the respondents' perceptions of implementation of ABC systems within the Jordanian manufacturing companies, a personal delivery questionnaire in which respondents indicate their perceptions of these systems was considered appropriate. In addition, the busy schedules of the population of respondents, such as chief managers and

heads of accounting departments in the Jordanian manufacturing shareholding companies, make any utilization of a telephone survey and e-mail questionnaire methods inaccessible. Finally, the data needed for this research was not available from archival sources. Therefore, the information had to be collected directly from the respondents. Therefore, the personal delivery and collection of questionnaires was selected in the current study as a method for collecting data in the current study.

### **3.7.6 Selecting Target Population and the Sampling Frame**

Sekaran(2006, p. 265) said that the population refers to the entire group of people, events, or things of interests that the researcher wishes to investigate. While Sample frame is a list from which a sample can be taken and which leads to ultimately to the sample of units about which information is to be obtained.(Sekaran, 2006, p. 265)

The population of the study consists entirely of Jordanian manufacturingshareholding companies which were listed on the Amman Stock Exchange at the end of 2009. This sector contains 92 companies classified as the chemical, electrical, engineering and construction, food and beverages, glass and ceramic, tobacco and cigarettes, paper and carton, pharmaceutical and medical, printing and packaging and textiles and leathers industries, and mining and extraction industries. These industries contribute to about 20% of Jordanian Gross Domestic Product (GDP)(Ministry of Planning Report, The Economic Indicators 2009, Amman, Jordan, 2009).

The previous studies (such as, Shields, 1995; Innes et al., 2000; Brown et al., 2004; Drury & Tayles, 2005; Baird et al., 2007; Al-Omiri & Drury, 2007; Sartorius et al., 2007) tested the factors affecting the decision of adoption and implementation of ABC without distinguishing between the industrial and financial sectors. They also did not distinguish between manufacturing industries and non-manufacturing in which ABC system has been adopted. Clarke et al. (1999) argued that, it is significant to differentiate between different types of sectors because the non-manufacturing companies are a much more heterogeneous group (Clarke et al., 1999). For instance, educational services are different from bank services, which are different from healthcare services or insurance. In particular, the previous researchers (such as, Baird et al., 2007; Cohen et al., 2005; Drury & Tayles, 2005; Innes et al., 2000; Kiani & Sangeladji, 2003; Shields, 1995) tested factors that influence the decision to adopt and implement ABC. They apply their studies in diverse firm sectors. So, this will lead to encounter many difficulties in explaining and interpreting the results from different studies (Clarke et al., 1999). For example, information about the association between firm characteristics and ABC implementation may be hidden by sector-related market or concealed by technological circumstances. As it has been shown by Clarke et al. (1999), implementation percentages as well as motives for implementation or rejection of ABC may differ meaningfully between industry groups (manufacturing and non-manufacturing). As a result, present study focuses on a more homogeneous group of companies. So, only manufacturing companies were tested in this study.

Another observation about the importance of distinguishing between the different sectors is shown by many researchers (such as, Al-Omiri & Drury, 2007; Clarke et al., 1999; Drury & Tayles, 2005). They argued that there are many differences between manufacturing firms and non-manufacturing firms, or between this sector and financial companies, based on the cost structures or level of overhead costs in these companies. For example, in non-manufacturing companies, the direct labour costs and material costs are very little, this means that fixed overhead costs are very high and this will increase the amount of total costs and thus implying that non manufacturing firms are forerunners compared to manufacturing firms in ABC adoption and implementation. But the studies show the exact reverse. For instance, Innes et al. (2000) reported that, the financial sector had the highest level (40.7%) of adoption of the ABC system, whereas, only 14.3% of manufacturing and 12.1% of non-manufacturing companies used this system.

The population of the study consists entirely of manufacturing companies where the factors influence to ABC adoption and implementation are not clear (Bjornenak, 1997; Clarke et al., 1999; Krumwiede, 1998).

Jordanian Manufacturing Shareholding Companies were chosen for the following reasons:

1. Jordanian manufacturing Shareholding companies have a suitable environment to adopt new managerial initiatives such as ABC systems because these companies have both the funding and the human resources. This sector also has favorable size (number of companies) that will help to give a complete idea about ABC

diffusion and to identify factors influencing the process of adoption and implementation ABC. (Al-Khadash & Feridun, 2006).

2. Jordanian manufacturing Shareholding companies are exposed to changes in the industrial environment such as changes in the production cost structure (Askarany, 2006; Innes & Mitchell, 1990) and new high technological manufacturing techniques which caused decreasing of direct labors cost and increasing of overhead costs, which need accurate allocation to products and services (Clarke et al., 1999; Maelah & Ibrahim, 2007). Due to these changes, manufacturing companies are also commonly associated with implementing cost accounting innovations, such as ABC to provide low-cost- high-quality services and to be more responsive to investor and customer needs (Al-Khadash & Feridun, 2006; Raffish, 1991).

### **3.7.7 Selection of the Respondents**

Previous studies and practitioners suggested that persons responding to the questionnaire must have a good experience in the costing system and accounting issues in the company such as chief financial manager or others like assistant chief financial manager this is because financial manager may be too busy and do not have time to answer the questionnaire (Chongruksut, 2002; Smith, 2003).

On the other hand, many researchers suggested that heads of accounting departments or heads of cost accounting departments are also suitable persons to answer the

questionnaire because they have knowledge and experiences about the costing system and factors influencing the implementation of ABC (Al-Khadash & Feridun, 2006; Clark et al., 1999). Moreover, it was considered appropriate to address the questionnaire to the heads of the accounting departments or the heads of the cost accounting departments since this was likely to maximize the response rate. Both the head of the accounting department and head of cost accounting department are most suitable employees that would be likely to have the best understanding of their company's costing system and the factors influencing the adoption/implementation of ABC. Having taken into account all the above reasons, the questionnaire requested that one of the following people namely: Chief Financial Manager, Assistant Financial Manager, Head of Accounting Department or Head of Cost Accounting Department to complete the questionnaire.

### **3.7.8 Features of the Cover Letter**

The cover letter attached to the final version of the questionnaire (see Appendix A, B) was developed to guarantee that the respondents comprehend what is expected wherever possible. The supervisor's and researcher's signature complete with their summary details is listed in the cover letter.

According to Saunders et al. (2000) and Sekaran (2000), motivation plays a key role when utilizing self-administered questionnaires for the purpose of collecting data. Hence, with the aim of establishing the credentials of the researcher and of encouraging the right responses from the respondents, a cover letter is attached to the final questionnaire.

Within the cover letter, specific details concerning the research aims and a number of issues concerning participants like confidentiality have been provided.

A cover letter plays a crucial role in the Jordanian business environment based on two reasons. Firstly, on the basis of cultural expectations, it is challenging to obtain information without the presence of a formal letter. Secondly, some of the information that was required from the respondents is of confidential variety. Therefore, it was expected that confidential information may not be contributed without a formal request from a higher educational organization.

In short, the cover letter in the present study contains the following items for the purpose of significantly increasing the response rate:

1. The purpose of the research highlighting the method of the respondents' selection and why it is crucial that the respondents complete the questionnaire;
2. A statement assuring the respondents of the confidentiality of their responses and an explanation of the results potential uses as well as an offer to make the respondents privy to the results after the study;
3. The cover letter lists most of the critical issues that several authors recommend (Saunders et al., 2000; Sekaran 2000).

### **3.7.9 Ethical Consideration for Questionnaire**

Prior to the distribution of the survey, an information sheet containing a statement that the research was being conducted in cooperation with the Universiti Utara Malaysia was drawn out to highlight the purpose of the study and the ethical rules governing the present research. This sheet was attached to each questionnaire and distributed to the respondents (see Appendix A, B). They were informed that under this particular rule, they are voluntarily participating as respondents and they were assured that no risks, such as psychological, moral, legal or other risks, would occur to them.

Additionally, for administrative purposes, the questionnaires were all coded and the codes were used for follow-up procedures. The researcher has the only access to the codes and on completion; the questionnaires are kept in a secure place at University Utara Malaysia which is accessible only to the researcher and his supervisors. Moreover, the results are reported in aggregate form so that individual responses from the participants are not identified.

### **3.7.10 Reliability, Validity and Non-response Bias Analysis**

Reliability and validity are two essential characteristics of a good measurement tool (Zikmund, 2003). The assessment tools that will be used to answer the research questions must be reliable and valid (Litwin, 1985; Trochim, 2006). In terms of the validity of the survey, two major issues arise: measurement reliability and measurement validity. Measurement reliability refers to how well the construct of interest is measured. Concern here is with stable measures and the accuracy of measurement, whereas measurement

validity refers to whether the “thing” that is purported to be measured really is being measured. The relationship between reliability and validity is straightforward. A test can be reliable but not valid, but a test cannot be valid without first being reliable. In other words, reliability is a necessary, but not sufficient condition of validity (Litwin, 1985; Trochim, 2006). Therefore, the criteria of reliability and validity were considered carefully in this research since reliability is a necessary condition for validity and only a reliable and valid instrument will yield accurate results. Reliability and validity are now discussed.

#### **3.7.10.1 Reliability**

Reliability means consistency of the research measurement. A measurement is reliable if the measurement can give similar results if used again in like conditions (Sekaran, 2003). There are two common methods generally used for estimating reliability: test/retest and internal consistency.

1. Test-retest reliability: This test includes the administration of a questionnaire by distributing it to the same respondents at two different points in time to check if the degree of the responses is stable. It is usually measured by measuring the correlation coefficient, which is called coefficient of stability (or r-value) (Sekaran, 2003).
2. Internal consistency reliability: This method is used when the variable measure requires responding to several questions. This means different items are used to measure the same variable. It is extensively recognized to measure internal consistency by calculating a Cronbach alpha (Creswell, 2003).

In this study the researcher used Cronbach alpha to measure internal consistency because it is difficult to measure the reliability by the any other method. Sekaran (2003) said that Cronbach alpha has some advantages. Firstly, Cronbach's alpha explains how much the correlation is probable between the items used and all other probable items that are measuring the same variable.

Secondly, it measures the squared correlation between the score that is given in a particular scale and the score of all probable items, which would have been given in any questionnaire in the world. Since alpha can be considered as a correlation of coefficient, then the range of its value will be between 0 and 1. But if the value of alpha is negative this means that the items are not positively correlated among themselves, and then the reliability of the model is desecrated (Zikmund, 2003).

Thirdly, alpha can be compared to the standardized alpha point, where the standardized alpha point is the value of alpha when all items were standardized to have a variance one. In the current study, the reliability of measures for the variables will be estimated by using SPSS version 15.

The Cronbach  $\alpha$  coefficient for each key variable used in the statistical analysis shows Alpha is more than 70%, so we can say that they have considerable reliability because the values exceed conventional levels of acceptability (Sekaran, 2003; Zikmund, 2003). Al-Omiri and Drury (2007) said that acceptable level is 60%. Then, with this use of

an acceptable extension of alpha by researcher and academics, we can say that this study also has sufficient reliability because alpha is more than 70%.

Table 3.5 below shows the Cronbach  $\alpha$  coefficient for each key variable used in the statistical analysis. The table also presents the descriptive statistics in terms of mean scores and actual range. The results below indicate the overall reliability of all the key variables because the values exceed conventional levels of acceptability (Sekaran, 2003; Zikmund 2003).

Table 3.5:  
*Reliability Statistics*

<b>Variables</b>	<b>No. of items</b>	<b>Mean</b>	<b>Actual range</b>	<b>Alpha</b>
Reasons for ABC implementation (catalysts)	10 items	3.793	3.225- 4.258	.879
Factors that facilitate the implementation of ABC	17 items	3.790	3.419- 4.322	.814
Factors that motivate the implementation of ABC	11 items	3.551	2.580-4.290	.797
Barriers or Reasons for Non-Adoption of ABC	21 items	3.671	3.211-4.245	.823
Factors working against ABC implementation	12 items	3.324	2.843-4.312	.801
Problems during ABC implementation	16 items	3.683	2.903- 4.548	.846

### **3.7.10.2 Validity**

Shannon (2000) argued that validity is the extent to which information collected in a research study truly reflects the phenomenon being studied. On the other hand, if the measuring instrument does not measure what it is designed to measure, there will be problems. Validity is an issue of research concern, since validity determines the confidence researchers have in the results of the research. A validity test is usually undertaken to check if what has been measured is what was intended (Litwin, 1995).

Four types of validity are normally cited. The first and the most important type of validity is content validity. It measures the extent to which the measurement scale reflects what is assumed to be measured. It also concerns with the purpose of the study, research topic, and the items included in the measurement scale. It tries to make sure that the questionnaire will solve and respond to the research questions by including everything it should, and delete anything it should not include (Zikmund, 2003). The second type of validity is face validity which depend on the respondents opinion to know if the items shown are satisfactory or valid to them (Litwin, 1995; Shannon, 2000). In order to establish the content/face validity for this research, previous studies were reviewed to identify possible items to be included in the scale. Experts in research fields were consulted to obtain their comments on the measurement instrument, then the measurement instrument was pre-tested on a group of respondents similar to the population being studied to ascertain whether revision was needed before modifying the measurement based on the feedback from the pre-test (Litwin, 1985).

The third type is the construct validity. This type of validity tries to examine if the results of a test or the empirical evidence are related to an underlying theory or a set of related factors (Trochim, 2006). In addition, Zikmund (2003) defined this type of validity as the capability of a measure to verify a network of a related proposition created from a theory based on concepts. It is generally assessed by tracking the act of the instrument scale over years in different settings and populations (Oppenheim, 1998). De Vaus (2007) said that the experts' opinion about measurement scales is very important and beneficial to support and assure of construct validity. In the current study construct validity occurs during the statistical analysis of the data.

The fourth type of validity is Criterion Validity. Criterion validity is the ability of a measure to correlate with other measures of the same construct (Zikmund, 2003). Criterion validity measures how well the scores on a test are related to the scores on another that has already established the test to the administered at the present time or in the future (Litwin, 1985). It is used as a confirmatory measure to evaluate the validity of ability tests, such as skills and aptitude tests.

Content/face validity was undertaken in this research to ensure that the questionnaire designed would collect the required information to answer and solve the research questions. To establish the content validity, the researcher reviewed previous studies and identified possible items used by other researchers to be included in the scales used. Expert opinions were sought from other researchers with an interest in the same field of this research study. The scales were then developed and tested on a group of respondents

similar to the sample in the study. With opinions and feedback from previous studies, research experts, and the pre-test respondents, the measurements were modified. With the modification, a reasonable degree of confidence in content validity was achieved. Moreover, study the following efforts have been made in the current to ensure questionnaire validity:

- 1- The purpose of study was identified very carefully
- 2- The questionnaire was passed to volunteers, members of staff, and a pilot study was undertaken
- 3- All the questions were adopted from previous studies that were used with different populations and at different times, thus contributing to construct validity

In relation to the non-response bias, Innes and Mitchell (1995) and Krumwiede (1998) suggested that in order to assess response bias, a research precedent is to compare the profiles of early and late respondents on the basis that the latter are more likely to resemble non-responses (Bjornenak, 1997). Therefore, the first 32 responses received (first group) were compared to the last 50 responses (second group). Chi-square test was used to assess non-response bias by comparing the mean-values of each variable to the company characteristics.

Table 3.6 showed that there were no significant differences between the characteristics of companies in the first and the second groups because all significant values are above the alpha level of 0.05. Therefore, evidence of non-response bias was not found and it is

expected that 82 respondents in this study can be said to be representative of all of the Jordanian manufacturing Shareholding Companies.

Table 3.6:  
*Test of Non-Response Bias*

<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Alpha</b>
<b>Industry Type</b>				
- First group	32	6.7500	3.42665	.222
- Second group	50	5.7600	3.62846	
<b>Number of employees</b>				
- First group	32	426.3438	369.44838	.618
- Second group	50	389.8800	287.00101	
<b>Number of products</b>				
- First group	32	72.5938	73.39590	.266
- Second group	50	56.2800	57.87250	
<b>Level of Overhead</b>				
- First group	32	.3600	.16396	.691
- Second group	50	.3446	.17493	

### 3.7.11 Data Analysis

The process of analyzing research data should link with the aims of the study and thenature of the data. There are generally two main categories of statistical

procedures which can be used in analyzing the quantitative data: parametric and non-parametric tests (Collis & Hussey, 2003; Zikmund, 2003). There are many arguments concerning when parametric or non-parametric tests should be used and therefore this is an unresolved issue in data analysis (Sekaran, 2003). However, the parametric tests can be traditionally used only if the following assumptions are fulfilled (Bouma and Ling, 2004; Collis and Hussey, 2003; Nachmias & Nachmias, 1996; Sekaran, 2003):

- The data are interval or ratio-scaled.
- The sample size is large.
- The data in the study are drawn from populations with normal distribution or normal sampling distribution.
- The selection of any respondent is independent (the selection of any company from the population to be included in the sample must not bias or affect the inclusion of any other companies).
- When differences or measures of statistical association are being analyzed between two or more samples, the variances (or standard deviations) of these samples do not differ significantly.

It is obvious that parametric tests are based on the assumption that researchers know certain characteristics of the population from which the sample is drawn. Therefore parametric tests refer to a measure which describes the distribution of the population such as mean or variance (Bryman & Bell, 2003). In contrast, non-parametric

tests do not make specific assumptions about population distributions and are therefore often referred to as distribution-free tests (De Vaus, 2007; Sekaran, 2003).

There are many reasons supporting the use of non-parametric tests in analyzing data. Firstly, non-parametric tests are the most appropriate tests when the data constitutes sets of ranks or are nominal data (Bouma & Ling, 2004; Collis & Hussey, 2003; De Vaus, 2007; Nachmias & Nachmias, 1996; Neuman, 1997). Secondly, non-parametric tests make relatively few assumptions about population distributions and thus it is always safe to use those (Saunders et al. 2000). Thirdly, non-parametric tests are likely to be the only method which can be used where the sample size is very low unless the distribution of the population is known exactly (De Vaus, 2007). In addition, non-parametric tests are also much easier to learn, apply and interpret than parametric tests (Saunders et al., 2000; Trochim, 2006). Furthermore, non-parametric tests have considerable advantages in terms of efficiency and validity when the assumption of normality is not satisfied (Collis & Hussey, 2003). Finally, if the data are measurements at the ordinal level in the first place, as with sets of ranks, or nominal data, a nonparametric test is the only possibility (Bryman & Bell, 2003; Nachmias & Nachmias, 1996).

Bearing the above discussion in mind, and given the facts that in this study, the number of respondents is not large, the population distribution is not preformed and the majority of the questions are measured on an ordinal scale, then non-parametric tests have been adopted to analyze the quantitative data in the current study (Bryman & Bell, 2003; Cooper & Schindler, 2003) Accordingly, the quantitative data analysis involved the use

of the Statistical Package for the Social Sciences (SPSS) program for statistical analysis. Tests included descriptive analysis such as frequencies, means and non-parametric tests using logistic regression and chi-square. The statistical tests and reasons for using them will be discussed next.

Frequency distributions were utilized to describe the data in terms of nominal scales, such as personal data, the classification of industry groups, the characteristics of the company, and the success level of implementing ABC as well as examining the level of ABC success.

In analyzing Likert-scale data, means and standard deviations are used. This method is useful in identifying the following: the reasons for not-adopting ABC, factors impacting upon the implementation of ABC, the reasons for implementing ABC, factors that facilitated and motivated the implementation of ABC, problems encountered during the implementation of ABC and barriers to ABC implementation.

Logistic regression can only be used where there are two dichotomous categories (e. g. ABC Implementation and non-ABC implementation). Under logistic regression, the normality is not necessarily the same for both dependent and independent variables. Hair et al. (1998) state that logistic regression is one of the most widely used linear probability models. Logistic regression has been used and reported in the published management accounting research journals and has been used in previous ABC research (Ahmadzadah et al., 2011; Gosselin, 1997; Krumwiede, 1998).

Based on the above discussion, logistic regression was chosen to test the hypotheses relating to the influence of the Company characteristics factors such as company sectors, size - number of employees, diversity - number of product, and level of overhead cost on the implementation/non- implementation of ABC.

Chi-square is the most popular discrete data, non-parametric technique used to test whether the answers to one question relate to the answers to another, where this cannot be shown by single tabulations (Trochim, 2005). Chi-square is often used for making comparisons, particularly between the contents of tables (Saunders et al., 2000). De Vaus (2007) explained that the Chi-square statistic is used for testing hypotheses concerning nominal data (such as job titles and gender) or ordinal data when there is no appropriate parameter or when the researcher does not know whether the population is normally distributed. Although the Chi-square test is criticized for not being a good measure of the strength (degree) or form of the association between two variables, its widespread use in testing independence has encouraged the use of measures of association based on it (Babbie, 1998).

There are two criteria for the Chi-square test to be valid. Firstly, the total number of observations is large and greater than 20. Secondly, all the expected values are at least 5 (Trochim, 2005). Traditionally, the test is performed by calculating the frequencies that would be expected if the null hypothesis is true and comparing them with the actual ones using the Chi-square statistics. The value derived from this calculation is then compared with the critical value, which depends on the number of degrees of freedom and the

chosen level of significance. If the calculated Chi-square value is less than the critical value, the null hypothesis cannot be rejected, which means that there is no relationship between the two variables, and vice versa (Babbie, 1998).

Using the SPSS software package, the Chi-square test was employed in this study to demonstrate the relationship between two variables which are classified as nominal scales (Babbie, 1998; Cavana et al., 2001; Trochim, 2005). Therefore, this technique was used to examine if there were significant differences between ABC implementers and non-implementers based on the company sector.

### **3.8 The Third Phase: Interviews**

#### **3.8.1 Interview Data Collection Method**

Previous studies (such as, Cooper & Morgan, 2008; Creswell, 1994) demonstrated that there are four basic methods to collect data in qualitative method. These are observations, audiovisual, documents, and interviews. Also, some previous studies and researchers (such as, Chongruksut, 2002; Swenson, 1995) emphasized the importance of interview as a data collection method especially in ABC system research. Gummesson (2000) said that interviews give the researchers the chance for deep investigation to discover new clues and new dimensions about the phenomenon under study. It can also give opportunity to interact with interviewees to collect accurate information from their experiences. The sub-sections of the study introduced, explained, and justified interviews of the data collection method in further detail for the current research.

### **3.8.2 Personal Interviews**

Researchers such as Tellis (1997) suggested that interviewing is the best data collection method in qualitative research. Creswell (2003) also suggested that interviewing technique will help researcher to interact with the participants being interviewed, and go in depth to provide an insight into what is in, and on, participants' minds regarding their behaviors, attitudes, views and feelings that cannot be directly observed. Sekaran (2003) added that this is not possible with other methods, such as the questionnaire survey.

The researcher used qualitative method in the second stage of the current research to complete, interpret and supplement the quantitative finding, and to discover new variable or factors that motivate, facilitate and are faced by ABC implementation that were not discovered in the quantitative stage. Previous researchers suggested that qualitative data are suited to supplement, explain, illuminate, validate or reinterpret quantitative data gathered from the same setting (Creswell, 1994, 2003) .

Personal interview method has many advantages that can help the researchers to know the respondents' reaction and help clarify questions and response options. It helps them to collect more information about the phenomenon from the respondents about their experience compared to standard questionnaire. In personal interviews, a descriptive questioning method is used to induce the interviewees to give as much information as possible about different factors influencing ABC adoption and implementation among manufacturing companies in Jordan.

Arguments for the use of the personal interviews as a data collection method in this study are based on the following advantages of personal interviews compared with other survey methods:

- The researcher has a chance to push an interviewee to give relevant, accurate and full information (Creswell 2003; Saunders et al., 2000). For example, Patton (1990) stated:

“People in interviews tell you things they never intended to tell”.(p.69)

- The researcher has a chance to assist the interviewees to identify the aim of the questions (Creswell, 2003; Saunders et al., 2000).
- Personal interviews will give the researcher more flexibility to ask and to improve the questions. This flexibility will aid to explore whether the questions are correctly phrased and are in a rational arrangement (Creswell 2003; Saunders et al., 2000).
- The researcher has a chance to manage the procedure of the interview, which can be closed or continued as desired.
- Item non-response –the interaction between researcher and respondent increases the likelihood that answers will be given to all questions on the questionnaire. This will lead to decrease in the item non-response by using personal interviews as opposed to using survey (Creswell, 2003; Saunders et al., 2000).
- Possibility for respondent misunderstanding – the personal interview provides a chance to probe. If a respondent’s reply is short or unclear, the interviewer may be

able to probe for a clearer or more complete clarification. As a result, the opportunity for respondent misunderstanding is reduced (Smith, 2003).

- High participation – the personal interviews usually increases the rate of people prepared to complete the interview. This will increase the response rate more than the survey (Creswell, 2003; Saunders et al., 2000).

### **3.8.3 Selection of Type of Interview**

There are three types of interviews, structured interviews, which contains a set of formal questions, unstructured with a general plan of enquiry but no specific set of questions that must be asked and semi-structured interviews (De Vaus, 2007; Saunders et al., 2000). All structured and unstructured interviews have their own advantages and disadvantages, which have been considered in selecting the type of interview in the current research.

Structured interviews contain sequence questions which are fixed in advance (Sekaran, 2003). In the structured interview, the interviewee is required to provide his/her answer by selecting one of the answers provided by the researcher. Structured interview is similar to distributing the questionnaire orally and the data collector filling in the questionnaire rather than asking the participants to fill the questionnaire (Creswell, 1998). Saunders et al. (2000) said that the advantages of the structured interview are that it is easy to quantify and compare the responses with other participants. The disadvantages of this method is it does not give the researcher the opportunity for unexpected answers because they limit the interviewee to what has been identified in advance by the

researcher and there is a high possibility of missing the important issues by some interviewees (De Vaus, 2007).

In unstructured interviews, the researcher covers a number of topics but the order of the questions is not fixed with their order. In this method, the researcher has the opportunity to change and develop the questions during the interview as a result of the exchange with the interviewee because the data will be created by interaction between the researcher and interviewee (Sekaran, 2003). Zikmund (2003) suggested that unstructured interviews have some disadvantage related to data analysis difficulties and related to its time consuming process. Moreover, Sekaran (2003) highlighted, totally unstructured interviews cause confusion, incoherence and can result in meaningless data.

In current research, to overcome the disadvantages and gain the maximum advantages of both the structured and unstructured interview, the researcher will use the semi-structured interview. The semi-structured interview will help the researcher to collect maximum possible in-depth data from interviewee on the details of the implementation process of ABC, and different factors influencing the adoption and implementation of ABC in Jordanian companies. In a semi-structured interview, the interviewee is given the maximum opportunity to give their answers to the questions which stem from their expertise on the subject. The semi-structured interview allows the interviewer to explore interviewee experiences of ABC adoption and implementation and focus on the main issues. At the same time, it allows the interviewer to explore participants' responses further to clarify issues emerging during the interview (Sekaran, 2003; Smith, 2003).

Interviews have different ways and tools. There are several ways to conduct the interview. It can be either by telephone, or face-to-face. Each one of these tools has advantages and disadvantages. Researchers such as De Vaus (2007) and Saunders et al. (2000) suggested that choosing one of these methods or tools depends on the following factors: the purpose of the study, the nature of the research question, type and size of the population to be interviewed, the budget for the research and resources available.

In the current research, the researcher uses face-to-face semi-structured interviews with financial managers and heads of cost accounting departments in the Jordanian manufacturing companies. This method has been used by researchers (e.g. Chongruksut, 2002; Foster and Swenson, 1997). It has a list of themes and questions supplemented with open-ended discussion to explain different issues or answer questions raised by both interviewee and interviewer.

The researcher uses face-to face interview method in this study because face-to-face interviews are more advantageous compared to the telephone interview method. Following are the discussion why face to face is the better option:-

- Item non-response: the social interaction between the interviewer and interviewees increases the likelihood that a response will be given to all items on the interview. This is why the item non-response is low for a face-to-face interview.

- Possibility of respondent misunderstanding: personal interviews provide better opportunity to investigate. Brief or unclear interviewee answer may help to probe for a clearer or more comprehensive explanation.
- Face-to-face interviews are more advantageous. This allows the interviewer to clarify questions and ensure the responses are understood (Sekaran, 2003).
- The response rate is also better for face-to-face interviews than telephone interviews (Sekaran, 2003).
- Telephone interviews allow many people to be contacted in a relatively short time. However, interviewers are unable to catch nonverbal signals that may lead into supplementary questions in a face-to-face interview (Smith, 2003).

#### **3.8.4 Interviews Protocol**

Protocol increases the reliability of the research, guides the investigator in collecting data from a single-case study and systematically adds rigour to the whole research process and helps to reduce the potential biases of researcher (Yin, 2003). A set of protocol has been established by the researcher as procedures, rules or instrument in collecting data. The protocol established is used to guide the researcher in the data collection process systematically.

In the current study, semi-structured interviews were carried out to explore the factors which influence ABC system. This was done through face-to-face interviews. The number of these interviews was 13 between February and March 2011. Consistent with the recommendations provided by De Vaus, (2007) and Sekaran (2003), activities were

carried out before, during and after the interviews for the purpose of obtaining the pertinent information from the interviewees and of maximizing the validity and reliability of information gathered. The researcher carried out this phase of the study firstly by sending letters to all 92 manufacturing companies that are included in the Amman Stock Exchange beside the initial questionnaire highlighting the study and objectives to them.

20 companies gave their agreement to conduct the interviews' but the number of companies decreased to 13 companies during the interviews' procedures because they were busy in preparing financial statements and taxes inquiries at that time. This was then followed by telephone calls in which their consent of participation was requested. During the calls, the respondents were requested for the tape recording of their interviews and they were informed about the confidentiality policy of the words they provided therein.

Moreover, for the interviewees to be prepared for the interview a copy of the questions was sent to them prior to the interview and an agreement letter was provided expounding on the background of the research (See Appendix H for a copy of the Interview Questions). The letter contained an explanation of the confidentiality and the anonymity of the interviewees and the information they will provide. The interviews were conducted in Arabic with each interview lasting between 25-45 minutes. After each interview, the researcher prepared a transcript in Arabic, and after which the interviewees are provided with it, to make any modifications they see fit. Consequently, all the interviewees gave their consent and approval of the transcripts. Next sections explain some of protocol

procedures related to recording and transcribing the interviews and Ethical Consideration for Interviews in more details.

#### **3.8.4.1 Recording and Transcribing the Interview**

The researcher made use of the tape-recorder to record each interview. Consent was taken from all the interviewees over their agreement of the recording. Moreover, the interviewees were informed that the tape recording can be halted at their decision. They were informed that the transcription would be devoid of individual or organization names, and a personal code was provided to each interviewee. For the purpose of confidentiality, the details of these codes were kept separately from the transcripts and tapes. The companies' codes were appropriated as Company One, Two and so on.

#### **3.8.4.2 Ethical Consideration for Interviews**

In all research, ethical practice is imperative. In other words, the researcher is obligated to respect the participants' rights, needs, values and desires (Creswell, 1994). In the current study, there were major ethical issues that had to be addressed. They are: informed consent, privacy and confidentiality.

