


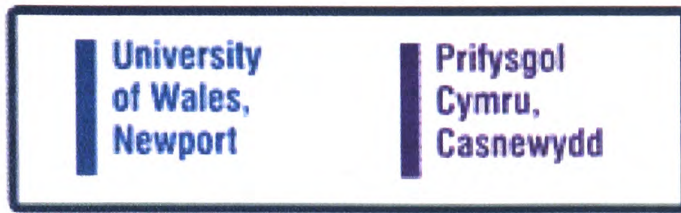
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Activity-Based Costing (ABC) Systems within Jordanian Industrial Companies: Factors that Facilitate, Motivate and Create Barriers to ABC Implementation

By:

Mahmoud Nassar

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

**University of Wales, Newport
Newport Business School
(2010)**

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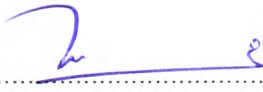
Mahmoud Nassar

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**University of Wales, Newport
Newport Business School
(2010)**

DECLARATION


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ABSTRACT

The diffusion of Activity Based Costing (ABC) has been researched extensively in developed countries. Research on these issues in Jordan in general and within the Jordanian industrial sector more specifically is limited. The aim of the current research is to contribute to the design and successful ABC implementation in the Jordanian industrial sector.

To achieve the aim of the research, the research methodology included both quantitative and qualitative data. The first stage was a quantitative study. The questionnaire survey was developed and the primary aims were to determine the current state of ABC adoption and implementation. The factors that facilitate, motivate and create barriers to ABC implementation were examined. In the second stage, semi-structured interviews were used to probe the significant results of the questionnaire survey. The interviews were conducted with 6 companies that have implemented ABC in full and currently using ABC information.

The survey findings indicate that ABC implementation among Jordanian industrial companies is quite satisfactory. The rate of ABC implementation is about 50.8%. Within the Jordanian industrial sector, the interaction between the following factors facilitated and motivated the implementation of ABC, namely: top management support, both training and education about the system, higher information technology, increasing proportion of overhead costs, growing costs, including product costs and administrative costs, and an increasing number of product variants.

The interviews with financial managers/heads of cost accounting departments are consistent with questionnaire survey findings and both reveal and emphasise the important effect of consultants, professional management/accounting bodies and cooperation between academics and professionals upon implementing ABC within the Jordanian industrial sector. Therefore, it can be concluded that it is not only demand but also supply factors that influence implementation of ABC within the Jordanian industrial companies.



***To my parents
(Daoud and Samia)***

To my lovely brothers and sisters



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List of Abbreviations

Abbreviations	Meaning
AA	Activity Analysis
ABB	Activity-Based Budgeting
ABC	Activity-Based Costing
ABM	Activity-Based Management
ACA	Activity Cost Analysis
BSC	Balanced Scorecard
CAM-I	Computer Aided Manufacturing-International
CIAM	Chartered Institute of Management Accounting
CPA	Certified Public Accountant
GDP	General Domestic Product
GM	General Motors
IT	Information Technology
JD	Jordanian Dinar
JSE	Johannesburg Securities Exchange
PC	Personal Computer
QIZs	Qualifying Industrial Zones
ROI	Return on Investment
SET	Stock Exchange of Thailand
SMA	Strategic Management Accounting
SPSS	Statistical Package for Social Sciences
TA	Throughput Accounting
TCS	Traditional Cost Accounting
TOC	Theory of Constraints
TQM	Total Quality Management
UK	United Kingdom

USA

United States of America

WTO

World Trade Organisation

CHAPTER ONE

INTRODUCTION

1.1 Introduction

During the last two decades, most companies across a range of countries and industries have faced dramatic changes in their business environment. Increasing levels of global competition and reductions in product life cycles arising from technological innovations have intensified the challenges for managers. Considerable changes have also taken place within the manufacturing environment with the emergence of advanced manufacturing technologies that have resulted in greater automation and changes in cost structure involving direct labour costs being replaced by overhead costs (Abdel-Kader and Luther, 2006; Alawattage *et al.*, 2007; Bhimani *et al.*, 2007; Alcouffe *et al.*, 2008; Hopper *et al.*, 2008; Smith *et al.*, 2008).

Towards the late 1980s, considerable publicity was given to criticisms of management accounting, particularly with the publication in 1987 of *Relevance Lost* authored by Johnson and Kaplan. These authors claimed that management accounting practices that were developed in the 1920s had remained unchanged and were still the dominant practices of the 1980s. They commented:

“Given the radical changes in the competitive environment ... and rapid world-wide movement of technology and capital, it is unlikely that the cost accounting and management control systems devised for the 1925 environment can still be useful sixty years later” (Johnson and Kaplan, 1987, p. 205).

Smith *et al.* (2008) suggested that the information provided by traditional cost accounting techniques such as variable costing, direct costing and traditional full absorption costing systems are not sufficiently accurate to satisfy the requirements of modern management. The literature indicated that traditional cost accounting information is largely inaccurate for the purpose of decision-making, prompting a call for innovation in cost accounting (Johnson and Kaplan, 1987; Innes and Mitchell, 1991; Brown *et al.*, 2004; Abernethy and Bouwens, 2005; Gosselin, 2007).

In response to such criticisms, considerable attention was given to modifying cost accounting techniques and implementing innovations that would enable management accounting to regain its relevance. In particular, the emphasis was to provide managers with the information they needed to compete in rapidly changing business environments. Therefore, new cost accounting techniques have emerged, such as Activity-Based Costing (Johnson and Kaplan, 1987; Bjornenak and Olson, 1999; Armstrong, 2002; Maiga and Jacobs, 2003; Bjornenak and Ax, 2005; Askarany, 2006; Alawattage *et al.*, 2007; Abdel-Kader and Luther, 2008; Chanegrih, 2008), Target Costing (Yoshikawa *et al.*, 1993; Cooper, 2002; Ansari *et al.*, 2006; Kee and Matherly, 2006), Life-Cycle Costing (Fabrycky, 1991), Kaizen Costing (Monden and Hamada, 1991; Yoshikawa *et al.*, 1993) and Throughput Accounting (Goldratt, 1993; Holmen, 1995).

The innovation that has possibly generated the greatest interest amongst practitioners and researchers has been Activity-Based Costing (ABC) (Brown *et al.*, 2004; Gosselin, 2007). ABC has been introduced as a solution for most product cost distortions that may take place due to the use of the Traditional Cost Systems (TCS). ABC has gained increasing attention amongst academics and researchers as a tool to help companies allocate overhead costs with a greater degree of accuracy. ABC is claimed by a large number of authors to offer considerable benefits over TCS, such as cost control, cost reduction and better decision-making. These benefits are claimed to improve management and to create competitive opportunity, as well as to improve profitability (Krumwiede and Roth 1997; Innes *et al.*, 2000; Baird *et al.*, 2004; Al-Omiri and Drury, 2007a; Bhimani *et al.*, 2007; Gosselin, 2007; Askarany and Smith, 2008).

The adoption and implementation of ABC has already been investigated in some countries. The literature shows examples of successful ABC implementation in countries such as Ireland (Clark *et al.*, 1999; Pierce and Brown, 2004), the UK (Innes and Mitchell 1991, 1995; and Innes *et al.*, 2000), the USA (Anderson, 1995; Pohlen and Londe, 1998; Groot 1999), Australia (Booth and Giacobbe, 1997; Nguyen and Brooks, 1997; Chenhall and Smith 1998), New Zealand (Cotton *et al.*, 2003) and Canada (Eden *et al.*, 2004). However, many researchers have suggested that more survey research evidence is needed to examine how countries around the world

compare with each other in terms of their understanding and implementation of ABC system (Cohen *et al.* 2005; Askarany and Yazdifar, 2007; Al-Omiri and Drury, 2007a; Gosselin, 2007).

A review of the available literature on this topic has allowed the researcher to notice the absence of detailed research in this aspect in Jordan in general and the Jordanian industrial sector in particular. Further information regarding the research context is described in next section.

1.2 The Jordanian Economy in the Research Context

The Jordanian economy is market-oriented, but consists of both private and public sectors. Both sectors have an important role to play in the Jordanian economy, with the government playing a vital part in regulating the economy and attracting inward investment. The industrial sector today is seen as one of the major potential economic sectors that Jordan should develop to achieve better economic growth (Central Bank of Jordan, 2007). Jordan's industrial sector is mainly built upon three industries: manufacturing, electricity production and mining. These three sectors are mainly privately owned and are characterised by small and medium sized companies. The production of chemicals and fertilisers in the 1970s was the beginning of the manufacturing industry (Hutaibat, 2005) and the industrial sector was able to establish export markets which brought much needed revenue to the country. Indeed, the overall contribution of the industrial sector to the Jordanian GDP for the year 2005 was about 17%. In the same year, the value of industrial exports was about (2379) JD million (1JD = £1). Furthermore, industrial exports contributed about 93.5% of the national exports. The total number of industrial establishments reached 21,000, employing more than 173,000 workers. This figure represents about 48% of the total number of workers in Jordan (Ministry of Planning Report, The Economic Indicators 2007, Amman, Jordan, 2007).

By the beginning of 1990s the country's accession to the World Trade Organisation (WTO), and signing of Free-Trade Agreements with a number of different parties, meant that, Jordan had become a fertile ground for industrial production to grow and expand (Central Bank of Jordan, 2007). The country's industrial production index comprises 77% in manufacturing production, 15% in mining, and 8% in electricity

production (Goussous, 2002). Consequently, as Jordan joined these global bodies, there became an urgent need to develop all Jordanian economic sectors, especially in terms of industry, as this should be able to deal with the philosophy of the free market economy (Ministry of Industry and Trade, 2007).

The industrial sector has also grown (to nearly 21 percent of GDP by 2006), in large part as a result of the United States–Jordan Free Trade Agreement (ratified in 2001 by the U.S. Senate). This agreement has led to the establishment of approximately 13 qualifying industrial zones (QIZs) throughout the country (Ministry of Industry and Trade, 2007). The QIZs, which provide duty-free access to the U.S. market, produce mostly light industrial products, especially ready-made garments. By 2006 the QIZs accounted for nearly US\$1.1 billion in exports according to the Jordanian government (Ministry of Planning Report, The Economic Indicators 2007, Amman, Jordan, 2007). Therefore, since Jordan's accession to the WTO and as more multinational companies establish joint ventures or regional offices in Jordan it is expected that changes will occur to management accounting practices in Jordan. These changes will be driven by the need for Jordanian companies to implement cost accounting innovations in order to compete more effectively.

Rapid economic growth in Jordan in the last two decades has led to a considerable increase in the number of accountants, and now that the economy is open and becoming export-oriented, more demand will be placed upon the accounting profession in terms of expertise and practicality. Companies need to plan, control, and make decisions about projects that will yield results important to their survival; this can only be done by using cost accounting innovations (Hutaibat, 2005). Furthermore, since more and more multinationals are setting up in the region, Jordanian industrial companies might be expected to be increasingly influenced by foreign accounting practices. Although "cost accounting practice is not universally uniform" (Luther and Longden, 2001, p. 315), it would be possible to adopt and implement certain practices from their foreign partners.

1.2.1 Jordanian Industrial Sector as the Research Context

This study focuses on the Jordanian industrial sector for four reasons.

Firstly, the researcher has extensive familiarity with and experience of cost accounting systems in Jordanian industrial companies.

Secondly, there is a clear trend in the social and economic development plans of successive Jordanian governments to support the industrial sector. Recently, this has been one of the central reoccupations of the government and industry alike. The primary aim of such a policy must be to provide a clear sense of direction by carefully identifying the priorities and by paying equal attention to both the developments of the internal capabilities of industrial companies as well as providing the necessary environment and conditions for industrialisation (Central Bank of Jordan, 2007). Such a policy should position Jordanian companies so that they can develop and compete in international markets and meet the expected challenges and opportunities for growth, especially now that, in the last few years, Jordan has undertaken major steps on its path to the international market.

Thirdly, industrial companies are exposed to changes in the industrial environment such as changes in the production cost structure (Innes and Mitchell, 1990; Askarany, 2006) and new high technological manufacturing techniques (Clarke *et al.*, 1999; Ruhanita and Nasir, 2006). Due to these changes, industrial companies are also commonly associated with implementing cost accounting innovations.

Finally, most prior research on ABC has selected industrial companies as the subject of research (Anderson, 1995; Swenson, 1995; Bjornenak, 1997; Gosselin, 1997; Krumwiede, 1998; Clarke *et al.*, 1999; Clarke and Mullins, 2001). The Jordanian industrial sector therefore represents a basis for comparison.

1.2.2 Accounting Education in Jordan and ABC in the Jordanian Industrial Sector

Jordanian accounting education is heavily based on accounting theory and practice in the United States where most Jordanian academics have completed their graduate studies (Hutaibat, 2005). Thus, most Jordanian accountancy programs, including management accounting courses, generally consist of similar course outlines and course titles to American courses and most teaching and studies of management accounting in Jordanian universities merely “translates and introduces” western techniques of management accounting (EI-Issa, 1990). Abu Elhijaa (2001) claimed that it is the responsibility of academic institutions such as universities, in spreading and enhancing the awareness of western management accounting innovations and the expected benefits that may be gained from them.

For the Jordanian industrial sector, ABC is the new cost accounting system (Al-Khadash and 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 industrial sector emerged from parent company policies in the U.S.A. or the U.K. (Arafat, 2002; Hutaibat, 2005).

Khaleel (2003) examined the limitations of traditional full absorption costing systems throughout implementing ABC as an optional system on one of the leading companies in the Jordanian industrial sector. The study results showed a significant variation between product costs as a result of the implemented ABC. Some products were undercosted while others were overcosted. The researcher advised Jordanian companies to implement ABC in order to eliminate products subsidies.

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 industrial sector. Furthermore, they added that Jordanian industrial 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.

1.3 Research Problems

Since the beginning of the 1990s, a number of surveys from several European countries, the USA, Australia, North America, Africa and Asia have pointed out that ABC is implemented only by between 20% and 30% of companies (Innes and Mitchell, 1995; and Innes *et al.*, 2000; Kaplan and Anderson, 2004; Askarany and Smith, 2008), whereas Traditional Costing System (TCS) continues to be widely implemented (Innes *et al.*, 2000; Al-Omiri and Drury, 2007a; Askarany and Smith, 2008). It should be noted that various possible reasons have been suggested for this relatively low implementation rate, including: (1) Technical variables such as identifying and aggregating activities, assigning resources to activities and selecting cost drivers (Innes and Mitchell 1990, 1995, 1998; Clarke *et al.*, 1999; Groot, 1999; Innes *et al.*, 2000; Chongruksut, 2002; Pierce and Brown, 2004; Cohen *et al.*, 2005, Sartorius *et al.*, 2007). (2) Behavioural and organisational variables such as internal resistance, lack of top management support, human resource availability, lack of knowledge, and an expressed satisfaction with current systems (Anderson, 1995; Shields, 1995; Clarke *et al.*, 1999; Innes *et al.*, 2000; Chongruksut, 2002; Pierce and Brown, 2004; Cohen *et al.*, 2005), and (3) Systems issues, such as data collection difficulties and inadequate computer software (Clarke *et al.*, 1999; Innes *et al.*, 2000; Pierce and Brown, 2004).

The low rate of ABC implementation, as empirically observed across a range of countries and industries have motivated some researchers to find a solution to the “ABC Paradox” a term coined by Gosselin (1997). Moreover, there is growing evidence to suggest that most of these companies encountered problems in implementing ABC and, in extreme cases, did not have success with it, which later resulted in abandoning the ABC system altogether. This suggests that if ABC has

demonstrated benefits, why then, is it not actually implemented by a gradually increasing number of companies?

Several recent studies have started to explore this issue by considering the implementation rate of ABC, the reasons for implementing ABC, the problems associated with ABC and the critical success factors relating to its successful implementation (Gosselin, 2007; Kaplan and Anderson, 2007; Askarany and Smith, 2008). However, the empirical evidence from ABC research is inconsistent for two reasons.