- **Informed Consent**

Informed consent can be described as the participation of the respondents under their own volition on the basis of their knowledge of the purpose of the study. Therefore, the nature and the consequences pertaining to the present study were explained to them and the decision to withdraw at any time was left under their discretion.

Moreover, an Informed Consent Form, signed by the researcher and the interviewee, was distributed to each interviewee prior to the interview. The form's contents included: guidelines to be followed, the responsibilities of parties, freedom of consent issues, withdrawal volition of interviewees at any time and the requirement of further questions and questioning. (See Appendix G for a copy of the cover letter and consent form)

- **Privacy and Confidentiality**

The code of ethics followed by the researcher acts as a safeguard to protect the interviewees' and their companies' identities. The researcher in the present study was the sole person who knew the identity of the participants. Within all the written documentations, the companies were simply addressed as Company One, Two....etc.

### **3.8.5 Case Study Data Analysis**

To investigate the factors that catalyze, facilitate, motivate and create barriers to ABC implementation in the case study, the researcher will use both within-case, and across-case analysis. Yin (2003) said in case of multiple case study strategy for research design, the within-case analysis is often done before across-case analysis. Therefore, the case study analysis starts with analysis of each individual case, explains the reasons for ABC implementation, and determines the factors that facilitate catalysts, motivate and create barriers to implementation. Then the across-case analysis of all case companies is followed with the focus of the factors being confirmed and disconfirmed. Both the analyses will be explained next.

### **3.8.5.1 Within-Case Analysis**

Within-case analysis starts by collecting some demographic information of each case. This consists of the general background of the company and the nature of the company's accounting costing systems. The discussion of the organization include general information about organizational size and type that could help the researcher to obtain fundamental knowledge of the organization, and help with further analysis of the case study information. Following the above general information, the analysis explains the factors that motivate, facilitate and create barriers and problems faced during ABC adoption and implementation.

### **3.8.5.2 Cross-Case Analysis**

In this method the researcher summarizes and analyzes the findings from all cases from the within-case analysis to generate insights, rather than to prove anything or draw generalizations (Yin, 2003). Insights into each of the factors that facilitate, motivate and create barriers to ABC implementation were drawn from similar themes and patterns that emerges from the within-case analysis (Carson et al., 2001).

## **3.9 Chapter Summary**

This chapter described the research model and research design, methodology and data collection method. This study uses mixed methods for data collection purpose, quantitative and qualitative. Quantitative method includes two phases. Firstly, initial questionnaire will be followed by main questionnaire. Secondly, qualitative phase would

be conducted by personal interviews. The researcher suggests analyzing the data by using SPSS program for questionnaire and content analysis for personal interviews data. This chapter shows Questionnaire Classification, variables measurement, and content of the final version of the questionnaire. The method of increasing the validity of the questionnaire is also presented. In addition, this chapter explained the interviews, justified personal interview as a data collection method to be used in this study. Finally, the interviews protocol and data analysis method is presented.

## **CHAPTER FOUR**

### **QUANTITATIVE DATA ANALYSIS**

#### **4.0 Introduction**

This study explains the findings of the study conducted in accordance with the objectives and to answer the research questions which were described in chapter one. Several statistical methods were used to analyze the data. Firstly, in the first phase the initial survey data analysis is described. Secondly, in the second phase the main survey analysis is elaborated and it consists of profile of respondent, and company characteristics. Reasons for non-adoption and implementation of ABC, the factors which motivate, catalyze, and facilitate the implementation of ABC, and level of ABC success are discussed. Finally hypotheses analysis is provided

#### **4.1 The First Phase: The Initial Survey Data Analysis**

As mentioned in the previous chapter, the aim of the initial questionnaire was to know the current state of ABC implementation in the Jordanian manufacturing companies, and to overcome the problem of implementation definition prevailing in the literature as previous studies defined it as actual ABC implementation (Cagwin & Bouwman, 2002; Shields, 1995). Other studies defined it as either actual implementation or the wish for implementation (Cohen et al., 2005).

This process took place from 22<sup>th</sup> October to 9<sup>th</sup> December 2010. Ninety-two questionnaires were distributed and eighty-two questionnaires returned, giving a response rate of 89%. This is followed with a phone call and personal interviews to improve the response rate. Based on the results of the initial questionnaire survey, companies are classified as follows:

Table 4.1:  
*Number of Companies in each Category of ABC Implementation*

Name of the Stage	Number of the Companies
Non-adopters	48
Adopters	14
Implementers	9
Users	7
Abandoners	4
<b>Total</b>	<b>82</b>

The first category includes 48 companies classified as non-adopters of ABC; companies in this group still use traditional costing system method to allocate overhead cost. The second category includes 14 companies classified as adopter companies. Here, the companies perceive the distortion of the existing cost system. They took approval from top management to implement and invest resources which are necessary to implement ABC system and the pilot project prepared in this stage.

The questionnaire results also show that 9 companies are classified as implementers. These companies are described as companies that have begun implementing ABC systems, and those that are in the process of forming a team of ABC implementation, determining project scope and objectives, designing training and workshops, collecting data or/and analyzing activities and cost drivers and organizational members' commitment to use ABC.

The fourth stage includes 7 companies that were using ABC; in this stage the companies have started using ABC information as part of daily practices or integrating them with other systems. Finally, 4 companies were classified as the abandoners. In this category, ABC was abandoned after the decision to implement or use in the company as a solution to the traditional costing system problems.

The previous studies used three criteria to determine the percentage of ABC adoption and implementation and the first criterion was used by Maelah and Ibrahim (2006) to know the adoption percentage in Malaysian manufacturing companies; they found that the adoption percentage is 36.11%. However in their study, Maelah and Ibrahim (2006) do not segment ABC to stages. Based on these criteria, 30 companies out of 82 companies adopted ABC, which means that the adoption percentage was around 36.5% in the Jordanian manufacturing companies.

The second and third criteria refer to Bjornenak (1997) study that used two methods to determine the implementation percentage. The second criterion is based on usage and

refers to full implementation and using ABC information for various purposes in the company (Bjornenak, 1997). Currently, 7 companies out of 82 were using ABC information as part of daily practice or integrated with other systems. Accordingly, the percentage of ABC implementation within the Jordanian manufacturing companies based on this criterion is about 8.5%. The percentage of ABC implementation (8.5%) is less than the percentages found in the previous studies. Khasharmeh (2002) found that the implementation percentage of ABC was about 10%. However, the usage percentage was 10.7% in Al-Khadash and Feridun's (2006) study. The definition of using was not clear because neither studies segment ABC into stages.

The third criterion is based on implementation as a process rather than using ABC information as a part of daily practices or integrating ABC with other systems. Accordingly, the percentage of ABC implementation within the Jordanian manufacturing companies based on this criterion is about 19.5% (7 companies had used ABC; 9 companies that were in the process of implementing), this criterion include only the companies which are started the implementation process or using the system and it will be adopted in the current study to show the implementation percentage within the Jordanian manufacturing companies.

However, previous studies in Jordanian manufacturing companies expected this high implementation percent, for example; Khadash and Feridun (2006) said that the awareness level of the importance of implementing ABC was found to be significantly higher among the Jordanian financial managers. This evidence contributes to support and

explain the high percentage of ABC implementation within the Jordanian manufacturing companies. They also add that this sector has an environment that favors the implementation of new managerial initiatives such as ABC systems because they have the funding, the human resources, the product, the input and the output.

## **4.2 The Second Phase: The Main Survey Analysis**

### **4.2.1 Profile of Respondents**

The second part of this chapter provides the descriptive analysis about the individual respondents and companies under study. This information obliges the understanding of the background of respondents and their individual companies and shows the satisfaction of respondents participating in this study.

#### **4.2.1.1 Information of Respondents**

This sub-section presents information about individual respondents. This information relates to work position, academic qualification, experience in the field and experience in the current position.

##### **4.2.1.1.1 Work Position**

Table 4.2 reveals that 18.3% (15) of those completing the questionnaire were financial managers, 37.8 % (31) assistants of financial managers, 18.3%(15) were head of cost accounting departments and 25.6% (21) were heads of accounting.

Table 4.2:  
*Work Position in the Company*

	Frequency	Percent	Valid Percent	Cumulative Percent
Financial manager	15	18.3	18.3	18.3
Assistant financial manager	31	37.8	37.8	100.0
Head of cost accounting department	15	18.3	18.3	36.6
Head of accounting department	21	25.6	25.6	62.2
<b>Total</b>	82	100.0	100.0	

Chart 4.1 shows these results in more detail:

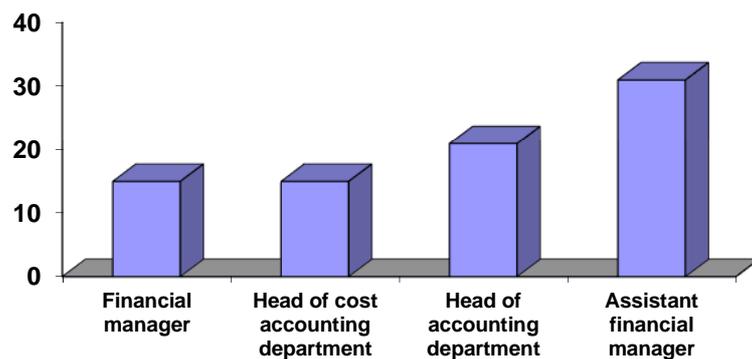


Chart 4.1  
*Work Positions in the Company*

#### 4.2.1.1.2 Academic Qualifications

Respondents were asked to state their academic qualifications. Table 4.3 shows the majority of respondents, 52.4% (43) held a Bachelor degree, 32.9% (27) have Master degree and 14.6% (12) are PhD degree holders. In other words, all of the companies' respondents have higher education qualifications.

Table 4.3:  
*Academic Qualification in the Company*

	Frequency	Percent	Valid	
			Percent	Cumulative Percent
PhD degree	12	14.6	14.6	14.6
Master degree	27	32.9	32.9	47.6
Bachelor degree	43	52.4	52.4	100.0
<b>Total</b>	82	100.0	100.0	

Chart 4.2 presents a detailed presentation of these results:

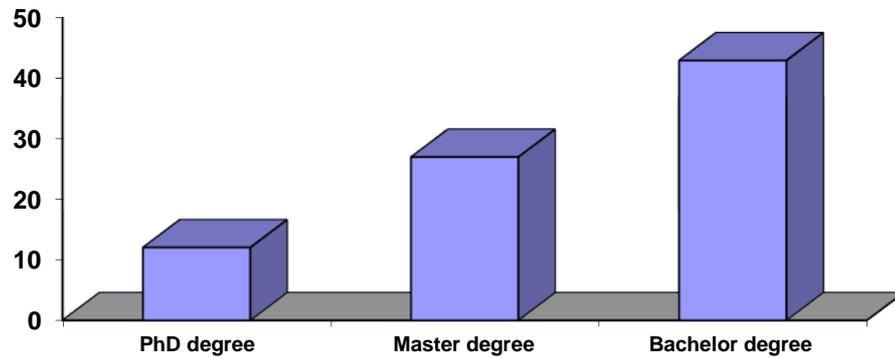


Chart 4.2:  
*Respondents' Academic Qualification*

#### 4.2.1.1.3 Experiences in Field

Respondents were asked to indicate the length of their work experience. Table 4.4 reveals that 32.9% (27) of respondents had worked less than 2 years and 36.6% (30) of respondents had worked between 2 to 5 years. 22% (18) had experience in accounting

of between 6 to 10 years 4.9% (4) had experience in accounting of between 6 to 10 years, while 3.7% (3) had more than 15 years' experience.

Table 4.4:  
*Total Experience in this Field of Study*

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 2 years	27	32.9	32.9	32.9
2 – 5 years	30	36.6	36.6	69.5
6 – 10 years	18	22.0	22.0	91.5
11 – 15 years	4	4.9	4.9	96.3
16 – 20 years	3	3.7	3.7	100.0
<b>Total</b>	82	100.0	100.0	

Chart 4.3 shows these results in detail:

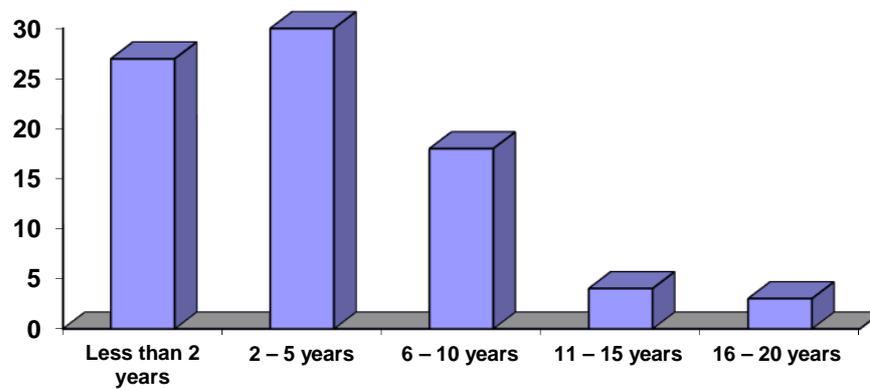


Chart 4.3:  
*Experiences in Field*

#### 4.2.1.1.4 Experience in the Company

Respondents were asked to indicate the length of their current work experience. Table 4.5 shows 35.4% (29) of respondents had worked less than 2 years in their current companies, while 3.7% (3) had worked for more than 15 years. The table below shows all respondents total experience in the manufacturing companies.

Table 4.5:  
*Total Experience in the Company*

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 2 years	29	35.4	35.4	35.4
2 – 5 years	31	37.8	37.8	73.2
6 – 10 years	16	19.5	19.5	92.7
11 – 15 years	3	3.7	3.7	96.3
16 – 20 years	3	3.7	3.7	100.0
<b>Total</b>	82	100.0	100.0	

Chart 4.4 shows these results in more detail.

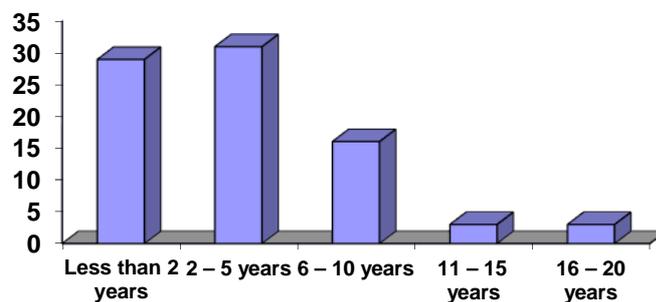


Chart 4.4:  
*Experiences in the Company*

## 4.2.2 Company Characteristics

The information presented in this sub-section is related to industrial type, number of employees, number of products and level of overhead. This information is presented as descriptive analysis in this sub-section.

### 4.2.2.1 Industrial Type

Respondents were asked to classify their company's industry type. These were later presented as eleven main industrial categories which were selected to represent Jordanian manufacturing companies based on Amman stock exchange. Table 4.6 shows the categories and their frequencies. Most respondents' companies were represented in the following categories: food and beverages industries, engineering and construction, chemical industries, followed by glass and ceramic industries, mining and extraction industries, electrical industries, and pharmaceutical and medical. Table 4.6 shows this classification in more details.

Table 4.6:  
*Industrial Type Classification*

	Frequency	Percent	Valid Percent	Cumulative Percent
Chemical industries	10	12.2	12.2	12.2
Mining and extraction industries	7	8.5	8.5	20.7
Electrical industries	6	7.3	7.3	28.0
Paper and cartoon industries	4	4.9	4.9	32.9
Engineering and construction	16	19.5	19.5	52.4

Pharmaceutical and medical industries	6	7.3	7.3	59.8
Food and beverages	19	23.2	23.2	82.9
Glass and ceramic industries	9	11.0	11.0	93.9
Textiles, leathers and clothing	3	3.7	3.7	97.6
Tobacco and cigarettes	2	2.4	2.4	100.0
<b>Total</b>	<b>82</b>	<b>100.0</b>	<b>100.0</b>	

Chart 4.5 shows these results in more details

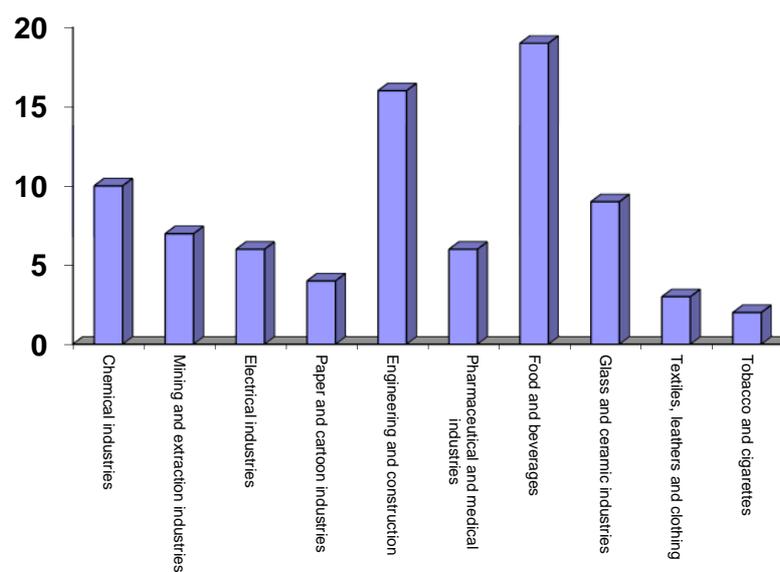


Chart 4.5:  
*Industry Types*

Based on the Department of Statistics Reports and Ministry of Industry and Trade in Jordan, they classified the last eleven types which have the same characteristics into three groups, first one was called the engineering sector, and this group includes two sectors, namely: electrical, and engineering and construction industries. The second one was

called the processing sector, and this group includes four sectors, namely: chemical industries, medical industries, glass and Ceramic industries, and Mining and Extraction industries. The last one is called consumers product sector, and this group includes five sectors, namely: food and beverages, tobacco and cigarettes, textiles, leathers and clothing, paper and carton industries, and printing and packaging, as shown in Table 4.7.

Table 4.7:  
*Industrial Type New Classification*

	Frequency	Percent	Valid Percent	Cumulative Percent
Engineering	22	26.8	26.8	26.8
Processing	32	39.0	39.0	65.9
Consumers	28	34.1	34.1	100.0
<b>Total</b>	82	100.0	100.0	

Chart 4.6 shows these results in more details

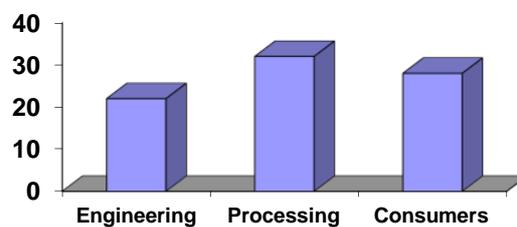


Chart 4.6:  
*Industry Types New Classification*

#### **4.2.2.2 Number of Employees**

Previous studies (Ahmadzadeh et al., 2011; Innes et al., 2000; Innes & Mitchell, 1995; Pierce & Brown, 2004) adopted diverse type of measures to the company size such as capital, annual sales, total revenue, total assets and number of employees. However, this study adopts the number of employees as a measure to the company size in Jordanian manufacturing companies. The Data analysis for all companies found the minimum number of employees is 34 employees up to 1500 employees. It found also that the average for all these companies is 404 employees. The Ministry of Industry and Trade in Jordan classifies companies with less than 100 employees as small companies, companies employing between 100 and 500 employees as medium-sized and those with more than 500 employees as large. In the current study, majority of the companies are classified as small and medium.

#### **4.2.2.3 Number of products**

Product diversity was measured by the number of products (see Bjornenak, 1997). The Data analysis for all companies found the minimum number of products is 6 products up to 301 products. It found also that the average for all these companies is 62 products.

#### **4.2.2.4 Level of Overhead**

Respondents were asked to indicate the percentage of overhead to total cost. The Data analysis for all companies found the minimum level of overhead costs is 10% up to 75%. It found also that the average for all these companies is 35%.

### 4.3 Barriers or Reasons for Non-Adoption of ABC

Many advantages to ABC implementation adoption percentage revealed by studies show that ABC adoption percentage is still low and there are companies that strongly resist the possibility of ABC implementation. Therefore, this section examines the third research question: For non-adopting companies, what are the main barriers or reasons for not adopting ABC?

The non-adoption of ABC stage is defined in the current study as when the companies have not adopted ABC, and still uses traditional costing system or departmental allocation methods. 48 individual respondents who operated TCS and have not adopted ABC were requested to explain their decisions.

The respondents were asked to answer from a list of 21 potential reasons that may explain why their business units had not adopted ABC. The individual respondents were asked to percentage items on a five-point scale where 1 = strongly disagree and 5 = strongly agree. The possible reasons were explored by looking at the mean scores of each item. The responses are summarized in Table 4.8

Table 4.8:  
*Reasons for Non-Adoption of ABC*

N		Min	Max	Mean	Std.
7	Costly to switch to ABC	2	5	4.29	.683
10	Consultants too costly	2	5	4.08	.710
17	Lack of top management support	2	5	4.06	.885

6	Cost accounting change is not our priority	1	5	3.52	1.185
3	Too complex and Too time consuming	2	5	3.46	.898
1	Satisfied with the current system	1	5	3.40	1.198
11	Difficulties in selecting appropriate software	2	5	3.27	1.047
12	Difficulties in selecting cost drivers	1	5	3.25	1.101
4	Lack of managerial initiative	1	5	3.25	1.062
19	Lack of expertise to implement ABC	1	5	3.23	1.077
15	Lack of internal resources	2	5	3.19	1.024
18	Resistance from employees	1	5	3.15	1.091
21	Lack of management policies S	1	5	3.15	1.010
14	Difficulties in collecting data on the cost drivers	1	5	3.04	1.110
13	Less complexity in products/services	1	5	2.98	1.376
8	The perceived benefits of ABC do not justify the cost of implementing it	1	4	2.98	.956
2	Lack of awareness of ABC	1	5	2.88	1.196
5	The control of overheads is already adequate	1	5	2.83	1.191
16	Have relative small proportion of overheads in total manufacturing/service costs	1	5	2.67	1.310
9	No intensity of competition	1	5	2.52	1.148
20	Ambiguity of ABC benefits in literature	1	5	2.46	1.320

The most important factor for not adopting ABC is the high cost associated with switching to ABC (mean scores = 4.29) and costly consultants (mean scores = 4.08). This was consistent with the previous studies such as Awasthi (1994); Booth and Giacobbe (1997); Chongruksut (2002); Cobb et al. (1992); Cohen et al. (2005) and O'Dea and Clarke (1994); when they found that inherent difficulties such as the high costs associated

with switching to ABC and costly consultants are major barriers to ABC adoption and implementation.

This is followed by lack of top management support (mean scores = 4.06) and cost accounting change not being a priority (mean scores = 3.52) as a part of organizational factors and business environment to ABC adoption. Shields (1995) said that top Management support has an important role in ABC adoption and implementation and the lack of support will present as a barrier or problem to ABC adoption. Similar proof is reported by previous studies such as Chongruksut (2002); Cohen et al. (2005); Groot (1999); and Innes and Mitchell (2000). Majid and Sulaiman (2008) in their study in Malaysia found that cost accounting change is not a priority and it has been revealed to be a major important barrier to ABC adoption and implementation.

The item too complex and too time consuming (mean scores = 3.46) was mentioned as an inherent difficulty and this was consistent with previous researcher's findings such as Alabbadi and Areiqat (2010); O'Dea and Clarke (1994); Pierce and Brown (2004).

The item "satisfied with the current system" (mean scores = 3.40) was also cited as a major reason for non adoption of ABC in the Jordanian manufacturing companies. Similar proof is reported by Askarany and Yazdifar (2007); Chung et al. (1997); Innes et al. (2000); Innes and Mitchell, (1991), and Pierce and Brown (2004). However, the reasons for not adopting ABC among the Jordanian manufacturing sectors are not different from those documented in other countries as mentioned in the last argument.

From Table 4.8(page221)there is a strong disagreement with the statements “Ambiguity of ABC benefits in literature” (mean scores = 2.46) and “No intensity of competition” (mean scores = 2.52) as barriers to adopting ABC. This result contrasts with the result by O’Dea and Clarke (1994) who reported that “Ambiguity of ABC benefits” in literature appears to be an important factor for not adopting ABC in the firms. Added to that the result is the contrasting finding by O’Dea and Clarke (1994); and Sartorius et al. (2007) who said that “No intensity of competition lead to non-adoption of ABC”.

#### **4.4 Factors AgainstABC Implementation**

This section examines the research question: For companies that adopted/abandonedABC, what are the main factors against implementation or using ABC?

It is important to distinguish between ABC adoption and implementation stages because the factors influencing adoption maybe different for non-adoption; in other words, the challenges being faced by an adopter may be different from those that are being faced by a non-adopter and the same different findings will develop in different stages. However, Gallivans (2001) suggested that the decision to implement any innovation is based on two stages: the primary decision stage during which the company adopts an innovation as an idea or project plan, and the secondary decision stage in which the adopters move from adopting the innovation as an idea or project plan to its actual implementation by the company.

The current section of the study will determine the factors faced by the companies when they attempt to start the system implementation; a list of 12 items were forwarded to 14 adopter companies and to 4 abandoner companies who abandoned the system in the pilot study and have not started the implementation yet.

The adopter stage is defined in the current study as the companies taking approval from top management to invest in the resources necessary for implementing ABC. Abandonment stage is defined as the stopping of ABC implementation at an early pilot testing or was implemented and analysis was performed but is not being pursued at this time. In the current study, the questionnaire was sent to the adopter companies and abandoning companies because the two stages involves taking approval from top management to implement ABC and the questionnaire gave the abandoning companies the opportunity to give reasons to justify their abandonment decision but the result shows that all the abandoning companies stopped their implementation after the pilot study and have not started the implementation yet, so they do not give additional reasons to justify their abandonment decision. Table 4.9 below shows the abandoner companies and their abandonment stage.

Table 4.9:  
*Stages of ABC Abandonment*

<b>Stages of ABC Abandonment</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative</b>
			<b>Percent</b>

A pilot project	4	100	100
Developing and installing ABC, as well as training employees	-	0.0	100
Full Implementation of ABC	-	0.0	100
<b>Total</b>	<b>4</b>	<b>100</b>	

The individual respondents were asked to rate items on a five-point scale where 1 = strongly disagree and 5 = strongly agree. The possible factors were explored by looking at the mean scores of each item. The responses are summarized in Table 4.10 below.

Table 4.10:  
*Factors That Work Against ABC Implementation*

		<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std.</b>
12	Lack of expertise to implement ABC	18	2	5	4.22	.943
1	Too complex and Too time-consuming	18	2	5	3.94	1.211
2	Costly to switch to ABC	18	2	5	3.78	1.215
4	Consultants too costly	18	2	5	3.67	.970
10	Lack of top management support	18	1	5	3.22	1.215
3	The perceived benefits of ABC do not justify the cost of implementing it	18	2	5	3.06	.938
5	Difficulties in selecting appropriate software	18	1	4	2.89	1.079
9	Lack of internal resources	18	1	5	2.83	1.383
7	Ambiguity of ABC benefits in literature	18	1	5	2.72	1.274
8	Difficulties in collecting data on the cost drivers	18	1	4	2.72	1.018
6	Difficulties in selecting cost drivers	18	1	4	2.67	1.085

The lack of expertise to implement ABC (mean scores = 4.22) and too complex and too time-consuming (mean scores = 3.92) were cited as the most important factors that impact the implementation of ABC within the Jordanian Manufacturing Shareholding Companies. This is followed by the costly switch to ABC (mean scores = 3.78) and too costly consultants (mean scores = 3.67). Similar proof is reported by Booth and Giacobbe (1997); Cohen et al. (2005); Cobb et al. (1992); Innes and Mitchell (1991). Meanwhile, organizational difficulties such as resistance from employees were cited as the least common factor that impacts the implementation of ABC within the Jordanian manufacturing sector and added to that are system issues such as difficulties in collecting data on the cost drivers (mean scores = 2.72) and technical difficulties such as difficulties in selecting cost drivers (mean scores = 2.67) . This result contrasts with the findings by Cohen et al. (2005) and Pierce and Brown (2004) and Shields (1995), who report that organizational difficulties appear to be important reasons for not implementing ABC rather than technological difficulties.

However, the factors that impact the implementation of ABC among Jordanian manufacturing companies in general are no different from those reported in other studies such as Alabbadi and Areiqat (2010); Chen et al.(2001); Chongruksut (2002); Chung et al. (1997); Cobb et al. (1992);Cohen et al. (2005); Groot (1999); Innes and Mitchell (1991); Innes and Mitchell (1998); Pierce and Brown (2004).

## **4.5 Implementation and using ABC within the Jordanian Manufacturing**

### **Shareholding Companies**

Companies implementing ABC consist of implementers (companies that were currently implementing ABC) and users (companies that were currently using ABC) are examined in this section. It is hoped that this will determine the factors that catalyzes, facilitates and motivates the decision to implement ABC, and to determine the barriers to ABC implementation during the implementation and usage stages.

The focus in the next sub-sections is to answer the research questions that are related to the research model described in Chapter Two. The development of the research model was based on the theoretical framework of management accounting change models that were introduced by Innes and Mitchell (1990). These are being considered as catalysts, motivators and facilitators. Cobb et al. (1995); Kasurinen (2002) and Wenisch (2004) developed this further by adding factors that hindered, delayed, or even prevented change.

#### **4.5.1 Reasons for ABC Implementation (Catalysts)**

This section examines the research question: For companies that are currently implementing/using ABC, what are the factors that are directly associated with the implementation decision?

Previous studies such as Abrahamson (1991) and Innes and Mitchell (1990) defined catalyst factors as factors which associate directly with the implementation decision.

Abrahamson (1991) classified these factors to be efficient-choice, force decision, and fad or fashion.

For the reasons of ABC implementation, the respondents were given a list of 10 potential reasons for implementing ABC and asked to indicate on a scale of 1 = Vitally unimportant and 5 = Vitally important the degree of importance attributable to each reason in the decision to implement ABC. The responses are summarized in Table 4.11.

*Table 4.11:  
Reasons for ABC Implementation(Catalysts)*

		<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std.</b>
10	Advice from auditors and /or consultants	16	4	5	4.63	.500
7	Advice from parent or headquarters	16	3	5	4.50	.632
9	We wished to try a new accounting innovation	16	3	5	4.38	.619
5	It was competitors were using ABC	16	2	5	3.94	.998
6	Pressure from government or other regulatory authorities	16	2	4	3.19	.834
1	The existing costing system was not reliable	16	1	4	2.94	.772
2	It was necessary to update the existing information system	16	1	4	2.75	.775
4	The existing costing system did not provide useful information to management	16	1	4	2.75	1.000
3	Other units within the company had benefited from adopting ABC	16	1	4	2.50	1.033
8	To be seen as having a sophisticated costing system that was comparable with best practice	16	1	4	2.31	1.138

The advice from auditors and/or consultants (mean scores = 4.63) and advice from parent or headquarters (mean scores = 4.50) were cited as the most important factors that impact the implementation of ABC within the Jordanian manufacturing companies. This is followed by the firms wishing to try a new accounting innovation (mean scores = 4.38) and because competitors were using ABC (mean scores = 3.94) and Pressure from government or other regulatory authorities (mean scores = 3.19).