Firstly, the extent of ABC implementation in a range of developed countries varies widely. Some countries report an increase in the use of ABC while other countries report the exact reverse. In some instances researchers in the same country have reported widely different trends (Booth and Giacobbe, 1997; Baird *et al.*, 2004; 2007; Brown *et al.*, 2004). It is, therefore, difficult to compare the findings from the various studies, particularly relating to usage rates or the ability to discriminate between implementers and non-implementers when the term “adoption” has been subject to different definitions (Al-Omiri and Drury, 2007b). For example, the term “adoption” 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 companies that have considered the implementation of ABC with those that have shown no interest in ABC.

Secondly, the reasons for implementing ABC, the barriers to ABC implementation and critical success factors appear to differ widely (Brown *et al.*, 2004), since different researchers often defined these in different ways (Swenson, 1995; Cohen *et al.*, 2005; Baird *et al.*, 2007).

Based upon the discussion, the importance of the industrial sector to the Jordanian economy, the increased number of companies in the Jordanian industrial sector, and because there has been little empirical research undertaken on the diffusion of ABC in Jordan in general, and in the Jordan industrial sector in particular, it is argued that there is a critical need to conduct an empirical investigation. Such an investigation would aim to determine the current state of ABC adoption and implementation and determine the main reasons for its implementation as well as identify the main problems associated with its implementation.

1.4 Research Aim and Objectives

The aim of the current study is therefore to determine the current state of ABC implementation and determine the factors influencing decisions to adopt and implement ABC systems within the Jordanian industrial sector by answering nine principal research questions. In addition, the current study intends to achieve the following objectives: namely, to:

- i. Examine the extent of ABC implementation system within the Jordanian industrial sector.
- ii. Identify the main reasons for not-considering the usage of ABC system.
- iii. Determine the main factors against the implementation of ABC system.
- iv. Identify the main reasons (catalysts) for implementing ABC system; in particular the extent to which the four perspectives presented by Abrahamson (1991) (efficient choice, forced selection, fad and fashion perspectives) explain the implementation decision of ABC system.
- v. Determine the main factors that have facilitated the process of implementing ABC system.
- vi. Ascertain the main factors that have motivated the implementation of ABC system.
- vii. Identify the main barriers to ABC implementation.
- viii. Determine the main reasons for the abandonment of ABC system.
- ix. Ascertain the views of user companies on the degree of success of ABC system.

1.5 Research Questions

In order to achieve the above aim and objectives, the current study will seek to answer the following research questions:

1. What is the current state of ABC implementation among the Jordanian industrial companies?
2. For companies that are not-considering using ABC, what are the main reasons for not considering it?
3. For companies that are Considering/Adopting ABC, what are the main factors against ABC implementation?
4. For companies that are currently Implementing/Using ABC, what are the main reasons for its implementation?
5. For companies that are currently Implementing/Using ABC, what are the main factors that facilitate its implementation?
6. For companies that are currently Implementing/Using ABC, what are the main factors that motivate its implementation?
7. For companies that are currently Implementing/Using ABC, what are the main barriers to ABC implementation that the companies have encountered?
8. For companies that are currently Using ABC, what is the degree of ABC success?
9. For companies that have Abandoned ABC, what are the main reasons for abandonment?

1.6 Expected Contribution

Several contributions are expected by conducting this research. The first contribution of this study is to examine the diffusion of ABC within the Jordanian industrial sector. The lack of empirical research effort on the adoption and implementation of ABC in the Jordanian industrial sector is a prime motive for conducting this study. The previous review of the focal literature established that previous studies focused only on the implementation of ABC in western developed countries. Therefore, this study presents an attempt to fill part of the gap in the literature and reduce the ambiguity regarding the current state of ABC adoption and implementation among Jordanian industrial companies. Accordingly, six categories will be examined namely, non-consideration, consideration, adoption, implementation, abandonment and usage

category. Thus the study finding will be an original contribution to the field of ABC implementation in the country.

Moreover, taking into consideration the very limited literature regarding the innovation process in Jordan in general and the Jordanian industrial sector in particular, one of the important contributions of this study has been the development of the research model for better understanding of the diffusion of ABC in this sector. In addition, the empirical results, and in particular the factors that facilitate, motivate and create barriers to ABC implementation, contribute to knowledge of the process of adoption and implementation of ABC among Jordanian industrial companies. It should be noted that the development of the research model in this research 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 further contribution of this study is the use of a multi-attribute approach to measure the success of ABC implementation within the Jordanian industrial sector. Numerous studies have been undertaken relating to the success of ABC amongst implementing companies. However, measuring the success of ABC is problematic and researchers have used different approaches to measure that success (Baird *et al.*, 2007). Success has been measured using management evaluation (Shields, 1995) according to the use and satisfaction of ABC (Swenson, 1995; Dosch and Wilson, 2007) and the degree of employee satisfaction (MaGowan and Klammer, 1997). In this study, the success of ABC will be measured by degree of satisfaction with ABC implementation, the degree of using ABC in decision-making and the overall of success of ABC implementation.

Finally, most of the previous studies such as Booth and Giacobbe (1997); Krumwiede (1998); Brown *et al.* (2004); Cohen *et al.* (2005); Al-Omiri and Drury (2007b); Baird *et al.* (2007), have relied on respondents self-rating their systems as ABC or non-ABC. In this study, several control questions were included in the questionnaire to check the respondent' claims that they were operating ABC system is actually ABC users. In addition, semi-structured interviews were conducted with six user companies for

further clarification. Therefore, compared with previous studies, there was a much higher probability in this study that those respondents claiming to use ABC were actually ABC users.

1.7 Structure of Thesis

The thesis contains eight chapters that are summarised briefly in this section.

Chapter 1 provides the background to the research and introduces the research problem and nine research questions for investigation. It also includes justifications for the research and a brief overview of the research context. Finally, the layout and content of the chapters are described.

The aim of chapter 2 is to provide an explanation of ABC as a system that has been introduced as a solution for most product cost distortions that may take place due to the use of the traditional cost systems (TCS). This chapter discusses the emergence, applications and limitations of ABC systems in more detail.

To derive a better understanding of factors influencing the non-adoption, adoption and implementation of cost accounting innovations, it is important to be aware of the theories derived from the diffusion of innovation literature. Therefore, the aim of Chapter 3 is to provide a brief summary of the diffusion of innovation literature. This was done by providing an overview of the different perspectives that can be adopted to classify diffusion of innovation research. In addition, the theoretical framework of management accounting change models that were introduced by Innes and Mitchell (1990), Cobb *et al.* (1995) and Kasurinen (2002) are described. The aim here is to provide a link between diffusion process and framework of management accounting change models.

Since the beginning of the 1990s, many surveys have been undertaken in different countries to ascertain ABC implementation rates. The survey evidence suggests that, over the last decade, there has been an increasing interest in ABC, but the rate of implementation has been fairly slow. Thus, the first aim of chapter 4 is to review these studies. The second aim of this chapter is to facilitate the design of the research model

in the current study by reviews and analyses the findings of a number of studies regarding the implementation of ABC systems in different countries.

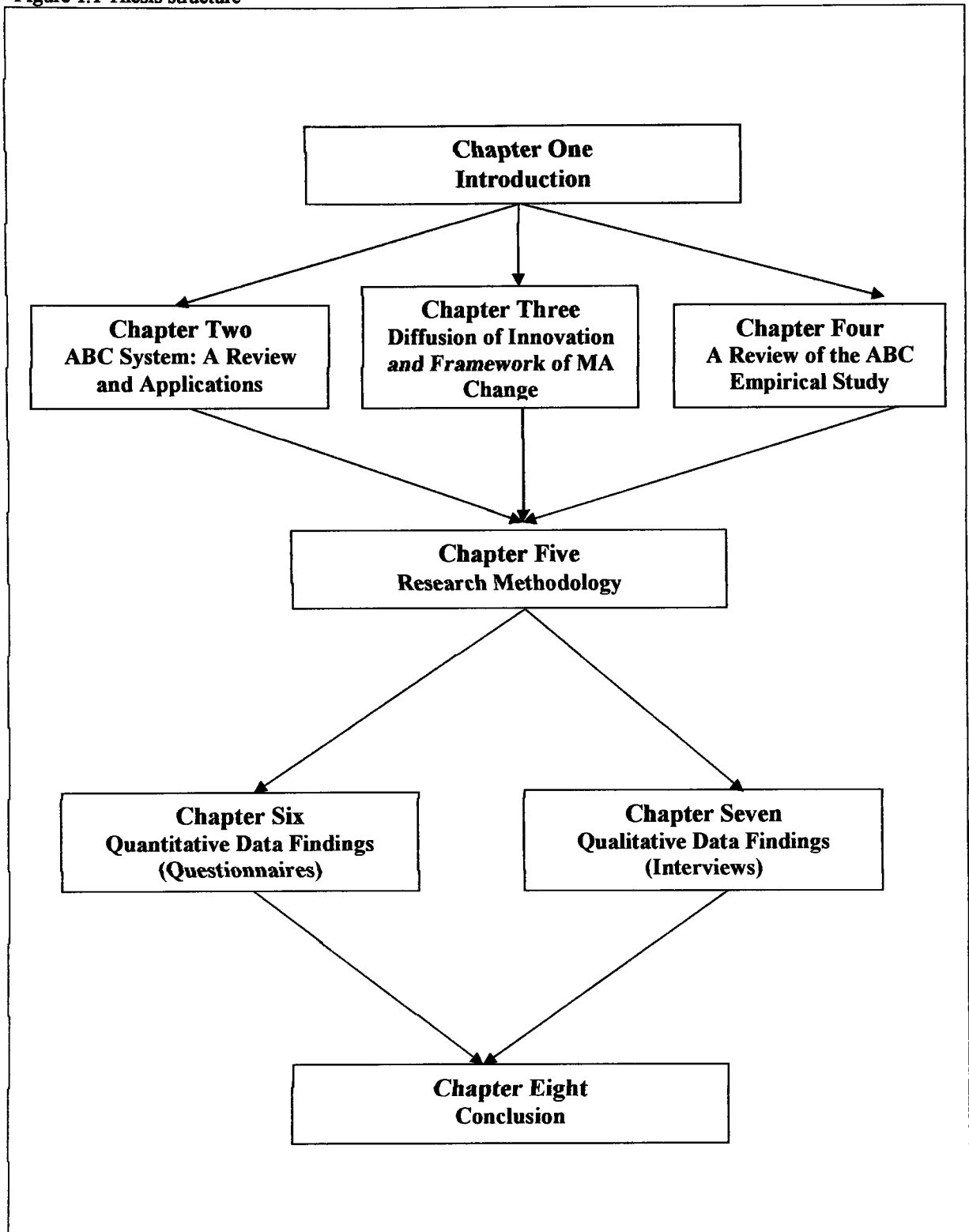
Chapter 5 explains and justifies the methodology adopted in this research and provides justification for the use of specific research methods and data collection techniques. It specifies the design and implementation for the quantitative and qualitative research employed in this study. The questionnaire and the interview are clarified in detail. The justifications for choosing the questionnaire as a method for collecting data are also described. The questionnaire design, classification of questionnaire sections, pre-testing and pilot study of the questionnaire, selection of the individual respondents and reliability and validity are explained. The interview method also is justified and explained and the interview processes are clarified.

Chapter 6 is the first empirical chapter of the thesis. It aims to statistically describe the data gathered by the questionnaire survey in order to provide a comprehensive picture of ABC implementation within the Jordanian industrial sector. This quantitative analysis is based on *percentages, means, and Chi-square test and Cross tabulations*. In addition, the chapter provides a base for the following chapter in which the qualitative data are presented.

Chapter 7 deals with the second stage of the study where the interviews and details regarding the participants and procedures involved in the data collection are presented. This chapter begins with an outline of the purpose for selecting the qualitative data. There follows a brief overview of the data analysis techniques employed. This chapter contains within company analysis for each company is discussed, followed by the cross-company analysis, which includes an analysis of variations between companies.

Chapter 8 is designed to present conclusions and highlights the contributions of the study, starting with a summary of the research questions and providing an overview of ABC implementation in the Jordanian industrial sector. The chapter then discusses the theoretical and methodological contributions of the study. Finally, the limitations of this study are discussed and suggestions are made to future researchers engaging in the study of ABC. Figure 1.1 outlines the thesis structure.

Figure 1.1 Thesis structure



CHAPTER TWO

ACTIVITY-BASED COSTING (ABC) SYSTEMS: A REVIEW AND APPLICATIONS

2.1 Introduction

The previous chapter justified the location of this ABC study in the Jordanian industrial context. This chapter discusses the emergence, applications and limitations of ABC systems in more detail. It begins with a summary of contemporary cost accounting practices and describes the major criticisms of TCS as well as the arguments for the need for change. Then, the major features of TCS and ABC systems are described in order to make comparisons between both systems. This chapter would not be complete without a detailed analysis of the stages involved in the design and operation of ABC and the usage of ABC systems in manufacturing companies for different purposes, such as product costing and pricing decisions, customer profitability, and budget. Finally, the major limitations of ABC are presented.

2.2 Relevance Lost: Criticisms of TCS and the Recognition for a need to Change

During the 1980s the limitations of Traditional Cost Systems (TCS) began to be widely publicised by both academics and practitioners (Johnson and Kaplan, 1987; Cooper and Kaplan, 1988a, b; Cooper, 1988a, b; Reyhanoglu, 2004). Drury (2004) and Atkinson *et al.* (2007) claimed that TCS were designed decades previously when most companies manufactured a narrow range of products/services, and direct labour 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 labour was a significant portion of product costs but the declining direct labour 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 centres to products. They asserted that direct labour 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 (Hughes and Gjerde, 2003; Anand, 2004; Reyhanoglu, 2004; Gupta and Baxendale, 2008).

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 labour. Consequently, high volume products will subsidise 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 (Drury and Tayles, 2000; Anand, 2004).

Cooper and Kaplan (1988a) claimed that the second major criticisms of TCS are mainly related to the reporting of inaccurate costs information for decision-making (Gupta and Baxendale, 2008; Smith *et al.*, 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 (1988a) 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 (Hughes and Gjerde, 2003; Anand, 2004; Gupta and Baxendale, 2008).

Cooper (1988a) 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 labour, 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 labour 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 labour, 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 *et al.*, 2007).

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

2.3 Contemporary Cost Accounting Systems

Because of the limitations of TCS highlighted in the previous section, there has been increasing emphasis on the need for contemporary accounting systems to be developed to provide information relevant to current organisational operating environments (Yoshikawa *et al.*, 1993; Atkinson *et al.*, 2007). The following sub-sections summarises the most high profile of these contemporary accounting systems. This discussion is provided to contextualise the focus on ABC within this study, which is widely regarded to be the most influential and widely adopted contemporary cost accounting system (Johnson and Kaplan, 1987; Bjornenak and Olson, 1999; Maiga and Jacobs, 2003; Bjornenak and Ax, 2005; Askarany, 2006; Alawattage *et al.*, 2007).

2.3.1 Target costing

Target Costing is a market-driven system of cost reduction, focused on managing costs at the development and design stages of a product (Yoshikawa *et al.*, 1993; Ansari *et al.*, 2006; Kee and Matherly, 2006; Kocsoy *et al.*, 2008). Cooper (2002) and Cooper and Slagmulder (2002) described Target costing as a customer-oriented technique that has been widely used by Japanese companies and which has recently been implemented by companies in the USA and Europe countries. Yoshikawa *et al.* (1993) defined Target costing as a companywide profit management activity during the new product development stage that includes: (1) planning products that have customer-pleasing quality, (2) determining target costs (including target investment costs) for the new product to yield the target profit required over the medium to long term given the current market conditions, and (3) devising ways to make the product design achieve target costs while also satisfying customer needs for quality and prompt delivery.

The first stage in Target Costing requires market research to determine the customers' perceived value of the product based on its functions and its attributes (i. e. its functionality) (Monden and Hamada, 1991). A target price which customers are prepared to pay for the product is determined and a target profit is also determined which is then deducted from the target price to derive a target cost (Ansari *et al.*, 2006). The target cost is compared with the predicted actual cost. If the predicted actual cost is above the target cost intensive efforts are made to close the gap so that the predicted cost equals the target cost (Horngren *et al.*, 2000; Cooper and Slagmulder, 2002). Accordingly, a major feature of target costing is that a team approach is adopted to achieve the target cost. The team members include designers, engineers, purchasing, manufacturing, marketing and management accounting personnel. Their aim is to achieve the target cost specified for the product at a prescribed level of functionality and quality. This involves eliminating product functions that add cost but which do not increase the value to customers (Yoshikawa *et al.*, 1993; Cooper, 2002).

In summary, Target Costing aims to reduce the life-cycle costs of new products whilst ensuring quality, reliability, and other consumer requirements, by examining all possible ideas for cost reduction at the product planning, research and development phases of production (Monden and Hamada, 1991; Cooper and Slagmulder, 2002; Drury, 2004; Kocsoy *et al.*, 2008).

2.3.2 Life-Cycle Costing

Life-cycle Costing is management accounting tool that is used during the new product introduction phase (Booker *et al.*, 2007; Bonabeau *et al.*, 2008). It attempts to capture all the cost associated with a major capital asset, such as an aircraft, over its Life-cycle including research and development, production, operation, maintenance and support (Fabrycky, 1991; Cokins, 2002). It assigns expected costs to each separate phase of the life-cycle to arrive at total life-cycle costs for a new product or system (Kee and Matherly, 2006). Life-cycle costing, therefore, provides an understanding of the cost and revenue implications of equipment both before and after entry into service (Drury, 2004). It can be used to inform engineering decision-making and cost monitoring over the life of product (Dunk, 2004). Further cost estimates require judgements concerning costs that may or may not be based on past experience (Yoshikawa *et al.*, 1993). They can be derived from expert opinion, cost estimating relationships or known cost factors and data (Horngren *et al.*, 2000). Cost data can be sourced from existing database, product planning data, supplier documentation and data, engineering test and field data, and financial and accounting data (Atkinson *et al.*, 2007)

Life-cycle costing is becoming an increasingly important tool for satisfying customer needs and making realistic investment decisions for the business (Drury, 2004). It enables the evaluation of alternatives, both inter-system comparisons (comparison between products from different suppliers) and intra-system comparisons (comparison between different design configurations of the same product) (Ansari *et al.*, 2006). It also highlights the economic impact of design decisions and provides additional information for capital investment decisions (Artto, 1994). However, life-cycle cost analyses present major challenges with regard to data collection and consistency. Hence, they are inherently inaccurate. Information may need to be drawn from different sources and, therefore contain inconsistencies or be in different formats (Horngren *et al.*, 2000). There may also be difficulties accessing data sources (Kee and

Matherly, 2006). In addition, it is extremely difficult to predict the costs and revenues associated with the later stages of the life-cycle (Cooper, 2002).

2.3.3 Throughput Accounting (TA)

Throughput Accounting (TA) is another contemporary cost accounting system that has been developed from the theory of constraints (TOC) which was introduced by Ellyahu. M. Goldratt in the early 1980s. The concept of TOC is that constraint establishes the limits of performance of any system. Therefore, TOC suggest the managers to focus on how to effectively managing these constraint in improving the overall performance of their organisations (Goldratt, 1993). Generally, there is at least one constraint existing in every organisation in attaining their goals. It is very important to thoroughly comprehend and consider the constraint because releasing the constraint is the same with improving the overall performance of organizations as a system (Goldratt, 1993).

TA is not a complete cost accounting system but includes three measures namely,

1. Throughput: the rate at which the system generates money through sales (output which is not sold is not throughput but inventory).
2. Inventory: all the money invested in things the system intends to sell.
3. Operating expense: all the money the system spends in turning inventory into throughput.

Throughput is represented as sales minus “total variable” cost. Inventory includes any physical inventories such as raw material, work on process, unsold finished products, and includes tool, building, capital equipment and furnishings. Operating expense includes expenditures such as direct and indirect labour, supplies, outside contractors and interest payment (Goldratt, 1993; Yoshikawa *et al.*, 1993; Cooper, 2002).

The concepts underlying TA are not fundamentally new: the definition of throughput in TA is the same as the definition of contribution margin in traditional cost accounting, and using throughput to make operating decisions would theoretically result in the same decisions that would result from a variable cost system (VCS). The differences in TA lie in the fact that direct costing systems generally consider direct labour as a variable cost, while Goldratt realises that direct labour is frequently a fixed

cost; and that in TOC, decisions take a organisation's constraint or constraints into account (Horngren *et al.*, 2000; Atkinson *et al.*, 2007).

2.3.4 Kaizen Costing

Kaizen is Japanese term for making improvements to a process through small incremental amounts, rather through large innovations (Drury, 2004; Horngren *et al.*, 2006). Kaizen costing is widely used by Japanese companies as a mechanism for reducing and managing costs (Yoshikawa *et al.*, 1993; Yoshikawa, 1994). The major difference between Target and Kaizen costing is that Target costing is applied during the design stage whereas Kaizen costing is applied during the manufacturing stage of the product life cycle (Monden and Hamada, 1991). With target costing the focus is on the product, and cost reductions are achieved primarily through product design. In contrast, Kaizen costing focuses on the production processes and cost reductions are derived primarily through the increased efficiency of the production process. Therefore the potential cost reductions are smaller with Kaizen costing because the products are already in the manufacturing stage of their life cycles and a significant proportion of the costs will have become locked-in (Monden and Hamada, 1991; Yoshikawa *et al.*, 1993; Horngren *et al.*, 2006; Atkinson *et al.*, 2007).

The aim of Kaizen costing is to reduce the cost of components and products by a per-specified amount. Monden and Hamada (1991) described the application of Kaizen costing in a Japanese automobile plant. Each plant is assigned a target cost reduction ratio and this is applied to previous year's actual costs to determine the target cost reduction. Kaizen costing relies heavily on employee empowerment. They are assumed to have superior knowledge about how to improve processes and customers and likely to have greater insights into how costs can be reduced. Thus, a major feature of Kaizen costing is that workers are given the responsibility to improve processes and reduce costs. Unlike Target costing it is not accompanied by a set of techniques or procedures that are automatically applied to achieve the cost reductions (Monden and Hamada, 1991; Horngren *et al.*, 2006).

2.4 Activity-Based Costing (ABC)

In a series of articles that were published during 1984-1989 in the Harvard Business Review and the Journal of Cost Management, ABC was introduced by Kaplan (1984b; 1986; 1988) Cooper (1988a; 1988b) and both authors Cooper and Kaplan (1988a, 1988b). These articles played an important role in the diffusion process for ABC. They examined how TCS could distort product costs and how ABC could provide a solution to this problem. Based on observations of innovative management accounting techniques Cooper and Kaplan conceptualised the ideas underpinning these systems and coined the term “ABC”. They generated a considerable amount of publicity and consultants began to market and implement ABC systems before the end of the decade (Cooper, 1990, a, b, c; Cooper and Kaplan, 1990, 1991, 1992).

Cooper and Kaplan (1988a) presented some further important findings about overhead cost structure in some electronics and machinery manufacturing companies. Later, they formulated a radically different approach from the TCS approach (Cooper and Kaplan, 1988b). Both authors claimed that this new approach could be a better way of evaluating, understanding and assigning overhead costs to products much more accurately than had been previously done (Lindahl, 1997; Reyhanoglu, 2004). During 1990 and 1992, Cooper and Kaplan reported further theoretical advances in ABC. ABC ideas have now become firmly embedded in management accounting literature and educational courses (Cooper and Turney, 1990; Bjornenak and Mitchell, 2002; Brewer *et al.*, 2003). The following sections define, describe, and discuss ABC in more detail.

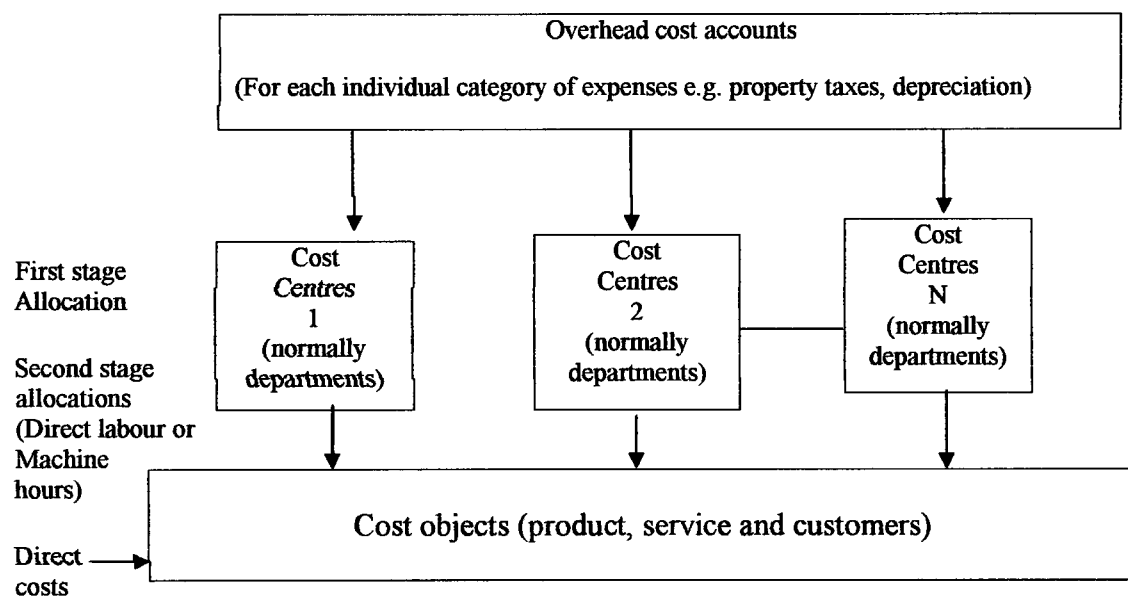
2.4.1 Distinguishing between TCS and ABC Systems

Drury (2004) claimed that both TCS and ABC systems rely on what has become known as the two-stage allocation process. In the first stage TCS assigns indirect costs to cost centres (normally departments), whereas ABC systems assign costs to each major activity centre rather than departments. Hence, the first distinguishing feature between the two systems is that ABC systems assign costs to a greater number of first-stage cost centres (i.e. cost pools) (Homburg, 2001). The second stage allocates costs from the cost centres to cost objects (products/services). TCS allocates indirect costs to cost objects using a small number of allocation bases/cost drivers that tend to vary

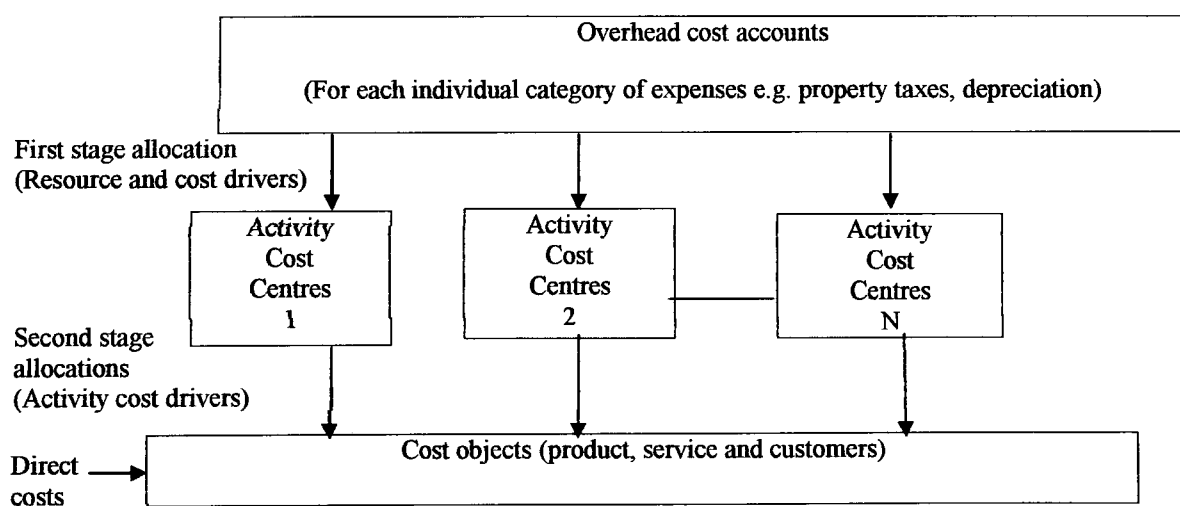
directly with the volume produced. Direct labour hours/cost and machine hours are the allocation bases that are mostly used by TCS. In contrast, ABC systems use many second-stage cost drivers, including drivers that do not vary directly with volume produced. Examples include the number of production runs and the number of purchasing orders for allocating the costs of production scheduling and purchasing to cost objects respectively (Horngren *et al.*, 2003). Figure 2.1 illustrates the major differences between TCS and ABC systems.

Figure 2.1 An illustration of two-stage allocation process for TCS and ABC systems.

a) Traditional costing system (TCS)



b) Activity-based costing system



Source: (Drury, 2004, p. 373)

Innes and Mitchell (1995a) argued that the TCS and the ABC systems have similar frameworks but they have differences in the indirect cost allocations process. Cooper *et al.* (1992a) illustrated that the indirect costs in TCS are allocated to cost pools and, next, the costs in cost pools are allocated to the products or customers by using several bases that are proportional to the volume of product-units produced although many indirect and support resources (such as set-up cost, process engineering cost) are not employed in proportion to the volume of product-units produced. Accordingly, cost in TCS is misrepresented. In contrast, indirect costs in ABC systems are assigned to activities based on the activity's use of resources; cost allocation of each activity into products or customers is based on work volume measures relating to specific product lines, so-called 'cost drivers' (Cooper *et al.*, 1992b; Dierks and Cokins, 2001; Anand, 2004; Reyhanoglu, 2004).

Kaplan (1988) argued that both methods have differences not only in the nature of allocation bases, but also in the number of allocation bases utilised to assign costs in the second stage. TCS employs three common allocation bases, namely: direct labour hours; machine hours; and material dollars, whereas ABC utilises many allocation bases, such as set-up hours; number of times ordered; number of times handled; and other transaction-related bases (Cooper, 1988a). Consequently, product costs of ABC are claimed to have more accuracy than those of TCS (Innes and Mitchell, 1991; Kaplan, 1988). Therefore, another distinguishing feature of ABC systems is that it relies on a greater number of cost centres and different types of second stage cost drivers. By using a greater number of cost centres and cost drivers that are desirably based on cause-and-effect allocations, ABC systems report more accurate product/service costs. TCS are likely to report less accurate costs because, in the first stage, costs are allocated to only a very small number of cost centres (sometimes a single cost centre for the whole business unit) and make extensive use of arbitrary allocations in the second stage of allocating indirect costs to cost objects (Lindahl, 1997).

2.4.2 Description of Designing Activity-Based Costing System

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 (1988, 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 (Troxel and Weber, 1990). 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 (Kevin, 2007). In the second stage, costs that are collected in the cost pool are assigned to products by using cost drivers (Dierks and Cokins, 2001; Kevin, 2007; Gosselin, 2007). 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 and Jackman, 2002).

Drury (2004) identified the following four stages for establishing and operating an ABC system:

1. Identifying the major activities that take place in a company;
2. Assigning costs to cost pools/cost centres for each activity;
3. Determining the cost driver for each major activity; and
4. Assigning the cost of activities to products according to the product's demand for activities.

These stages will be presented to identify the main difficulties encountered during the implementation of ABC. Each of these stages will be described briefly below.



Stage One: Identifying Activities

Drury (2004) stated that activities consist of the aggregation of units of work or tasks. For instance, the purchasing of materials might be identified as a separate activity. This activity involves the aggregation of many different tasks, such as receiving a purchase request, identifying suppliers, preparing the purchase order, mailing purchase orders and performing follow-ups.

Drury (2004) argued that the activities chosen should be at a reasonable level of aggregation based on costs versus benefits criteria. For instance, rather than classifying the purchasing of materials as an activity, each of its constituent tasks could be classified as separate activities. However, this level of decomposition would involve the collection of a vast amount of data and would likely be too costly for product costing purposes. Alternatively, the purchasing activity might be merged with the materials receiving, storage and issuing activities to form single materials procurement and handling activity. This is likely to represent high a level of aggregation because a single cost driver is unlikely to provide a satisfactory determinant of the cost of the activity. For instance, selecting the number of purchase orders as a cost driver may provide a good explanation of purchasing costs but may be entirely inappropriate for explaining costs relating to receiving and issuing. Thus, instead of establishing materials procurement and handling as a single activity, it may be preferable to decompose it into three separate activities; namely, purchasing; receiving and issuing activities; and establishment of separate cost drivers for each activity (Borjesson, 1994).