In the first item, the advice from auditors and/or consultants is considered as a fashion perspective (see section 2.2.1.6). But the second item, advice from parent or headquarters and fifth item, pressure from government or other regulatory authorities are considered as force decision perspectives. The third item is we wished to try a new accounting innovation related to the fad perspective while the fourth item is competitors were using ABC, which is related to the efficient choice perspective. This first five items were followed by a group of four items relating to existing costing system items such as; the existing costing system was not reliable (mean scores = 2.94) and it was necessary to update the existing information system (mean scores = 2.75).

Based on the information listed in Table 4.11, fashion and force decision perspectives are two of the main reasons for ABC implementation among the Jordanian manufacturing sector. The fashion perspective is considered as the first and the highest item advice from auditors and/or consultants. It is a perspective that assumes that companies will be inclined to imitate other companies owing to the conditions of uncertainty linked to the

goals and the technical efficiency of innovations. As a consequence of this perspective, company decisions depend on which companies they should imitate as opposed to which technology they should implement. Additionally, the perspective assumes that during uncertain conditions, companies in a group imitate administrative technologies practiced by 'fashion setting' companies outside the group like consulting companies, business school and auditors.

The second item, advice from parent or headquarters and fifth item, pressure from government or other regulatory authorities come under force decision perspective. Under this perspective, a number of companies with controlling power can force other companies to adopt or diffuse new administrative technologies. These influential companies may have interest to force other companies to adopt a technically inefficient administrative technology. This can also happen in the case of an efficient technology to be abandoned. These are often regardless of companies' confrontation to adopt or reject the new innovation. Based on this perspective, researchers argued that the legitimate authority of government allows forcing the diffusion of innovations. Malmi (1999) suggested that forced selection assumes that adopting companies face a situation of no option. The finding in this study was consistent with the previous studies such as Majid and Sulaiman (2008).

The third most important item that influenced the decision of ABC implementation in the Jordanian manufacturing sector was: wishing to try a new accounting innovation and it is return to fad perspective. Under this perspective, innovation will be adopted when

companies within a group follow other companies within that group. Companies imitate other companies in order to obey with the developing norms (DiMaggio & Powell, 1983;Malmi, 1999). Fad process is a condition where companies with low reputation on certain characteristics will follow the innovation of the more reputed companies (Abrahamson, 1991).

The fourth item; It was because competitors were using ABC - is related to the efficient choice perspective. Under this perspective, the level of certainty about the aim of a company or the measurement of the technical efficiency of an innovation will be very high. In these conditions, companies will sensibly choose the innovation that can allow them to achieve their aims. The general assumption in innovation diffusion literature is that adopters of an innovation are rational and make independent and technically efficient choices (Gosselin, 2006). Abrahamson (1991) said that based on the efficient-choice perspective's suggestion, companies decide the adoption and rejection of innovations themselves. Therefore, their behavior is not imitative. In general, this study is consistent with previous studies such as Abrahamson (1991), Bjornenak (1997), Gosselin (1997), Majid and Sulaiman (2008), Malmi (1999).

#### **4.5.2 Factors that Motivated the Implementation of ABC**

This section will examine the research question: For companies that are currently implementing/using ABC, what are the main factors that motivate its implementation?

Previous studies suggested that motivator factors have a main role in creating the potential for change in the company. Innes and Mitchell (1990) defined motivators as factors that influence management accounting change in a general manner, such as changes in cost structure, shortcomings of the existing cost system, and change in business environment.

In the current section of the study, respondents who were implementing/using ABC were provided with a list of 11 items or questions to give their opinions about the importance of these items in motivating the Jordanian manufacturing companies to implement ABC. The individual respondents were asked to percentage items on a five-point scale where 1 = strongly disagree and 5 = strongly agree.

Table 4.12 shows that ABC implementers and users largely indicated that globalization of consumer and producer markets (mean scores = 4.25), and increased competition (mean scores = 3.56) are the most important factors that motivate the implementation of ABC. These two important factors motivate the companies to implement ABC which are attributable to the change in business environment reasons. This was consistent with previous studies such as Chongruksut (2002), Chung et al. (1997), Innes and Mitchell (1991), Maelah and Ibrahim (2006) and Shield (1995). However, it was in conflict with Brierly (2009) and Brown et al. (2004) findings that technological factors, such as product customization are not related to whether operating units considered ABC.

Growing costs, including production and administrative costs (mean scores = 3.50) were also cited as major factors that motivate ABC implementation. This important item is

attributed to the change in cost structure. This was consistent with previous studies such as Bjornenak (1997), Cooper (1991) and Shield (1995).

The final result regards the currently being faced allocation problems (mean scores = 3.50) and the inability of the traditional cost systems to provide relevant information in the new business environment (mean scores = 3.25) which are both considered as major factors that motivate ABC implementation. These important items are attributed to the shortcomings of the existing cost system, and this finding is consistent with the previous studies' findings such as Chung et al. (1997), Cooper (1988), Innes and Mitchell (1991), Kruehwield (1998), McGowan and Klammer (1997), and Shield (1995).

However, the factors that motivate the process of ABC implementation within the Jordanian manufacturing companies are similar to those mentioned in previous literatures, such as Al-Omiri and Drury (2007b), Chung et al. (1997), Innes and Mitchell (1991), and Shield (1995). They found that deficiencies relating to existing costing systems and factors relating to changing environment (competitive, manufacturing, and cost structure) represented the dominant motives for implementing ABC.

Table 4.12:  
*Factors that Motivate the Decision to Implement ABC*

		<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std</b>
11	Globalization of consumer and producer markets	16	1	5	4.25	1.183
9	Increased competition	16	2	4	3.56	.727
2	Growing costs, including production costs and					

	administrative costs	16	1	5	3.50	1.211
7	Currently facing allocation problems	16	2	5	3.50	.894
8	Inability of the traditional cost systems to provide relevant information in the new business environment	16	1	4	3.25	.931
10	Increased regulation (such as investment)	16	2	4	3.13	.806
1	Increasing proportion of overhead costs	16	1	5	3.00	1.265
6	Inability of the traditional cost systems to adopt to increased automation in the production service process	16	1	4	3.00	.894
4	Currently lack of decision-making information (such as non-financial information)	16	1	5	2.94	1.124
3	Currently the increasing number of product/service variants	16	1	5	2.88	1.147
5	The inaccuracies of product/ service cost of the traditional cost systems	16	1	4	2.88	.957

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### 4.5.3 Factors that Facilitated the Implementation of ABC

This section examines the research question: For companies that are currently implementing/using ABC, what are the main factors that facilitate its implementation?

Previous studies suggested that the facilitator factors have a main role in creating the potential for change in the company, and the change will not happen without the facilitator factors. Innes and Mitchell (1990) defined facilitator factors as factors that provide managers with the positive conditions that are necessary but not sufficient by themselves for a management accounting change, such as training, consultant, top

management support, non-accounting ownership, internal champion support , education and IT.

To know the impact of seven factors on the decision to implement ABC, namely training, consultant, top management support, non-accounting ownership, internal champion support, education and IT. This section of the study hold 17 items distributed to 16 individual respondents implementing or using ABC to obtain their answers about the degree of importance of seven factors that could facilitate the decision to implement ABC. They were asked to percentage the items on a five-point scale where 1 = strongly disagree and 5 = strongly agree. The responses are summarized in Table 4.13 below.

Table 4.13:  
*Factors that Facilitate the Decision to Implement ABC*

		<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std.</b>
1	ABC received active support from top management	16	3	5	4.00	.730
12	Detailed sales and operating data are available in the information system for the last 12 months	16	2	5	4.00	.816
16	The ABC implementation team was truly cross functional	16	3	5	3.94	.680
15	Departments outside accounting (e. g. manufacturing, marketing etc. ) have shown an interest in supporting ABC's success	16	2	5	3.88	.885
5	Education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided	16	2	4	3.75	.577
2	Management has provided adequate resources, such as time and commitment to the ABC implementation effort.	16	2	5	3.69	.946

11	Operating data in the information system are updated "real time" rather than periodically.	16	2	5	3.69	1.014
10	There is a permanent managerial consultant in the company	16	2	5	3.63	.806
6	Adequate training was provided for designing ABC.	16	2	5	3.62	.719
14	There is a role for some employees to create awareness of new accounting systems.	16	2	5	3.56	.727
7	Adequate training was provided for using ABC.	16	2	5	3.50	.730
8	The choice of any accounting systems is influenced by consultant companies	16	2	5	3.50	.816
13	There are individual within the company who significantly promotes the cause of adopt a new accounting systems	16	2	4	3.50	.730
9	Consultant companies are regularly consulted when dealing with problems	16	2	4	3.37	.719
3	Top management or senior managers have a clear commitment to use ABC information as the basis for decision-making.	16	2	5	3.31	.793
4	When the ABC began, the objectives of ABC implementation were clearly understood both by designers and users	16	1	4	3.25	.931
17	ABC has been linked to performance evaluations of non-accounting personal	16	2	4	3.19	.750

Table 4.13 shows that ABC implementers and users largely indicated that ABC received active support from top management (mean scores = 4.00), and detailed sales and operating data are available in the information system for the last 12 months (mean scores

= 4.00) are the most important factors that facilitate the implementation of ABC. This is followed by The ABC implementation team was truly cross functional (mean scores = 3.94), Departments outside accounting (e. g. manufacturing, marketing etc.) have shown an interest in supporting ABC's success (mean scores = 3.88).

The most cited factors that facilitate the decision to implement ABC were that ABC received active support from top management. This finding is consistent with previous studies' findings such as Shields (1995). He said that top management support has an important role in ABC adoption and implementation. Cooper et al. (1992) explained that there is a strong relation between corporate strategy and adequate of resources and top management support. Gunasekaran (1999) added that top management support is very important to the adoption and implementation of ABC especially at implementing and using stages. This is because the support from top management will facilitate the implementation by providing time, facilitating preparation and purchase of software, training programs, and investments in resources to implement ABC.

The second most important item mentioned by the respondents is the detailed sales and operating data that are available in the information system for the last 12 months. This item refers to the information system in the companies, this was consistent with the literature review for example, Cooper (1988) and Rahmouni and Charaf (2010) argued that high quality of information technology may encourage the managers and make them very comfortable to implement ABC. Anderson (1995) added that the level of information technology has important effects on the costing system design. For instance, the

measurement cost associated with using additional cost drivers depends on whether the data required by that driver is already available, or has to be specifically determined. IT can also give detailed data relating to cost driver information which is needed by more sophisticated costing systems. But this finding contrasts with Krumwiede (1998) who revealed that strong information technology in the company might push the managers to reject or abandon ABC. However, she did not deny that IT can facilitate the implementation process.

Some previous studies such as Cooper et al. (1992) and Maelah and Ibrahim (2007) mentioned that the non-accounting ownership is a key factor that facilitates the decision to implement ABC as found in the current study. ABC implementation team was truly cross functional having departments outside accounting (e. g. manufacturing, marketing etc.) which have shown interest in supporting ABC's success as a major role to facilitate the implementation process in Jordanian manufacturing companies. Maelah and Ibrahim (2007) said that non-accounting ownership is the participation of employees who are not accountants to design ABC and use its information. Cooper et al. (1992) said that when non-accountants (such as top executives, operating employees or design engineers) are committed to using ABC information, they can help to promote ABC, and the implementation of ABC has been shown to be effective.

In addition, individual respondents also reported that education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided (mean scores = 3.75). Previous studies assigned the role of education as a facilitator to ABC implementation. Krumwied (1998) and Shields (1995) found that education about the objectives of ABC

implementation, benefits of ABC, and the problems of implementation will facilitate the process of implementation. They added that there are different resources for the purpose of education, such as books, lectures, training and articles.

#### **4.5.4 Problems Encountered During the Implementation of ABC**

This section examines the research question: For companies that are currently implementing /using ABC, what are the barriers encountered during its implementations?

During the implementation or usage of ABC, the company could face technical, behavioral and organizational and system problems. Kasurinen (2002) said that these problems could make the change process, hinder it, slow it down or even prevent change. Thus, this study tries to determine this problem that may explain the low adoption and implementation percentages of ABC in the Jordanian manufacturing sector.

To know the most critical problems facing Jordanian companies during the implementation or ABC use, this section of questionnaire contains 16 items mentioned in previous studies as difficulties, barriers or problems facing the implementation process, and then individual respondents were asked to assess problems of implementing and using ABC. The level of difficulty encountered was ranked on a five-point scale where 1= strongly disagree and 5 = strongly agree. The results are summarized in Table 4.14 below.

Table 4.14:  
*Problems of ABC Implementation*

		<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std.</b>
4	Lack of software packages	16	2	5	4.00	.894
9	Difficulty in gathering data on cost-drivers	16	2	5	3.94	1.063
10	Difficulty in defining cost drivers	16	2	5	3.94	1.063
14	Coping with changes in accounting	16	2	5	3.75	.775
16	Changes required to company structure to fit Activities Selected	16	2	5	3.56	1.031
6	Takes up a lot of managers' time	16	2	4	3.50	.894
8	High cost of ABC consulting	16	2	5	3.50	.966
7	Takes up a lot of computer staffs time	16	2	5	3.38	1.025
1	High cost of implementing ABC	16	2	5	3.31	1.138
12	Difficulty in identifying activities	16	2	4	3.25	1.000
2	Lack of top management support	16	2	4	3.19	.911
15	Lack of knowledge of data requirement and collection	16	1	4	2.81	1.047
3	A higher priority of other changes/projects.	16	1	4	2.69	1.014
5	Lack of commitment among departments	16	1	4	2.69	1.078
11	Difficulty in designing system	16	1	4	2.69	1.014
13	Resistance to change	16	1	4	2.13	.957

The data analysis finding shows that lack of software packages (mean scores = 4.00), difficulty in gathering data on cost-drivers (mean scores = 3.94), difficulty in defining cost drivers (mean scores = 3.94), coping with changes in accounting (mean scores = 3.75) are the most important problems facing the implementation of ABC in Jordanian manufacturing companies.

The first item, lack of software packages refers to the system issues and a similar finding was found by previous studies such as Innes and Mitchell (1995) and Majid and Sulaiman, (2008). The second and third items, difficulty in gathering data on cost-drivers and difficulty in defining cost drivers refer to technical problems. Meanwhile, the coping with changes in accounting refers to behavioral and organizational problems.

However, the finding above shows that, technical problems are rampant in the implementation process as compared to behavioral or organizational problems in Jordanian manufacturing companies. This is in contrast with the finding of Krumwiede and Roth (1997), who argued that ABC problems resulted from more behavioral and organizational variables than technical variables. This could be explained by the results of Al-Khadash and Feridun (2006) who argued that the Jordanian manufacturing sector has a good environment in adopting new managerial initiatives such as ABC systems because they have the funding, the human resources and the knowledge about the ABC benefits.

The above finding is followed by, changes required to company structure to fit activities selected (mean score = 3.56), takes up a lot of managers' time (mean score = 3.50) and high cost of ABC consulting (mean score = 3.50) and most of these are factors hailing from behavioral and organizational problems.

Lack of top management support (mean score = 3.19), lack of knowledge of data requirement and collection (mean score = 2.81), a higher priority of other

changes/projects (mean score = 2.69), lack of commitment among departments (mean score = 2.69), difficulty in designing system (mean score = 2.69), and resistance to change (mean score = 2.13) were cited as the less common factors facing ABC implementation in Jordanian manufacturing companies.

An overview of the Table 4.14 can presents that lack of top management support is not a common problem in Jordanian manufacturing companies and this finding is consistent with the last section's finding about the facilitator factors, because implementer and users companies said that top management support was an essential and key factor for facilitating their ABC implementation process.

#### **4.6 Level of ABC Success**

This section examines the research question: For companies that are currently using ABC, what is the degree of ABC success?

Barid et al. (2007) and Shields (1995) said that the definition of success was problematic as the literature is not clear about the meaning of success. Previous studies found some variables to measure ABC success (Barid et al., 2007). Examples of ABC success measures tested in prior studies include use and satisfaction of ABCs (Swenson, 1995), workers satisfaction, (McGowan & Klammer, 1997), management evaluation, (Shields, 1995), ABC technical characteristics rating (Byrne et al., 2009; McGowan, 1998) and dollar improvements (Kennedy & Affleck-Graves, 2001).

The current study used four success measurements of ABC implementation within manufacturing sector in Jordan. Considering observed ABC maturity and using stage, this measure comprises the overall success of ABC implementation, ABC information characteristic rating, the degree of using ABC in decision making, and satisfaction with ABC implementation. Most of the previous studies measured success at different stages and not based on ABC maturity.

#### 4.6.1 The Overall Success of ABC Implementation

The first measure finding of the current study is about the level of ABC success and users were asked to rate their perception of the success of ABC implementation in their companies. The level of ABC success was ranked on a five-point scale where 1= Poor and 5 = Very good. Table 4.15 below shows the perceptions of the success of implementing ABC by users. The majority of ABC users perceived the success level of implementing ABC as good (71.4%).

Table 4.15:  
*Level of ABC Success among User Companies*

	Frequency	Percent	Cumulative Percent
Good	5	71.4	71.4
Very good	2	28.6	100
<b>Total</b>	7	100	

#### 4.6.2 ABC Information Characteristic Rating

The second measurement of ABC success was based on the technical characteristics of ABC information. This ABC information characteristic rating comprises of accuracy,

accessibility, reliability, timeliness and understandability. This measure was used by Byrne et al. (2009) and McGowan (1998) to compare between ABC information characteristic rating and TCS information characteristic rating. The current study assumes that the higher the ABC information characteristic rating, the more successful will be the implementation (Innes & Mitchell, 1995; Krumwiede, 1998). The respondents were asked to indicate on a five-point scale from 1 = very low to 5 = extremely high, the frequency of ABC information characteristic rating for each of the five ABC information characteristic listed in the question. The findings are reported in Table 4.16 below

Table 4.16:  
*Frequency of ABC Information Characteristic*

		<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
1	Accuracy	7	4	5	4.29	.488
3	Reliability	7	4	5	4.29	.488
4	Timeliness	7	3	5	4.00	.577
5	Understandability	7	3	5	4.00	.816
2	Accessibility	7	3	4	3.57	.535

Table 4.16 shows that accuracy (mean score = 4.29), and reliability (mean score = 4.29) were the highest ABC information characteristic rating. This is followed by the timeliness (mean score = 4.00), understandability (mean score = 4.00) and accessibility (mean score = 3.57). Data analysis shows also that the majority of users answered that ABC information characteristic rating in the following levels: average, high and extremely high. The findings are reported in Table 4.17 below.

Table 4.17:  
*ABC Information Characteristic Rating Among User Companies*

	Average		High		Extremely high	
	Count	%	Count	%	Count	%
Accuracy			5	71.4	2	28.6
Accessibility	3	42.9	4	57.1		
Reliability			5	71.4	2	28.6
Timeliness	1	14.3	5	71.4	1	14.3
Understandability	2	28.6	3	42.9	2	28.6

#### 4.6.3 The Degree of using ABC in Decision Making

Third measurement of ABC success was based on the use of ABC information in decision-making. This measure assumes that the more extensive the use of ABC information, the more successful the implementation (Innes et al.,2000;Innes & Mitchell, 1995). The respondents were asked to indicate on a five-point scale (from 1 = Never to 5 = Always) the frequency of using ABC information for each of the 7 different purposes listed in the question. The findings are reported in Table 4.18.

Table 4.18:  
*Frequency of Using ABC Information by User Companies*

	N	Min	Max	Mean	Std.
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1	Product costing	7	3	5	4.43	.787
2	Determine customer profitability	7	4	5	4.43	.535
6	Pricing decision	7	4	5	4.43	.535
3	Decision-making	7	3	4	3.43	.535
4	Planning	7	2	4	2.86	.690
7	Performance measurement	7	2	4	2.86	.690
5	Budgeting	7	2	4	2.71	.951

Table 4.30 shows that ABC was widely used for many different purposes started with using ABC in product costing (mean score = 4.43), determine customer profitability (mean score = 4.43), pricing decision (mean score = 4.43) and decision-making (mean score = 3.43) represents the most widely used applications. The use of ABC in Planning (mean score = 2.86), performance measurement (mean score = 2.86) and Budgeting (mean score = 2.71) represents the least widely used in Jordanian manufacturing companies. Data analysis shows that the majority of users used ABC information for different purposes in the following degrees: rarely, sometimes, very often and always. Table 4.19 below shows these findings in more details.

Table 4.19:

*Using ABC Information among User Companies*

	Rarely		Sometimes		Very Often		Always	
	Count	%	Count	%	Count	%	Count	%
Product costing			1	14.3	2	28.6	4	57.1
Determine customer profitability					4	57.1	3	42.9

Decision-making			4	57.1	3	42.9		
Planning	2	28.6	4	57.1	1	14.3		
Budgeting	4	57.1	1	14.3	2	28.6		
Pricing decision					4	57.1	3	42.9
Performance measurement	2	28.6	4	57.1	1	14.3		

#### 4.6.4 The Satisfaction with ABC Implementation

Fourth measurement of ABC success requested the respondents to give their opinion about their satisfaction in three areas they gain after implementing ABC. This area is calculating method, cost reduction and gained benefits. The respondents were asked to indicate on a scale where 1 = very unsatisfied and 5 = very satisfied. Table 2.20 shows that the majority of ABC users had quite a high level of satisfaction with the cost reduction efforts (mean scores = 4.57), calculating method (mean scores = 4.43), and satisfaction with the benefits of ABC that user companies have gained (mean scores = 4.14).

Table 4.20:

*Level of ABC Satisfaction among User Companies*

		N	Min	Max	Mean	Std.
3	You are satisfied with your business unit's ability to provide information to aid in cost reduction efforts	7	4	5	4.57	.535
2	You are satisfied with your method for calculating product and service costs	7	4	5	4.43	.535

1	You are satisfied with the benefits of ABC that your company has gained	7	4	5	4.14	.378
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Table 4.21 shows that most companies were satisfied and very satisfied with cost reduction effort, calculating method and satisfaction with the benefits of ABC that user companies has gained during the use of ABC in their companies. This finding is consistent with the previous finding such as Swenson (1995) who found that the degree of satisfaction with costing will be high after implementing ABC.

Table 4.21:  
*The Degree of Satisfaction with ABC among User Companies*

	Satisfied		Very satisfied	
	Count	%	Count	%
You are satisfied with the benefits of ABC that your company has gained	6	85.7	1	14.3
You are satisfied with your method for calculating product and service costs	4	57.1	3	42.9
You are satisfied with your business unit's ability to provide information to aid in cost reduction efforts	3	42.9	4	57.1

#### **4.7 Analysis of Factors to Answer the Research Question Number 9**

In order to test hypotheses Logistic regression will be used in the current study. Logistic regression can only be used where there are two dichotomous categories (e. g. ABC Implementation and non-ABC implementation). Under logistic regression, the normality is not necessarily the same for both dependent and independent variables. Hair et al. (1998) state that logistic regression is one of the most widely used linear probability models. Logistic regression has been used and reported in the published management accounting research journals and has been used in previous ABC research (Ahmadzadah et al., 2011; Gosselin, 1997& Krumwiede, 1998). Based on the above discussion, logistic regression was chosen to test the hypotheses relating to the influence of the Company characteristics factors on the implementation/non- implementation of ABC.

As for this study, the model was adapted from as Ahmadzadah et al. (2011) to answer the research question number 9. The organizations are divided into two groups, implementers and non-implementers, in the following logistic regression equation:

$$Y = b_1 + b_2 (V1a) + b_3 (V1b) + b_4 (V1c) + b_5 (V2) + b_6 (V3) + b_7 (V4) + e$$

Where:

( $Y=1$ ) = the probability of ABC implementation

V1a = company sector- Engineering

V1b= company sector -Processing

V1c= company sector -Consumers

V2 = size -number of employees

V3 = diversity - number of product

V4 = level of overhead cost

E = residual error term

Logistic regression (logit) analysis was done on the hypotheses. It is formulated to predict and explain two- categorical variable (Hair et al. 1998). logit estimates models in which the dependent variable can take only two values, 1 and 0. The overall measure of how well the model fits is given by the likelihood value (-2LL or -2 log likelihood). Hosmer and Lemeshow (1989) develop a classification test where sample is divided into approximately ten equal classes. The number of actual and predicted event is compared in each class with the chi-square statistic.

To analyze the data and to make the logistic regression valid, it was necessary to combine users and implementers in one group as ABC implementers. Bjornenak (1997) added that ABC implementers had the same characteristic that users have, while non-implementers include companies that were non-adopting, adopting and abandoned ABC. Consequently, potential users group consists of 16 companies (9 implementer and 7 users). On the other hand, the non-implementers group comprises of 66 companies (48 non-adopters, 14 adopters, and 4 abandoners).

In this study, the two values in which variable take are 1 and 0 where 1 represents the organizations that implement ABC and 0 represent the organizations that non-implementers. The sample size of the organizations is 16 implementers and 66 non-implementers. Table 4.22 below, the model were to predict the Y-value as 0 or 1, the

model will be correct 80.5 percent times. This is a high percentage compared to the naïve model of 50 percent.

Table 4.22:  
*Classification Table (a,b)*

		Observed		Predicted	
				IMPLEM	Percentage Correct
				.00	1.00
Step 1	IMPLEM	.00	66	0	100.0
		1.00	16	0	.0
Overall Percentage					80.5

a Constant is included in the model,b The cut value is .500

To determine which variable has significant impact on ABC implementation Table 4.23 is referred. The variables will be statistically significant at  $p < 0.05$  and  $p < 0.10$ . From table 4.23 in this study, the all variables: company sectors, size-number of employees, diversity-number of product, and level of overhead cost are not significant, because  $P > 0.05$ .

Table 4.23:  
*Variables in the Equation*

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	SIZE	-.001	.001	1.892	1	.169	.999
	DIVERS	.001	.005	.055	1	.814	1.001
	COST	1.910	1.726	1.224	1	.268	6.752

ENGIN			.937	2	.626	
PROCE	.372	.717	.268	1	.605	1.450
CONSU	-.308	.708	.189	1	.663	.735
Constant	-1.642	.912	3.246	1	.072	.194

a Variable(s) entered on step 1: SIZE, DIVERS, COST, SECTOR

The findings in this study reveals that company sectors, size - number of employees, diversity -number of product, and level of overhead cost don't have significant influence on the implementation of ABC among manufacturing shareholding firms in Jordan. Therefore hypotheses H1a, H1b, H1c, H2, H3, and H4 are rejected. These results explained in more details as follows:

The data analysis for first hypotheses shows no any relationship between ABC implementation and company sector, because the significant value for all company sectors (Engineering, Processing, and Consumers) more than 0.05. Shields (1995) stated that the implementation and designing of cost accounting systems are conditional on the characteristics of industries. The literatures related to the diffusion of innovation theory such as Abrahamson (1991) and Malmi (1997) said that the companies within an industry sector may imitate other companies, so the imitation process may result in similar accounting system being adopted within specific business sectors. Al-Omiri and Drury (2007) said that ABC was initially introduced in manufacturing companies. Thus, mimicking behavior suggests that manufacturing companies may be more likely to adopt sophisticated costing systems.

There are a few implementers in each sector; to enhance the data analysis and to make it more valid a chi-square was employed in the current study. Table 4.24 presents the classification of ABC Implementers and Non-ABC Implementers based on the type of sector.

Table 4.24:  
*Classification of ABC Implementers and Non-ABC Implementers Based On Type of Sector*

		<b>Implementers –Non Implementers</b>			
			<b>Implementer</b>	<b>Non- Implementer</b>	<b>Total</b>
SECTOR1	Engineering	Count	6	16	22
		% within SECTOR1	27.3%	72.7%	100.0%
		% within Implementers –Non Implementers	37.5%	24.2%	26.8%
		% of Total	7.3%	19.5%	26.8%
	Processing	Count	5	27	32
		% within SECTOR1	15.6%	84.4%	100.0%
		% within Implementers –Non Implementers	31.3%	40.9%	39.0%
		% of Total	6.1%	32.9%	39.0%
	Consumers	Count	5	23	28
		% within SECTOR1	17.9%	82.1%	100.0%
		% within Implementers –Non Implementers	31.3%	34.8%	34.1%
		% of Total	6.1%	28.0%	34.1%
Total	Count	16	66	82	
	% within SECTOR1	19.5%	80.5%	100.0%	
	% within Implementers–Non Implementers	100.0%	100.0%	100.0%	
	% of Total	19.5%	80.5%	100.0%	

In the current study, to know if there are statistically significant differences between both ABC Implementers and Non-ABC Implementers based on type of sector, a chi-square was employed. As mentioned before the numbers of companies in some sectors is very small. So, the sectors that had similar characteristics were combined in one group

based on the Department of Statistics Reports and Ministry of Industry and Trade in Jordan. Eleven types of manufacturing companies were classified into three groups (See section 4.2.2.1). This decision was organized to increase the number of companies in each group to make the chi-square analysis valid.

The data analysis found no main difference between ABC Implementers and Non-ABC Implementers based on type of sectors, as shown in Table 4.25 (chi-square is 1.200 and Sig.549). This finding is consistent with previous studies such as Ahmadzadah et al. (2011) finding that found no significant relation between adoption of the activity-based costing technique and industry type within Iranian companies. Added to this is Gosselin's (1997) finding that found similar results within Canadian manufacturing companies.

Table 4.25:  
*Chi-Square Tests Implementers Based on Type of Sector*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.200(a)	2	.549
Likelihood Ratio	1.149	2	.563
Linear-by-Linear Association	.598	1	.439
N of Valid Cases	82		

a 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.29.

The data analysis for hypotheses number two shows no any relationship between company size- number of employees and ABC implementation. Because the significant value for size variable is .169 and this more than 0.05, so the second

hypotheses rejected. Previous studies such as Clarke et al. (1999) and Krumwiede (1998) argued that the companies' size has a main role in the implementation of ABC. The results vary from one study to another; for example Ahmadzadah et al. (2011); Bjornenk (1999); Clarke et al. (1999); Krumwiede (1998) and Pierce and Brown (2004) found no significant relationship between ABC adoption and implementation and company size-number of employees. However studies such as Abu Salama (2008); Baird et al. (2004) and Brown et al. (2004) found a strong significant relation between ABC adoption and implementation and company size.

The data analysis for hypotheses number three shows no any relationship between diversity-number of products and ABC implementation. Because the significant value for diversity is .814 and this more than 0.05, so the third hypotheses rejected. The number of products is used to describe the level of product diversity. Cooper (1988a) argued that product diversity leads to a higher possible cost distortion and applies when products consume activity resources in different proportions. Several studies have examined the relationship between the decision to implement ABC and the products diversity, such as Abu Salama (2008); Bjornenk (1999); Brown et al. (2004) and Clarke et al. (1999). The results demonstrate to be helpful of the influence of ABC implementation. However the current study's finding is consistent with the previous studies' findings such as Ahmadzadah et al. (2011).

The data analysis for hypothesis number four shows no any relationship between level of overhead cost and ABC implementation. Because the significant value for size variable is

.268 and this more than 0.05, so the fourth hypotheses rejected. Previous studies such as Cooper and Kaplan (1988a) argued that overhead was becoming an increasingly larger part of product cost. This led to the distortions making traditional costing systems unable to determine accurate product costs. So, ABC was seen as a more accurate cost allocation method of overhead. The results regarding the associations between ABC implementation and level of overhead cost were ambiguous; for example, Abu Salama (2008) and Booth and Giacobbe (1997) found a positive association between ABC implementation and the level of overhead cost. However this finding is consistent with the previous studies' findings such as Brierly (2009). Meanwhile it contrasts with previous studies' findings such as Ahmadzadah et al. (2011).

#### **4.8 Chapter Summary**

The findings drawn from the analysis of questionnaire data that were reported in this chapter highlight the views of questionnaire respondents in relation to the adoption and implementation of ABC within the Jordanian manufacturing companies. Numerous key findings were discussed in this chapter. First, the percentage of ABC implementation with the Jordanian manufacturing companies based on the first criterion was 36.5% (30 companies out of 82 adopting, implementing or using ABC information). The second criterion is based on usage and refers to the full implementation and using ABC information for various purposes in the company. The percentage of ABC implementation within the Jordanian manufacturing companies based on this criterion is about 8.5% (7 companies out of 82 were using ABC information as part of daily practice or integrated with other systems). The third criterion is based on implementation as processes rather

than using ABC information as a part of daily practices or integrating ABC with other systems. Accordingly, the percentage of ABC implementation within the Jordanian manufacturing companies based on this criterion is about 19.5% (7 companies had used ABC; 9 companies that were in the process of implementing ABC).

Second, regarding the reason for non-adopted ABC implementation, the results indicated that the most cited reasons for not adopting ABC were the inherent difficulties with ABC design and implementation group namely: costly to switch to ABC (mean scores = 4.29) and consultants too costly (mean scores = 4.08) was cited as the most important reason for not adopting ABC within the Jordanian Manufacturing Companies, followed by lack of top management support (mean scores = 4.06).

Third, lack of expertise to implement ABC (mean scores = 4.22) and too complex and too time-consuming (mean scores = 3.94) were cited as the most important factors against the implementation of ABC within the Jordanian Manufacturing Companies, followed by costly to switch to ABC (mean scores = 3.78) and consultants too costly (mean scores = 3.67).

Fourth, regarding the reason for ABC implementation, the analysis indicated the fashion and force perspectives were the dominant reasons for implementing ABC, namely: advice from auditors and/or consultants (mean score = 4.63), advice from parent or headquarters (mean score = 4.50). This is followed by - We wished to try a new accounting innovation (mean score = 4.38) as a fad perspective and It was competitors were using ABC (mean score = 3.94) as an efficient choice perspective.

Fifth, the analysis of factors that motivate the process of ABC implementation has shown that both ABC implementers and users largely indicated that the globalization of consumer and producer markets (mean scores = 4.25), increased competition (mean scores = 3.56) are two important factors motivating the companies to implement ABC which are attributed to the change in business environment reasons. This is followed by the growing costs, including production costs and administrative costs (mean scores = 3.50) and currently facing allocation problems (mean scores = 3.50), these two factors are attributed to change in cost structure and shortcoming in existing system respectively.

Sixth, the analysis of factors that facilitate the process of ABC implementation has shown that ABC received active support from top management (mean scores = 4.00) and detailed sales and operating data are available in the information system for the last 12 months (mean scores = 4.00), followed by the ABC implementation team was truly cross functional (mean scores = 3.94) and departments outside accounting (e. g. manufacturing, marketing etc. ) have shown an interest in supporting ABC's success. Therefore, top management support and higher information technology were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian Manufacturing Companies.

Seventh, regarding the analysis of the problems encountered during the implementation of ABC, the results has shown that the greatest problem in implementing ABC was the lack of software packages (mean scores = 4.00), difficulty in gathering data on cost-

drivers (mean scores = 3.94) and Difficulty in defining cost drivers (mean scores = 3.94). This is followed by coping with changes in accounting (mean scores = 3.75).

Eighth, four measures are used in the current study to know the level of ABC success. Firstly, the Jordanian Manufacturing Sector assess the degree of ABC success as good and very good. Secondly, the data analysis shows that the users perceived that ABC information characteristic rating is average, high and extremely high. The analysis shows that accuracy (mean score = 4.29), and reliability (mean score = 4.29) were the highest ABC information characteristic rating. This is followed by timeliness (mean score = 4.00), understandability (mean score = 4.00), and accessibility (mean score = 3.57). Thirdly, the greater part of Jordanian companies are using ABC to determine product costing (mean score = 4.43), determine customer profitability (mean score = 4.43), for pricing decision (mean score = 4.43) and decision-making (mean score = 3.43). Finally, the greater part of ABC users had quite a high level of satisfaction with their unit's ability to provide information to aid in cost reduction efforts (mean score = 4.57), calculating method (mean score = 4.43) and gain benefits (mean score = 4.14). In the next chapter, the discussion of the interview data analysis provided.

Ninth, the data analysis found that there are no relationship between ABC implementation and company characteristics (company sectors, size - number of employees, diversity - number of product, and level of overhead).



## CHAPTER FIVE

### QUALITATIVE DATA ANALYSIS

#### 5.0 Introduction

The qualitative stage complements and affirms the quantitative component analyzed in the last chapter. The qualitative analysis obtainable here is used as a follow-up for further explanation of the results of the survey and is also used to assist the understanding and corroboration of the results of the survey findings. Moreover, the qualitative stage is used to raise issues relevant to the topic but which had not been covered in the quantitative stage.

The in-depth interview technique for this chapter of the study was designed for interviews with companies that had non-adopted, adopted, implemented and using ABC information. Each company in this chapter was examined as an entity to obtain an understanding of reasons for non-adopting or non-implementing ABC and to know the procedure of ABC implementation as well as the respondents' opinions and perspectives of each individual company as to what are considered to be the significant factors in the company. By initially using within-company analysis, this represented potential to assist in-depth views of the issues and their impact on each exacting company. Cross-company analysis was then used to analyze the similarities and differences of all the thirteen companies under the qualitative study.

## **5.1 Within-Company Analysis for Non-Adopters Companies**

This section describes within-company analysis, provides background information which will give an overall picture of each company. It includes the universal background information, such as the type of sector and the number of employees of the company and its capital.

### **5.1.1 Company One**

Company one is an electrical industry with a total number of employees of around 600 in 2010. The capital of the company at the end of 2010 was 15 million JD (1 JD = RM4 approximately). The company was established in 1972 as a public share holding company. Its products include ovens, gas and electricity and metal office furniture, medical and electric water heaters and solar and greenhouse gas. This company is a non-adopter of ABC system. The discussion is based on the interview with the firm's head of cost accounting department.

#### **5.1.1.1 The Barriers or Reason for Non-Adoption of ABC in Company One**

Previous studies such as Askarany and Yazdifar (2007) and Pierce and Brown (2004) said that some companies do not adopt ABC system because they are satisfied with their traditional costing system. Based on the head of the cost accounting department of Company One, he commented:

“Traditional costing system is a good system because it is easier than ABC system and it is enough for our work; we have used it for many years”.

Previous studies such as Lawson (2005) and O’Dea and Clarke (1994) and Stratton et al. (2009) said that ABC system implementation is very costly so, many companies do not implement it. The head of the cost accounting department in Company One further stated:

“To design and implement ABC system is very costly. This will force us to spend more money and it may not lead to new or best results.”

### **5.1.2 Company Two**

Company Two is a company from the chemical industry with a total number of employees of around 220 in 2010. The capital of the company at the end of 2010 was 9 million JD (1 JD = RM4 approximately). The company was established in 1991 as a public share holding company. The main objective of the company is to secure the country’s needs of the basic materials for the chemical industries and water treatment projects.

#### **5.1.2.1 The Barriers or Reason for Non-Adoption of ABC in Company Two**

Previous studies such as Chongruksut (2002), Cohen et al. (2005) and Innes and Mitchell (2000) argued that lack of top management support is the main reason for not considering or adopting ABC. The head of the cost accounting department in Company Two stated that:

“Our top managers do not allow us to adopt ABC, he is an old man and he is not convinced with any new system. We have suggested adopting ABC but he rejected our suggestion because he was afraid that ABC may not be effective and

it is merely a fad which will lead to the depletion of the company's resources without benefit".

In Ireland, O'Dea and Clarke (1994) indicated that the small rate of overhead costs in the cost structure is an important reason for non-consideration or adoption of ABC. Based on the head of the cost accounting department in Company Two:

"However, although I encourage the company to adopt the new management accounting innovation, I am convinced that the level of overhead costs in our company is not much and the control of overheads is already adequate".

### **5.1.3 Company Three**

Company Three is a company from the chemical industry with a total number of employees of around 143 in 2010. The capital of the company at the end of 2010 was 4 million JD (1 JD = RM4 approximately). The company was established in 1969 as a public share holding company. Company Three produces iron pipes and all accessories of different types and standards, for sale and export.

#### **5.1.3.1 The Barriers or Reasons For Non- Adoption of ABC in Company Three**

Askarany and Yazdifar (2007) in their study in Australia explained the reasons why ABC adoption percentage is very low. They concluded through the use of two surveys that the main reason of not adopting ABC was adequacy of current system. The following comment is based on the head of cost accounting department in company Three:

“Our work is simple and traditional costing system can provide us with accurate cost allocation. It suits our company and we do not find problems in the system. Most of the cost allocation problems are the employees’ and accountants’ making”.

The importance of professional accounting bodies in Jordan was highlighted during the interview with the head of the cost accounting department in Company Three. The interviewee emphasized the position and importance of professional accounting bodies for improving and behind the companies for adopting and implementing ABC within the manufacturing companies. The position and importance of such accounting bodies is very obvious in other countries, such as the Ireland, United States of America and the United Kingdom. Based on the head of cost accounting department in company Three:

“In Jordan, there is a marked absence of a well-established professional accounting body although concerned individuals are convinced that such bodies would assist in improving and supporting the implementation of management accounting innovations like ABC, and CIMA in the UK”.

Cohen et al. (2005) and Gunasekaran et al. (1999) stated that top management support has a main role in the adoption and implementation of ABC system. They can be barring or facilitating factors because top management support will provide the work with resources, time and training which is very necessary for implementing ABC system. This support will facilitate the implementation process. On the other hand, lack of top

management support will hinder or prevent the implementation process. As stated by the head of the cost accounting department in Company Three:

“Any step for adopting or implementing ABC system needs agreement from our top management. However they always reject our suggestions to implement this system because they think ABC is not effective”.

#### **5.1.4 Company Four**

Company Four comes from the food and beverage industry with a total number of employees of around 102 in 2010. The capital of the company at the end of 2010 was 6 million JD (1 JD = RM4 approximately). The company was established in 1989 as a public share holding company. The Company is in refining and bottling plant oils business used for food purposes.

##### **5.1.4.1 The Barriers or Reason for Non-Adoption of ABC in Company Four**

Chongruksut (2002) and Pierce and Brown (2004) argued that some companies do not adopt ABC because they are satisfied with their traditional system and they believe that existing cost systems are satisfactory for product costs and measuring performance. Awasthi (1994) and Chongruksut (2002) also said that some companies do not adopt ABC because they found it to be expensive and the consultant services are too costly. The financial manager in Company Four stated that:

“We are comfortable with the current costing system. We think it is better than ABC system because ABC systems are very costly and its implementation also

needs expensive consultants. We do not want to spend our money in implementing a system in which we are not sure if it will benefit us or not”.

## 5.2 Cross-company Analysis for Non-Adopters Companies

This section provides an outline of a cross-company analysis. It includes all barriers and problems identified by companies and their overall assessments in each individual company. To help in arriving at an overall assessment of the important factors that impact the implementation of ABC within the Jordanian manufacturing companies, the analysis of the four companies has been summarized in Table 5.1. Qualitative analyses together with quantitative ratings were done to generate the summary.

Table 5.1:  
*Summary of Cross-Company Analysis*

Factors	Company			
	1	2	3	4
<b>Reasons for non- adoption of ABC</b>				
High cost of ABC implementation	✓	X	X	✓
High cost consultants	X	X	X	✓
Lack of accounting bodies	X	X	✓	X
Satisfied with current system	✓	X	✓	✓
Lack of top management support	X	✓	✓	X
small percentage of overhead costs	X	✓	X	X

Legend:

✓ □ = the factor that are supported by interviewee    X □ = the factors that are not supported by interviewee

The fourth companies interviewed do not adopt ABC system because there are barriers to this adoption, but the most important reason was the fact that they were satisfied with the current system. The cross-company analysis shows that three companies out of four are satisfied with their traditional costing system. Two companies out of four said that the lack of top management support is an important reason for not adopting ABC system. Also, two companies out of four said that high cost of ABC implementation is a reason for not adopting ABC in their companies. These results are followed by the last two barriers which are high cost consulting services and small percentage of overhead costs.

### **5.3 Within-Company Analysis for Adopter Companies**

This section describes within-company analysis. Firstly, it provides a summary of background information which gives an overall picture of each company. It includes the universal background information, such as the type of sector and the number of employees of the company and its capital.

#### **5.3.1 Company One**

Company one is in mining industry with a total employees of around 900 in 2010. The capital of the company at the end of 2010 was 60 million JD (1 JD = RM4 approximately). The company was established in 1951 and recorded in 1964 as a public share holding company. The main aim of this company is to manufacture and sell cement in domestic and foreign markets.

### **5.3.1.1 Factors Against ABC Implementation in Company One**

Previous studies such as Chongruksut (2002) and Cohen et al. (2005) argued that the main barriers facing the implementation of ABC are related to high cost of implementation of the system. In Company One, the head of the cost department stated:

“The company needs to spend high expenses on training programmers, hardware and software prior to ABC implementation.”

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting the success of implementing ABC. The main problem encountered in ABC implementation by Company One was the number and lack of local consulting companies in Jordan.

In Company One, the head of the cost department stated:

“In Jordan there is a lack of expertise companies, which makes the company, depend fully on expensive outside expertise”.

Previous studies such as Alabbadi and Areiqat (2010) and Pierce and Brown (2004) found that some institutions such as companies and universities do not implement ABC system because the system is too complex and its implementation consume a lot of time. The head of the cost department added that:

“ABC system implementation process is very complex and it consumes our manager’s time. Moreover, they are busy individuals who do not have time extra

time to prepare all ABC resources and arrange the company structure and its activities”.

### **5.3.2 Company Two**

Company Two is in food and beverage industry with a total employee of around 130 in 2010. The capital of the company at the end of 2010 was 5 million JD (1 JD = RM4 approximately). The company was established in 1993 as a public share holding company.

#### **5.3.2.1 Factors Against ABC Implementation in Company Two**

Pierce and Brown (2004) and Sartorius et al. (2007) said that lack of expertise to implement ABC is a main problem facing the companies when they attempt to start the implementation process. This is based on the head of the cost accounting department in the company:

“There are no employees in our company that has the expertise to implement ABC because the system is still new and it just started in developed countries such as in the European countries and USA which have rich bases to implement new management accounting innovation such as ABC. But in Jordan, the expertise is very low and we are facing this problem now. This is because we do not know how we can deal with ABC software, data, identify activities and choosing cost drivers”.

Researchers such as Friedman and Lyne (1999) argued that consultants play a main role in the implementation of ABC system. However, some companies do not implement ABC or stopped their implementation because it is very costly. This is stated by the head of the cost accounting department in the company:

“Jordan is still lacking of consultants which makes the companies fully dependent on foreign consultants.”

The Head of the Cost Accounting Department added:

“Our top managers are always slow in providing the requirements of ABC implementation. They are hesitant and afraid of the high payment and the consumption of resources without achieving the benefits after implementing the new system. We are trying to persuade them but they remain hesitant”.

The last barrier is consistent with previous researchers such as Innes and Mitchell (2000); Chongruksut (2002) and Cohen et al. (2005), when they found that lack of top management support is a main barrier of ABC adoption and implementation.

### **5.3.3 Company Three**

Company Three is in textiles, leathers and clothing industry with a total employee of around 235 in 2010. The capital of the company at the end of 2010 was 17 million JD (1 JD = RM4 approximately). The company was established in 1992 as a public share

holding company. The main objective of Company Three was to produce different types of clothes and sell them in Jordan or export it to other countries.

### **5.3.3.1 Factors Against ABC Implementation in Company Three**

Cobb et al. (1992) and Pierce and Brown (2004) found that lack of internal resources is a problem faced by the companies when they attempt to start ABC implementation process.

This is based on the statement of the assistant financial manager:

“We took agreement from top management to implement ABC system and we were about to start the implementation but we found problems in the form of our ABC budget. It is very low and there is lack of internal resources such as software, sufficient training and IT. Added to that ABC resource is very costly. Our implementation team needs more financial support to purchase all ABC implementation resources”.

Innes and Mitchell (1991) and O’Dea and Clarke (1994) point out that the implementation of ABC is too complex and too time-consuming. These are the most common problems encountered by the companies when implementing ABC. This is based on the assistant financial manager’s statement. He stated that:

“ABC’s implementation is a full time occupation when initiated. When the top management chose me to be one of the members of ABC implementation team, I lost track of my daily operations”.

He added:

“There is a shortage of staff in many major areas of ABC implementation process. Most of them require high salary. ... It takes time and hard effort to find them”.

Researchers such as Friedman and Lyne (1999) argued that consultants have a main role in the implementation of ABC system. Some companies do not implement ABC or stopped their implementation because it is very costly. This mirrors the words of the head of the cost accounting department:

“Implementation of ABC requires a consultant who is an expert in the area and know the implementation procedures in-depth. We tried to hire such consultants but they are very expensive”.

He added:

“ABC is a costly system and its implementation needs a huge budget, so we are careful to bring in a good consultant and enough resources to implement it without errors and eventually to gain benefits more than its costs”.

#### **5.4 Cross-company Analysis for Adopters Companies**

This section provides an outline of a cross-company analysis. It includes all barriers and problems identified by companies and their overall assessments in each individual company. To help in arriving at an overall assessment of the important factors that impact the implementation of ABC within the Jordanian manufacturing companies, the analysis of the three companies has been summarized in Table 5.2.

Table 5.2:  
*Summary of Cross-Company Analysis*

<b>Factors</b>	<b>Company</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Reasons for non- implementation of ABC</b>				
Lack of expertise to implement ABC		✓	✓	X
Too complex and Too time-consuming		✓	X	✓
High cost of ABC implementation		✓	X	✓
High cost consultants		X	✓	✓
Lack of internal resources		X	X	✓
Lack of top management support		X	✓	X

Legend:

✓ □= the factor that are supported by interviewee    X □= the factors that are not supported by interviewee

The three companies interviewed have adopted the ABC system but have not implemented it yet because there are barriers to the implementation process. The cross-company analysis shows that two companies out of three faced four problems most of them relating to ABC itself not to behavior or organizational factors and these barriers are: too complex and too time-consuming, high cost of ABC implementation, high cost of consultants and lack of expertise to implement ABC. One company out of three companies said that lack of internal resources and lack of top management support are the barriers they face resulting in the delayed implementation process.

## **5.5 Within-Company Analysis for Implementer and User Companies**

This part describes within-company analysis. Firstly it provides a summary of background information which gives an overall picture of each company. It includes the universal background information, such as the type of sector and the number of employees of the company and its capital, and the year of establishment and when they started the ABC adoption.

### **5.5.1 Implementation of ABC in Company One**

Company one is in electrical industry with a total number of employees of around 301 in 2010. The capital of the company at the end of 2010 was 22 million JD (1 JD = RM4 approximately). The company was established in 1983. In 2004, the decision was completed to shift from the traditional cost system to activity based costing system. The procedures of ABC implementation was completed in June 2006.

#### **5.5.1.1 Reasons for ABC Implementation (Catalysts Factors) in Company One**

The company takes advice from auditors and/or consultants about the recourse to fashion perspective. As mentioned earlier, the perspective assumes that companies are inclined to imitate other administrative technologies manifested by 'fashion setting' companies outside the group like the consulting companies, business school and auditors owing to the uncertainty relating to goals and the technical efficiency of innovations. Hence, company decisions depend more on which companies they choose to imitate as opposed to which technology they should implement (Abrahamson, 1991). It is evident that the interview data of the financial manager in Company One manifested the same notion.

According to the financial manager,

“ABC was the widespread fashion of that time and therefore, every manager in every company in the industry made a quick move to observe the new system and to use it.”

The financial manager later added:

“ABC information has been available to us for many years. Although there was nothing wrong with our previous system, we considered ABC implementation as we had reason to believe that it will improve our ineffective business processes and help us in our new project venture”.

#### **5.5.1.2 Factors that Facilitate the Implementation of ABC in Company One**

Shields (1995) stated that top management support has an important role in ABC adoption and implementation. Gunasekaran (1999) added that top management support is very important to the adoption and implementation of ABC especially at the implementation and utilization stages because the support from top management will facilitate the implementation by giving time, preparing and purchasing the software, training programs, and investments in resources. Based on the interview of the financial manager in Company One:

“My top manager has been involved with the ABC system since its implementation until now. For instance, he has registered to get his CPA certificate to be updated with the system”.

Top management should commit resources and develop goals and strategies to enable the implementation of ABC. They also should demonstrate a commitment to ABC by using it as the basis for decision-making. Based on the interview of the financial manager in Company One:

“Our managers have the basic skills needed to implement ABC and they provided the implementation team with resources and training which is very necessary for implementation process”.

Cooper (1988) argued that high quality of information technology may encourage the managers and make them very comfortable to implement ABC. Anderson (1995) added that the level of information technology has important effects on the costing system design. For instance, the measurement cost associated with using additional cost drivers depends on whether the data required by that driver is already available, or has to be specifically determined. IT can also give detailed data relating to cost driver information which is needed by more sophisticated costing systems. The IT factor is considered to play a key role in the success of the ABC. Based on the interview of the financial manager in Company One:

“Our company has an advanced IT system; all our equipment, computers and communications are working well and this encouraged us to continue ABC implementation process because it makes ABC design, implementation and utilization of information easier and more successful”.

He added:

“The most important advantage to the advanced IT is the fact that it provides the necessary data about the cost drivers that may be used as a base for cost allocation”.

### **5.5.1.3 Factors that Motivate the Implementation of ABC in Company One**

Change in business environment such as globalization of consumer, producer markets and increased competition push companies to look for solutions by implementing ABC.

Based on the interview of the financial manager in Company One:

“In the new environment, especially after Jordan's accession to the WTO, implementing new costing system became a necessary issue to provide more accurate cost information suitable for decision making and to satisfy market requirements”.

Shortcomings of the existing cost system such as currently faced allocation problems and inability of the traditional cost systems to provide relevant information in the new business environment have a main role in encouraging companies to implement ABC (Chung et al., 1997). Based on the interview of the financial manager in Company One, he attributes the problems to the traditional costing system which encouraged the company to implement ABC:

“We do not identify our product cost well, but with ABC system, we can know the correct way. ABC is something different. We look at what really

influences us and what are the critical factors which affect our product cost and we have, therefore, the ability to determine the prices of our products”.

He added:

“We find the figures produced by our previous costing system as undependable. We solve this problem by implementing ABC”.

#### **5.5.1.4 Problems of ABC Implementation in Company One**

Majid and Sulaiman (2008), Pierce and Brown (2004) said that system issues such as lack of software packages are critical problems faced during ABC adoption and implementation. The financial manager said:

“Our company is facing many problems with the software because there is lack of software packages in the markets if we buy it, sometimes it does not suite our company tasks and added to that it needs to be updated from time to time”.

Friedman and Lyne (1999) suggested that the difficulty in the selection of cost drivers was a factor that could be recognized as a technical issue and it could influence the implementation of the ABC system. The financial manager in Company One said that:

“The processes of selecting cost drivers were distorted all the time, we had a hard time to choose suitable cost drivers then to deal with them”.

In Company One, fashion perspective was the most important factor catalyst of ABC implementation. Top management support and IT are the most crucial factors facilitating the choice to implement successfully. The change in business environment and shortcomings of the existing cost system is the main factors motivating the implementation of ABC. The key problems encountered during the implementation of ABC in Company One were lack of software packages and difficulties in the selection of cost drivers.

### **5.5.2 Implementation of ABC in Company Two**

Company Two is in the Tobacco and Cigarette industry with a total employee of around 554 in 2010. The capital of the company at the end of 2010 was 55 million JD (1 JD = RM4 approximately). The company was established in 1992 and in 2002 the choice was completed to shift from the traditional cost system to activity based costing system. The procedure of ABC implementation was approximately completed in June 2004.

#### **5.5.2.1 The Reasons for ABC Implementation (Catalysts Factors)in Company Two**

Malmi (1999) suggested that force decision perspective means that a number of companies with controlling power can force other companies to adopt or diffuse new administrative technologies while Majid and Sulaiman (2008) argued that advice from parents or in this instance, from headquarters, force companies to implement ABC. Based on the interview of the head of the cost accounting department in Company Two, he stated:

“Our headquarter is using ABC system, so they forced us to implement ABC. According to the headquarter, standardization of the methods of calculating cost of products is sufficient justification for ABC implementation”.

#### **5.5.2.2 Factors that Facilitate the Implementation of ABC in Company Two**

Brown et al. (2004) and Cooper et al. (1992) said that top management support has an important role in ABC adoption and implementation, this role stems from the strong relation between corporate strategy and adequate resources and top management support. Gunasekaran (1999) added that top management support is very important to the adoption and implementation by giving time, preparing and purchasing the software, training programs, and investments in resources to implement ABC. The head of the cost accounting department in Company Two said:

“Our managers are supporting us to change and implement ABC. They provided all the necessary resources we need for implementation”.

He added:

“Our top managers helped us during ABC implementation process by eliminating the employees’ resistance to change from TCS to ABC system”.

Non-accounting ownership is a key factor that facilitates the decision to implement ABC. Cooper et al. (1992) said that when non-accountants (such as top executives, operating employees or design engineers) are committed to using ABC information, they can help

to promote ABC, and the implementation of ABC has been shown to be effective. Based on the head of the cost accounting department in Company Two:

“Before we started ABC implementation process, we invited employees from all departments outside accounting such as manufacturing and marketing. Also, the implementation team includes all functions; not just accounting function such as IT employees and engineers as the suggestions of all these employees were important to promote and improve the implementation process and make it more successful”.

Rahmouni and Charaf (2010) and Shields (1995) argued that this training phase has an important role in the ABC success and training will help the users to know how to interpret the system information and how to employ it for target goals. Based on the head of the cost accounting department in Company Two:

“It was beneficial that we took sufficient training programs before and during the implementation process. This training gave us more opportunities to know how the system works and how we can use its information and to solve expected problems”.

### **5.5.2.3 Factors that Motivate the Implementation of ABC in Company Two**

Kaplan (1988) argued that companies attempting to achieve competitive edge in the marketplace, those that are able to get better quality, lower costs and efficiency

of operations and eliminate products and services that cause losses, achieve it through the use of ABC system. Chongruksut (2002) and Krishnan (2006) claimed that competition was the most important external factor that encourages companies to implement ABC which may lead to achieve the satisfaction of customer requirement and for the purpose of enhancing product costs, pricing and quality. AL-Omiri and Drury (2007a) also found a positive association between the competition and ABC adoption. Based on the interview of the head of the cost accounting department in Company Two:

“We work in a highly competitive environment; implementing ABC is a key reason to our success and being competitive in the industry sector. ABC information plays an important role in achieving that”.

Previous studies such as Shield (1995) tried to link between ABC implementation and environmental factors such as globalization, deregulation, and customer demand. He found that any change in these factors will lead to change in management accounting practices. Innes and Mitchell (1990) in their case study found that the change in external environment such as globalization and lower operating costs for competitors are the motivators for management accounting change. Based on the interview with the head of the cost accounting department in Company Two:

“We have entered an era of globalization. There is a wide range of products which are varied in sizes, types and shapes. Trying to compete without products, we need

to improve our costing system to fulfill the customer's requirements by providing them with our products with best quality and lowest prices".

Shield (1995) in his study found that growing costs, including production and administrative costs are main factors that motivate companies to implement ABC. Based on the interview with the head of the cost accounting department in Company Two:

"In the new environment, growing costs, including direct and indirect cost motivated us to implement ABC especially, we are using machine more than employees to complete our work and produce our products and this shifting will increase the overhead cost which needs accurate allocation to products. This is very difficult if we use traditional costing system".

#### **5.5.2.4 Problems of ABC Implementation in Company Two**

Chung et al. (1997), Gosselin (1997) and Malmi (1999) said that changes required in the company structure to fit activities selected are considered as main problems which may face companies during the implementation process. Based on the interview with the head of the cost accounting department in Company Two:

"During the design and implementation of ABC, we found difficulties in the arrangement of some policies and company departments to make the company structure suitable to ABC implementation".

Clarke et al.(1999) and Pierce and Brown (2004)andSartorius et al. (2007) argued that difficulty in gathering data cost-drivers is a problem faced by companies during the implementation process. Based on the interview with the head of the cost accounting department in Company Two:

“The cost driver’s data is very complicated and it was very difficult to collect this data regarding all cost drivers in the company. We made use of the development information system to help us collect the data”.

Cobb et al. (1992) andPierce and Brown (2004) claimed that difficulty in defining cost drivers is a problem faced in the ABC implementation especially when the number of products is high. Based on the interview with the head of the cost accounting department in Company Two he said:

“The choice of suitable cost driver to calculate the cost of products was difficult especially when there is more than one cost driver that can be used to calculate the cost of products”.

Awasthi (1994) and Chongruksut (2002)identified the role of consultants during the process of ABC implementation as a important factor impacting on ABC implementing success. The lackand high cost of ABC consultingisknown to be a problem to ABC implementation encountered in Company Two. The head of cost accounting department said that:

“There is a notable lack of consulting companies in Jordan. Therefore, we are fully dependent on foreign expensive consultants.”

In Company Two, the advice from parent or headquarters forced the companies to implement ABC. Top management support, non-accountants (such as top executives, operating employees or design engineers) and training are the most crucial factors facilitating ABC implementation. Increased competition and globalization of consumer and producer markets are the main factors that motivate the implementation of ABC. The main problems encountered during the implementation of ABC in Company Two are: difficulty in gathering data on cost-drivers, changes required to company structure to fit activities selected, difficulties in the selection of cost drivers, high cost of ABC consulting and lack of local consultants.

### **5.5.3 Implementation of ABC in Company Three**

Company Three is in the Engineering and Construction industry with a total number of employees of around 388 in 2010. The capital of the company at the end of 2010 was 104 million JD (1 JD = RM4 approximately). The company was established in 1994. In 2002, the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in September 2005.

### **5.5.3.1 Reasons for ABC Implementation (Catalysts Factors)in Company Three**

Consultant companies have a main role in encouraging the companies to implement ABC and help them in dealing with problems faced during the implementation of ABC (Cohen et al., 2005). According to the fashion perspective, companies will tend to imitate other companies because of conditions of uncertainty relating to goals and the technical efficiency of innovations. Based on the interview with the assistant financial manager of Company Three:

“We organized contact with an outside consultant company to help us to implement ABC”.