Kaplan and Cooper (1998) pointed out that some of the early ABC systems defined activities at a very micro level, and in some cases at the individual task level, resulting in hundreds of separate activity cost centres being established. Recent studies suggest that between twenty and thirty activity centres tend to be the norm for product costing purposes. Drury (2004) suggested that the final choice of activities must be a matter of judgement but it is likely to be influenced by factors such as the total cost of the activity centre (it must be of significance to justify separate treatment) and the ability of a single driver to provide a satisfactory determinant of the cost of the activity. Where the latter is not possible, further decomposition of the activity will be necessary.

Stage Two: Assigning Costs to Activity Cost Centres

After the activities have been identified the next stage is to determine how much the company is spending on each activity. Many resources are directly attributable to activity centres but other resources will be shared by several activities. Resource cost drivers, based on cause-and-effect relationships, should be used to assign the joint costs to individual activities or interviews with staff managers who can provide reasonable estimates of resources consumed by different activities.

Stage Three: Determining the Cost Driver for each Major Activity

The aim of this stage is to select cost drivers that link activity costs to the company's cost objects (such as products/services). However, cost drivers at this stage are referred to as activity cost drivers. Drury (2004) claimed that several factors must be taken into account when the company selects an appropriate cost driver. First, it should provide a clear explanation of costs in each activity cost pool. Second, a cost driver should be easily measurable, and third the data should be relatively easy to obtain and be identifiable with products. The costs of measurement should, therefore, be taken into account (Bidanda *et al.*, 2003).

Kaplan and Cooper (1998) identified three types of activity cost drivers, namely: Transaction drivers; Duration drivers; and Intensity drivers. *Transaction drivers*, such as the number of purchase orders processed, number of customer orders processed, number of inspections performed and the number of set-ups undertaken, all count the number of items an activity performs. Transaction drivers are the least expensive type of cost driver but they are also likely to be the least accurate because they assume that the same quantity of resources is required every time an activity is performed. Where the variation in the amount of resources required by individual cost objects is not great, transaction drivers are likely to provide a reasonably accurate measurement of activity resources consumed. If this condition does not apply then duration or intensity cost drivers should be used.

Duration drivers represent the amount of time required to perform an activity. Examples of duration drivers include set-up hours and inspection hours. For instance, simple products may require shorter set-up times, while complex high precision products may require much longer set-up times. Using set-up hours as the cost driver

will more accurately measure activity resource consumption than the transaction driver (number of set-ups) which assumes that an equal amount of activity resources are consumed by both simple and complex products. Using set-up hours in these circumstances as the cost driver will result in the reporting of more accurate product costs, but this will result in higher measurement costs.

Intensity drivers directly charge for the resources used each time an activity is performed. Whereas duration drivers establish an average hourly rate for performing an activity, intensity drivers involve direct charging based on the actual activity resources committed to a product. Intensity drivers are the most accurate activity cost drivers but they are also the most expensive to implement and maintain.

Stage Four: Assigning the Costs of Activities to Products

The final stage of designing ABC involves assigning the costs of activities to products in proportion to their usage of activities, as measured by activity drivers. Therefore, this stage requests computing a predetermined cost driver rate for each activity and multiplying this rate by the products actual usage of the activity cost driver.

2.4.3 Uses of ABC in Manufacturing Companies

Many researchers such as Swenson (1995); Shields (1995); Foster and Swenson (1997); Baird *et al.* (2007); Gosselin (2007), have claimed that ABC can be used in manufacturing companies for different purposes namely, product costing, pricing decisions, customer profitability and budgeting. These purposes will be employed to measure the extent of using ABC within the Jordanian industrial sector. Each of these purposes will be described briefly below.

- Product Costing

Using ABC information for product costing is the most common usage of ABC system and often forms the basis of product pricing and product profitability. This is largely because activity cost analysis is similar to the standard costing technique, and therefore, encourages companies to extend existing cost analysis to review the underlying cost drivers in relation to the basic business processes (Swenson and Barney, 2001; Anand, 2004; Hicks, 2005). This is of particular importance in the manufacturing sector, where the increasingly competitive environment and the degree

of product differentiation necessary to maintain or improve market share require effective information relating to the costs of developing and providing such products and services (Swenson, 1998; Swenson and Barney, 2001; Anand, 2004; Hicks, 2005; Fennema *et al.*, 2005; Reyhanoglu, 2004).

By analysing the activities performed and attributing them to individual products and services, efficiency and effectiveness can be improved through using ABC and efficiency can be improved by eliminating duplication and unnecessary activities, thereby improving work flows and training staff. Effectiveness is dependent on undertaking the right activities efficiently. By attributing costs to the activities, management can prioritise areas where effort should be focused in order to enable working practices to be made both more efficient and effective, where costs could be reduced, and performance improved (Kaplan and Atkinson, 1998; Kaplan and Cooper, 1998).

- Pricing Decisions

Various costing systems are used to produce increased accuracy relating to product costs and pricing. Some experiences reveal that distortion in reported product costs and, in turn, using ABC could reduce product pricing (Gunasekaran and Sarhadi 1998; Swenson and Barney, 2001; Anand, 2004; Reyhanoglu, 2004; Fennema *et al.*, 2005). Innes and Mitchell (1995) argued that the variation found in comparison with conventionally determined unit costs and the systematic cross subsidisation highlighted in several cases adds weight to the significance of in pricing decisions (Hicks, 2005). Moreover, Innes and Mitchell (1991a) also illustrated that ABC provides more relevant product costs leading to:

1. Better product and pricing strategies through more realistic information on product profitability being available
2. Greater understanding of the product line profitability of certain product groups with additional emphasis on management to reduce costs
3. More accurate costs reflecting all overhead costs associated with the product.

- **Customer Profitability Analysis**

Bellis-Jones (1989) claimed that customer profitability analysis involves calculating profit earned from a specific customer. The profit calculation is based on costs and sales that can be traced to a particular customer. According to Khajavi and Nazemi (2006), this technique is sometimes referred to as a customer account. Consequently, the overall profit and loss account can be analysed to produce an individual profit statement for each customer (Bellis-Jones 1989; Cooper and Kaplan, 1991; Dearman and Shields 2001; Khajavi and Nazemi, 2006). Innes and Mitchell (1995a) claimed that this type of analysis has provided a means for reviewing the profile of customer profitability and providing a prompt for strategic decisions on pricing, service, distribution, promotion and policies (Dodd and Lavelle, 2002; Sievanen and Tornberg, 2002; Anand, 2004).

Connolly and Ashworth (1994, p.36) argued that a company's initial interest in customer account profitability is typically triggered by a sudden and pressing concern about the profitability of its major customers. They defined a meaningful profit contribution as:

“The difference between the revenue earned from a customer and all the costs that can be associated with the customer”.

Using ABC for customer profitability analysis is claimed by Connolly and Ashworth (1994, p.37) to give a company:

“an improved understanding of, or new insights into, its sources of profitable business”.

- **Budgeting**

A new approach for building an effective continuing management process is known as Activity-Based Budgeting (ABB) (Stevens, 2004; Kevin, 2007). This approach has been developed from the basic framework of ABC (Brimson, 1991; Brimson and Antos, 1998; Cooper and Slagmulder, 2000a, b; Blekker, 2001; Cokins, 2001; Blekker, 2004; Stevens, 2004; Kevin, 2007).

ABB aims to authorise the supply of only those resources that are needed to perform activities required to meet the budgeted production and sales volume. ABB is the reverse of ABC product costing. With ABC product costing, resources are assigned to activities and activity cost drivers are used to assign activity costs to cost objects (such as products, services or customers). In contrast, with ABB cost objects are the starting point. Their budgeted output determines the necessary activities which are then used to estimate the resources that are required for the budget period (Lukka and Shields, 1999; Brimson and Antos, 1998). ABB involves the following stages:

1. Estimate the production and sales volume by individual products and customers;
2. Estimate the demand for organisational activities;
3. Determine the resources that are required to perform organisational activities;
4. Estimate for each resource the quantity that must be supplied to meet the demand ; and
5. Take action to adjust the capacity of resources to match the projected supply

The first stage is identical to conventional budgeting. In the second stage, ABB estimates the quantity of activity cost drivers required for each activity. Standard cost data incorporating a bill of activities is maintained for each product, indicating the different activities and the quantity of activity drivers that are required to produce a specified number of products (Brimson and Antos, 1998; Cooper and Slagmulder, 2000b). The resources required for performing the quantity of activity drivers demanded are estimated in the third stage. For instance, if the number of customer orders to be processed is estimated to be 20,000, and each order takes 15 minutes processing time, then 5,000 labour hours for customer processing activity must be supplied.

In the fourth stage the estimate of the resources demanded of the third stage is converted into an estimate of the total resources that must be supplied for each type of resource used by an activity. For flexible resources, where the supply can be matched exactly to meet the quantity demanded, the quantity of resources supplied will be identical to the quantity demanded. However, customer processing labour is likely to be a step cost function. Assuming that each person employed is contracted to work 1,500 hours per year, then 3.33 persons ($5.000/1500$) are the quantity of resources

required but, because resources must be acquired in lumpy amounts, four persons must be employed (Brimson and Antos, 1998).

The final stage compares the estimates of the quantity of resources to be supplied for each resource with the quantity of resources that are currently committed. If the estimated supply of a resource exceeds the current capacity, additional spending must be authorised within the budgeting process to acquire the additional resources. Alternatively, if the demand for resources is less than the projected supply, the budgeting process should result in management taking action to either redeploy or reduce those resources that are no longer required (Brimson and Antos, 1998; Cooper and Slagmulder, 2000b).

Brimson and Antos (1998) claimed that the major difference between traditional budgeting and ABB is that ABB focuses on the factors that drive the costs and concentrates on understanding the links between the drivers behind the activities, not just historical expenditure. ABB separates the analysis of cost/benefit and value of activities from more mechanistic budgeting exercises and reduces the complexity of the budgeting process, paying more attention to the management of the business and not simply on costs incurred (Cokins, 2001; Kennedy and Affleck-Graves, 2001; Dodd and Lavelle, 2002; Anand, 2004; Kevin, 2007).

2.5 Criticisms of the Activity-Based Costing Approach

In *Relevance Regained*, Johnson as an originator of the ABC systems claimed that ABC systems are not appropriate for operational control and improvement because they are often top-down systems controlled by central staff rather than by the personnel who actually do the work (Johnson, 1992). In addition, he argued that ABC systems are not customer oriented and are too aggregated to identify internal customers and show how the work of individuals or teams contributes to internal or external customer satisfaction. Johnson (1992, p.118) concluded that:

“ABC greatly improves cost-focused management practices of the past, but it is not a tool for managing competitive operations in a global economy.”

Accordingly, he stated that most managers are seeking an alternative to the traditional systems whether they or not they have ever used ABC.

In addition, Johnson claimed that ABC improves cost information by using activities to allocate costs but does so, without providing information about the way customers are satisfied or the way processes are stable and efficient. He now puts the focus on three features: customers, quality and employees. Johnson (1992, p.28) suggested that:

“What matters in business is to create fulfilling jobs and survive by profitably satisfying customers’ wants (without harming society or the environment)”.

Johnson then pointed out that ‘relevance was not lost by using improper accounting information to manage. It was lost by improperly using accounting information to control business operations’ (Johnson, 1992). The problem is that managers manage results - not processes. It is vital to understand “customer power” and “worker power”. Companies should stop managers and employees from attempting to manipulate processes in order to achieve accounting targets (Johnson, 1992), and managers should understand the differences between managing by remote control and practices that will lead to flexibility and customer satisfaction. He argues that the solution is TQM, which involves teamwork and “empowered” workers. It is also important to change education. ABC now, for Johnson (1992a), is part of the problem, not the solution.

Johnson and Broms (2000, p.151) concluded that:

“With activity-based costing, the profitability of a particular product line is viewed as being the same for all units sold, no matter how many different customers in how many different circumstances bought those units. Similarly, activity-based costing information portrays the profitability of a particular customer’s purchases of the same product with one average number, regardless of how many different times that customer purchased that product during the period.”

Limitations in the ABC systems have been also addressed by the Theory of Constraints (TOC). Campbell *et al*, (1997) claimed that ABC works on the assumption that decisions are made from a long run perspective. Hence, it has been criticised for its inability to support short-term decisions. Kee (1998) argued that a company's resources, such as the rent of factory equipment, may be contracted in advance, or they may be influenced by management policy as in the case of retaining workers in periods of excess labour capacity. Such costs are considered to be committed costs and as such, in the short run, a company will be unable to adjust its expenditures for these types of resources to meet its production needs. Under such circumstances the cost of the resources traced to a product under ABC may not reflect the incremental cost of their production in the short run. He further added ABC systems failure to incorporate constraints into the analysis of a company's products. This is because, ABC considers

the long-term perspective and hence short-term resource constraints are not taken into account. On the other hand, Holmen (1995) pointed out that the use of ABC or TOC depends on time horizon. He added TOC is more appropriate for short term planning and ABC for the long term planning. Ruhl (1997) also suggested that TOC is appropriate depending on the problem management faces. He stated that if the management problem is concerned with variable costs and throughput then TOC is applicable. If it is on overheads then ABC becomes appropriate.

Hirsch and Nibbelin (1992) and Drury (2004) have drawn attention to the possible limitations of ABC systems, particularly in the areas of allocation of common support department costs (e.g. set-up costs). According to them ABC system may use the number of set-ups as a cost driver resulting in products being charged a fixed fee based on the number of set-ups. However, the assumption here is all set-ups take the same time to complete, which may not be true. Nevertheless this problem can be overcome by the use of duration drivers instead of transaction drivers. Transaction-based cost drivers use number of transactions generated by the activity, whereas duration-based cost drivers are concerned with the duration of the said activity. Inevitably the duration-based cost drivers are more time consuming and costly to use as compared to the transaction-based drivers (Atkinson *et al.*, 2007).

Piper and Walley (1991) have criticised the logic of ABC. They claimed that ABC may provide more relevant information than traditional product costing, but question the decision relevant information provided by the ABC as compared to the contribution approach. The ABC approach, they argued, is an absorption costing system and hence suffers from the inherent deficiencies of the absorption costing model and the quality of information provided. Furthermore they also criticised the ABC model as a simplistic model treating the relationship between activity and resource consumption as being linear, absolute and certain. They also stated that ABC systems do not provide decision relevant information because they only consider relating activities to products and do not consider other complex situations such as the changing environment and the need to be concerned with actions that add value.

Kaplan (1992) argued that ABC is not magic, but only one of many information systems to help managers. However, he maintained that this system has several advantages. Firstly, it can be part of the improvement process. It gives a cost/benefit analysis, when it is necessary to achieve quality or other improvements. Secondly, it can be linked to performance measurement. After having identified the process drivers for a critical activity, it is possible to put measures in place to improve those process drivers in terms of efficiency. In addition, it can help understand operating cost consequences and improve supplier relationships. For Kaplan, it is vital to distinguish between low price and low-cost suppliers. The cost of receiving, inspecting, storing and moving the materials should be linked with the supplier price. Finally, ABC can help identify the segments and customers that can be satisfied profitably. Kaplan claims that attempting to meet all customer needs, without taking into consideration economic consequences, brings problems to companies.

2.6 Summary

Because of the limitations of TCS highlighted by *Relevance Lost* authored by Johnson and Kaplan, there has been an increasing emphasis on the need for contemporary accounting systems to be developed to provide information relevant to current organisational operating environments. Thus, this chapter described these contemporary accounting systems. This discussion was provided to contextualise the focus on ABC within this study, which is widely regarded to be the most influential and widely adopted such contemporary cost accounting systems. This chapter also provided a summary of ABC literature as well as the developments that have occurred from its inception in the late 1980s to the current time. In particular, the technical and theoretical aspects of ABC were described and a range of ABC applications were examined such as product costing and pricing decisions, customer profitability, and budget. Finally, the major limitations of ABC were presented.