He added:

“The implementation process was started by an independent consultant company, which was directly monitored by our manager. The established team began to implement the first phase of ABC. Then, the consultant company helped us in collecting the necessary data regarding the activities and cost drivers”.

### **5.5.3.2 Factors that Facilitate the Implementation of ABC in Company Three**

Anderson (1995) and Rahmouni and Charaf (2010) suggested that higher level of information technology has an important effect on costing system design. Based on the interview conducted with the assistant financial manager of Company Three:

“Strong IT databases in our company provided us with detailed data which is necessary for activity analysis and choosing suitable cost driver”.

Shields (1995) said that top management support has an important role in ABC implementation. This is because it is hard to implement complex systems such as ABC in the companies without its full support, and to make sure that the system is used for its planned function. Based on the interview with the assistant financial manager of Company Three, he stated that:

“The role of our top managers was very important during the implementation of ABC. Their knowledge was the solution for most problems which were faced by the implementation team. Added to that, they provided the employees with training and recourses which is necessary for ABC implementation”.

### **5.5.3.3 Factors that Motivate the Implementation of ABC in Company Three**

Bjornenak (1997) claimed that competition was the most important external factor for stimulating managers to consider implementing ABC. Kaplan (1988) said that companies facing strong competition should implement ABC as it is argued that companies operating in a more competitive environment have a greater need for highly developed costing systems such as ABC, which correctly assign costs to cost products. This is because competitors are more likely to take benefit of any errors from managers having relied on imprecise cost information to make decisions. Based to the interview data from the assistant financial manager of Company:

“Our traditional costing system was suited to the past when the number of customers and products was few. But in the new environment, the number of customers increased and the competition become very sharp, so it becomes very necessary to implement new accounting system such as ABC”.

He added:

“Globalization and the free movement of goods and products to various global markets and the diversity of consumption patterns have given us the opportunity to export our products to diverse markets around the world. This change has a role in motivating the implementation of ABC system in our company to meet the requirements of new markets in the new global economic environment”.

In the past production process and costs was simple but in the new business environment the production process became complex and the costs including indirect costs increased because many industrial firms have shifted from labor intensive to machine intensive in production. This shift has resulted to growing costs, including production costs and administrative costs, which need accurate allocation to products. Many firms have shifted from traditional cost accounting to activity based costing system. ABC provides more accurate overhead cost allocation (Innes & Mitchell, 1995).  
Based on the interview of the assistant financial manager of Company Three:

“In the new environment, we are using machine more than employees to complete our work and produce our products and this shifting will increase the

overhead cost which needs accurate allocation to products. This is very difficult if we use traditional costing system”.

He added:

“By using ABC, our managers can gain quick products accurate costs. The old costing system did not help in this matter; traditional costing system cannot give quick and accurate information for decision making purpose”.

#### **5.5.3.4 Problems of ABC Implementation in Company Three**

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting the success of implementing ABC. The main problem encountered in ABC implementation by Company Three was the number and lack of local consulting companies in Jordan. Based on the interview of the assistant financial manager of Company Three:

“Our company found a problem with consultants, they are costly and expensive. In Jordan, there is a lack of consultant companies, which makes our company completely dependent on expensive foreign expertise”.

Innes and Mitchell (1995) and Pierce and Brown (2004) suggested that lack of software packages is an important problem which may be faced during ABC implementation. Based on the interview of the assistant financial manager of Company Three:

“Sometimes it is difficult to buy software packages suited to our work and this problem increases when the software has to be upgraded from time to time”.

In Company Three, the implementation of ABC was promoted by consultant companies as a fashion perspective. Higher information technology, top management support, and education are the most crucial factors that influence the decision to implement ABC. Globalization, competition and growing costs, including production costs and administrative costs are the main factors that motivate the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Three were high cost of ABC consulting and lack of software packages.

#### **5.5.4 Implementation of ABC in Company Four**

Company Four is listed in the Mining and Extraction industry sector with a total workforce of around 420 in 2010. The capital of the company at the end of 2010 was 49 million JD (1 JD = RM4 approximately). The company was established in 1993. In 1999, the decision was made to move from the traditional cost system to ABC. The process of ABC implementation approximately finished on March 2003.

##### **5.5.4.1 Reasons for ABC Implementation (Catalysts Factors) in Company Four**

The item stating: “we wished to try a new accounting innovation” was a direct reason for ABC implementation in Company Four. This factor can be linked to fad perceptiveness. Under this perspective, innovation is adopted when companies within a group follow other companies within that group. Fad process is a condition where companies with low

reputation on certain characteristics will follow the innovation of the more reputed companies (Abrahamson, 1991). Based on the interview with the financial manager of Company Four:

“We wished to try new accounting innovation, because we found many successful companies outside Jordan similar to our industry using ABC system”

#### **5.5.4.2 Factors that Facilitate the Implementation of ABC in Company Four**

Based on Chongruksut (2002), sufficient resources, specifically internal resources, are required at the designing and implementation stage of ABC. Internal resources are generally represented by sufficient fund and time, as well as employees' knowledge and understanding of effective ABC implementation (Clarke & Mullins, 2001). These resources have been hailed as critical factors of a successful ABC implementation and adoption (Clarke & Mullins, 2001 & Innes et al., 2000). Based on the interview with the financial manager of Company Four:

“ABC implementation is very costly. And we are aware that the provision of adequate resources during the implementation stage would prove costly but the sufficient internal resources in our company eliminated the resistance to change of the employees, facilitated the implementation process and made ABC implementation process more successful”.

Education is very important to understand the objectives of ABC implementation by both designer and users. Broun et al. (2004) added that ABC education will help to ensure that

accountants have the knowledge and skills to implement ABC. They added that there are different resources of education, such as books, lectures, training and articles. Based on the interview with the financial manager of Company Four:

“Our management provided us with lectures, conferences and articles; this Education (such as benefits of ABC, the need for implementation of ABC) was a key factor in the successful ABC implementation in our company”.

#### **5.5.4.3 Factors that Motivate the Implementation of ABC in Company Four**

Cooper (1988) and Innes and Mitchell (1991) described the shortcomings of the existing cost system such as allocation problems and inability of the traditional cost systems to provide relevant information in the new business environment, as major factors that motivate ABC implementation. Based on the interview with the financial manager of Company Four:

“By using traditional costing system, we do not know the real costs; we found many problems in allocating the cost to products. The products profitability and pricing decisions were built on assumptions which are completely wrong, traditional costing system were unable to provide accurate cost allocation”.

Innes and Mitchell (1990) in their case study found that the change in external environment such as globalization and lower operating costs for competitors are the motivators for management accounting change such as ABC. Welfle and Keltyka (2000) and Wenisch (2004) said that companies’ challenges such as competitive environment

and globalized world are now expected to be the motivating factors for implementing new management accounting practices. Based on the interview with the financial manager of Company Four:

“To be honest with you, we wanted to increase the volume of our sales in various global markets by achieving competitive advantage in these markets, especially after Jordan’s accession to the WTO and the signing of the Free-Trade agreements with different countries such as the United States-Jordan Trade agreement in 2001, all these factors motivated us to implement ABC”.

Anderson (1995) and Innes and Mitchell (1991) argued that companies which encounter strong competitive market environments tend to use ABC. Based on the interview with the financial manager of Company Four:

“We work in a very strong market and if we continue working with the traditional costing system, we will leave from the market very soon. The information we gathered from the traditional costing system is inaccurate and too slow”.

#### **5.5.4.4 Problems of ABC Implementation in Company Four**

Malmi (1999) said that ABC implementation may lead to changes in company structure to fit activities selected. Based on the interview with the financial manager of Company Four:

“ABC implementation forced us to transfer some activities to other departments in the company and this included employees transferring and changing responsibilities in the company.”

Cohen et al. (2005) found that the main difficulties facing the implementation of ABC were the high cost of implementing the system and high cost of consulting companies. Based on the interview with the financial manager of Company Four:

“During the implementation of ABC, we faced difficulties. Some of them include ABC costs entailed and the high cost of consulting to deal with ABC implementation process.”

Cobb et al. (1992) and Pierce and Brown (2004) claimed that difficulty in defining cost drivers is a critical technical problem which is faced by companies during ABC implementation especially when the number of products is high. Based on the interview with the financial manager of Company Four:

“Choosing a cost driver is a procedure that is ever-changing. We had a difficult time selecting suitable cost drivers and then dealing with them”.

In Company Four, the wished to try a new accounting innovation as a fad perceptive was a direct reason for ABC implementation. Internal resources and education are the most crucial factors influencing the decision to implement ABC and its success

is also attributed to them. In addition, the shortcomings of the existing costing system and competition are the main factors motivating the implementation of ABC. The main problems encountered during the implementation of ABC in Company Four are namely: changes in company structure to fit activities selected, the high cost of ABC implementation, high cost of consulting services and difficulties in the selection of cost drivers.

### **5.5.5 Implementation of ABC in Company Five**

Company Five is in Chemical industry with total employees of around 705 in 2010. The capital of the company at the end of 2010 was 22 million JD (1 JD = RM4 approximately). The company was established in 1993. In 2005, the decision was made to move from the traditional cost system to ABC system.

#### **5.5.5.1 The Reasons for ABC Implementation (Catalysts Factors) in Company Five**

According to Gosselin (2006), under efficient choice perspective, the degree of certainty regarding the aim of a company or, in other words, the measurement of the technical efficiency of an innovation will be extremely high. Within this kind of environment, companies will realistically opt for the kind of innovation that will enable them to achieve their goals. In innovation literature, the general assumption is that innovation adopters are rational and they always make decisions that are characterized as independent and technically efficient. This is manifested in the interview with the head of the cost accounting department in Company Five:

“It was necessary to implement ABC because there are many competitors who were using it. This implementation in our company led to enhancing our product quality and fulfilled the customers’ requirements”.

#### **5.5.5.2 Factors that Facilitate the Implementation of ABC in Company Five**

Gunasekaran (1999) suggested that top management support is very important for ABC implementation especially at the implementation and utilization stages because the support from top management will facilitate the implementation by giving the required time, preparation and purchase of the software, the facilitation of the training programs, and investments in the resources. Based on the interview with the head of the cost accounting department in Company Five:

“Our Top management spends important time, resources and many training courses to support the staff, and to encourage us to learn how to implement and use the system. This support from top management has a main role in ABC successful implementation”.

Rahmouni and Charaf (2010) argued that training has an important role in the ABC success. Training in the implementation stage of ABC system will help the company team to understand the best method for installing the ABC system. However, in the usage stage of ABC, training will help the users to know how to interpret the system information and how to employ it for target goals (Shields, 1995). Based on the interview with head of the cost accounting department in Company Five:

“The process of ABC implementation started after the employees were given sufficient training about ABC concepts and its implementation method.”

He added:

“Training is very important. If workers don’t know what they are doing and what they are attempting to do, they can’t survive with the system”.

### **5.5.5.3 Factors that Motivate the Implementation of ABC in Company Five**

Researchers such as Kruemwield (1998) and Shield (1995) noted that ABC was developed as a practical solution for problems associated with traditional costing system, to produce more comprehensive and accurate accounting information. Based on the interview of the head of the cost accounting department in Company Five:

“ABC system is more accurate than traditional costing system and the information that we received from the traditional costing system were inaccurate and too late”.

Bjornenak (1997) and Cooper (1991) said that the change in cost structure, including increase in the level of overhead costs is a major factor that motivates ABC implementation. Based on the interview of the head of the cost accounting department in Company Five:

“Growing costs and Increase in the level of indirect costs in our company motivated us for ABC implementation because ABC is more accurate than

traditional costing system and has a greater ability to allocate indirect costs to products”.

Bruns and Kaplan (1987) said that competition is the most significant external factor formotivating managers to start to work on a new cost system. Cooper (1988) has also identified that companies facing violent competition should implement ABC. It is suggestedthat companies working in a more competitive environment have a greater need for sophisticated cost systems that are more accurate in assigning costs to products.Based on the interview of the head of the cost accounting department in Company Five:

“We are facing strong competition, so we need to reduce the cost of errors by measuring product costs as accurately as possible to have a competitive advantage. As you know, competitors are more likely to take advantage of any errors from managers having to rely on inaccurate cost information to make decisions”.

#### **5.5.5.4 Problems of ABC Implementationin Company Five**

Brown et al. (2004) and Innes and Mitchell (1995) stated that most of ABC problems refer to the system issues such as the amount of work and time needed. Based on the interview with the head of the cost accounting department in Company Five:

“Implementing ABC takes up a lot of the manager’s time, because its implementation procedures are very complicated”.

Pierce and Brown (2004) and Sartorius et al. (2007) suggested that difficulty in identifying activities was a factor that could be recognized as a technical issue and that could influence the implementation of the ABC system. Based on the interview of the head of the cost accounting department in Company Five:

“In our company we faced difficulty in identifying activities during the design and implementing of ABC. This is because the number of these activities which need special cost drivers was high”.

Clarke et al.(1999)suggested that difficulty of selecting cost drivers was a factor that could be recognized as a technical issue and that could influence the implementation of the ABC system. Based on the interview with the head of the cost accounting department in Company Five:

“There has been a need for a long time of an investigation identifying the cost drivers which are appropriate to our productions”.

In Company Five, the competitors were using ABC as an efficient choice perspective and it was the direct reason for ABC implementation. Top management support and training are the most crucial factors that influence the decision to implement ABC. Competition and shortcomings of the existing costing system are the main factors that motivate the implementation of ABC. The main problems faced by Company Five during the

implementation of ABC are difficulty in identifying activities, difficulties in selection of cost drivers, and the consumption of most of the managers' time.

### **5.5.6 Implementation of ABC in Company Six**

Company Six is in the Tobacco and Cigarette industry with a total number of employees of around 600 in 2010. The capital of the company at the end of 2010 was 50 million JD (1 JD = RM4 approximately). The company was established in 1993 and in 2008 the choice started to shift from the traditional cost system to activity based costing system.

#### **5.5.6.1 The Reasons for ABC Implementation (Catalysts Factors) in Company Six**

Companies may implement new innovation based on the fashion perspective which may be introduced by the consulting companies or outside experts, Cohen et al. (2005) said that companies should use outside experts to help them in choosing suitable costing system and dealing with problems that may be faced during ABC implementation. Based on the interview with the head of the cost accounting department in Company Six:

“The implementation of ABC in our company started with meetings between experts and our top managers from various departments”.

He added:

“Prior to ABC implementation, one of the experts hailing from America had a presentation for our managers and employees to inform us of the clarity

of the objectives and the necessity of comprehending the ABC system's philosophy".

#### **5.5.6.2 Factors that Facilitate the Implementation of ABC in Company Six**

Previous studies such as Chongruksut (2002), Krumwiede (1998), McGowan and Klammer (1997) and Shields (1995) stated that top management support is a vital factor affecting ABC implementation. Top management support also has a key role in using ABC information to communicate with non-accounting staffs, so that they could be encouraged to use it (Shields, 1995). Top management support could eventually eliminate the employees' resistance towards the implementation of ABC (Argyris & Kaplan, 1994). Based on the head of cost accounting department's words in Company Six:

"Our top managers encouraged the employees to participate in ABC implementation process and they convinced some employees who displayed resistance to change to be more helpful in the implementation process. We expect that ABC system implementation process will be completed after one year and will be integrated with all the departments in our company".

Cooper et al. (1992) suggested that if non-accounting employees could take part in the early stage of ABC implementation, ABC can be implemented more effectively. Maelah and Ibrahim (2006) argued that non-accountants will support, promote and make ABC more successful if they participated in the implementation process. When ABC is owned by accountants, there is a danger that it might be used only to satisfy their needs, which

are often related to status within the accounting profession and external reporting. Based on the head of cost accounting department in Company Six:

“We invited employees from different functions in our company to participate in the implementation process team. Our team was from all departments such as manufacturing, marketing and not just accounting department. We entertained all their suggestions to make our implementation more complete and successful”.

#### **5.5.6.3 Factors that Motivate the Implementation of ABC in Company Six**

Innes and Mitchell (1990) in their case study found that the change in external environment such as globalization and lower operating costs for competitors are the motivators for management accounting change such as ABC. Welfle and Keltyka (2000) and Wensch (2004) said that companies' challenges such as competitive environment and globalized world are now expected to be the motivating factors for implementing new management accounting practices. Based on the head of cost accounting department in Company Six:

“To be honest with you, we wanted to increase the volume of our sales in various global markets by achieving competitive advantage in these markets, especially after Jordan's accession to the WTO and the signing of the Free-Trade agreements with different countries such as the United States-Jordan Trade agreement in 2001, all these factors motivated us to implement ABC”.

Cooper (1988) and Booth and Giacobbe (1997) argued that competition faced by the companies in the new environment encourage them to implement ABC to achieve the competitive edge in the marketplace. Based on the head of cost accounting department in Company Six:

“We produce different types of cigarettes and at the same time there are many factories in the world producing cigarettes like ours. Therefore, we are facing sharp competition. So we need to implement ABC to achieve the competitive edge in the marketplace by getting better quality, lower costs and eliminate products and services that cause losses”.

In Thailand, Chongruksut (2002) found that financial crisis of Thailand in 1995 and the economic recession played a main role as motivating factors which encouraged the activity based costing implementation. Based on the head of cost accounting department in Company Six:

“After the Global financial crisis which affected the world in 2007 and led to rapid change in materials’ prices and cost of goods, we began searching for a solution to this problem by implementing a more accurate and advanced costing system”.

#### **5.5.6.4 Problems of ABC Implementation in Company Six**

Majid and Sulaiman (2008) and Pierce and Brown (2004) said that system issues such as lack of software packages are important problems which is faced during

ABC adoption and implementation. Based on the head of cost accounting department in Company Six:

“For implementing new system such as ABC, we need to buy unique software from outside markets. It is not easy to buy this software especially if it needs to be updated from time to time”.

Pierce and Brown (2004) and Sartorius et al. (2007) said that difficulty in gathering data on cost-drivers is an important problem which is faced by the companies during the implementation process. Based on the interview of the head of the cost accounting department in Company Six:

“There are many types of cost drivers which may be used as bases to allocate overhead cost to the products, but using a more suitable cost driver requires comparing all the cost drivers then choosing the best. Selection the best cost driver and gathering this large amount of data was very difficult work”.

In Company Six, fashion perspective which has been introduced by the outside experts was a direct reason for ABC implementation in the company. Top management support and non-accounting employees are the most crucial factors that facilitate the decision to implement ABC. Strong competition and global financial crisis are the main factors that motivate the implementation of ABC. The main problems which faced Company Six

during the implementation of ABC are lack of software packages, difficulties of selection of cost drivers and difficulty in collecting data about cost drivers.

### 5.6 Cross-company Analysis for Implementers and Users

The current section provides an outline of a cross-company analysis. It includes all factors and problems identified by companies and their overall assessments in each individual company. To help in arriving at an overall assessment of the important factors that impact the implementation of ABC within the Jordanian manufacturing companies, the analysis of the six implementers and user companies has been summarized in Table 5.3. Qualitative analyses together with quantitative ratings were used to generate the summary.

Table 5.3:  
*Summary of Cross-Company Analysis*

<b>Factors</b>		<b>Company</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Reason for ABC implementation</b>								
5	Efficiency choice		X	X	X	X	✓	X
6	Fashion		✓	X	✓	X	X	✓
7	Fad		X	X	X	✓	X	X
8	Forced selection		X	✓	X	X	X	X
<b>Factors that facilitate ABC implementation</b>								
	The role of top management support		✓	✓	✓	X	✓	✓
	Training		X	✓	X	X	✓	X
	Education		X	X	X	✓	X	X

Sufficientof internal recourses	X	X	X	✓	X	X
Non- accounting ownership	X	✓	X	X	X	✓
Higher information technology	✓	X	✓	X	X	X

**Factors that motivate ABC implementation**

Shortcoming of existing system	✓	X	✓	✓	✓	X
change in business environment reasons						
- Globalization of consumer	✓	✓	✓	✓	X	✓
- increase Competition	X	✓	✓	✓	✓	✓
Change in costs structure (Growing costs)	X	✓	✓	X	✓	X
Global financial crisis	X	X	X	X	X	✓

**Problems of ABC implementation**

Lack of software packages	✓	X	✓	X	X	✓
Takes up a lot of computer staff time	X	X	X	X	✓	X
High cost of ABC implementation	X	X	X	✓	X	X
High cost consultants	X	✓	✓	✓	X	X
Lack of local consultants	X	✓	✓	X	X	X
Difficulty in identifying activities	X	X	X	✓	✓	X

Difficulty in gathering data on cost-drivers	X	✓	X	X	X	✓
Difficulties of selection of cost drivers	✓	✓	X	X	✓	✓
Changes required for company structure to fit activities Selected	X	✓	X	✓	X	X

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Legend:

✓ □ = the factor that are supported by interviewee    X □ = the factors that are not supported by interviewee

The six companies interviewed gradually moved to implementing or using ABC system. The length of time required to implement the ABC system varied across the companies. In all companies, there is strong evidence that the fashion and the fad perspectives are the most important reasons for ABC implementation within the Jordanian manufacturing sector. One out of six companies said that efficiency choice is the reason for ABC implementation, and at the same time one out of six companies said that force decision is the reason for their implementation. The finding from the interviews shows the reasons for implementing ABC system in Jordanian manufacturing companies include all Abrahamson four perspectives which are Fashion, Fad, Efficiency choice and Forced decision.

Top management support is the most important factor to influence ABC implementation. According to the findings from the qualitative data, five out six companies agreed that top management completely support, commit and are concerned in the process of ABC implementation. This finding is consistent with the more general finding implying that almost all successful innovations require top management support. Hence, top

management should concentrate on resources, goals and strategies in ABC implementation and they must manifest their commitment to ABC by using the information it provides as the basis for decision-making. In addition, in order to support ABC information utilization, top management must strive to use ABC information while communicating and making agreements with other workers.

The finding of the present study revealed that two out of a total of six companies were of the consensus that training was the most important factor that weighs in their decision of ABC implementation. During training, the employees are provided a highlight of the workings of ABC, the method of its information interpretation and utilization for the purpose of product design, product pricing and process improvement. Additionally, the employees will also be shown how the compensation system will be accommodated to incorporate the performance measurement. Training increases the employees' confidence in ABC and eradicates their feelings of being pressured by the implementation method. In sum, training in designing, implementing and using the ABC system results in the workers' appreciation, acceptance and consideration of ABC use.

The present study's finding show that two out of six companies are of the consensus that that non-accounting ownership was the main factor that weighs in their decision to implement ABC. Based on Maelah and Ibrahim (2006), if non accounting employees are included in the activities surrounding the early stage of ABC implementation, ABC will be effectively implemented. This is owing to the fact that in this way, non-accountants will manifest their support and promotion of ABC and they will be committed to its use

and success. On the other hand, when ABC is solely owned by accountants, there is a possibility that it may get manipulated to satisfy their own needs as is often related to the status within the accounting profession and external reporting.

Two out six companies agreed that higher information technology was the most important factor to facilitate their decision to implement ABC. Anderson (1995) added that the level of information technology has important effects on the costing system design. For instance, the measurement cost associated with using additional cost drivers depends on whether the data required by that driver is already available, or has to be specifically determined. IT can also give detailed data relating to cost driver information of which is needed by more sophisticated costing systems.

One company agreed that education was the most important factor to facilitate its decision to implement ABC, and another company agreed that sufficiency of internal resources was the most important factor to facilitate its decision to implement ABC.

The shortcoming of existing system, such as allocation problems and inability of the traditional cost systems to provide relevant information in the new business environment are major factors that motivate ABC implementation. Four companies out of six indicated that, shortcoming of existing system motivated their decision to implement ABC. They also indicated that ABC system generates more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions.

Most of the respondents from the participating companies (five companies out of six) said that globalization and the increase of competition motivated their decision to implement ABC. Companies operating in a more competitive environment have a greater need for advanced costing systems such as ABC that are more accurately assign costs to cost products. This is because competitors are more likely to take advantage of any errors from managers having relied on inaccurate cost information to make decisions.

During ABC implementation process, the company could be faced with problems related to changing implementation in practice. Thus, barriers to change could make the change process slower, hinder it, and even prevent change. The difficulties in the selection of cost drivers have also been noted as a barrier followed by lack of software packages. Three companies mentioned that lack of software packages is a problem faced by them during the implementation process (see Table 5.3 for more details).

## **5.7 Chapter Summary**

This chapter analyzed the data collected from interviews with representative of four companies that have not adopted ABC yet, in order to know the reasons for non-adoption of ABC. This is followed by interviews with three companies that have currently adopted ABC to know the reasons for not starting the implementation process yet. These interviews are followed by six companies that have currently implemented ABC and currently using ABC information for different purposes. The analysis of the data was set by using both within company and cross-company analysis. Firstly, the background of the company study was provided. Secondly, within-company analysis for six companies was

conducted to decide the reason for ABC implementation, factors that motivate, facilitate and problems of ABC implementation. Thirdly, the results of all six companies were summarized. For each planned factor, an across-company analysis was provided.

## **CHAPTER SIX**

### **DISCUSSIONS, CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH**

#### **6.0 Introduction**

The research introduction including the research background, problem statement, research question, research objectives and significance of the study was presented in Chapter One. The literature review was presented in Chapter Two and in Chapter Three, the research methodology for the collection of data and analyses were described. The questionnaire's data has been examined using different statistical techniques according to the nature of the data. Within case study and cross case study data analysis were also used to analyze the interviews' data. This was followed by the presentation and discussion of findings in chapter Four and in chapter Five; when data gathered through interviews were evaluated. The current chapter presents an overview of the problem statement, research questions, Discussions, conclusions and implications of the study, confirmation of the research model, limitations and suggestions for future research.

#### **6.1 An Overview of the Research Problem**

Many academics and practitioners considered ABC to be the most significant innovation in management accounting of the 20<sup>th</sup> century (Abdel-Kader & Luther, 2008; Askarany & Yazdifar, 2007; Kaplan & Anderson, 2007). ABC system has been described as an improved method of allocating overhead costs, evaluating product profitability, and managing operating costs (Baird et al., 2007; Cohen et al., 2005). In addition, the results

of these studies show that using volume based costing to calculate products cost will produce error reports, which is unsuitable for decision making.

Despite the many advantages of the ABC adoption, previous studies showed that ABC is implemented only by 20% to 30% of organizations (Askarany & Smith, 2008; Innes et al., 2000; Innes & Mitchell, 1995; Kaplan & Anderson, 2004; Stratton, Desroches, Lawson, & Hatch, 2009). In addition, other studies (e.g. Arnaboldi & Lapsley, 2003; Byrne, Stower & Torry, 2009; Chung, Schoch & Teoh, 1997; Faudzaih & Rababah, 2011, 2012; Rasiah, 2011; Velmurugan & Nahar, 2010) revealed that many companies adopting ABC are still at the early stage of ABC implementation. These studies also revealed that most attempts to implement it ended in the narrow application of ABC in trivial services or in unused systems. Moreover, there is rising evidence to suggest that most of these companies faced problems during the implementation of ABC and, in extreme cases, did not have success with it, which later resulted in abandoning the ABC system altogether. On the other hand, traditional costing system continues to be increasingly implemented in most companies (Al-Omiri & Drury, 2007b; Askarany & Smith, 2008; Innes et al., 2000; Marie & Rao, 2010). This raises a basic question why management accounting innovations, such as ABC, have been slow to be adopted in the ever evolving, fast-paced change in organizational and technological environment in the last two decades.

Several recent studies have started addressing the issue of ABC adoption by highlighting the degree of adoption, the reasons for implementing ABC, the problems connected with

ABC adoption and implementation, and the critical success factors linking to its successful implementation (Askarany & Smith, 2008; Gosselin, 2006; Kaplan & Anderson, 2007; Rahmouni & Charaf, 2010). However, the empirical evidence of ABC research is problematic. Firstly, the degree of ABC implementation in different countries varies extensively; some countries show an increasing trend in ABC implementation while other countries show a decreasing one. Moreover, researchers in the same country have found extensively different results about the implementation percentage (Askarany & Yazdifar, 2010; Baird et al., 2004, 2007; Brown et al., 2004; Booth & Giacobbe, 1997; Stratton et al., 2009). In Jordan, Khasharmeh (2002) found that the implementation percentage of ABC were about 10% in Jordanian manufacturing shareholding companies. Al-Khadash and Feridun (2006) validated the result of Khasharmeh when they found that the implementation of ABC was about 10.6% in the same sector. On the other hand, Nasser, Morris, Thomas, and Sangster (2009) found the implementation was about 55.7%.

There are different interpretations of the term “implementation”. Some studies defined it as “actual ABC implementation”. Some other studies defined it as “consisting of either actual implementation or a desire to implement it”. Besides, the basis for comparing the factors influencing the implementation of ABC in some studies comparing companies adopting the implementation of ABC has differed with the studies companies not adopting the implementation ABC. Therefore, comparing the findings from the various studies is difficult. Particularly, this is true when the comparison is related to usage percentages or ability of factors to discriminate between implementers and non-

implementers when there are different definitions of the term “implementation” (Al-Omiri & Drury, 2007b). Secondly, studies showed wide variations with regard to the factors that motivated the implementation of ABC, the barriers and problems of ABC implementation, and critical success factors (Brown et al., 2004). This variation is often due to measuring success in different ways (Baird et al., 2007; Cohen et al., 2005; Drury & Tayles, 2005; Harrison & Killough, 2006; Swenson, 1995).

Due to inconsistencies in the existing findings, more investigations need to be carried out in Jordan. Fei and Isa (2010b) note that majority of empirical research has been carried out in the Western countries, but very few in developing countries on ABC adoption and implementation, especially those with rapid economic growth. Hutaibat (2005) indicate that Jordan's economy is rapidly growing, especially now that it is a member of the World Trade Organization (WTO), and has signed free trade agreements with various countries. Therefore, it is expected that changes will occur on management accounting practices and innovations in Jordan to compete more effectively. Companies need to plan, control, and make decisions about projects that will yield important results for their survival; this can only be done by using cost accounting innovations (Hutaibat, 2005). Furthermore, since more and more multinationals are setting up operations in the region, Jordanian manufacturing companies are expected to be increasingly influenced by foreign accounting practices. Although "cost accounting practice is not universally uniform" (Luther & Longden, 2001, p. 315), it would be possible to adopt and implement certain practices from their foreign partners.

Based upon the discussion, it is argued that an empirical investigation, to determine the current state of ABC adoption and implementation and the main factors that influence ABC implementation as well as identifying the main barriers and problems associated with its implementation, is warranted.

### **3.2 Discussions of Research Questions**

Chapters Four and Five show the findings of research questions data analysis. In this section, discussions of these research questions are presented.

#### **6.2.1 Discussions on the Current State of ABC Implementation among the Jordanian Manufacturing Shareholding Companies (Research Question 1)**

What is the current state of ABC implementation among the Jordanian manufacturing shareholding companies?

Previous studies used three criteria to determine the percentage of ABC adoption and implementation and the first criterion was used by Maelah and Ibrahim (2006) to know the adoption percentage in Malaysian manufacturing companies. They found that the adoption percentage is 36.11%. However in their study Maelah and Ibrahim (2006) do not segment ABC to stages. Based on these criteria, 30 companies out of 82 companies adopted ABC, which means that the adoption percentage was around 36.5% in the Jordanian manufacturing companies.

The second and third criteria refer to Bjornenak (1997) study that used two methods to determine the implementation percentage. The second criterion is based on usage and

refers to full implementation and using ABC information for various purposes in the company (Bjornenak, 1997). Currently, 7 companies out of 82 were using ABC information as part of daily practice or integrated with other systems. Accordingly, the percentage of ABC implementation within the Jordanian manufacturing companies based on this criterion is about 8.5%. The ABC implementation percentage (8.5%) is less than the percentages found in previous studies. Khasharmeh (2002) found that the implementation percentage of ABC was about 10%. However, the usage percentage was 10.7% in Al-Khadash and Feridun's (2006) study. The definition of using was not clear because neither studies segment ABC into stages.

The third criterion is based on implementation as a process rather than using ABC information as a part of daily practices or integrating ABC with other systems. Accordingly, the percentage of ABC implementation within the Jordanian manufacturing companies based on this criterion is about 19.5% (7 companies had used ABC; 9 companies that were in the process of implementing ABC).

However, previous studies in Jordanian manufacturing companies expected this increased percentage, for example; Khadash and Feridun (2006) said that the awareness level of the importance of implementing ABC was found to be significantly higher among the Jordanian financial managers. This evidence contributes to support and explain the high percentage of ABC implementation within the Jordanian manufacturing companies. He also adds that this sector has an environment that favors the implementation of new

managerial initiatives such as ABC systems because they have the funding, the human resources, the product, the input and the output.

### **6.2.2 Discussions on the main barriers or reasons for not adopting ABC? (Research Question 2)**

For non-adopting companies, what are the main barriers or reasons for not adopting ABC?

Many advantages to ABC implementation adoption percentage revealed by studies show that ABC adoption percentage is still low and there are companies that strongly resist the possibility of ABC implementation. Therefore, this section examines the third research question to know the main reasons for non-adoption of ABC.

Forty eight individual respondents who operated TCS and have not adopted ABC were requested to explain their decisions. The respondents were asked to answer from a list of 21 potential reasons that may explain why their business units had not adopted ABC. The individual respondents were asked to rate items on a five-point scale where 1 = strongly disagree and 5 = strongly agree. The possible reasons were explored by looking at the mean scores of each item.

Analysis of the quantitative research results revealed that the greatest reason for non-adoption of ABC was the high cost to switch to ABC, followed by the costly consultant, lack of top management support, and cost accounting change not being a priority. Too complex and too time consuming and being satisfied with the current system were also

cited. This was further supported by the qualitative research findings as the participating companies pointed out that high cost of implementation and high cost consultants, satisfaction with the current system and lack of top management support are the most commonly encountered barriers during the implementation of ABC.

In addition, interviews generated other reasons for non-adoption of ABC within the Jordanian manufacturing companies. Interviewees mentioned and emphasized the important effects of the following factors: lack of accounting bodies, and small rate of overhead costs. However, the reasons for not adopting ABC among the Jordanian manufacturing sectors are not different from those documented in other countries as mentioned in the previous studies such as Alabbadi and Areiqat (2010); Askarany and Yazdifar (2007); Chongruksut (2002); Cobb et al. (1992); Cohen et al. (2005); Pierce and Brown (2004); Majid and Sulaiman (2008) and Shields (1995).

### **6.2.3 Discussions on the mMain Factors against Implementation or Using of ABC for Companies that Adopted/Abandoned ABC (Research Question 3)**

For companies that adopted/abandoned ABC, what are the main factors against implementation or using of ABC?

Gallivans (2001) suggested that the decision to implement any innovation is based on two stages: the primary decision stage during which the company adopts an innovation as an idea or project plan, and the secondary decision stage in which the adopters move from adopting the innovation as an idea or project plan to its actual implementation by the company.

Analysis of the quantitative research results revealed that the greatest reasons for non-implementation of ABC or non-initiation of the implementation process are: lack of expertise to implement ABC, too complex and too time-consuming, costly to switch to ABC, costly consultants, lack of top management support and finally, the perceived benefits of ABC do not justify the cost of implementing it. This was further supported by the qualitative research findings as the participating companies pointed out that lack of expertise to implement ABC, too complex and too time-consuming, high cost of ABC implementation, high cost consultants and lack of top management support are the most commonly encountered barriers during the implementation of ABC. In addition, interviews mentioned that lack of internal resources is a reason for non-implementation of ABC within the Jordanian manufacturing companies.

However, the factors that impact the implementation of ABC among Jordanian manufacturing companies in general are not different from those reported in other studies such as Alabbadi and Areiqat (2010); Chen et al.(2001);Chongruksut (2002); Chung et al. (1997);Cobb et al. (1992);Cohen et al. (2005); Groot (1999); Innes and Mitchell (1991); Innes and Mitchell (1998)and Pierce and Brown (2004).

#### **6.2.4 Discussions on the factors that are directly associated with the implementation decision for companies that are currently implementing/using ABC(Research Question 4)**

For companies that are currently implementing/using ABC, what are the factors that are directly associated with the implementation decision?

The respondents were given a list of 10 potential reasons for implementing ABC (catalysts factors) and asked to indicate on a scale of 1 = vitally unimportant and 5 = vitally important, the degree of importance attributable to each reason in the decision to implement ABC.

The questionnaire data analysis shows that the dominant reasons for implementing ABC in Jordanian manufacturing shareholding companies are all related to Abrahamson's (1991) perspectives who classified these perspectives or factors to efficient-choice, force decision, and fad or fashion. In the first item, the advice from auditors and/or consultants is considered as a fashion perspective. But the second item, advice from parents or headquarters is considered as a force decision perspective. The third item (we wished to try a new accounting innovation) is related to the fad perspective while the fourth item (competitors were using ABC) is related to the efficient choice perspective.

Findings from the semi-structure interviews exposed that, in most of the participating companies, there was strong proof that fashion, force decision, efficient-choice, and fad were the main reasons for ABC implementation within the Jordanian manufacturing companies. Three out of six companies said that they implemented ABC as a fashion perspective because they had used consultants to help them with their implementation. Companies contract with consultants because of conditions of uncertainty relating to goals and the efficiency of innovations. As a result, companies implemented the system that was promoted by consultant companies.

One company out of six implemented ABC because it was a force topic; in other words, their parent or headquarters force them to implement it. One company out of six implemented ABC because it was an efficient-choice; the competitors were using ABC to gain competitive advantages. Abrahamson (1991) stated that based on the efficient-choice perspective's suggestion, companies decide the adoption and rejection of innovations themselves. Therefore, their behavior is not imitative. Finally, one company out of six implemented ABC because it was a fad topic. Companies in this category usually implement ABC not because of any particular reason, like increasing product cost accuracy or better decision-making but because of the other companies' adoption of it. For the purpose of appearing legitimate, companies try to conform to and adopt emergent norms or to stop their competitors from having a competitive edge through the use of ABC. The results of the interview analysis match the ones in the questionnaire findings presented in chapter Four.

#### **6.2.5 Discussions on the main factors that motivate ABC implementation for companies that are currently implementing/using ABC(Research Question 5)**

For companies that are currently implementing/using ABC, what are the main factors that motivate its implementation?

Motivator factors are known as factors that influence management accounting change in a general manner, such as changes in cost structure, shortcomings of the existing cost system, and change in business environment. In the current section of the study, respondents who were implementing/using ABC were provided with a list of 11 items or

questions to give their opinions about the importance of these items in motivating the Jordanian manufacturing companies to implement ABC. The individual respondents were asked to rate items on a five-point scale where 1 = strongly disagree and 5 = strongly agree.

Analysis of the quantitative research results revealed that ABC users largely indicated that globalization of consumer and producer markets, increased competition, growing costs, including production costs and administrative costs, currently faced allocation problems and inability of the traditional cost systems to provide relevant information in the new business environment, were found as major factors that motivate ABC implementation.

Findings from the semi-structure interviews exposed that, in most of the participating companies, there was strong evidence that change in business environment is the dominant reason that motivates the implementation of ABC. Five out of six companies said that globalization of consumer is an important reason that motivated their companies for ABC implementation and in addition, five out of six companies said that increased competition is an important reason that motivated their companies for ABC implementation. Four out of six companies said that shortcoming of existing system is an important reason and have a strong role in motivating their companies for ABC implementation. Three out of six companies said that change in costs structure such as growing costs and increase in the level of overhead costs have a strong role in motivating their companies to implement ABC.

Just one out of six companies said that global financial crisis which impacted the world in the mid 2007 has a role in motivating their decision for implementing new management accounting innovation such as ABC. This new variable discovered in the study about the relation between global financial crises needs to be examined and investigated more in the future studies. The only sole related study to the topic is Chongruksut (2002), who studied the adoption of ABC systems in Thailand by survey method and found that financial crisis of Thailand in 1995 and the economic recession, played a main role in the activity based costing adoption. Ahmadzadeh et al. (2011) recommended that future research should examine some variables to know their influence on adoption and implementation of Activity-Based costing (ABC) and one of these variables is the economic crisis.

However, the factors that motivate the process of ABC implementation within the Jordanian manufacturing companies are similar to those mentioned in previous literature, such as Al-Omiri and Drury (2007b), Chung et al. (1997), Innes and Mitchell (1991), and Shield (1995).

#### **6.2.6 Discussions on the main factors that facilitate its implementation for companies that are currently implementing/using ABC (Research Question 6)**

For companies that are currently implementing/using ABC, what are the main factors that facilitate its implementation?

Innes and Mitchell (1990) defined facilitator factors as factors that provide managers with the positive conditions that are necessary but not sufficient by themselves for a management accounting change, such as training, consultant, top management support, non-accounting ownership, internal champion support, education and IT.

Analysis of the quantitative research results revealed that ABC users largely indicated that ABC received active support from top management. Factors such as; detailed sales and operating data are available in the information system for the last 12 months, the ABC implementation team was truly cross functional, departments outside accounting (e.g. manufacturing, marketing etc.) have shown an interest in supporting ABC's success and education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided, were all found as major factors that facilitate the implementation process of ABC in Jordanian manufacturing companies.

Findings from the semi-structure interviews support this quantitative research finding in most companies. Five out of six companies said that top management support is the most important factor facilitating the implementation process.

According to Brown et al. (2004), support of top management is considered to be an active support and open promotion that the upper echelons of executives like the CEO provide to innovation. They stated that the commitment of top management in the implementation of ABC will lead to the reduction of risk of abandonment (Brown et al., 2004) mainly because the project becomes included among the management's main

initiatives (Shields, 1995). This will guarantee that management will facilitate; the required resources (e.g., finance, time, and human resources), the relay and the clarification of objectives, the benefits of the project, the incorporation of the project into the company's main strategies and the management's intention to tackle problems that arise concerning employees' resistance to change (Baird et al., 2007; Shields, 1995).

The interview results show that two out of six companies said that higher information technology is an important factor facilitating the implementation process. The level of information technology has important effects on the costing system design. IT can give detailed data relating to cost driver information which is needed by more sophisticated costing systems (Anderson, 1995; Rahmouni & Charaf, 2010).

The results also show that two out of six companies claimed that non-accounting ownership is an important factor that facilitates the implementation process. Maelah and Ibrahim (2007) stated that non-accounting ownership is the participation of employees, who are not accountants, to design ABC and use its information. Cooper et al. (1992) stated that when non-accountants (such as top executives, operating employees or design engineers) are committed to using ABC information, they can help to promote ABC, and the implementation of ABC has been shown to be effective.

The results revealed that two out of six companies stated that training is an important factor facilitating the implementation process. During training, employees will be made aware of the workings of ABC, the method of its use for the purpose of product design, product pricing and process improvement. ABC training involving training in design,

implementation and usage of ABC system will facilitate employees' understanding and acceptance of ABC usage.

One out of six participating companies pointed out that education is an important factor facilitating ABC implementation. Education about the objectives of ABC implementation, benefits of ABC, and the problems of implementation, will facilitate the process of implementation. In addition, different resources exist for the purpose of education such as, lectures, books, training and articles (Krumwied, 1998; Shields, 1995). Sufficient internal resources are important factors mentioned by one out of six companies as a facilitating factor. Chongruksut (2002) suggested that sufficient resources, particularly internal resources are needed at the designing and implementation stage of ABC. Internal resources are normally attributed to sufficient fund and time, as well as employees' knowledge and understanding on how to implement ABC effectively (Clarke & Mullins, 2001).

The findings in this study are consistent with the results of previous studies such as Anderson (1995); Cooper (1988); Cooper et al. (1992); Gunasekaran (1999); Maelah and Ibrahim (2007); Rahmouni and Charaf (2010) and Shields (1995).

#### **6.2.7 Discussions on the problems encountered during its implementation for companies that are currently implementing/using ABC (Research Question 7).**

For companies that are currently implementing/using ABC, what are the problems encountered during its implementation?

Companies which started the implementation process could face technical, behavioral and organizational and system problems during the implementation process or during the system usage in practice. These problems have a negative impact on the implementation process because it makes it slower, hindering, and even preventing implementation. Therefore, the current study tries to determine the major problems that may be faced by companies during the implementation process and tries to explain the differing implementation percentages of ABC.

To know the most critical problems facing Jordanian companies during the implementation or ABC usage, the related section in the questionnaire contains 16 items mentioned in previous studies as difficulties, barriers or problems facing the implementation process, and then individual respondents were asked to assess problems of implementing and using ABC. The level of difficulty encountered was ranked on a five-point scale where 1= strongly disagree and 5 = strongly agree.

Analysis of the quantitative research results revealed that the greatest difficulty in implementing ABC was the lack of software packages followed by the difficulty in gathering data on cost-drivers, as well as the difficulty in defining cost drivers. Coping with changes in accounting, changes required to company structure to fit activities selected and takes up a lot of managers' time were also mentioned in the questionnaire results as major problems faced by Jordanian manufacturing companies during the implementation or using of ABC.

This was further supported by the qualitative research findings as four out of six participating companies pointed out that difficulties of selection of cost drivers is the major problem that they faced during the implementation process. Lack of software packages and high cost consultants are indicated by three companies as the problem encountered during the implementation of ABC, followed by difficulty in identifying activities, lack of local consultants, difficulty in gathering data on cost-drivers and changes required for company structure to fit activities selected.

In addition, interviews revealed several factors that influence the implementation of ABC within the Jordanian manufacturing companies. Interviewees mentioned and emphasized the important effect of the following factors; takes up a lot of computer staff time and high cost of ABC implementation. However, the problems facing Jordanian manufacturing companies during the implementation of ABC are not different from those documented in other countries as reported by Chen et al. (2001); Cohen et al. (2005); Innes and Mitchell (1991); Innes and Mitchell (1995); and Majid and Sulaiman (2008).

#### **6.2.8 Discussions on the Degree of ABC Success(Research Question 8)**

For companies that are currently using ABC, what is the degree of ABC success?

Four measures are used in the current study to measure ABC implementation success within the Jordanian manufacturing companies. The first measure of the level of ABC success is based on the management evaluation to overall success of ABC. Accordingly,

ABC users were asked to rate their perception of the success of ABC implementation in their companies. The level of success was ranked on a five-point scale where 1= Poor and 5 = Very good. The majority of ABC implementers perceived the success level of implementing ABC as good or very good.

The second measurement of ABC success was based on the technical characteristics of ABC information. This ABC information characteristic rating comprises of accuracy, accessibility, reliability, timeliness and understandability. The current study assumes that the higher the ABC information characteristic rating, the more successful will be the implementation. The respondents were asked to indicate on a five-point scale from 1 = very low to 5 = extremely high.

The data analysis finding shows that accuracy and reliability were the highest ABC information characteristic rating. This is followed by timeliness, understandability and finally, accessibility. The finding also shows that majority of users answered the ABC information characteristic rating in the following increasing levels: average, high and extremely high.

Third measurement of ABC success was based on the use of ABC information in decision-making. This measure assumes that the more extensive the use of ABC information, the more successful the implementation. The respondents were asked to indicate on a five-point scale (from 1 = Never to 5 = Always) the frequency of using ABC information for each of the 7 different purposes listed in the question. The data

analysis finding show that ABC was widely used for many different purposes. The results also show that product costing, determining customer profitability, pricing, and decision-making represent the most widely used applications in Jordanian manufacturing companies. The data analysis reveals that the majority of users used ABC information for different purposes in the following degrees: rarely, sometimes, very often and always.

Fourth measure of ABC success requested the respondents to provide their opinion about their satisfaction in three areas they gain after implementing ABC. This area is calculating method, cost reduction and gained benefits. The respondents were asked to indicate on a scale where 1 = Very unsatisfied and 5 = Very satisfied. The data analysis shows that majority of ABC users had a high level of satisfaction with the cost reduction efforts, calculating method and satisfaction with the benefits of ABC that users companies has gained. The finding shows that most companies were satisfied and very satisfied with cost reduction effort, calculating method and satisfaction with the benefits of ABC that user companies has gained during the use of ABC in their companies.

#### **6.2.9 Discussions on the factors (type of sectors, size,diversity andlevel of overhead)that have significant influence on ABC implementation in Jordanian manufacturing shareholding companies? (Research Question 9)**

Do these factors (type of sectors, size, diversity and level of overhead) have significant influence on ABC implementation in Jordanian manufacturing shareholding companies?

In order to study if there are positive relationship between company characteristics such as type of sectors, size - number of employees and diversity-number of products, level

of overhead, and ABC implementation. The data analysis shows no any relationship between these factors and ABC implementation. These finding is consistent with previous studies such as Ahmadzadah et al. (2011)'s finding that found no significant relation between adoption of the activity-based costing technique and industry type, company size-number of employees, and diversity-number of products within Iranian companies. These finding is consistent with previous studies such as Brierly (2009) who found no any relationship between level of overhead and ABC implementation.

### **6.3 Conclusions**

The findings drawn from the analysis of questionnaire data that were reported in this chapter highlight the views of questionnaire respondents in relation to the adoption and implementation of ABC within the Jordanian manufacturing companies. Numerous key findings were discussed in this study. First, the percentage of ABC implementation with the Jordanian manufacturing companies based on the first criterion was 36.5% (30 companies out of 82 adopting, implementing or using ABC information. The second criterion is based on usage and refers to the full implementation and using ABC information for various purposes in the company. The percentage of ABC implementation within the Jordanian manufacturing companies based on this criterion is about 8.5% (7 companies out of 82 were using ABC information as part of daily practice or integrated with other systems). The third criterion is based on implementation as processes rather than using ABC information as a part of daily practices or integrating ABC with other systems. Accordingly, the percentage of ABC implementation within the

Jordanian manufacturing companies based on this criterion is about 19.5% (7 companies had used ABC; 9 companies that were in the process of implementing ABC).

Secondly, regarding the reason for non-adopted ABC implementation, Forty eight individual respondents who operated TCS and have not adopted ABC were requested to explain their decisions. The respondents were asked to answer from a list of 21 potential reasons that may explain why their business units had not adopted ABC. The individual respondents were asked to rate items on a five-point scale where 1 = strongly disagree and 5 = strongly agree. The possible reasons were explored by looking at the mean scores of each item.

the results from questionnaire indicated that the most cited reasons for not adopting ABC were the inherent difficulties with ABC design and implementation group namely: costly to switch to ABC (mean scores = 4.29) and consultants too costly (mean scores = 4.08) was cited as the most important reason for not adopting ABC within the Jordanian Manufacturing Companies, followed by lack of top management support (mean scores = 4.06). This result was further supported by the qualitative research findings. In addition, interviews generated other reasons for non-adoption of ABC within the Jordanian manufacturing companies. Interviewees mentioned and emphasized the important effects of the following factors: lack of accounting bodies, and small rate of overhead costs.

Third, The current study determines the factors faced by the companies when they attempt to start the system implementation; a list of 12 items were forwarded to 14

adopter companies and to 4 abandoner companies who abandoned the system in the pilot study and have not started the implementation yet. The individual respondents were asked to rate items on a five-point scale where 1 = strongly disagree and 5 = strongly agree. The possible factors were explored by looking at the mean scores of each item.

the results from questionnaire indicated that the most cited factors working against ABC implementation is a lack of expertise to implement ABC (mean scores = 4.22) and too complex and too time-consuming (mean scores = 3.94) were cited as the most important factors against the implementation of ABC within the Jordanian Manufacturing Companies, followed by costly to switch to ABC (mean scores = 3.78) and consultants too costly (mean scores = 3.67). This result was further supported by the qualitative research findings. In addition, interviews mentioned that lack of internal resources is a factor working against implementation of ABC within the Jordanian manufacturing companies.

Fourth, regarding the reason for ABC implementation, The data analysis for both quantitative and qualitative shows that all Abrahamson's (1991) four perspectives; fashion, force decision, fad and efficient-choice (i.e. advice from consultants, advice from parent or headquarters, we wished to try a new accounting innovation and it was because competitors were using ABC) associate directly with the implementation decision in Jordanian manufacturing companies.

Fifth, Analysis of the quantitative and qualitative data results shows that the most cited factors that motivate ABC implementation process were; globalization of consumer, increase competition, growing costs, currently faced allocation problems and inability of the traditional cost systems to provide relevant information in the new business environment. However, change in business environment, change in costs structure (Growing costs) and shortcoming of existing system were cited as the most important factors that motivate the decision to implement ABC within the Jordanian manufacturing companies.

Sixth, analysis of the quantitative and qualitative data results shows that the most cited factors that facilitate ABC implementation process in Jordanian manufacturing companies were; ABC received active support from top management, detailed sales and operating data are available in the information system for the last 12 months, the ABC implementation team was truly cross functional, departments outside accounting (e. g. manufacturing, marketing etc.) have shown an interest in supporting ABC's success, and education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided. These results mean that, top management support, higher information technology, non-accounting ownership and education were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian manufacturing companies.

Seventh, regarding the problems encountered during the implementation of ABC, Analysis of the quantitative and qualitative data results shows that lack of software

packages, difficulty in gathering data on cost-drivers, difficulties of selection of cost drivers, changes required for company structure to fit activities selected, high cost consultants and taking up a lot of computer staff time are the most cited problems encountered by the Jordanian manufacturing companies during the implementation process.

Eighth, four measures are used in the current study to know the level of ABC success. Firstly, the Jordanian Manufacturing Sector assesses the degree of ABC success as good and very good. Secondly, the data analysis shows that the users perceived that ABC information characteristic rating is average, high and extremely high. The analysis shows that accuracy (mean score = 4.29), and reliability (mean score = 4.29) were the highest ABC information characteristic rating. This is followed by timeliness (mean score = 4.00), understandability (mean score = 4.00), and accessibility (mean score = 3.57). Thirdly, the greater part of Jordanian companies are using ABC to determine product costing (mean score = 4.43), determine customer profitability (mean score = 4.43), for pricing decision (mean score = 4.43) and decision-making (mean score = 3.43). The data analysis reveals that the majority of users used ABC information for different purposes in the following degrees: rarely, sometimes, very often and always. Finally, the greater part of ABC users had quite a high level of satisfaction with their unit's ability to provide information to aid in cost reduction efforts (mean score = 4.57), calculating method (mean score = 4.43) and gain benefits (mean score = 4.14).

Ninth, In order to study if there are positive relationship between company characteristics such as type of sectors, size-number of employees and diversity-number of products, level of overhead, and ABC implementation. The data analysis shows no any relationship between these factors and ABC implementation.

#### **6.4 Implications of the study**

The findings in this study enhance the body of knowledge in this area of research. The study combined questionnaire and interviews methods to investigate the ABC implementation in Jordanian manufacturing companies. The survey was conducted to determine the ABC implementation status and influence of several factors on ABC implementation. Since the availability of an extensive research in the area understudied is scarce, the findings of the survey managed to give some overview of the implementation of ABC in Jordanian manufacturing industry with focusing to the barriers and problems of the system implementation.

Due to the small number of implementers captured in the survey, the interviews were used to further analyze the group. The cases strengthen the study by providing explanatory power to some of the issues relevant to the study. Therefore, the combination of these two methods complemented one another. It can be said that some of the finding in the survey and case study are consistent with previous research and some contradict.

This might be due to different environment and the later developments in the area of study. The important implication is that this study has contributed to the existing research

in ABC from the perspective of Jordan, a fast developing country. By doing so, it has also provided an interesting dimension of the literature of international accounting.

The finding showed that most manufacturing companies in Jordan do not implement ABC as their overhead costing system. In addition, it is also found that among those that production manufacturing environment that is highly capital intensive, there is no doubt that more companies are striving for a better costing method for their overhead cost. It is hoped that with more exposure to knowledge and trend in management accounting practices, more companies will be motivated to reevaluate their current costing prompting ABC through various publications and seminars be renowned speakers in the area. It's suggested that exemplary cases from Jordan be incorporated in those efforts in order to make it more effective. It should be stressed that this cannot be done without the support from the industry. Their contribution is sharing experiences and concern is vital for further development of the ABC practices in Jordan.

Although companies are still skeptical about ABC, the study shows that this situation is likely to change in the future. the study has shown that motivator factors especially Globalization of consumer, increase Competition, Growing costs, and Inability of the traditional cost systems to provide relevant information in the new business environment have been the main drive for the organization to implement ABC . Beside that some companies implement ABC as a force, fad or fashion decision.

It is found that the margin of error embedded in the traditional costing system was no longer tolerable in today's business environment. Organizations need not only provide products of high quality but are also required to offer competitive pricing in order to survive the marketplace. The stiff competition in this borderless world has forced many organizations to press for more accurate information as basis of decisions. The traditional cost accounting system that relied heavily on averaging of overhead cost across various products could no longer satisfy this need. It is hoped that the pressure to compete the viewed positively. Companies should strive to improve their costing techniques to reflect this development. Companies should seek information on current techniques through the various sources available.

The majority of ABC implementers perceived the success level of implementing ABC as good or very good. The finding also shows that majority of users answered the ABC information characteristic rating as average, high and extremely high. The information generated from ABC system can be used for product costing, determining customer profitability, pricing, and decision-making. The results also shows that most companies were satisfied and very satisfied with cost reduction effort, calculating method and satisfaction with the benefits of ABC that user companies has gained during the use of ABC in their companies. On the other hand, the decision to implement ABC required the Top management support, IT, and Non-Accounting Ownership for the system implementation. Therefore organization need to weigh the appropriateness of the system to the cost involved in adopting and implementing it.

### **6.5 An Overview of ABC Implementation and Confirmation of Research Framework**

This study tried to confirm the results gained from the two data collection methods and it provides a framework (research framework) as shown in Figure 6.1. Based on the data analysis, the research framework shows all catalysts, motivators, facilities factors to ABC implementation process. The research framework in this study is based on the theoretical framework of management accounting change models that were introduced by Innes and Mitchell (1990); these being catalysts, motivators, and facilities. Cobb et al. (1995) and Kasurinen (2002) developed this further by adding the problems of the implementation process and recommended to evaluate the success of ABC adoption and implementation. Wenisch (2004) developed this further by evaluating the success of BSC implementation.

The data analysis for both quantitative and qualitative shows that all Abrahamson's (1991) four perspectives; fashion, force decision, fad and efficient-choice (i.e. advice from consultants, advice from parent or headquarters, we wished to try a new accounting innovation and it was because competitors were using ABC) associate directly with the implementation decision in Jordanian manufacturing companies. Analysis of the quantitative and qualitative data results shows that the most cited factors that motivate ABC implementation process were; globalization of consumer, increase competition, growing costs, currently faced allocation problems and inability of the traditional cost systems to provide relevant information in the new business environment. However, change in business environment, change in costs structure (Growing costs)

and shortcoming of existing system were cited as the most important factors that motivate the decision to implement ABC within the Jordanian manufacturing companies.

Analysis of the quantitative and qualitative data results shows that the most cited factors that facilitate ABC implementation process in Jordanian manufacturing companies were; ABC received active support from top management, detailed sales and operating data are available in the information system for the last 12 months, the ABC implementation team was truly cross functional, departments outside accounting (e. g. manufacturing, marketing etc.) have shown an interest in supporting ABC's success, and education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided. These results mean that, top management support, higher information technology, non-accounting ownership and education were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian manufacturing companies.

However the interaction between the three types of factors will make the potential for change. If the company faces problems, these will make the change process slower, hindering, and even preventing change.

Analysis of the quantitative research results revealed that the greatest difficulty in implementing ABC was the lack of software packages followed by difficulty in gathering data on cost-drivers, as well as difficulty in defining cost drivers. Coping with changes in accounting, changes required to company structure to fit activities selected and takes up a lot of managers' time, were also mentioned in the questionnaire results as major problems

faced by the Jordanian manufacturing companies during the implementation or using of ABC.

This was further supported by the qualitative research findings as four out of six participating companies pointed out that the item - difficulties of selection of cost drivers is the major problem that faced them during the implementation process. Lack of software packages and high cost consultants are indicated by three companies as the problems encountered during the implementation of ABC. Difficulty in identifying activities, lack of local consultants, difficulty in gathering data on cost-drivers and changes required for company structure to fit activities selected are indicated by three companies as the problems encountered during the implementation of ABC. In addition, interviews revealed several factors that influence the implementation of ABC within Jordanian manufacturing companies. Interviewees mentioned and emphasized the important effect of the following factors; takes up a lot of computer staff time and high cost of ABC implementation.

However, lack of software packages, difficulty in gathering data on cost-drivers, difficulties of selection of cost drivers, changes required for company structure to fit activities selected, high cost consultants and taking up a lot of computer staff time are the most cited problems encountered by the Jordanian manufacturing companies during the implementation process.

The quantitative data analysis of all users companies in the current study also showed that the level of ABC implementation success is good and very good. Furthermore, the results show that accuracy and reliability were the highest ABC information characteristic rating. This is followed by timeliness, understandability and accessibility (respectively). The result shows that majority of users answered that ABC information characteristic rating in the following way: average, high and extremely high level.

Furthermore, the results show that ABC was widely used for many different purposes, the top most of which are; product costing, determining customer profitability, pricing decision and decision-making. The uses of ABC in planning, performance measurement and budgeting represent the least uses in Jordanian manufacturing companies. Finally, the data analysis shows that the companies who are using ABC were satisfied with cost reduction effort, calculating method and with the benefits of ABC that user companies has gained. Following finding shows the data analysis conformation in more details:

**- Motivators**

Globalization of consumer, increase Competition, Growing costs, Currently facing allocation problems and Inability of the traditional cost systems to provide relevant information in the new business environment.

**- Catalysts**

Advice from consultants, Advice from parent or headquarters, we wished to try a new accounting innovation and it was competitors were using ABC.

### **- Facilitators**

ABC received active support from top management, detailed sales and operating data are available in the information system for the last 12 months, the ABC implementation team was truly cross functional, departments outside accounting (e. g. manufacturing, marketing etc.) have shown an interest in supporting ABC's success and education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided.

### **- Barriers and Problems of ABC implementations**

The Lack of software packages, difficulty in gathering data on cost-drivers, difficulties of selection of cost drivers, changes required for company structure to fit activities selected, high cost consultants and taking up a lot of computer staff time.