CHAPTER THREE

DIFFUSION OF INNOVATION AND FRAMEWORK OF MANAGEMENT ACCOUNTING CHANGE

3.1 Introduction

The previous chapter provided a summary of ABC literature and the developments that have occurred from its inception in the late 1980s to the current time. In particular, the technical and theoretical aspects of ABC have been explained and a range of ABC applications described. Therefore, the previous chapter provided the foundations for examining the factors that influence companies to implement or reject the ABC system. It is apparent from the content of the previous two chapters that ABC represents a major innovation in the Jordanian industrial sector. To understand why and how innovations diffuse across companies, it is necessary to examine the diffusion process within a broader context. In order to meet this requirement, the diffusion on innovation literature will be presented in this chapter.

Several studies have suggested that there is a relationship between diffusion of innovations and change of management accounting systems. For instance, Wejnert (2002) and Askarany (2006) claimed that innovation is always a change process, but change processes are not always innovative. Consequently, the term 'innovation' has become almost synonymous with the process of change. However, for any change process to occur, there needs to be some understanding about what is required to achieve the change, and there needs to be a motivating force to implement the change. Accordingly, this chapter also highlights the previous literature in the field of management accounting change that attempted to formulate the framework of management accounting change (Innes and Mitchell, 1990; Cobb *et al.*, 1995; Kasurinen, 2002). It should be noted that the framework of management accounting change will be evaluated in this section to facilitate the development of a research model in the current study.

3.2 Definitions of Innovation

Rogers (2003, p.11) suggested that if the individual has no perceived knowledge about an idea and sees it as new, it is an innovation. He interpreted innovation as:

“an idea, practice or object that is perceived as new by an individual or other unit of adoption”.

Similarly, Damanpour and Gopalakrishnan (1998, p. 2) defined innovation as:

“the adoption of an idea or behaviour new to the organisation”.

Rogers (1995, 2003) claimed that the most common criterion in any definition of innovation is its newness. He stated that newness in an innovation can be judged not only in terms of new knowledge, but also from the point of view of first persuasion, or the influence or a decision to adopt (Damanpour, 1992; Bjornenak and Ax, 2005; Damanpour and Schneider, 2006; Cooper and Crowther, 2008). Accordingly, innovation can be related to new technological changes and products and new administrative techniques and services (Ehigie and McAndrew, 2005; Askarany *et al.*, 2007).

Damanpour (1991) pointed out that the term ‘innovation’ may be viewed as the adoption of an idea which relates to a system, programme, policy, process, plan or service that are new to the company at the time of adoption (Damanpour, 1992; Bjornenak and Ax, 2005; Damanpour and Schneider, 2006). It can therefore be concluded that innovation may be viewed as a process to create new ideas or renew ideas which already exist (Rogers, 1995, 2003; Askarany, 2006; Askarany *et al.*, 2007).

The element of ‘perceived as new’ is the distinguishing feature between an innovation and the related concept change. Zaltman *et al.* (1973, p. 12) maintained that:

“although {all} innovations imply change, not all change involves innovations since not everything an organisation adopts is perceived as new”.

Likewise, Bjornenak (1997) claimed that social and economic change is often the direct consequence of the diffusion of new concepts. Thus, understanding diffusion is a key to understanding change and one possible way to assess change (Sangster, 1996; Askarany *et al.*, 2007).

3.2.1 The Diffusion of Innovation

The working definition of diffusion of innovation in the current study is the adoption and implementation of new ideas, systems and the particular emphasis is diffusion of innovation within and across companies (Damanpour, 1992; Jennifer, 2003; Damanpour and Schneider, 2006; Cooper and Crowther, 2008). With this view and emphasis Rogers (2003, p. 11) identified the diffusion of innovation as:

“the process by which an innovation is communicated through certain channels over time among the members of a social system”.

According to Rogers (2003) adoption is a decision to make full use of an innovation as the best course of action available; whereas rejection is a decision not to adopt the innovation.

He further distinguished between the adoption process and the diffusion process where the adoption process pertains to an individual, and the diffusion process occurs within a society, as a group process. Rogers (2003, p. 99) defined the innovation adoption process as:

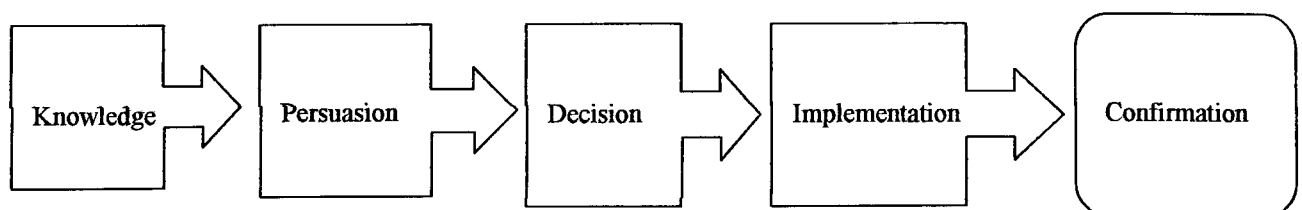
“the mental process through which an individual passes from first knowledge of an innovation to a decision to adopt or reject and to confirmation of this decision”.

Rogers (2003, p.150) also defined the diffusion process as:

“the spread of a new idea from its source invention or creation to its ultimate users or adopters”.

Additionally, Rogers (2003) breaks the adoption process down into five stages. Figure 3.1 shows the five stages of the innovation process. The innovation-decision stage is a process whereby an adopter (individual or organisation) 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.

Figure 3.1 Rogers adoption process stages



Source: (Rogers, 2003, p. 170)

The five stages are;

The **Knowledge stage**: here adopters become aware of an innovation through the different sources available in the social system; the **persuasion stage**: the adopters become interested in the innovation and develop a mental acceptance, or make a decision to reject the innovation; the **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; the **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; and the **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 industrial sector, 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 (Khasharmeh, 2002; Al-Khadash and Feridun, 2006) 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 industrial sector.

3.2.2 Innovation Diffusion Theory

The literature on diffusion of innovations extends over many decades and is widely dispersed over a variety of different areas (Lundblad, 2003; Rogers, 2003; Claiborne, 2008). The diffusion of innovation as proposed by Rogers (1995) has been widely tested and adapted in the management accounting field (Gosselin, 2007). It has been studied across many disciplines at individual, organisational as well as societal levels (Wolfe, 1994). Researchers have attempted to answer questions about the pattern of adoption (Abrahamson, 1991) and the characteristics of early and late adopters (Rogers, 1995). In addition, they have also considered the characteristics that differentiate between those innovations that are widely adopted and those that are not widely adopted (Rogers, 1995; 2003).

Several reviews of the research literature on organisational innovation have identified stream of research that addresses different research questions, units of analysis and dependent variables. For instance, Wolfe (1994) reviewed the organisational innovation literature and concluded that the literature of organisational innovation is composed of three discernible streams which developed somewhat sequentially. These three streams are concerned with the general phenomenon of organisational innovation. Each stream has a different focus as they address different questions, different units of analysis and diverse dependent factors. The three research approaches and their corresponding questions and research aims are presented in Table 3.1 and are followed by a review of each approach.

Table 3.1 The three research approaches on innovation research

Research approach	Research question	Research aim
Diffusion of innovation research	What is the pattern of diffusion of an innovation through a population of potential adopter organisations?	Addresses the diffusion of an innovation over time and/or space
Organisational innovativeness research	What determines organisational innovativeness?	Addresses the determinants of the innovativeness of organisations
Process theory research	What are the processes organisations go through in implementing innovations?	Addresses the process of innovation within organisations

Source: (Wolfe, 1994, p. 407)

The diffusion of innovation research refers to its spread through a population of optional adopters. The unit of analysis is therefore the innovation. The objective of the diffusion of innovation research is to address, explain or predict rates and patterns of innovation adoption over time and/or space, the research question being to establish what exactly the pattern of diffusion through a population of potential adopter companies is. The outcomes of the diffusion of innovation research include the following.

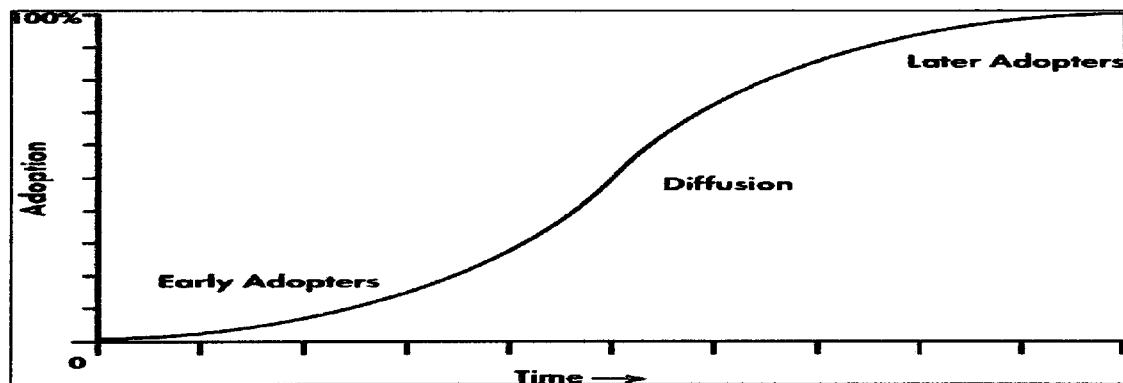
Firstly, the identification of innovation attributes which supposedly influence innovation. Rogers (1995, p. 16) presented five aspects of an innovation which affect its rate of diffusion in the population for which it is relevant. He argued that:

“...innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations”.

Secondly, adopters are classified presumed to have different characteristics and tendencies to adopt such as: innovators, early adopters, the early majority, the late majority, and laggards (Rogers, 2003; Cooper and Crowther, 2008).

The diffusion of innovation research typically involves using empirical data to fit a mathematical model of the diffusion process over time and using various explanatory factors. Cumulative adoption over time has often been depicted by an S-shaped curve (Abrahamson 1991; Wolfe 1994; Lundblad, 2003). The number of adopters increases slowly as first, due to uncertainty about the innovation. This is followed by a step “take off”, which has been attributed to a substantial drop in the price of the new technology, causing a surge in demand (Attewell, 1992). A contagion effect takes hold and the number of adopters increases rapidly, resulting in a relatively steep curve. In the final stage the market for the innovation saturates, the number of new adopters tapers off and the curve flattens, this being representative of the upper plateau on the “S” as shown in Figure 3.2.

Figure 3.2 S-Curve of Innovation Diffusion



Source: (adopted from Bjornenak, 1997, 6)

Diffusion of innovation research focuses on innovation at the aggregate level, but it offers no transparency on an individual company's adoption decision and, hence, fails to provide a behavioural explanation of why some companies are faster to adopt than others (Malmi, 1999).

Organisational innovation studies have attempted to discover the determinants of an organisation's innovativeness, and early adopters have been contrasted with late adopters to generate a list of factors relating to early adoption. Most studies have relied on a variance research model (Wolfe, 1994) such as the regression model and survey data collection. Organisation size, profitability of an innovation, innovation champions inside the organisation, production type, degree of centralisation, organisational slack, proportion of specialists and intensity of competition have all been linked to innovation adoption (Malmi, 1999). Rogers (1995) argued that although organisational innovation studies provide some indication of which companies might first adopt innovation, researchers have seldom addressed the aggregate diffusion among companies based on the knowledge of organisational innovativeness. In other words, organisational innovation studies have been of limited help when trying to explain the reasons for most innovations following the S-shape pattern.

The process theory of organisational innovation research investigates the nature of the innovation process. Here the research question is: 'What processes do companies go through when implementing innovations to determine organisational innovation?' The focus is on how and why innovations emerge, develop, grow and possibly terminate, and the unit of analysis of process theory research is the innovation process itself (Rogers, 2003).

Wolfe (1994) identified two generations of process theory research. The first generation is called "stage model research" and conceptualises innovation as a series of stages that unfold over time. The purpose is to determine whether the innovation process involves identifiable stages and, if so, what they are and what their sequence is. The second generation is simply called "process research". This involves in-depth, longitudinal, research that is conducted to fully describe the sequences of, and the conditions that determine, innovation processes. This research often involves theory building and qualitative data collection.

To obtain a greater insight about the innovation adoption process several studies have sought to understand the stages of the adoption and implementation process. To this end, Cooper and Zmud (1990) used a stage model to describe the specific case of IT adoption and implementation and they identified the stages for the implementation of IT innovation as: Initiation; Adoption; Adaptation; Acceptance; Routinisation; and

Infusion. The stage model developed by Cooper and Zmud was adapted by Anderson (1995) Krumwiede (1998) and Brown *et al.* (2004) to examine the adoption and implementation of ABC systems. However, these models will be discussed in more detail in the next chapter.

Wolfe (1994) concluded that the diffusion of innovation research provides an understanding of how and why an innovation diffuses over time. In contrast, organisational innovativeness contributes to identifying the differentiating characteristics that distinguish between early and late adopters, while process theory research helps to discern the stages and processes involved in organisational innovation. According to Wolfe (1994) and Rogers (2003), however, both diffusion of innovation research and organisational innovation research have been criticised because they place too much emphasis on the demand side and not enough on the supply-side aspects of diffusion.

3.2.3 Alternative Explanations of Innovation Diffusion Theory

March (1978) argued that the efficient-choice perspective is based on two major assumptions. Firstly, organisations within a group can freely and independently choose to adopt an administrative technology. Secondly, organisations are relatively certain about their goals and their assessment of how efficient technologies will be in attaining these goals. As a result, organisational choices can be rational and lead to the selection and retention of technically efficient administrative technologies.

Rogers (2003) suggested that the dominant perspective in the diffusion of innovation literature reinforces pro-innovation biases because it relies on a model of choice whereby adopters make independent, rational choices guided by the goals of technical efficiency. In other words, the general assumption in innovation diffusion literature is that adopters of an innovation are rational and make independent, technically efficient choices (Gosselin 2007). 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 (Rogers, 2003; Gosselin, 2007).

Abrahamson, (1991) argued that the dominant perspective in the diffusion of innovation literature contains pro-innovation biases, which he defined as the presumptions that innovations will benefit companies. These biases suggest an obvious answer to the question of whether innovations diffuse or disappear. They appear to diffuse when they benefit the companies adopting them and they disappear when this is not the case. Abrahamson concluded, therefore, that it makes little sense to ask what processes drive or counter the diffusion of innovations when these processes take hold or to what extent these processes cause the diffusion or rejection of innovations. Moreover, it makes even less sense to ask whether certain processes diffuse non-beneficial innovations or cause the rejection of beneficial ones.

Abrahamson (1991) developed counter-arguments for each of the two assumptions made by March (1978). To counter the first assumption made by March (1978), Abrahamson argued that if companies outside the group, such as regulatory bodies or consulting companies, influence choices made by companies within this group, then they can determine the diffusion of administrative technologies that are technically inefficient for companies within the group. A similar rationale can be used to reject efficient technologies when it is in the outside companies' interest to do so.

To counter the second assumption made by March (1978), Abrahamson suggested that companies have unclear goals and a high degree of uncertainty about the technical efficiency of administrative technologies. Consequently, they cannot rationally choose technically efficient administrative technologies because they would not be able to assess technical efficiency. Moreover, because they lack clear goals they cannot decide which type of technical efficiency matters to attain organisational goals. On the basis of these counter-assumptions, Abrahamson concluded that companies imitate other companies; they base their decisions about which administrative technology to use on the decisions of other companies (Dimaggio and Powell 1983; Cooper and Crowther, 2008).

Abrahamson identified four perspectives to indicate when companies will imitate the decisions of other companies to accept technically inefficient administrative technologies or imitate other companies' decisions to reject technically efficient technologies. These four perspectives are: efficient-choice; forced-selection; fashion, and fad, as shown in Figure 3.3.

Figure 3.3 Abrahamson's four perspectives

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

Source: (Abrahamson, 1991, p. 591)

The first and most prevalent motive in the early diffusion literature is described as an "efficient choice" perspective. This perspective is based on the assumption that little uncertainty exists in relation to the goals of an organisation or the measurement of the technical efficiency of an innovation. In these circumstances companies will rationally choose the innovation that will allow them to attain their goals.