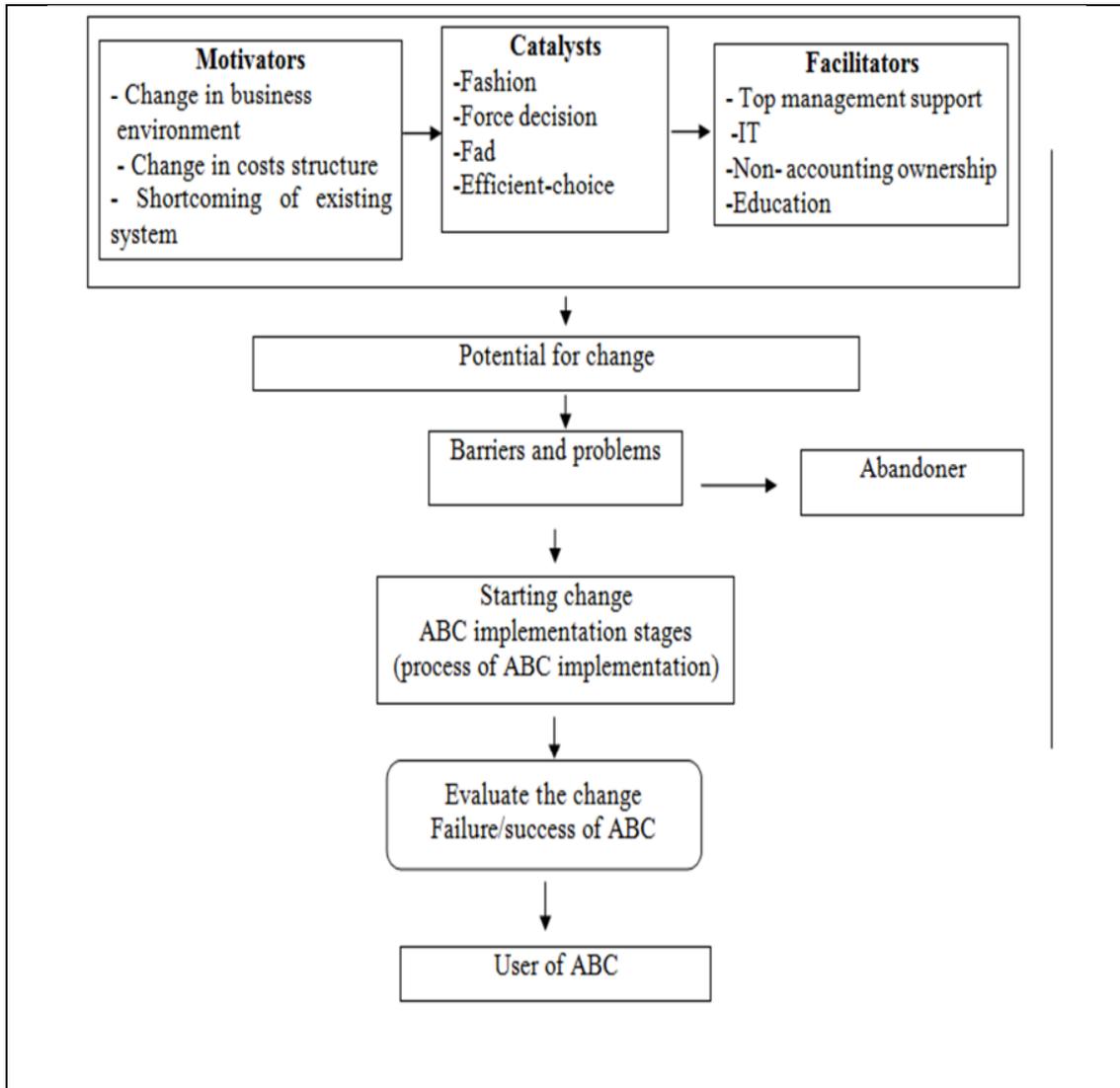


Figure 6.1:  
*Confirmation of Research Framework*

## 6.6 Contribution of the Study

This study helps to know the extent of ABC adoption and implementation within the Jordanian manufacturing sector by the segmentation of ABC adoption and implementation into different stages. This is the first contribution of this study. Most previous studies did not segment ABC adoption and implementation to stages. Previous researcher such as Fei and Isa (2010) and Liu and Pan (2007) recommended that future

studies must specify the ABC implementation stage. Therefore, this study presents an effort to fill a part of the gap in the literature and reduce the vagueness regarding the current state of ABC adoption and implementation among the Jordanian manufacturing shareholding companies.

Secondly, most previous studies focused only on the implementation of ABC in western developed countries such as Ireland (Clark et al., 1999; Pierce & Brown, 2004), UK (Innes et al., 2000; Innes & Mitchell, 1991, 1995), USA (Anderson, 1995; Groot, 1999) Australia (Booth & Giacobbe, 1997; Brown et al., 2004; Van Nguyen & Brooks, 1993) and New Zealand (Cotton et al., 2003). The results of current study have a contribution in terms of obtaining knowledge in the area of the implementation of ABC, particularly in eastern developing countries like Jordan.

As the third contribution, this study used a multi-attribute measure of ABC implementation success within manufacturing sector in Jordan. Considering observed ABC maturity and using stage, this multi-attribute comprises satisfaction with ABC implementation, ABC information characteristic rating, the degree of using ABC in decision making, and the overall success of ABC implementation. Most of the previous studies measured success at different stages and not based on ABC maturity.

The fourth contribution is the development of a conceptual model of ABC implementation in manufacturing companies. It allows for the development of a more sophisticated understanding concerned with the factors catalysts, motivating, facilitating,

and creating barriers to ABC implementation in the context of the eastern developing country. It also contributes by cutting off various issues about the factors influencing the ABC implementation. It should be noted that the development of the research model is based on the theoretical framework of management accounting change models that were introduced by Innes and Mitchell (1990); these being catalysts, motivators, and facilities. Cobb et al. (1995) and Kasurinen (2002) developed this further by adding the problems of the implementation process and recommended to evaluate the success of ABC adoption and implementation. Wensch (2004) developed this further by evaluating the success of BSC implementation.

Finally, most of the previous studies have allowed the respondents self-rating of their company on the basis of use or non-use of ABC. In this study, several control questions are included in the questionnaire to check the respondent's claims that they were operating ABC system are authentic. In addition, semi-structure interviews conducted with 13 companies represent all Jordanian adoption and implementation stages for further explanation, supplementation, and discovering of any new factors which may influence the ABC adoption and implementation. Therefore, compared to previous studies, this study has much higher probability that respondents claiming to use ABC give the information of really ABC users.

## **6.7 Limitations of the Current Study**

The current study possesses some limitations which should be considered when interpreting its results and outcome. These limitations present an avenue of opportunities for future related studies.

Firstly, the scope of the study is confined by the population which comprises of solely Jordanian manufacturing shareholding companies listed in Amman Stock Exchange in 2009. This limitation will present a limitation that will prove as a barrier to the generalisability of the findings. Conversely, the findings of the study may have turned out differently if the type of companies chosen within the manufacturing companies is broadened. Additionally, the results may have turned out differently, if the study considered the service sector and non-profit companies. Hence, there is a dire need to search for ways to increase the range of similar surveys for the purpose of acquiring a more generalized and comprehensive view of Jordanian companies' perceptions of ABC.

Secondly, respondents of the survey in this study are from the financial and accounting function in order to represent organizations that are knowledgeable in the accounting development. In other words, the chosen respondents are more able to respond to questions regarding ABC in their organizations. However, limitations may come from varying opinions as the samples' opinions may differ from that of production related employees (Anderson & Young, 1997). According to Anderson and Young (1997), this group are most possibly inclined to present ownership bias towards their view of ABC

adoption (Anderson & Young, 1997). In sum, generalization of the results of the current study to the entire Jordanian population should be approached with caution.

Thirdly, although the response rate of the survey is high, the number of companies in each category of ABC adoption is quite small. This presented difficulties in conducting meaningful statistical tests. In addition, the discussions regarding ABC adoption and implementation contained in the study are dependent on the description as the means to communicate the survey results. In other words, the results of the current study may have turned out differently if the number of companies in each category of study was higher and the number of ABC users was larger.

Fourthly, in the second stage of the current study, the semi-structure interviews were conducted only with companies that are non-adopters, adopters and implementers and users of ABC information. Therefore, the implications for this study may have been enhanced if the number of interviewees had been expanded to include abandoners in another environment because most Jordanian companies abandoned the pilot project prior to initiating the implementation process.

Fifthly, the necessary data concerning technical barriers that were faced during the ABC implementation process were gathered through questionnaires and semi-structured interviews with financial managers and/or heads of cost accounting department as it was impossible to directly collect data from the Information Technology and/or

Manufacturing Engineering departments. Owing to this confinement, data was limited to the results obtained from the above individuals.

Sixthly, interpretations and judgments of the researcher were required in the categorization of data during the coding process of interview data which led to subjectivity and hence, possible bias in the results. To reduce this bias and subjectivity, the researcher went through lengths to guarantee consistency during interviews and documentation of analytical procedures.

### **6.8 Recommendations and Suggestions for Future Research**

After undertaking the current study, several avenues have been identified for future research. The following seven recommendations are pertinent:

Firstly, the current study covered limited ground as it concentrated solely on Jordanian Manufacturing Shareholding Companies listed on the Amman Stock Exchange; a limitation that would negatively affect the generalisability of results. A broader ground for research is recommended for future studies in order to acquire a more comprehensive view of the Jordanian manufacturing shareholding companies' perceptions of ABC.

Secondly, the research has identified several types of companies for the purpose of studying ABC adoption and implementation. Of the 82 respondents, 48 had not adopted ABC, 14 had adopted, 4 had abandoned it after a pilot project and 16 had implemented and used ABC. Owing to the small numbers within each category, it was next to

impossible to carry out any type of advanced statistical analysis. Hence, more in-depth and thorough case studies are needed to be undertaken for the purpose of the examination of significant issues suitable to each category of companies. For instance, case studies that attempt to explain the reason why some companies have ignored the serious adoption of ABC or other accounting innovations. Future similar studies should work on the identification of the situations whereby the existing system is considered appropriate.

Thirdly, only few studies have carried out an examination of the abandonment of ABC systems prior and after implementation. It is recommended that case studies are conducted to study abandonment of ABC. On the basis of the current findings, the numbers of companies in both categories of companies are small in number and therefore, inappropriate for statistical analysis. Future studies should carry out an examination of the real reason for abandonment of ABC; whether it represents failure to meet the objectives or success in meeting it and thus, in the latter, its abandonment translates to no further need in maintaining the system.

Fourthly, the current study examined the role of different types of factors to ABC success such as organizational, behaviour and technical factors but it did not examine the role of different types of culture to ABC successful adoption and implementation. Only a few researchers like Baird, et al., (2004); (2007) and Brewer (1998) implied that the national culture dimensions could impact the degree of ABC success. Prior research has also tested corporate culture factors in addition to national culture. Baird et al. (2007) carried out an examination of the association between success of activity management practices

and organizational factors comprising of top management support, training, link to performance evaluation and compensation, and link to quality initiatives, as well as organizational culture comprising of outcome orientation, team orientation, attention to detail, as well as innovation. The results revealed that two organizational factors namely top management support and link to quality initiatives, held the explanation of the differences in success of activity management practices, such as ABC. Likewise, two organizational culture factors namely outcome orientation and attention to detail were related with ABC success. They claim that organizational factors had stronger associations with the ABC in comparison with organizational culture. Fei and Isa (2010a) said that few researches have studied the role of culture on ABC successful implementation. Future research should attempt to determine the influence of culture on ABC successful adoption and implementation within the Jordanian companies.

Fifthly, a review of existing literature showed that only a few studies carried out an investigation of the impact of ABC on financial performance and these studies made use of cross-sectional surveys. However, these surveys could not keep 'other factors' constant and hence, future researches are encouraged to involve longitudinal studies exploring the improvement in financial performance of companies prior and after ABC implementation (Ittner et al., 2002 and Velmurugan & Nahar, 2010). Similarly, future research concerning Jordanian manufacturing shareholding companies should attempt to find out the relationship between the use of ABC costing and the enhancement of financial performance, by focusing on user companies which implemented ABC at least

three years before because influence of such innovation needs at least three to five years to manifest improvement of financial performance.

Sixthly, the present study did not target any specific manufacturing industry. Therefore, future study can concentrate on looking into specific types of manufacturing industry by investigating individual industrial sectors' differences and similarities. Furthermore, the limitations of the present study may be considered as a basis for prospective research and further investigation. A research of such caliber may consider including the entire manufacturing companies in Jordan to know the influence of different factors on ABC implementation.

Seventhly, in Thailand, Chongruksut (2002) found that the economic crisis was a significant variable that motivated the adoption of new management accounting innovations such as ABC, for their survival. Actually the influence of global financial crisis to Jordan's economic was not strong as the influence of Thailand crisis to the Thai economic in 1997, because this crisis led to 0% export rate, on account of a rapid increase of domestic wage rates during 1991 to 1995 leading to rising costs and increasing competition from other lower cost developing countries, such as China and Vietnam. Additionally, Thailand faced a high balance-of payments deficit and a great amount of short-term foreign debt. These problems decreased the Thai currency and consequently, many Thai companies went bankrupt (Phongpaichit & Baker, 2000), the unemployment rose from 3.5% of the labour force in 1997 to 5.7% in March 1998. In turn, due to the great amount of unemployment, purchasing power in the economic system sharply

decreased. Almost all Thai firms encountered a considerable decline in sales (Phongpaichit & Baker, 2000). This crisis resulted in most Thai corporations' reformation and change in management; they particularly restructured both finance and operations and started implementing new management accounting improvements such as ABC.

The influence of global financial crisis led to economic recession, rapidly changed the prices of goods and increased in the intensity of competition, and any impact to the international markets will impact Jordan because Jordan is a member of the World Trade Organization and has a number of economic agreements with the United States. Moreover, the global crisis which resulted from the mortgage problem in the United States markets has also been one of the many reasons that triggered companies to step up operations. In Jordan, one company out of six said that global financial crisis and the accompanied rapid change in prices motivated them to implement ABC.

In light of the related studies in literature, Ahmadzadeh et al. (2011) recommended that future research should examine some variables to know their influence as motivators to the adoption and implementation of Activity-Based costing (ABC) such as economic crisis. In sum, future studies should examine the role of economic crisis as a motivating factor in ABC implementation.

## **6.9 Summary**

As the closing chapter of the current study, the present chapter presented a summary of the entire research. It has gone through an overview of the following issues: the major

findings stemming from the nine research questions, the identification of the contribution of the research in understanding ABC implementation within the Jordanian manufacturing shareholding companies, the discussions and conclusion of the research problem through the development of the final comprehensive research framework, the presentation of the implications of the study and contributions of the theory and practice of the research and finally, the limitations and recommendations for further research.

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# Appendices

**Appendix A**

**Questionnaire Cover Letter**

**(English version)**

**Dear Respondent,**

I am a doctoral program researcher in the Department of Accounting at the University Utara Malaysia in Malaysia. I am writing to ask for your participation in my research project. My research aims to study the adoption and implementation of Activity-Based costing within Jordanian manufacturing companies and to determine the factors that have catalyzed, facilitated, motivated and the ABC implementation and the its problems among Jordanian manufacturing sector.

The consequence of this study will aid both professionals and academics to assess the extent of adoption and implementation of ABC among Jordanian manufacturing companies thus, enabling them to make decisions and recommendations that would help Jordanian companies face the challenges in the new business environment.

When replying to each question, please try to be as objective as possible to avoid any kind of 'biases'. For instance, avoid ticking on the answer that seems to be appealing to you, but tick on the answer that indicates your 'real' opinion and that describes the 'realistic situation in the company'. In addition, your answer should be a reflection of the overall situation in your company and not just confined to your particular area of tasks. Your accurate depiction of the situation in the company will greatly contribute to the validity of the present research.

Please be assured that the information and data you provide will remain confidential and will only be used for research purposes. A copy of the research result will be provided upon request. If you have any enquiries, please feel free to contact me using my contact details bellow.

**Thank you very much for your participation and co-operation.**

**Yours sincerely,**

**Abedalqader Rababah**

Tele: 00962775226314

E-mail: [abedra\\_1981@yahoo.com](mailto:abedra_1981@yahoo.com) or [abedalqader.rababah@gmail.com](mailto:abedalqader.rababah@gmail.com).

**Appendix B**

**Questionnaire Covering**

**Letter**

**(Arabic version)**

"بسم الله الرحمن الرحيم"

السلام عليكم ورحمة الله وبركاته ،

ارجو من عطفكم مساعدتي بملئ هذه الاستبانة والتي تعد جزء من متطلبات الحصول على درجة الدكتوراه في المحاسبة والتي اجريها في جامعة الشمال الماليزية في دولة ماليزيا الصديقة.  
يهدف هذا البحث الى التعرف على درجة تطبيق نظام التكاليف حسب الانشطة في الشركات المساهمة العامة الاردنية وعلى العوامل المرتبطة ارتباطا مباشرا بعملية التطبيق وكذلك العوامل المحفزة والمسهلة لعملية التطبيق وكذلك الموانع والمشاكل التي تحد او تعيق عملية التطبيق للنظام في الشركات الاردنية.  
ورغم تطوعية ملئ الاستبانة فاني اشكر لكم تعاونكم لانجاح هذا البحث ، واؤكد لكم بان الاطلاع على المعلومات الواردة في الاستبانة ستكون سرية ولن يطلع عليها الا الباحث والمشراف على البحث ، كما ان نتائج الدراسة ستظهر بشكل اجمالي دون ذكر اسم الشركة.  
لقد توخى الباحث الحرص على ان تكون الاستبانة قصيرة ولا تاخذ وقتا طويلا لتعبئتها من قبل المستجيب فهي تحتاج حوالي 15 دقيقة فقط . ارجو منكم التعاون معي باعادة الاستبانة خلال عشرين يوما من تاريخ تسلمه وذلك لكسب الوقت والبدء بعملية تحليل البيانات .  
شاكرا حسن تعاونكم ، لاي سؤال او استفسار لا تترددوا بالاتصال بي على رقم الموبايل (0777338637) او (0775226314).

وتفضلو بقبول فائق الاحترام

توقيع .....

عبدالقادر حسن ربابه

دكتورة المحاسبة

جامعة الشمال الماليزية

اميل: [abedra\\_1981@yahoo.com](mailto:abedra_1981@yahoo.com) or [abedalqader.rababah@gmail.com](mailto:abedalqader.rababah@gmail.com)

**Appendix C**

**Initial Questionnaire**

**Survey and Participation**

**Form**

## **Welcome**

You are requested to participate in my study regarding the adoption and implementation of Activity Based Costing (ABC) system in the Jordanian manufacturing companies. Your contribution is highly valued. Please fill in the questionnaire below through checking one of the following stages that best describes your business unit's current situation. Information that you provide will be used only for scientific research included in my PhD thesis under the supervision of accounting professors at University Utara Malaysia.

**Yours sincerely,**

**Abedalqader Rababah**

Tele: 00962775226314

E-mail: [abedra\\_1981@yahoo.com](mailto:abedra_1981@yahoo.com) or [abedalqader.rababah@gmail.com](mailto:abedalqader.rababah@gmail.com).

### **Activity Based Costing System (ABC)**

ABC is a method of measuring cost and performance of activities and cost objects. The basis on which it assigns cost to activities is their use of resources. After that, it assigns cost to cost objects on the basis of their use of activities. ABC emerged in the late 1980s as a mechanism for providing more accurate product/service cost information to support strategic decisions. During the 1990's it has been extended as a tool to control and manage costs more effectively.

**Q1** Regarding to your activity based costing (ABC) situation, please check one of the following stages that describes your company's current situation:

#### **1- Non-Adoption stage**

The stage interprets as: The Company do not get approval from top management to invest the resources necessary for implementing ABC.

#### **2- Adoption stage:**

The stage interprets as: The Company gets approval to invest the resources necessary for implementing ABC.

### **3- Implementation stage:**

The stage interprets as: The companies have begun implementing ABC systems, and the company is in the process of forming a team of ABC implementation, determining project scope and objectives, designing training and workshops, collecting data or/and analyzing activities and cost drivers and organizational members' commitment to use ABC

### **4- Abandonment stage**

This stage is defined as: ABC was implemented and analysis performed but is not being pursued  
at this time.

### **5- Usage stage**

This stage means: the implementation of ABC was finished and the companies have started using ABC information as a part of daily practices or are integrating it with other systems.

Q2 Please give your decision if you will participate in the interview?

Agree

don't agree

Thank you

**Appendix D**

**Questionnaire Category A**

**(Non-adopter Companies)**

**Section one: Company Type and Costing System Techniques**

The information in this section is about the company in general. (Please answer all questions by placing a tick  in one box only.

1. Please indicate your type of business.

- |   |  |
|---|--|
| <input type="checkbox"/> Chemical industries          | <input type="checkbox"/> Mining and extraction industries      |
| <input type="checkbox"/> Electrical industries        | <input type="checkbox"/> Paper and cartoon industries          |
| <input type="checkbox"/> Engineering and construction | <input type="checkbox"/> Pharmaceutical and medical industries |
| <input type="checkbox"/> Food and beverages           | <input type="checkbox"/> Printing and packaging                |
| <input type="checkbox"/> Glass and ceramic industries | <input type="checkbox"/> Textiles, leathers and clothing       |
| <input type="checkbox"/> Tobacco and cigarettes       | <input type="checkbox"/> Others .....                          |

2. Approximately how many employees work in your business unit?  
\_\_\_\_\_ (Please record the approximate number here).

3. Approximately how many products/service are produced in your business unit?  
\_\_\_\_\_ (Please record the approximate number here).

4. Please indicate the relative percentage of overhead costs to total cost (overhead & direct costs) in your company?  
\_\_\_\_\_ % (Please record the approximate number here).

### Section Two: Reasons for non-adoption of ABC

1. Please indicate **reasons** why your company has not adopted ABC by ticking the appropriate box below:

Factors	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
1. Satisfied with the current system					
2. Lack of awareness of ABC					
3. Too complex and Too time consuming					
4. Lack of managerial initiative					
5. The control of overheads is already adequate					
6. Cost accounting change is not our priority					
7. Costly to switch to ABC					
8. The perceived benefits of ABC do not justify the cost of implementing it					
9. No intensity of competition					
10. Consultants too costly					
11. Difficulties in selecting appropriate software					
12. Difficulties in selecting cost drivers					
13. Less complexity in products/services					
14. Difficulties in collecting data on the cost drivers					
15. Lack of internal resources					

16. Have relative small proportion of overheads in total manufacturing/service costs					
17. Lack of top management support					
18. Resistance from employees					
19. Lack of expertise to implement ABC					
20. Ambiguity of ABC benefits in literature					
21. Lack of management policies					

**Section Three: General Questions**

The information in this section is about you in general. (Please answer all questions)

1. What is your working position in this company?

- Financial manager                       Head of cost accounting department  
 Head of accounting department       Assistant financial manager  
 Other (please specify).....

2. Your highest academic qualification is.

- PhD degree                       Master degree  
 Bachelor degree               Other (please specify).....

3. Your total experience in this field is.

- Less than 2 years               2 – 5 years               6 – 10 years  
 11 – 15 years                   16 – 20 years               More than 20 years

4. Your total experience in this company is.

- Less than 2 years               2 – 5 years               6 – 10 years  
 11 – 15 years                   16 – 20 years               More than 20 years

# Appendix E

## Questionnaire Category B (Adopter /Abandoner Companies)

**Section one: Company Type and Costing System Techniques**

The information in this section is about the company in general. (Please answer all questions). (Please tick  /  one box only).

1. Please indicate your type of business:

- |   |  |
|---|--|
| <input type="checkbox"/> Chemical industries          | <input type="checkbox"/> Mining and extraction industries      |
| <input type="checkbox"/> Electrical industries        | <input type="checkbox"/> Paper and cartoon industries          |
| <input type="checkbox"/> Engineering and construction | <input type="checkbox"/> Pharmaceutical and medical industries |
| <input type="checkbox"/> Food and beverages           | <input type="checkbox"/> Printing and packaging                |
| <input type="checkbox"/> Glass and ceramic industries | <input type="checkbox"/> Textiles, leathers and clothing       |
| <input type="checkbox"/> Tobacco and cigarettes       | <input type="checkbox"/> Other.....                            |

2. Approximately how many employees work in your business unit?  
\_\_\_\_\_ (Please record the approximate number here).

3. Approximately how many products/service are produced in your business unit?  
\_\_\_\_\_ (Please record the approximate number here).

4. Please indicate the relative percentage of overhead costs to total cost (overhead & direct costs) in your company?  
\_\_\_\_\_ % (Please record the approximate number here).

**Section Two: factors that impact the implementation of ABC**

2. Please indicate **reasons** why your company has not implemented ABC or is not currently implementing by ticking  /  the appropriate box below:

<b>Factors</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>No opinion</b>	<b>Agree</b>	<b>Strongly agree</b>
1. Too complex and Too time-consuming					
2. Costly to switch to ABC					
3. The perceived benefits of ABC do not justify the cost of implementing it					
4. Consultants too costly					
5. Difficulties in selecting appropriate software					
6. Difficulties in selecting cost drivers					
7. Ambiguity of ABC benefits in literature					
8. Difficulties in collecting data on the cost drivers					
9. Lack of internal resources					
10. Lack of top management support					
11. Resistance from employees					
12. Lack of expertise to implement ABC					

**Section Three: for companies who abandonment ABC**

1. In your company, at which stage did your implementation of ABC stop?

Pilot study

Developing and installing ABC, as well as training employees

Full Implementation of ABC

Other reason for abandonment decision (please specify)	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
_____					

**Section Four: General Questions (for Adopter \ Abandoner companies)**

The information in this section is about you in general. (Please answer all questions)

1. What is your working position in this company?

- Financial manager                       Head of cost accounting department  
 Head of accounting department     Assistant financial manager  
 Other (please specify).....

2. Your highest academic qualification is.

- PhD degree                       Master degree  
 Bachelor degree                 Other (please specify).....

3. Your total experience in this field is.

- Less than 2 years             2 – 5 years             6 – 10 years  
 11 – 15 years                 16 – 20 years         More than 20 years

4. Your total experience in this company is.

- Less than 2 years             2 – 5 years             6 – 10 years  
 11 – 15 years                 16 – 20 years         More than 20 years

# Appendix F

## Questionnaire Category C (Implementer/User Companies)

**Section One: Company Type and Costing System Techniques**

The information in this section is about the company in general. (Please answer all questions by ticking  in one box only)

1. Please indicate your type of business:

- |   |  |
|---|--|
| <input type="checkbox"/> Chemical industries          | <input type="checkbox"/> Mining and extraction industries      |
| <input type="checkbox"/> Electrical industries        | <input type="checkbox"/> Paper and cartoon industries          |
| <input type="checkbox"/> Engineering and construction | <input type="checkbox"/> Pharmaceutical and medical industries |
| <input type="checkbox"/> Food and beverages           | <input type="checkbox"/> Printing and packaging                |
| <input type="checkbox"/> Glass and ceramic industries | <input type="checkbox"/> Textiles, leathers and clothing       |
| <input type="checkbox"/> Tobacco and cigarettes       | <input type="checkbox"/> Other.....                            |

2. Approximately how many employees work in your business unit?  
\_\_\_\_\_ (Please record the approximate number here).

3. Approximately how many products/service are produced in your business unit?  
\_\_\_\_\_ (Please record the approximate number here).

4. Please indicate the relative percentage of overhead costs to total cost (overhead & direct costs) in your company?

\_\_\_\_\_ % (Please record the approximate number here).

**Section Two: ABC implementation**

1. In your opinion what is the importance of each of the following factors in the decision to implement ABC. (Please tick one box  row)

<b>Factors</b>	<b>Vitally unimporta nt</b>	<b>unimporta nt</b>	<b>Medium important</b>	<b>Importan t</b>	<b>Vitally importa nt</b>
1. The existing costing system was not reliable					
2. It was necessary to update the existing information system					
3. Other units within the company had benefited from adopting ABC					
4. The existing costing system did not provide useful information to management					
5. It was competitors were using ABC					
6. Pressure from government or other regulatory authorities					

7. Advice from parent or headquarters					
8. To be seen as having a sophisticated costing system that was comparable with best practice					
9. We wished to try a new accounting innovation					
10. Advice from auditors and /or consultants					

2. In your opinion, how have the following factors **facilitated** your decision to implement ABC in your company (Please tick one box  / row)

<b>Factors</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>No opinion</b>	<b>Agree</b>	<b>Strongly agree</b>
1. ABC received active support from top management					
2. Management has provided adequate resources, such as time and commitment to the ABC implementation effort.					
3. Top management or senior managers have a clear commitment to use ABC information as the basis for decision-making.					
4. When the ABC began, the objectives of ABC implementation were clearly understood both by designers and users					
5. Education (such as benefits of ABC, the need for implementation of ABC and					

so on) is being provided					
6. Adequate training was provided for designing ABC.					
7. Adequate training was provided for using ABC.					
8. The choice of any accounting systems is influenced by consultant companies					
9. Consultant companies are regularly consulted when dealing with problems					
10. There is a permanent managerial consultant in the company					
11. Operating data in the information system are updated “real time” rather than periodically.					
12. Detailed sales and operating data are available in the information system for the last 12 months					
13. There are individual within the company who significantly promotes the cause of adopt a new accounting systems					
14. There is a role for some employees to create awareness of new accounting systems.					

15. Departments outside accounting (e. g. manufacturing, marketing etc. ) have shown an interest in supporting ABC's success					
16. The ABC implementation team was truly cross functional					
17. ABC has been linked to performance evaluations of non-accounting personal					

3. In your opinion, how have the following factors **motivates** your decision to implement ABC in your company (Please tick  e box per row)

<b>Factors</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>No opinion</b>	<b>Agree</b>	<b>Strongly agree</b>
1. Increasing proportion of overhead costs					
2. Growing costs, including production costs and administrative costs					
3. Currently the increasing number of product/service variants					
4. Increased competition					
5. Increased regulation (such as investment)					
6. Globalization of consumer and producer markets					
7. Currently facing allocation problems					

8. Inability of the traditional cost systems to provide relevant information in the new business environment					
9. Inability of the traditional cost systems to adopt to increased automation in the production service process					
10. The inaccuracies of product/ service cost of the traditional cost systems					
11. Currently lack of decision-making information (such as non-financial information)					

4. What problems has your company encountered during the implementation of ABC? (Please tick  one box per row)

<b>Factors</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>No opinion</b>	<b>Agree</b>	<b>Strongly agree</b>
1. High cost of implementing ABC					
2. Lack of top management support					
3. A higher priority of other changes/projects.					
4. Lack of software packages					
5. Lack of commitment among departments					
6. Takes up a lot of managers' time					
7. Takes up a lot of computer					

staffs time					
8. High cost of ABC consulting					
9. Difficulty in gathering data on cost-drivers					
10. Difficulty in defining cost drivers					
11. Difficulty in designing system					
12. Difficulty in identifying activities					
13. Resistance to change					
14. Coping with changes in accounting					
15. Lack of knowledge of data requirement and collection					
16. Changes required to company structure to fit Activities Selected					

**Section Three: Success of ABC implementation**

**For companies who currently using ABC**

1. Please rate the success of implementation of ABC for your company

Very poor     Poor     Average     Good     Very good

2. Please indicate to the Technical characteristics rating of ABC information in your company

Technical characteristics of	Extremely high	High	Average	Low	Extremely low
------------------------------	----------------	------	---------	-----	---------------

ABC information					
Accuracy					
Accessibility					
Reliability					
Timeliness					
Understandability					

3. Please indicate how ABC is consistently used for the following purposes in your company by ticking  one box per row.

Purposes for used ABC	Never	Rarely	Sometimes	Very Often	Always
Product costing					
Determine customer profitability					
Decision-making					
Planning					
Budgeting					
Pricing decision					
Performance measurement					

4. How satisfied are you with ABC implementation in your company based on the following items:

Satisfied with ABC implementation	Very unsatisfied	Unsatisfied	Medium satisfied	Satisfied	Very satisfied
1. You are satisfied with the benefits of ABC that your company has gained					
2. You are satisfied with your methodfor					

calculating product and service costs					
3. You are satisfied with your business unit's ability to provide information to aid in cost reduction efforts					

**Section five: General Questions**

The information in this section is about you in general. (Please answer all questions)

1. What is your working position in this company?

- Financial manager                       Head of cost accounting department  
 Head of accounting department       Assistant financial manager  
 Other (please specify).....

2. Your highest academic qualification is.

- PhD degree                       Master degree  
 Bachelor degree               Other (please specify).....

3. Your total experience in this field is.

- Less than 2 years               2 – 5 years                       10 years  
 11 – 15 years                       16 – 20 years                       more than 20 years

4. Your total experience in this company is.

- Less than 2 years               2 – 5 years                       10 years  
 11 – 15 years                       16 – 20 years                       more than 20 years

THE END

THANK YOU

**Appendix G**

**Cover Letter and Consent**

**Form**

## **Cover Letter**

Dear Respondent,

My name is Abedalqader Hasan Rababah, I am a doctoral program researcher in the Department of Accounting at Universiti Utara Malaysia (UUM). My research aims to study adoption and implementation of Activity-Based costing within the Jordanian manufacturing shareholding companies and to determine the factors that have catalyzed, facilitated, motivated and problems of ABC implementation among the Jordanian manufacturing companies.

This interview is part of my research project and it aims to join your knowledge, opinion, approach and perception about the implementation of Activity-based costing systems (ABC). Your answer will be very precious for the success of the implementation of the ABC.

I am inviting you to contribute in my research. Your participation will involve an interview, which takes around 25-45 minutes to complete. Participation in this research is voluntary and you may take out at anytime.

I assure that views expressed in the interviews will be treated as secret and will be used for scientific purposes only. I will give you with the consequences of the study if you wish to have them, when the consequences are completed.

If you have any queries regarding this project please contact with my Email [abedra\\_1981@yahoo.com](mailto:abedra_1981@yahoo.com), or with my supervisor, Associate. Prof. Dr. Faudziah Hanim B tFadzil. Email [fhanim@uum.edu.my](mailto:fhanim@uum.edu.my). Your co-operation in completing the interview is highly valued.

**Thank you very much for your participation**

**Yours sincerely,  
Abedalqader Rababah**

**Consent form**

Dear Participant,

Before we can begin the interview, I need your informed consent. You can provide this by reading and signing this form. I will tape your interview only if you give me signed permission to do so. Your participation is entirely voluntary and you can withdraw at any time, including after the interview begins and after the interview is finished. If you withdraw, any material collected during my contact with you will be destroyed and will not be used in any way in the analysis and writing of the research results. You are free to request more information about the study and you are also free to refuse to answer any specific questions during the interview.

Your interview, and any other material I collect, will be used as the basis for completing the research's PhD thesis. Any information that I collect will remain strictly confidential. Names and identities will be disguised in my final report, and care will be taken to ensure that any descriptions of situations or direct quotes cannot be connected to you. In order to preserve anonymity, the researcher will choose a code for every interviewee. If it became necessary the result of the interview would be published by coding and in general. So you should feel free to ask for clarification or new information throughout your participation. If you have further questions concerning matters related to this research please contact the researcher's by e mail [abedra\\_1981@yahoo.com](mailto:abedra_1981@yahoo.com).

**Final Confirmation:**

Do you agree to participate in the study according to the conditions outlined above?

Yes

No

May I tape record your participation in this interview?

Yes

No

Participation's Signature.....

Date.....

# Appendix H

## Interview Questions

## Interview Questions

### *For Non- Adopters Companies:*

Q1: What are the main Barriers for not adopted ABC in your company?

### *For Non-Implementers Companies Adopters / Abandoners Companies :*

Q1: What are the main factors against implementation of ABC in your company?

### *For Implementers / Users Companies :*

#### **The development of ABC:**

Q1: How long have you been implementing ABC?

Q2: Why was ABC introduced?

Q3: Could you please describe the development of ABC in your company?

Q4: Who was decided to implement ABC in your company?

Q5: In your opinion, how the below factors influence your decision to implement ABC?

- Advice from auditors and /or consultants
- Advice from parent or headquarters
- We wished to try a new accounting innovation
- It was competitors were using ABC
- Pressure from government or other regulatory authorities
- Shortcoming of existing costing system

**Factors that Facilitate the Implementation of ABC within JMFG**

Q1: In your opinion, which factors have facilitated the implementation of ABC in your company? Why?

Q2: Could you please describe how these factors facilitate the implementation of ABC in your company?

- Top Management Support
- Higher Information Technology
- Non-accounting ownership

**Factors that Motivate the Implementation of ABC within JMFG**

Q1: In your opinion, which factors have motivated the implementation of ABC in your company? Why?

Q2: Could you please describe how these factors motivate the implementation of ABC in your company?

- Environmental change (competition/globalization)
- Change in companies structure (level of overhead/growing cost)
- Shortcoming of existing system(Currently facing allocation problems\ Inability of the traditional cost systems to provide relevant information in the new business environment).

**Problems of ABC Implementation within JMFG**

Q1: What factors have hindered the implementation of ABC in your company?

*Conclusion:*

Is there anything I have not asked that you feel is important when discussing the implementation of ABC in your company?

Is there **anyone** else that you would recommend talking to in relation to implementation of ABC?

Would you like some of the feedback from this research regarding factors that facilitate/motivate and that create barriers to ABC implementation or the findings of the research?

If you would like, we will supply a copy of what we believe you told us, and how we have interpreted what you said, so that you can correct the impressions that we have taken from your responses. We will also provide you with factors suggested by other respondents, you could then comment on the responses of others and accept or reject factors.

**Thank you very much for your precious time and your valuable help!**

# **Appendix I**

## **Sample Interview Protocol Form**

## Sample Interview Protocol Form

Project: The Implementation Stage of Activity Based Costing Systems in Jordanian Manufacturing Shareholding Companies.

Date: \_\_\_\_\_  
Time of Interview: \_\_\_\_\_  
Place: \_\_\_\_\_  
Interviewer: \_\_\_\_\_  
Interviewee: \_\_\_\_\_  
Position of Interviewee: \_\_\_\_\_

Good morning (afternoon). My name is Abedalqader Hasan Rababah, I am a doctoral program researcher in the Department of Accounting at Universiti Utara Malaysia (UUM). My research aims to study adoption and implementation of Activity-Based costing within the Jordanian manufacturing shareholding companies and to determine the factors that have catalyzed, facilitated, motivated and problems of ABC implementation among the Jordanian manufacturing companies.

This interview is part of my research project and it aims to join your knowledge, opinion, approach and perception about the implementation of Activity-based costing systems (ABC). Your answer will be very precious for the success of the implementation of the ABC. I am inviting you to contribute in my research. Your participation will involve an interview, which takes around 25-45 minutes to complete.

If it is okay with you, I will be tape-recording our conversation. The purpose of this is so that I can get all the details but at the same time be able to carry on an attentive conversation with you. I assure you that all your comments will remain confidential. I assure that views expressed in the interviews will be treated as secret and will be used for scientific purposes only. However, I need your informed consent. You can provide this by reading and signing this form. I will tape your interview only if you give me signed permission to do so.

## **Interview Questions**

### **For Non- Adopters Companies:**

Q1: What are the main Barriers for not adopted ABC in your company?

### **For Non-Implementers Companies Adopters / Abandoners Companies :**

Q1: What are the main factors against implementation of ABC in your company?

### **For Implementers / Users Companies :**

#### **The development of ABC:**

Q1: How long have you been implementing ABC?

Q2: Why was ABC introduced?

Q3: Could you please describe the development of ABC in your company?

Q4: Who was decided to implement ABC in your company?

Q5: In your opinion, how the below factors influence your decision to implement ABC?

- Advice from auditors and /or consultants
- Advice from parent or headquarters
- We wished to try a new accounting innovation
- It was competitors were using ABC
- Pressure from government or other regulatory authorities
- Shortcoming of existing costing system

### **Factors that Facilitate the Implementation of ABC within JMFG**

Q1: In your opinion, which factors have facilitated the implementation of ABC in your company? Why?

Q2: Could you please describe how these factors facilitate the implementation of ABC in your company?

- Top Management Support
- Higher Information Technology
- Non-accounting ownership

**Factors that Motivate the Implementation of ABC within JMFG**

Q1: In your opinion, which factors have motivated the implementation of ABC in your company? Why?

Q2: Could you please describe how these factors motivate the implementation of ABC in your company?

- Environmental change (competition/globalization)
- Change in companies structure (level of overhead/growing cost)
- Shortcoming of existing system(Currently facing allocation problems\ Inability of the traditional cost systems to provide relevant information in the new business environment).

**Problems of ABC Implementation within JMFG**

Q1: What factors have hindered the implementation of ABC in your company?

**Conclusion:**

Is there anything I have not asked that you feel is important when discussing the implementation of ABC in your company?

Is there **anyone** else that you would recommend talking to in relation to implementation of ABC?

Would you like some of the feedback from this research regarding factors that facilitate/motivate and that create barriers to ABC implementation or the findings of the research?

If you would like, we will supply a copy of what we believe you told us, and how we have interpreted what you said, so that you can correct the impressions that we have taken from your responses. We will also provide you with factors suggested by other respondents, you could then comment on the responses of others and accept or reject factors.

**Thank you very much for your precious time and your valuable help!**

# Appendix J

## Questionnaire Category A

(Non-adopter)

**(Arabic Version)**

استبان المجموعة الاولى

غير المعتمدين للنظام

**القسم الاول: معلومات عامة عن الشركة :**

هذا الجزء من الاستبيان هو عبارة عن معلومات عامة عن الشركة (الرجاء محاولة الاجابة على جميع الاسئلة

بوضع إشارة /  واحدة في المربع المناسب).

1. تحت اي من القطاعات الرئيسية التالية تدرج طبيعة عمل شركتكم.

<input type="checkbox"/>	الصناعات الكيماوية	<input type="checkbox"/>
<input type="checkbox"/>	التعدين	<input type="checkbox"/>
<input type="checkbox"/>	أجهزة ومعدات كهربائية	<input type="checkbox"/>
<input type="checkbox"/>	الطباعة والورق والكرتون	<input type="checkbox"/>
<input type="checkbox"/>	الصناعات الهندسية والصناعات الانشائية	<input type="checkbox"/>
<input type="checkbox"/>	المنتجات العلاجية واللوازم الطبية	<input type="checkbox"/>
<input type="checkbox"/>	الصناعات التمونية والغذائية	<input type="checkbox"/>
<input type="checkbox"/>	التعبئة والتغليف	<input type="checkbox"/>
<input type="checkbox"/>	صناعة الزجاج و الخزف	<input type="checkbox"/>
<input type="checkbox"/>	صناعة الغزل والنسيج والاحذية	<input type="checkbox"/>
<input type="checkbox"/>	التبغ والسجائر	<input type="checkbox"/>
<input type="checkbox"/>	أخرى (الرجاء التحديد).....	<input type="checkbox"/>

2. ما عدد موظفي الشركة الحالي ؟

(الرجاء ذكر الرقم هنا) \_\_\_\_\_

3. ما هو عدد منتجات شركتكم الحالي؟

(الرجاء ذكر الرقم هنا) \_\_\_\_\_

4. ما نسبة التكاليف الصناعية غير المباشرة الى مجموع التكاليف داخل شركتكم ؟

(الرجاء ذكر الرقم هنا) % \_\_\_\_\_

**القسم الثاني: الشركات غير المستخدمة لنظام محاسبة تكاليف المبني على اساس الانشطة**

1. الرجاء تحديد الاسباب التي حالت دون استخدام نظام محاسبة تكاليف المبني على اساس الانشطة (ABC) داخل شركتكم . (الرجاء وضع اشارة / واحدة فقط لكل صف).

اسباب عدم تطبيق نظام محاسبة التكاليف المبني على اساس الانشطة (ABC).	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
1. الرضى عن نظام التكاليف الحالي ومخرجاته					
2. نقص الالمام بنظام محاسبة التكاليف المبني على اساس الانشطة					
3. تعقيد النظام وحاجته لوقت كبير					
4. ضعف المبادرات الادارية من قبل الادارة لدعم وتشجيع استخدام النظام					
5. هنالك ضبط في تخصيص التكاليف الصناعية غير المباشره في الشركه					
6. هنالك اولويات اخرى للشركه					
7. ارتفاع تكاليف تبني النظام					
8. التكاليف المتوقعة لاستخدام النظام تفوق المنافع المحتملة					
9. قلة المنافسة من قبل الشركات الاخرى					
10. ارتفاع تكاليف الخبراء والمستشارين					
11. نقص البرمجيات المناسبة لتبني النظام					
12. صعوبات في تحديد مسببات التكلفة					
13. قلة تعقيد وتنوع المنتجات داخل شركتكم					
14. صعوبات في تجميع البيانات المتعلقة في مسببات التكلفة					
15. قلة موارد الشركه (بشرية ، ماليه ... الخ)					
16. انخفاض نسبة التكاليف الصناعية غير المباشرة الى اجمالي التكاليف					

					17. ضعف الدعم من قبل الادارة العليا
					18. مقاومة التغيير من قبل بعض الموظفين
					19. ضعف الخبرة المتوفرة لاستخدام النظام
					20. عدم وضوح منافع النظام
					21. ضعف السياسات الادارية

### القسم الثالث: معلومات عامة

هذا الجزء من الاستبانة هو عبارة عن معلومات عامة عن معبئ الاستبانة (الرجاء محاولة الاجابة على جميع الاسئلة

بوضع إشارة / واحدة في المربع المناسب).

1. ما هو المسمى الوظيفي لكم في هذه الشركة.

مدير مالي       مساعد مدير مالي  
 رئيس قسم المحاسبة       رئيس قسم التكاليف       أخرى (الرجاء التحديد).....

2. ما هي أعلى درجة علمية حصلت عليها.

دكتوراه       ماجستير  
 بكالوريوس       أخرى (الرجاء التحديد).....

3. عدد سنوات خبرتك في مجال المحاسبة ما بين.

اقل من 2 سنة       2 - 5 سنة       6 - 10 سنة  
 11 - 15 سنة       16 - 20 سنة       اكثر من 20 سنة

4. عدد سنوات عملك لدى هذه الشركة ما بين

اقل من 2 سنة       2 - 5 سنة       10 - سنة  
 11 - 15 سنة       16 - 20 سنة       اكثر من 20 سنة

# Appendix K

## Questionnaire Category B

(Adopter / Abandoner)  
**Arabic Version**

استبان الطبقة الثانية

المعتمدين والتاركين للنظام

**القسم الاول: معلومات عامة عن الشركة :**

هذا الجزء من الاستبيان هو عبارة عن معلومات عامة عن الشركة (الرجاء محاولة الاجابة على جميع الاسئلة

بوضع إشارة /  واحدة في المربع المناسب).

1. تحت اي من القطاعات الرئيسية التالية تدرج طبيعة عمل شركتكم.

التعدين	<input type="checkbox"/>	الصناعات الكيماوية	<input type="checkbox"/>
الطباعة والورق والكرتون	<input type="checkbox"/>	أجهزة ومعدات كهربائية	<input type="checkbox"/>
المنتجات العلاجية واللوازم الطبية	<input type="checkbox"/>	الصناعات الهندسية والصناعات الانشائية	<input type="checkbox"/>
التعبئة والتغليف	<input type="checkbox"/>	الصناعات التمرنية والغذائية	<input type="checkbox"/>
صناعة الغزل والنسيج والاحذية	<input type="checkbox"/>	صناعة الزجاج و الخزف	<input type="checkbox"/>
أخرى (الرجاء التحديد).....	<input type="checkbox"/>	التبغ والسجائر	<input type="checkbox"/>

2. ما عدد موظفي الشركة الحالي ؟

\_\_\_\_\_ (الرجاء ذكر الرقم هنا)

3. ماهو عدد منتجات شركتكم الحالي؟

\_\_\_\_\_ (الرجاء ذكر الرقم هنا)

4. ما نسبة التكاليف الصناعية غير المباشرة الى مجموع التكاليف داخل شركتكم ؟

\_\_\_\_\_ % (الرجاء ذكر الرقم هنا)

**القسم الثاني: الشركات غير المستخدمة لنظام محاسبة تكاليف المبني على اساس الانشطة**

2. الرجاء تحديد الاسباب التي حالت دون استخدام نظام محاسبة تكاليف المبني على اساس الانشطة (ABC) داخل شركتكم . (الرجاء وضع اشارة  / واحدة فقط لكل صف).

اسباب عدم تطبيق نظام محاسبة التكاليف المبني على اساس الانشطة (ABC).	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
1. تعقيد النظام وحاجته لوقت كبير					
2. ارتفاع تكاليف تبني النظام					
3. التكاليف المتوقعة لاستخدام النظام تفوق المنافع المحتملة					
4. ارتفاع تكاليف الخبراء والمستشارين					
5. نقص البرمجيات المناسبة لتبني النظام					
6. صعوبات في تحديد مسببات التكلفة					
7. عدم وضوح منافع النظام					
8. صعوبات في تجميع البيانات المتعلقة في مسببات التكلفة					
9. قلة موارد الشركة (بشرية ، ماليه)					
10. ضعف الدعم من قبل الادارة العليا					
11. مقاومة التغيير من قبل بعض الموظفين					
12. ضعف الخبرة المتوفرة لاستخدام النظام					

**القسم الثالث : فقط للشركات التي تركت النظام**

1 في شركتكم في اي مرحله من المراحل التاليه توقف استخدام نظام التكاليف حسب الانشطة

التطبيق المبدئي للنظام

التطوير والتاسيس وتدريب العاملين على استخدام النظام

التطبيق الكامل للنظام

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشده	اسباب اخرى ادت ترك النظام
_____					

### القسم الرابع : معلومات عامة

هذا الجزء من الاستبانة هو عبارة عن معلومات عامة عن معبئ الاستبانة (الرجاء محاولة الاجابة على جميع الاسئلة

بوضع إشارة / واحدة في المربع المناسب).

1. ما هو المسمى الوظيفي لكم في هذه الشركة.

مدير مالي  مساعد مدير مالي   
 رئيس قسم المحاسبة  رئيس قسم التكاليف  أخرى (الرجاء التحديد).....

2. ما هي أعلى درجة علمية حصلت عليها.

بكالوريوس  دكتوراه  ماجستير   
 أخرى (الرجاء التحديد).....

3. عدد سنوات خبرتك في مجال المحاسبة ما بين.

اقل من 2 سنة  2 - 5 سنة  6 - 10 سنة   
 11 - 15 س  16 - 20 سنة  أكثر من 20 سنة

4. عدد سنوات عملك لدى هذه الشركة ما بين

اقل من 2 سنة  2 - 5 سنة  6 - 10 سنة   
 11 - 15 سنة  16 - 20 سنة  أكثر من 20 سنة

شكرا جزيلاً على مشاركتكم في هذه الدراسة

# Appendix L

## Questionnaire Category C

(Implementer/User

Companies)

(Arabic Version)

استبان المجموعه الثالثه  
المنفذين والمستخدمين للنظام

القسم الاول: معلومات عامة عن الشركة :

هذا الجزء من الاستبيان هو عبارة عن معلومات عامة عن الشركة (الرجاء محاولة الاجابة على جميع الاسئلة

بوضع إشارة / واحدة في المربع المناسب ) .

1. تحت اي من القطاعات الرئيسية التالية تدرج طبيعة عمل شركتكم.

التعدين	<input type="checkbox"/>	الصناعات الكيماوية	<input type="checkbox"/>
الطباعة والورق والكرتون	<input type="checkbox"/>	أجهزة ومعدات كهربائية	<input type="checkbox"/>
المنتجات العلاجية واللوازم الطبية	<input type="checkbox"/>	الصناعات الهندسية والصناعات الانشائية	<input type="checkbox"/>
التعبئة والتغليف	<input type="checkbox"/>	الصناعات التمونية والغذائية	<input type="checkbox"/>
صناعة الغزل والنسيج والاحذية	<input type="checkbox"/>	صناعة الزجاج و الخزف	<input type="checkbox"/>
أخرى (الرجاء التحديد).....	<input type="checkbox"/>	التبغ والسجائر	<input type="checkbox"/>

2. ما عدد موظفي الشركة الحالي ؟

\_\_\_\_\_ (الرجاء ذكر الرقم هنا)

3. ماهو عدد منتجات شركتكم الحالي؟

\_\_\_\_\_ (الرجاء ذكر الرقم هنا)

4. ما نسبة التكاليف الصناعية غير المباشرة الى مجموع التكاليف داخل شركتكم ؟

\_\_\_\_\_ % (الرجاء ذكر الرقم هنا)

**القسم الثاني: محاسبة التكاليف المبني على اساس الانشطة (ABC)**

1. الرجاء تحديد أهمية كل سبب من الاسباب التالية في قرار تبني شركتكم لنظام محاسبة التكاليف المبني على اساس الانشطة (ABC). (الرجاء الاجابة بوضع اشارة / واحدة فقط لكل صف).

غير مهم	قليل الاهمية	متوسط الاهمية	مهم	مهم جدا	<u>اسباب تبني النظام</u>
					1. لا يمكن الاعتماد على نظام التكاليف الحالي
					2. هنالك ضرورة لتحديث نظام المعلومات الحالي
					3. يمكن للدوائر الاخرى في شركتكم الاستفادة من تبني نظام محاسبة تكاليف المبني على اساس الانشطة.
					4. نظام التكاليف الحالي لا يزود الاداره بمعلومات مفيدة
					5. يتم استخدام نظام محاسبة التكاليف المبني على اساس الانشطة من قبل المنافسين لكم .
					6. هنالك ضغوطات من قبل الجمعيات المحاسبية على شركتكم لاستخدام نظام محاسبة التكاليف المبني على اساس الانشطة.
					7. الاستشارات المقدمة من الادارة العامة لشركتكم.
					8. بناء نظام تكاليف متطور مقارنة مع الانظمة الاخرى في الشركة
					9. هنالك رغبة لدى الشركة في تبني بنظام محاسبي جديد
					10. المدققون والخبراء ينصحون باستخدام نظم محاسبة التكاليف المبني على اساس الانشطة في شركتكم.

2. الرجاء تحديد دور العوامل المذكوره أدناه في قرار استخدام نظام محاسبة تكاليف المبني على اساس الأنشطة (ABC) في شركتكم. (الرجاء وضع اشارة / حدة فقط لكل صف).

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	العوامل المساعدة في استخدام نظام محاسبة التكاليف المبني على اساس الأنشطة (ABC)
					1. تدعم الادارة العليا في شركتكم استخدام نظام محاسبة التكاليف المبني على اساس الأنشطة.
					2. يستخدم المديرون في شركتكم سلطاتهم ومسؤولياتهم في دعم استخدام نظام محاسبة التكاليف المبني على اساس الأنشطة.
					3. هنالك التزام من قبل المديرين في شركتكم باستخدام معلومات نظام محاسبة تكاليف المبني على اساس الأنشطة في اتخاذ القرارات
					4. كانت اهداف استخدام النظام واضحة عند التطبيق
					5. هنالك المام ومعرفة من قبل كادر الشركة بفوائد نظام محاسبة التكاليف المبني على اساس الأنشطة والحاجة لاستخدامه في شركتكم.
					6. تم توفير التدريب المناسب لعملية تصميم النظام
					7. تم توفير التدريب المناسب لعملية استخدام النظام
					8. تؤثر اراء الخبراء والمستشارين الخارجين على تبني اي نظام محاسبي في شركتكم.
					9. هنالك مستشار متخصص لتطوير الانظمة المحاسبية في شركتكم.
					10. يتم استشارة الخبراء والمستشارين بشكل منتظم لحل المشاكل والصعوبات في نظام محاسبة التكاليف المبني على اساس الأنشطة
					11. نظام معلومات الشركة لديكم يوفر بيانات تفصيلية عن مبيعات وتكاليف الشركة لسنة سابقة
					12. يتم تحديث البيانات التشغيلية في نظام معلومات

					شركتكم بشكل مستمر
					13. وجود موظف مبدع في شركتكم يعمل بشكل مستمر من اجل تبني نظام محاسبة التكاليف المبني على اساس الانشطة.
					14. يقوم بعض الموظفين بدور التوعية باهمية نظام محاسبة تكاليف المبني على اساس الانشطة في شركتكم.
					15. الاقسام خارج نطاق المحاسبه (التحويليه والتسويق ..... الخ) لها اهتمام في دعم نجاح النظام
					16. فريق تطبيق النظام كان من مختلف الوظائف في المؤسسه
					17. تطبيق النظام ونجاحه كان مربوطا بتقييم الاداء للاشخاص غير المحاسبين في الشركه

3. الرءاء تحديد دور العوامل المذكوره ادناه في تحفيز كعملى استخدام نظام محاسبة تكاليف المبني على اساس الانشطة (ABC) في شركتكم. (الرجاء وضع اشارة / واحدة فقط لكل صف).

موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة	العوامل المحفزة لاستخدام نظام محاسبة التكاليف المبني على اساس الانشطة (ABC)
					1. ارتفاع نسبة التكاليف الصناعية غير المباشرة في شركتكم
					2. ارتفاع في التكاليف الانتاجية والتكاليف الادارية
					3. التنوع في منتجات الشركة
					4. تكلفة الوحدات المستخرجة من نظام المحاسبة الحالي غير دقيقة
					5. نقص البيانات المتوفرة لغايات اتخاذ القرارات (مثل نقص البيانات غير المالية)
					6. نظام التكاليف التقليدي (الحالي) غير

					قادر على مواكبة اتمتة الانتاج
					7. تواجه الشركة صعوبات في تخصيص التكاليف الصناعية غير المباشرة
					8. نظام المحاسبة الحالي غير قادر على تقديم المعلومات في ظل البيئة الانتاجية الجديدة
					9. زيادة المنافسة من قبل الشركات الاخرى
					10. التشريعات التجارية (تشريع تشجيع الاستثمار)
					11. عولمة اسواق المنتجين والمستهلكين

4. الرجاء تحديد الصعوبات التي واجهتكم أثناء تبني نظام محاسبة التكاليف المبني على اساس الانشطة (ABC) في شركتكم. (الرجاء وضع اشارة / واحدة فقط لكل صف).

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	صعوبات تبني نظام محاسبة التكاليف المبني على اساس الانشطة (ABC)
					1. ارتفاع تكاليف تبني النظام
					2. ضعف الدعم من الادارة العليا
					3. هنالك اولويات اخرى للشركة
					4. نقص البرمجيات المناسبة لتبني النظام
					5. ضعف التنسيق والتعاون بين دوائر الشركة
					6. يتطلب النظام وقت كبير من الادارة
					7. يتطلب النظام وقت كبير من قبل المبرمجين داخل الشركة
					8. ارتفاع تكاليف المستشارين والخبراء

					9. صعوبات في جمع البيانات الخاصة في مسيبيات التكلفة
					10. صعوبات في تحديد مسيبيات التكلفة
					11. صعوبات في تصميم النظام
					12. صعوبات في تحديد الأنشطة
					13. ضعف الالمام ببيانات ومتطلبات النظام
					14. مقاومة التغيير من قبل بعض الموظفين
					15. التعامل مع التغييرات المحاسبية
					16. نظام محاسبة التكاليف المبني على اساس الأنشطة يتطلب تغيير في هيكله الشركة بما ينسجم مع الأنشطة المختاره

**القسم الثالث: تقييم النجاح في تطبيق نظام محاسبة التكاليف المبني على اساس الأنشطة (ABC).**

1. ما هي نسبة نجاح استخدام نظام محاسبة التكاليف المبني على اساس الأنشطة (ABC) في شركتكم (الرجاء الاجابة بوضع اشارة / في المربع المناسب)

ممتاز  جيدة  مقبولة  ضعيفة  ضعيفه جدا

2. الرجاء تحديد درجة قوة الصفات التقنية التالية لنظام التكاليف حسب الانشطه في شركتكم.

منخفض جدا	منخفض	متوسط	عالي	عالية جدا	الصفات التقنية
					نظام التكاليف حسب الأنشطة
					الدقه
					القابلية

					الموثوقية
					الوقتية
					القابلية للفهم

3. الرجاء تحديد ما هي درجة استخدام نظام محاسبة التكاليف المبني على اساس الانشطه (ABC) في المجالات المذكورة أدناه في شركتكم.

ابدا	نادرا	احيانا	غالبا	دائما	مجالاتالاستخدام
					1. تكلفة المنتج
					2. تحديد ربحية العميل
					3. اتخاذ القرارات
					4. التخطيط
					5. الموازنة
					6. قرارات التسعير
					7. مقاييس الاداء

4. الرجاء تحديد درجة الرضى عن استخدام نظام محاسبة التكاليف المبني على اساس الانشطة (ABC) في شركتكم

غير راضي	غير راضي	غير متأكد	راضي	راضي جدا	درجةالرضى
					1. المنافع المتحققة من تبني النظام
					2. دقة تحديد تكاليف الانتاج من قبل النظام
					3. اساليب تخفيض تكاليف الانتاج في الشركة

### القسم الرابع: معلومات عامة

هذا الجزء من الاستبانة هو عبارة عن معلومات عامة عن معي الاستبانة (الرجاء محاولة الاجابة هلى جميع الاسئلة

بوضع إشارة / واحدة في المربع المناسب).

1. ما هو المسمى الوظيفي لكم في هذه الشركة.

مدير مالي  مساعد مدير مالي   
رئيس قسم المحاسبة  رئيس قسم التكاليف  أخرى (الرجاء التحديد).....

2. ما هي أعلى درجة علمية حصلت عليها.

دكتوراه  ماجستير   
بكالوريوس  أخرى (الرجاء التحديد).....

3. عدد سنوات خبرتك في مجال المحاسبة ما بين.

اقل من 2 سنة  2 - 5 سنة  6 - 10 سنة   
12 - 15 سنة  16 - 20 سنة  اكثر من 20 سنة

4. عدد سنوات عملك لدى هذه الشركة ما بين

اقل من 2 سنة  2 - 5 سنة  6 - 10 سنة   
11 - 15 سنة  16 - 20 سنة  اكثر من 20 سنة

شكرا جزيلاً على مشاركتكم في هذه الدراسة

الباحث :- عبدالقادر ربابعة