Theories attributing innovation diffusion to the efficient choice perspective build on the idea of performance gaps. The discrepancies between a company's goals and what it can attain (Abrahamson, 1991). Environmental changes create similar performance gaps across a company and companies with similar goals tend to react to the performance gaps by adopting the same efficient administrative technology. Conversely, companies that do not experience these gaps, or have different purposes, will not adopt these technologies. Innovations are diffused when they help to reduce the performance gaps created by environmental change (Malmi, 1999; Cooper and Crowther, 2008), or when they help to fulfil management's needs. According to

theories based on the efficient-choice perspective, companies determine the diffusion and rejection of innovations themselves and, hence, their behaviour is not imitative.

In Abrahamson's concept, the second explanation for the diffusion processes is "forced selection". According to this perspective, a number of companies have sufficient power to dictate which administrative technologies will diffuse across companies. These powerful companies may have an interest in forcing technically inefficient administrative technology to diffuse or efficient technology to be rejected, despite the resistance of companies in adopting or rejecting this technology (Cooper and Crowther, 2008). Theorists building on the forced-selection perspective have argued that the legitimate power of government bodies allows them to force the diffusion of innovations. Examples of this include accountancy professional bodies setting the standards on how product costs should be calculated for inventory valuation and income measurement or government defence departments specifying the methods that should be used to determine product costs for pricing purposes. Malmi (1999) concluded that forced selection assumes that adopting companies face a situation of no choice and their motives are not significant when explaining the diffusion and rejection of innovations.

A third way by which the diffusion of innovations can occur is through the imitation of companies outside their own social group. Abrahamson calls this type of diffusion the 'fashion' perspective. This perspective assumes that companies will tend to imitate other companies because of conditions of uncertainty relating to goals and the technical efficiency of innovations (Clark, 2004). According to such perspectives, company decisions are more concerned with which companies they should imitate rather than which technology they should adopt. The fashion perspective assumes that, under conditions of uncertainty, companies in a group imitate administrative technologies promoted by 'fashion-setting' companies outside the group, such as consulting companies, business schools and business mass media (for example, the publications of popular business books) (Benders and Van Veen, 2001). The administrative technologies promoted by fashion-setting companies may or may not be efficient. Therefore, they may promote the diffusion of efficient technologies and the rejection of inefficient ones. Alternatively, they may select only those that they believe they can market profitably, regardless of how technically efficient they can be in companies.

Similarly, the “fad” perspective assumes that diffusion of innovation occurs when companies within a group imitate other companies within that group, whereas the fashion perspective assumes that companies imitate other companies that reside outside the group. Companies imitate other companies either in order to appear legitimate by conforming to emergent norms (DiMaggio and Powell, 1983) or to avoid the risk that competitors will gain a competitive advantage by using the innovation (Abrahamson and Rosenkopf, 1993; Clark, 2004; Ehigie and McAndrew, 2005; Cooper and Crowther, 2008).

Fad theories suggest that companies implement innovations because other companies have implemented them rather than on the basis of an evaluation of the innovation’s efficiency (Spell, 1999; Williams, 2004). Institutional bandwagon pressures and competitive bandwagon pressures may cause this behaviour (Gosselin, 2007). Institutional bandwagon pressures may occur when non-adopters fear that they will appear abnormal and then lose legitimacy with their stakeholder (Staw and Epstein, 2000). This threat would lead them to implement an innovation even though they have not assessed its efficiency.

Competitive bandwagon pressures arise from the menace of lost competitive advantage. Risk adverse managers would prefer to implement an innovation, even though it was not well appraised, to avoid optional losses of competitive advantage. The threat of a lost competitive advantage would outweigh the benefits of an equally competitive advantage in managers’ utility schema. Implementing an innovation similar to the competitors would prevent managers from being perceived as incompetent. If the returns were high, they would appear as good managers. If the returns were low, they would be perceived as no worse than other managers in the industry. Bandwagon pressures may affect the diffusion process for ABC in two distinct ways (Staw and Epstein, 2000). On one hand, institutional pressures, such as those created by consultants and professional accounting associations, may force managers to adopt and implement ABC. Furthermore, because of the high level of ambiguity surrounding the technical efficiency and returns of ABC, companies and strategic business units within an industry in which a large number of companies adopted ABC may feel more pressure, from competitors to adopt and implement ABC. On the other hand, these competitive pressures may cause counter-bandwagon effects,

since managers within an industry may not feel the pressure to implement ABC if competitors tend to reject ABC.

Malmi (1999) investigated the extent to which the diffusion of ABC in Finnish companies could be explained in terms of the four perspectives identified by Abrahamson (1991) the efficient-choice; forced selection; fashion; and fad perspectives. Malmi examined the rate of ABC adoption during the period 1986-1995 and identified three stages according to the diffusion curve, namely the initial stage (1986-1990), the take-off stage (1991-1992) and a later stage representing the period after 1992. A postal questionnaire survey was used and the respondents were asked to indicate the extent to which nine motives influenced the decision to implement ABC. These nine motives included six efficient-choice motives, one forced selection motive and two fashion and fad motives.

Malmi pointed out that in the initial stage the motives within the efficient-choice category were the most frequently cited. He also examined the supply side, and the results showed that consultants played almost no role in the initial stage. ABC was not taught at that time in Finland and no courses or seminars on ABC were available. Moreover, there was no suitable software for ABC, no local companies to imitate and a lack of awareness about ABC being used in overseas companies. Consequently, the fashion or fad perspectives did not explain this adoption behaviour at that stage. Malmi reported that the efficient-choice perspective also had the strongest explanatory power in explaining adoption behaviour in companies in the initial stage of innovation diffusion of ABC. In addition, he concluded that the driving force for innovation diffusion during this stage was inside the group of adopting companies.

In the take-off period stage, some respondents referred to the fashion-related motives, although the 'rational' motive still dominated throughout the entire period. From the point of view of the supply side, interviews with the respondents suggested that some of the adoption decisions were influenced by consultants. Malmi further reported an increase in the number of articles in 1990 when ABC took off in Finland. Little evidence was found, however, to support either the forced selection or fad perspectives. Malmi concluded that the efficient choice and fashion perspectives both explained the adoption behaviour during the take-off stage of innovation diffusion for

ABC and confirmed that the driving force for innovation diffusion during this stage came from outside the group of adopting companies.

For the subsequent stage, beyond take-off (1993-1995), a number of respondents cited a suggestion from headquarters as their motive for adoption. In addition, at this time there were sub-units of Finnish-based multinationals where ABC had been applied earlier in other sections. Therefore, it appears that learning in one unit leads to its wider applications in other sub-units in some companies, suggesting that decisions to apply ABC further are more a result of efficient-choice than imitation. Another feature of this stage was that in 1993 and 1994, the first PC applications appeared; the existence of suitable software for PC use was given as one of the reasons for the timing of ABC adoption. It appeared that some companies had considered ABC and realised its potential for data collection and processing. Adoption as a consequence of the lower cost of implementation suggests that this decision falls within the efficient-choice category.

In summary, the results of the Malmi (1999) study showed that 'efficient choice' motives in the initial stage of innovation adoption were followed by 'efficient choice' and 'fashion' related motivations in the following take-off phase. Finally, Malmi (1999) found that 'efficient choice' and 'fad' perspectives were most common in the phases after the take-off phase.

3.2.4 The Supply Side of the Diffusion Process

The discussion so far within this section has concentrated only on the demand-side of the diffusion process. However, the diffusion process is also dependent on the supply-side considerations (Oliver, 1991; Scott, 1995; Bjornenak, 1997; Gosselin, 2007; Cooper and Crowther, 2008).

Bjornenak (1997) investigated the diffusion of ABC based on a questionnaire survey of 75 of the largest manufacturing companies in Norway, distinguishing between the supply-side and the demand-side. While the former relates to the organisational environment with its various influences, such as consultancy and the mass media, the latter aims to link specific properties of the innovation with the characteristics of the potential adopters. According to Bjornenak, the most influential factors on the demand-side concerned the nature of the phenomenon being diffused. In the case of

ABC diffusion, he identified cost structure, existing costing systems, product diversity and competition as the essential factors. On the supply-side, the majority of the adopters of ABC received assistance from consultants indicating that they played an essential role in these diffusion processes. Similarly, company size was identified as a relevant factor, since larger companies proved to have a larger network of communication channels and infrastructures to adopt the accounting innovation. Courses and availability of internal change agents seemed to provide for the most effective communication channels.

Bjornenak, (1997) pointed out that most adopters require persuasion to accept an innovation, in the form of awareness and demonstration. For instance, the first set of adopters or consultants may take on the active role of drivers of the diffusion process. Bjornenak also drew attention to the importance of the infrastructure in the diffusion of an accounting innovation. Media, such as articles, books, seminars and conferences, may be used to inform and convince potential adopters. Similarly, Abrahamson (1996) suggested that the impact of management fashions on the innovation adoption decision could be studied by comparing the temporal frequency of articles on innovation in the mass media with the innovation diffusion curve. A theoretical relationship requires that an increase in the number of publications should precede and accompany the take-off of an innovation.

Clarke *et al.* (1999) studied the state of management accounting practices in Ireland. The data was 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 marginalised". 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 demand changes in the education of accountants and managers. Also, the results indicate that ABC was not well understood by Irish management accountants.

Abrahamson (1991, 1996) claimed that the imitation process was derived primarily from Professionalism. There are two important sources of imitation in Professionalism: one from formal education and legitimation provided by university specialists. They are the main forces for the development of organisational norms among professional managers and qualified staff. The second source is from professional networks that diffuse new models rapidly. The filtering of personnel is another important mechanism for encouraging imitation among companies. Companies can enhance their professionals in special ways, such as through the employment of individuals from companies within the same industry or through the hiring of top executives from financial or legal departments.

In Jordan, although the increasing importance of accounting means that more universities in Jordan offer Bachelor and Master degrees in accounting, the nature of these courses mainly produces students who are well aware of accounting theories but lack practical skills such as management accounting initiatives, computer components and other languages (Arafat, 2002). Most accounting courses and textbooks that are taught in universities are in Arabic. Furthermore, there is a considerable gap between the academic and the professional community of accountants in Jordan. This is proven by the lack of journals, lectures, seminars, research, and cooperation between the two parties. There are no PhD courses being offered in accounting at any of the public universities in Jordan. Furthermore, according to a study by the Committee on Accounting in Developing Countries (Hutaibat, 2005), one of the most prominent problems facing accounting practices in developing countries, such as Jordan, is the lack of strong national associations of accountants. Such an association is vital to influence the development of accounting practices in the country. The role and importance of such accounting bodies is very clear in other countries, such as the USA and the UK. For example, the Chartered Institute of Management Accountants (CIMA) contributed, supported, and sponsored many studies in management accounting both inside and outside the UK. Unfortunately, there is no professional management accounting body in Jordan.

In summary, Abrahamson's four perspectives appear to be particularly associated with, and relevant to, current study, since they afford a wider perspective as to why innovations may be implemented by Jordanian industrial companies. In addition, Abrahamson's four perspectives overcome the pro-innovation bias mentioned earlier as he considers the supply-side and its role in the innovation adoption process. Therefore, the current study will adopt Abrahamson's four perspectives to explain the importance of the specific perspective (efficient-choice, forced-selection, fashion, and fad) in implementing the ABC systems within the Jordanian industrial sector. This is in response to Gosselin's (2007, p.665) suggestion that:

“there has not yet been enough empirical research on fads and fashions in management accounting that would allow for better understanding the diffusion process of management accounting innovations from a fads and fashions perspective”.

And,

“Future studies should focus on the influence of supply side relating to the diffusion of more sophisticated costing systems to ascertain whether the lack of skilled management accountants is a factor that inhibits the implementation of more sophisticated systems”.

3.3 A Framework for Studying Management Accounting Change

The literature of management accounting change is mainly dominated by the two different perspectives of contingency and institutional theory. However, both have different perspectives on studying management accounting change (Burns and Vaivio, 2001).

From the institutional perspective, the theory pays much more attention to the micro-organisation than to the macro-environment factors. In other words, it considers the environment inside the company as the key player generating change, while the external environment has no direct relationship with management accounting and its role is limited to initiating the need for the change (Burns *et al.* 1999; Burns, 2000). The main feature of institutional theory is its ability to answer the questions pertaining to why and how change has occurred. However, conducting institutional research requires a comprehensive awareness of the interrelationships between the change actors inside the organisation (Burns and Vaivio, 2001). This might be the reason behind the use of the longitudinal case-study method based on periods of at least two years associated with this theory and the unavailability of evidence of using a large-

scale questionnaire survey method (Burns *et al.* 1999; Burns, 2000). Accordingly, institutional theory is not appropriate in the current study for the following reasons.

1. Previous studies adopting institutional theory have often tended to focus their analysis on change within companies rather than examining how a particular management accounting innovation diffuses at a broad macro, sector, and typically national level.
2. As mentioned above, institutional theory focuses on the inter-organisation relationships (demand-side factors) as the main drivers of management accounting change, with little attention given to the external factors (supply-side factors).

From the contingency perspective, the theory is based on the principle that there is no single management accounting system that is applicable in all circumstances, but the effectiveness of the system is dependent on the conditions surrounding organisations (Otley, 1980; Fisher, 1995). The perspective examines the static relationship between management accounting and the environment. In other words, it attempts to answer the question pertaining to why the change has occurred and ignores the process of change or "how the change has occurred" (Gerdin and Greve, 2004).

The contingency theory pays equal attention to both the external and internal environmental factors as origins of management accounting change (Fisher, 1995; Collier, 2001; Haidma and Laats, 2002; Chenhall, 2003). In addition, its basic consideration of the relationship between the business environment and management accounting and methodological flexibility (which can be conducted with a single or multiple case-study method as well as a large scale questionnaire survey) have made the contingency theory the most dominant approach to studying management accounting change (Krumwiede, 1998). Nevertheless, several researchers (Covaleski *et al.* 1996; Reid and Smith, 2000) have criticised the contingency theory for the following reasons: (1) the theory presents only a static comparative analysis of the management accounting system and does not illustrate the process of change and how the management accounting system has arrived at its existing shape; (2) there is no

agreement about the set of contingent variables affecting companies and many of these variables are not clearly defined; and (3) the relationship between the management accounting system and some contingent variables is not specified as to whether it is direct or through other mediating variables.

In order to overcome some of the limitations associated with the contingency theory, Innes and Mitchell (1990) developed a framework categorising the change origins into three groups according to their relationships with the process of management accounting change (Cobb *et al.* 1995; Kasurinen, 2002). These groups are the motivators, catalysts and facilitators, which have to combine together to produce the desired change.

It is also worth mentioning that Innes and Mitchell's (1990) framework is based on the contingency perspective of management accounting change. Nevertheless, the framework takes into account the impact of environmental factors on management accounting systems. However, instead of categorising these factors into internal and external, it groups them into facilitators, motivators and catalysts. Another feature of Innes and Mitchell's (1990) framework is that it concentrates on both the reason for and the process of change. In other words, it answers the question pertaining to why as well as how management accounting systems change (Cooper and Crowther, 2008).

3.3.1 Catalysts, Motivators and Facilitators of Management Accounting Change

Innes and Mitchell (1990) developed a framework to explore the process of change in management accounting in seven electronic enterprises. Innes and Mitchell (1990) conclude that the change has taken place in the analysed companies as a result of a combination of three types of factors, classified as motivators, catalysts and facilitators. Based on Innes and Mitchell (1990), the above mentioned groups can be defined as follows: in the first group, catalysts are factors directly associated with the change, the occurrence of which corresponds closely to the timing of change, such as the loss of market share, the launch of competing products, poor financial performance, and other organisational changes. The second group, the facilitators, provide managers with the necessary favourable conditions but these are not enough for a management accounting change by themselves. Examples of facilitators include

the authority of accountants, a degree of autonomy from the parent company, computing resources, and accounting staff. Finally, the motivator group contains factors that influence management accounting change in a general manner. Examples of motivators are the production cost structure, production technology, competitive market conditions, and organisational structure (see Table 3-2).

Table 3.2 Innes and Mitchell factors that impact on management account change

Authors	Catalysts	Motivators	Facilitators
Innes and Mitchell (1990)	Loss of market share Poor financial performance New accountants Organisational change	Competitiveness Production technology Organisational structure Product cost structure Short product life cycle	Accounting staff resources Authority of accountants Accounting computing resources

Source: (Innes and Mitchell, 1990, p. 14)

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.

3.3.2 Catalysts, Motivators, Facilitators and Barriers to Management Accounting Change

Whilst the research of Innes and Mitchell (1990) drew on comparative case studies, their framework was further developed by Cobb *et al.* (1995); this was an in-depth, longitudinal study of the changes in a bank's management accounting system. Several of the changes initiated, such as the implementation of ABC, largely failed or encountered severe implementation problems. Such barriers to change were mainly of internal origin. Examples of this included the changing priorities during the change process, accounting staff turnover and resistant attitudes to change. Cobb *et al.* (1995) also focused on the pivotal role of certain key individuals, or change agents, in overcoming such barriers and reinforcing the momentum for change over a period of

time. This resulted in a more refined model where motivators, catalysts and facilitating factors (seen as creating the potential for change) were supplemented by *leaders*, *barriers to change* and the *momentum for change*. The interplay between these factors was considered to have an important influence in terms of whether or not change initiatives materialised.

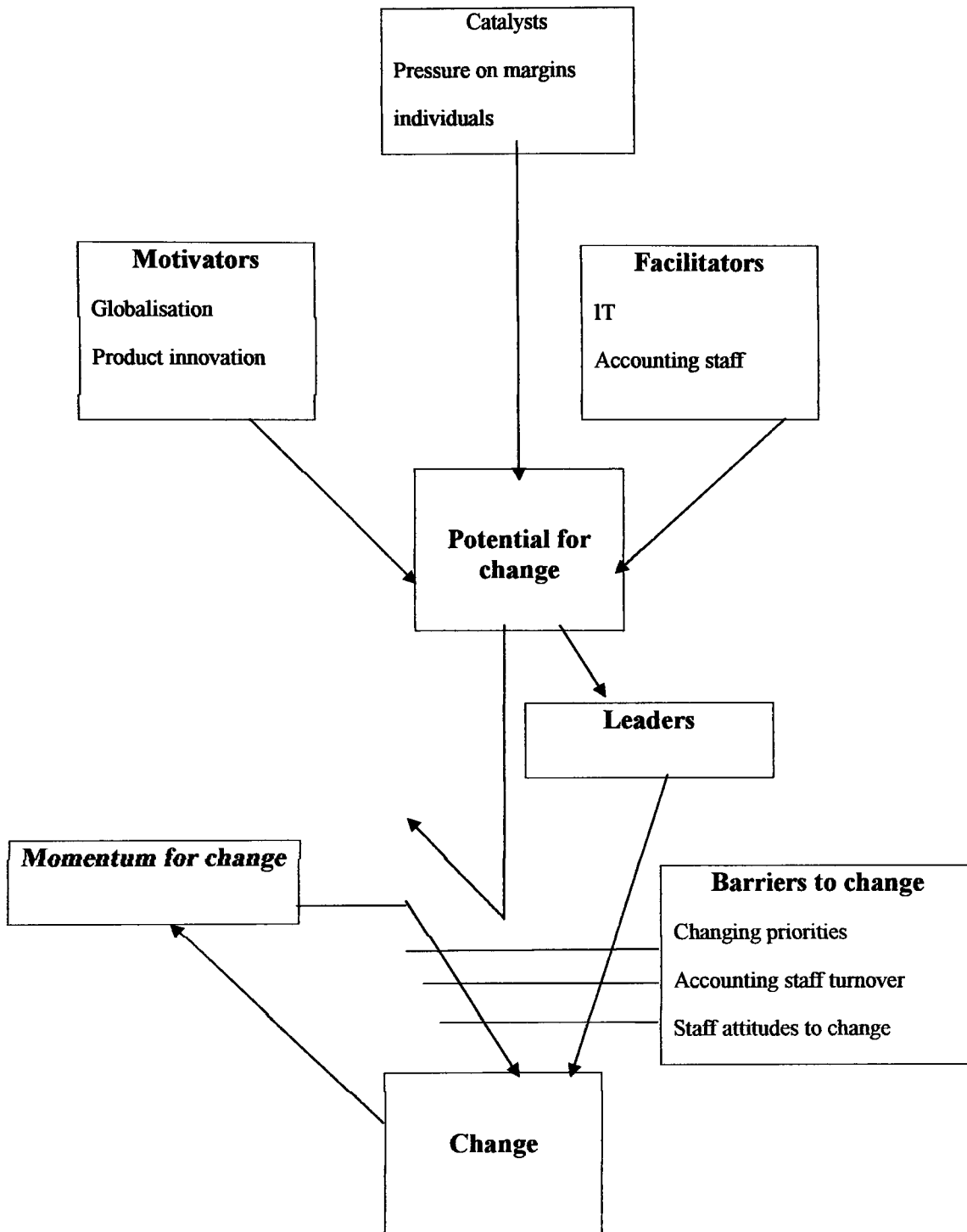
Cobb *et al.* (1995) criticised Innes and Mitchell's framework for not including barriers to change and focusing too much on change elements outside the organisational sphere. Because of this, the change process occurring within the organisation as well as the influence of individuals in this process would be neglected. Thus, in an effort to overcome these drawbacks, Cobb *et al.* developed a model of organisational change that considered the barriers as well as the facilitating factors as developed by Innes and Mitchell and shown in Figure 3.4. Significantly, they stressed the particular significance of individuals in the change process:

**“Motivators, catalysts and facilitators may be necessary to create a potential for change but action by individuals is needed to overcome the barriers to change”
(Cobb *et al.*, 1995, p, 173).**

According to Cobb *et al.* (1995), individuals are needed who act as catalysts, initiating the change process. Likewise, leaders in their role of encouraging people and instigating activities are regarded as an important constituent. Combining all these elements with a momentum for change, that is the expectation of continuing change, ultimately results in management accounting change.

Considering both structural factors and individuals' activities, as well as how these spheres interact, the Cobb *et al.*'s (1995) model seems superior to models that regard change as being caused by either individual actions or organisational structures. It should, however, be noted though that their study did not aim to explain diffusion.

Figure 3.4: Accounting change model

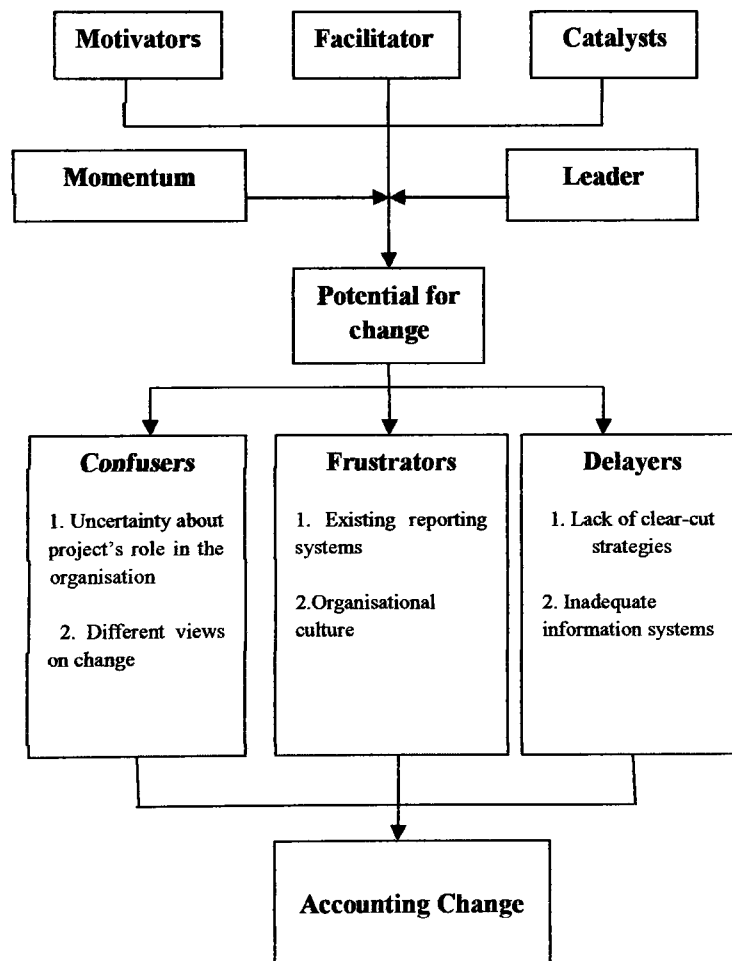


Source: (Cobb et al, 1995, p. 173)

Based on a case study of a Balanced Scorecard (BSC) implementation in a Finnish manufacturing company, Kasurinen (2002) added a final refinement to the model developed by Innes and Mitchell (1990) and Cobb *et al.* (1995). Kasurinen (2002) stated that aside from the combination of barriers with facilitating factors, the model of Cobb *et al.* is convincing due to its emphasis on the role of individuals in the change process, which goes beyond the function of a facilitator, catalyst or motivator. However, this model seemed to be limited in the sense that only one general category of barriers existed.

Based on this criticism, Kasurinen (2002) extended Cobb *et al.*'s model. While the change facilitating elements in Cobb *et al.*'s are kept as part of the extended change model, the categories of barriers to change are classified as: "confusers", "delayers" and "frustrators" as shown in Figure 3.5.

Figure 3.5 Revised Accounting change model



Source: (Kasurinen, 2002, p. 338)

The first category contained factors that “disrupted” the case project. Examples of this type of barrier found in the case study were a divergence between the project goals of the division and the business unit management, coupled with uncertainty about the project’s future role in the organisation. “Delayers”, as a second barrier category, referred to factors that are more technical and temporary in nature and often related to the new managing technology in question. In his study, Kasurinen found a lack of clear-cut strategies and inadequate information systems, these constituting the barriers under this category. Finally, “frustrators” referred to factors that “suppress” the change attempt in the organisation. These could be, for instance, a prevailing engineering culture that strengthened the perception of the BSC as a diagnostic measurement instead of a strategic planning tool or an already existing reporting system in the organisation.

Apart from the further subcategories of change barriers, Cobb *et al.*’s model and Kasurinen’s differ in the role leaders’ play in the change process. Cobb *et al.* explicitly emphasised the capacity of the leaders to overcome barriers, while Kasurinen’s model indicated that leaders, together with a momentum, are necessary to create the potential for change. This potential can be blocked, however, by the three subcategories of barriers that ultimately determine whether or not change occurs. Table 3.3 shows the summary of the studies that investigated management accounting changes.

Table 3.3 Summary of the studies that investigated management accounting change

Author(s)	Catalysts	Motivators	Facilitators	Barriers
Gobb <i>et al</i> (1995)	Pressure on margins Individuals	Globalisation Product innovation Increase the competition	IT Accounting staff	Changing priorities Accounting staff turnover Staff attitudes to change
Kasurinen, (2002)	Pressure on margins Individuals	Globalisation Product innovation Increase the competition	IT Accounting staff	Confusers: uncertainty, different view on change Frustrators: Existing systems, organisational culture Delayers: Lack of clear-cut strategy, Inadequate information system

Following the above discussion, it should be noted that in the previous three studies (Innes and Mitchell, 1990; Cobb *et al.* 1995; Kasurinen, 2002) no attempt was made to explain the diffusion of the management account innovations. However, in the current study the diffusion of ABC will be examined based on the theoretical framework of management accounting change which was discussed earlier in this section.

Another way the current study seeks to extend the previous studies is in developing Kasurinen's findings by examining the implementation stages of management accounting innovations. Kasurinen (2002, p. 338) clearly stated that his model:

“...provides a potentially useful way to analyse the context of change at the early stages of a project”.

Gallivans (2001) argued that the decision to adopt any innovation is based on two decisions: the primary decision during which the company adopts an innovation as an idea or project plan, and the secondary decision which moves from adopting the idea or projected plan to the actual implementation of the innovation by the company. According to Gallivans findings, the second decision is more difficult. Kasurinen's study examined the primary decision (adoption stage), while the current study will examine both the adoption and implementation stages. The primary stage as an adoption stage will be studied to determine the reasons for not implementing ABC and the second stage as actual implementation stage will also be investigated. It is anticipated that this will determine the factors that have both facilitated and motivated the decision to implement ABC among Jordanian industrial companies.

Moreover, two of the previous models such as Innes and Mitchell (1990); and Cobb *et al.* (1995) did not provide any definitions of the success or failure of implementing management accounting innovations. The Kasurinen (2002, p. 341) model did, however, provide a general definition of success, and is defined as:

“a thorough implementation or projects where the explicitly or implicitly stated goals of the project are met”.

The current study will also extend this definition through the use of a multi-attribute approach to measure the success of ABC implementation within the Jordanian industrial sector (see chapter Four, section 4.2.1 for more detail). In addition, since the BSC project in the Kasurinen's (2002) study was terminated (unsuccessfully in his case) after less than two years, it cannot be assumed that it also covers the later stages of the BSC projects. The current study will examine the implementation of ABC innovation among both types of Jordanian companies, those which unsuccessfully implemented ABC (companies that had implemented ABC then abandoned it) and those that fully and successfully implemented ABC. This is in response to Kasurinen's demand for future studies on successful and unsuccessful implementation of management accounting innovations and it is hoped that the current study will meet Kasurinen's (2002, p. 341) suggestion that:

"..., more case studies should be conducted in organisations which have successfully implemented the BSC or corresponding change. One aim of these studies could be to investigate the factors and implementation approaches which have made successful change possible. ... the model could also be tested, and possibly further developed, by exposing in other types of change projects".

As indicated by Cobb *et al.* (1995, p. 172), managers in charge of management accounting play a critical role when evaluating changes:

"As catalysts they initiated the change process, but without their leadership role the change process may have faltered in the face of the barriers".

On this basis, Schwarze *et al.* (2007) examined the drivers of and barriers to management accounting change from a managerial perspective, based on the survey results from 161 German, Austrian and Swiss banks. They demonstrated that management accounting change is primarily driven by behavioural control/board expectations. They found a significant positive influence from profitability, personal incentives, environmental considerations, agency problems, and data quality.

The results of this study are similar to important assumptions regarding the accounting change model of Cobb *et al.* (1995) who identified leaders as a critical factor in overcoming barriers to management accounting change. The Schwarze *et al.* (2007) study found that behavioural control had a high impact on the manager's intention of managing accounting change. Furthermore, they pointed out that the strong impact of board expectations is equal to that found by Cobb *et al.* (1995) and also applied to the significant role played by individuals as catalysts. Schwarze *et al.* (2007) additionally presented evidence of the impact of IT (measured by application support and data quality), environment and profitability on the management accounting change.

3.4 Summary

This chapter presented an extensive review of the literature on the diffusion of innovations. Based on this review, the different perspectives that can be adopted to classify the diffusion of innovation research were described. In addition, Abrahamson's four perspectives (efficient-choice, forced-selection, fashion, and fad) were presented and the role of both demand and supply-side factors were identified. This was followed by, an overview of the previous literature in the field of management accounting change that attempted to formulate the framework of management accounting change (Innes and Mitchell, 1990; Cobb *et al.*, 1995; Kasurinen, 2002).

CHAPTER FOUR

A REVIEW OF THE ABC EMPIRICAL STUDIES

4.1 Introduction

To derive a better understanding of the factors influencing the non-adoption, adoption and implementation of cost accounting innovations, it is important to be aware of theories derived from the diffusion of innovation literature. The previous chapter provided a brief summary of the diffusion of innovation literature. The different categories of innovation were described and this was followed by an overview of the different perspectives that can be adopted to classify diffusion of innovation research. Accordingly, chapter four provides a review of studies relating to the application of the diffusion of innovation literature to Activity-based costing (ABC). In addition, other empirical studies relating to ABC usage and applications that do not directly draw on the diffusion of innovation literature will be examined to determine the factors influencing the adoption, failure and success of ABC implementation. The objective of this section is to review the empirical studies on ABC in both developed and developing countries to determine the factors that facilitate, motivate and create barriers to ABC implementation. This will be used subsequently to design the questionnaire survey in the current study. Finally, survey evidence on the implementation of ABC in different countries in Europe, North America, Africa and Asia are presented to evaluate the degree to which ABC has been implemented by companies. The implementation rate in this section therefore represents a basis for comparison.

4.2 Studies on the Diffusion of ABC

Since the beginning of the 1990s, researchers have attempted to evaluate the degree to which companies have adopted and implemented ABC in several countries (Europe, North America, Africa and Asia). The survey evidence suggests that, over the last two decades, there has been an increasing interest in ABC, but the rate of implementation has been fairly slow. The description of the surveys will be divided into three periods of time. This decision was made to make the analysis of the surveys more comparative.

4.2.1 Surveys published from 1990 to 1994

Innes and Mitchell (1991) conducted a survey of the use of ABC by members of the Chartered Institute of Management Accounting (CIMA) in the United Kingdom. They surveyed 720 companies in the manufacturing and financial service sectors. The overall response rate was 26%. This survey revealed an implementation rate of only 6% among the respondents but 33% of them indicated that they were currently assessing ABC. There were also 9% of the respondents who indicated that they had rejected ABC. The majority of respondents mentioned that they had not considered ABC.

Another study was conducted by Nicholls (1992) in the UK among a group of participants at an ABC seminar held in May 1990. About 10% of the respondents mentioned that they had adopted ABC, 18% were experimenting with the ABC technique while 62% were considering the adoption of ABC.

Armitage and Nicholson (1993) also used a questionnaire to capture information about Canadian companies' attitudes towards ABC. Their survey was sent to 702 large Canadian companies. The response rate was as high as 50%. The results showed that 14% of the respondents had implemented ABC, 15% were considering implementing ABC and 67% had not considered implementing an ABC system. Ask and Ax (1992) undertook a similar study in Swedish engineering companies and, as with Innes and Mitchell, found that 6.7% of the respondents had started implementing ABC and that larger companies had a greater tendency to adopt it.

Bright *et al.* (1992) conducted a large study on product costing techniques in the UK companies. The results of the part of their study on the adoption and implementation of ABC were astonishing. They indicated that 32% of the respondents were using ABC and that 60% of the remaining group was planning to use ABC within the next 3 years. Even the authors of this study showed some scepticism about these results. There are potential explanations for these results. The response rate was low at 12% and the authors had not performed any test for non-response bias. Drury and Tayles (1994) also conducted a large study on product costing practice in the UK. Their instrument included a series of statements relating to the actual and planned use of ABC. 4% of the companies had introduced ABC while 9% intended to introduce ABC.

4.2.2 Surveys published from 1995 to 2000

Innes and Mitchell (1995) replicated their 1991 survey. The population surveyed comprised the 1,000 largest companies in the UK. The results showed that 20% of the respondents had adopted ABC. In 1991, that rate was 6%. They also demonstrated that, even though ABC had been introduced 7 years earlier, the proportion of companies that had not considered implementing ABC was still very high (40%). Furthermore, 13% of the companies had rejected ABC (9% in 1991). The adoption rate was almost the same in both manufacturing and service companies (19.8% in comparison to 18.9%). This result is interesting since, at first, ABC was intended for companies from the manufacturing industry.

The study of Lukka and Granlund (1996) was aimed at providing a better understanding of the cost accounting practices of Finnish companies. The population surveyed consisted of 309 Finnish manufacturing companies. They found that 30% of the respondents had implemented or were in the process of implementing ABC.

In 1994, Bjornenak (1997) did a survey in Norway to develop a conceptual framework to explain the diffusion process for ABC and to identify the factors that influence managers' decisions to adopt ABC. Among the 75 respondents, 53 had some knowledge of ABC. Within this group, 30 had adopted ABC, 12 had not considered its implementation, and 11 had rejected it.

A second survey on ABC was conducted by Gosselin (1997) in Canada following Armitage and Nicholson (1993). Among the 161 respondents, 77 indicated that they had adopted ABC but only 49 finally implemented it. Thus, the implementation rate was high at a level of 30.4%. The population in this survey was limited to manufacturing companies.

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

Chung *et al.* (1997) investigated the implementation rate of ABC in Singapore and found that the implementation rate of ABC in Singapore was not as high (4%-21%) as Singaporean companies were still in the early stages of their experimentation with ABC.

Clark *et al.* (1999) performed the first survey of ABC in Ireland. A total of 204 companies responded to the survey. Approximately 12% had implemented ABC, 20% were assessing it, 13% had rejected it and 55% had not considered its adoption.

Innes *et al.* (2000) replicated their 1994 survey (Innes and Mitchell, 1995) in the UK's largest companies and compared the results. They showed that the ABC adoption rate had not increased during the 1994-1999 period. It had actually dropped from 21% of the respondents to 17.5%. On the other hand, the rejection rate had grown.

The surveys that had been conducted during the years 1995-2000 showed that, despite the large number of articles published on ABC during that period. The inclusion of

ABC in most management accounting textbooks, the presence of several consulting companies and the development of ABC software, and the ABC adoption rate have not increased as much as the management accounting community would have expected (Gosselin, 2007).

4.2.3 Surveys published from 2001 until 2008

After 2000, the number of surveys is decreasing significantly in developing countries, while the number of surveys is increasing in Asian and African countries. Cotton *et al.* (2003) used the Innes *et al.* (2000) survey in New Zealand in 2001. The response rate was high at 40%. Their results are quite similar to Innes *et al.* (2000). The adoption rate was slightly higher (20.3% vs. 20.35%) but fewer companies were considering ABC (11.1% vs. 30.3%).

The use of ABC in Asian countries is not widespread based on some surveys (Chen *et al.*, 2001). For instance, the results of a survey in Hong Kong by Chen *et al.* (2001) showed that 11% of the respondents had already implemented ABC and a further 5% were planning to implement it in near future. Chongruksut (2002) conducted a mail questionnaire survey among companies listed on the Stock Exchange of Thailand (SET) that operate in the Bangkok region. A total of 292 questionnaires were sent to the accounting/finance managers. 101 questionnaires were usable and represented a response rate of around 35%. In relation to the ABC adoption rate, the findings indicate that 11.9% (12 companies) had already adopted the ABC, 2% had rejected adoption, and around 23% of respondents were intending to adopt ABC. The highest percentages of the responses 63% (64 companies) had no plans to adopt ABC and some of them had no knowledge of ABC.

Kiani and Sangeladji (2003) examined the current state of ABC implementation in the United States. The questionnaires were sent to 500 presidents, controllers, and managers of Fortune 500, the largest industrial corporation in the USA. The number of responses amounted to 85. Among the respondents, 44 companies had used ABC at various levels. The adoption rate was high, but as in many surveys, the questionnaire did not enable the researchers to assess what the nature of the ABC model implemented was.

Manalo (2004) conducted a telephone survey among the Top 500 Corporations (The Fookien Times Philippine Yearbook, 2001) in the Philippines. The findings indicated that around 17% (83 companies) were implementing ABC, 55% (275 companies) were still using traditional costing systems, and the remainder of the total sample 28% (142 companies) were still considering ABC implementation.

Pierce (2004) and Pierce and Brown (2004) also conducted a survey in Ireland with a questionnaire similar to that used by Innes *et al.* (2000) and found results that they considered to be quite similar to those of Cotton *et al.* (2003). Even though they reported an adoption rate of 27.9%, they indicated that the proportion of Irish companies that had not considered ABC was still high at just over 50%. The adoption rate of this survey is much higher than the one reported by Clark *et al.* (1999). The responding companies included 51.6% of manufacturing companies. Subsidiaries of multinational companies accounted for 49.2 of the respondents. This is probably one explanation for the adoption rate of 27.9%, which is larger than the one disclosed in Innes *et al.* (2000).

In a Greek postal questionnaire survey conducted by Cohen *et al.* (2005) on a sample of 88 leading Greek companies during 2003, it was revealed that 40.9% (36 companies) had adopted ABC, while 59.1% (52 companies) of the respondents were non-ABC adopters. Additionally, the non-ABC adopters could be further divided into three groups according to their perceptions towards ABC. A first group of 28 companies (31.9%) did not consider ABC as a future possibility (deniers), a second group of 12 companies(13.6%) considered ABC implementation as a future prospect (supporters), and finally 12 companies(13.6%) were completely ignorant about the ABC technique (unaware companies).

Likewise, the use of ABC in African countries is not widespread (Waweru *et al.*, 2005). For instance, the results of a study in South Africa by Sartorius *et al.* (2007) examined the extent of ABC implementation among 181 South African companies listed on the Johannesburg Securities Exchange (JSE). The results showed that only 12% of 181 respondent companies had implemented ABC.

The first study to examine the level of ABC implementation in the Jordanian industrial sector was carried out by Khasharmeh (2002). His study population consisted of all the Jordanian Industrial 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 levels 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 industrial companies (56 companies in total) to identify those companies which applied the management accounting innovation. It was found that six companies had implemented ABC. It should be noted that neither studies segmented ABC to stages.

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. The results of all these surveys have to be considered cautiously since there is no single definition of ABC Walley *et al.* (1994); 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.

4.3 The empirical studies of ABC

The empirical studies on ABC can be organised into three different groups, namely:

1. Research studies that explain the factors that facilitate and motivate ABC implementation from different perspectives.
2. Research projects that seek to evaluate the problems encountered during the process of ABC adoption and implementation.

3. Research studies that have attempted to assess the level of ABC success and determine the factors that impact upon the success of ABC implementation.

The decision regarding the above classification was made to facilitate design the research model in the current study. Each group will be described in the following sub-sections.

4.3.1 Studies relating to Factors influencing the Implementation of ABC

A number of studies have investigated the implementation of ABC and the factors influencing the decisions to adopt and implement it. Anderson (1995), Shields (1995), Bjornenak (1997), Booth and Giacobbe (1997), Krumwiede and Roth (1997), Krumwiede (1998), Brown *et al.* (2004) carried out research into ABC implementation in Canada, the USA, Australia and the UK.

In a longitudinal study of a single company, Anderson (1995) investigated the ABC implementation process in General Motors (GM) between 1986 and 1993. From this study she developed a framework for evaluating ABC implementation and identifying the factors that influenced its implementation. Anderson used the framework of five broad categories proposed by Kwon and Zmud (1987), namely, individual characteristics; organisational factors; technological factors; task characteristics; and environmental factors (summarised in Table 4.1).

Table 4.1 Anderson's factors used to investigate the impact of ABC implementation.

Individual Characteristics	Organisational factors	Technological factors	Task Characteristics	External Environment
Disposition toward change/intrinsic reward in change	Centralisation	Complexity for users	Uncertainty/ lack of goal clarity	Heterogeneity of demands
Education	Functional specialisation versus multi-disciplinary approaches	Compatibility with existing systems	Variety	Competition
Job tenure	Internal communication	Relative improvement over existing system	Worker autonomy	Environmental uncertainty
Informal support (such as sponsors, champions)	Training investments	Relevance to manager's decisions	Worker responsibility	External communications

Source: (Anderson, 1995, p.10).

The observations and interviews enabled Anderson to identify 19 factors that impacted positively or negatively on the implementation of ABC at four stages of the Cooper and Zumd (1990) model. These four stages were: initiation; adoption; adaptation; and acceptance. Clearly, some of the factors have an impact only at one specific stage and the influence of contextual factors such as competition, the relevance to managers' decisions, compatibility; and organisational factors such as top management support, training, and satisfaction with the existing system varied according to the stage studied. Thus, this model can only be useful and reliable if the stage of the implementation can be properly identified.

Anderson (1995) reported that at the initiation stage, factors such as competition, environmental uncertainty, relative improvements over the existing system, worker responsibility, functional specialisation, training, the heterogeneity of demands, the disposition toward change, and complexity for users all had a positive impact at the initiation stage of ABC. However, workers responsibility and centralisation had a negative impact.

At the adoption stage, the relevance to the managers' decisions, process knowledge, the relative improvements over the existing system, environmental uncertainty, the role of involvement, the disposition toward change, training, the compatibility with organisation strategy and the degree of complexity for users had a positive impact in the adoption stage. Three factors, however, had a negative impact, these being lack of goal clarity and worker autonomy, the lack of internal communication, and uncertainty. The numbers of factors that had some impact at more advanced stages of the implementation process were much lower. The third stage, the adaptation, is influenced positively by competition, disposition toward change, centralisation, internal communications, training, and compatibility with existing systems. Only internal communications, training, and variety would have an influence at the acceptance stage.

The Anderson study, however, had certain limitations relating to two areas: firstly her study did not cover all the implementation stages of ABC, and secondly her research did not investigate the companies that had abandoned ABC implementation so was unable to determine the factors that influenced their decision to reject the system. This view was also supported by Gosselin (2007, p. 658) who suggested that:

“future research could attempt to use the Anderson’s model in the context of an organisation that abandoned ABC after having completed three or four stages of the Cooper and Zmud (1990) model”.

Based on replies to a questionnaire survey from 53 Norwegian manufacturing companies, Bjornenak (1997) examined the impact of various factors thought to influence ABC adoption. In this case, the ABC adopters (30 companies) were defined as those responding companies that had implemented ABC, were currently implementing it, or wished to implement it. Non-adopters (23 companies) were defined as those that stated that they did not wish to adopt ABC or that they had not yet decided to do so.

The factors studied were cost structure, the existing cost system, product diversity and competition. The proportion of overheads within the cost structure was measured by overhead costs as a percentage of the total value-added costs (direct labour and overheads). The mean percentages were 73.6% for adopters and 66% for non-adopters (significant at the 10% level). In terms of the existing cost system, Bjornenak compared the number of cost pools and the allocation for adopters and non-adopters and found that there were no significant differences between the two groups.

The number of product variants and degree of the customised production were used to measure product diversity, but only the degree of customisation was found to be significant at the 5 % level.

The competition was measured using the percentage of sales being exported (based on the assumption that competition is higher in foreign markets) and the number of competitors for the major products. These results were not consistent with the hypothesised relationship, as non-adopters had a higher export rate ($p < 0.10$) and a higher number of competitors (not significant). To capture the combination of factors affecting adoption, discriminate analysis and LOCIT regression were used. The best discriminating function was obtained by combining the cost structure, the degree of customised production and the sales as a percentage of the exports. The function classified 71% within the correct group and 67% using the LOGIT model.

Booth and Giacobbe (1997) examined factors influencing three stages of ABC adoption based on a survey of 205 Australian manufacturing companies. The three stages were: the initiation of interest in ABC (consisting of 94 companies that had never considered the adoption of ABC and 113 that had shown an interest in ABC);

the adoption/non-adoption of ABC as an idea (this consisted of 113 companies in the initiation category that had shown an interest in ABC, with 49 companies having adopted ABC as an idea and 64 companies rejecting it); the adoption/non-adoption of ABC as a practice (consisting of 24 companies having adopted ABC as a practice and 29 companies rejecting it as practice).

Cost structure, product diversity, competition and size were examined as explanatory factors which distinguished between each of the two groupings identified within each of the above three categories.

There were three significant factors: cost structure ($p < 0.05$), product diversity ($p < 0.05$) and size ($p < 0.01$). Overheads, as a percentage of product cost, were higher for those companies interested in ABC compared to those that had never considered the adoption of ABC. In addition, companies adopting ABC as an idea showed a larger change in the overhead costs compared with those rejecting it as an idea. Two measures were used for product diversity: the first required the respondents to indicate on a 5-point Likert scale (1=strongly agree to 5=strongly disagree) whether they agreed with the statement that they had a high number of product lines; the second was a measure of product line innovation based on asking the respondents to indicate the average number of product lines introduced in a 12-month period. The only significant item related to product lines was that the mean number of lines for those adopting ABC as an idea was slightly higher than for those rejecting it as an idea. Company size was measured by the number of employees and sales turnover. The findings were supported only for the first category ($p < 0.01$), with companies showing an interest in adopting ABC being significantly larger, on average, than those not interested in ABC.

Competition was not significant for any the above companies. It was measured by asking the respondents to indicate whether their business unit was in a position to influence the price for all or the majority of their products (price markers) or whether they had no such influence (price takers). An interesting feature of the above findings was that no significant relationships were observed as regards those companies that had adopted ABC as a practice compared with other companies.

In addition, Krumwiede (1998) empirically tested the model developed by Anderson (1995). He examined how some contextual factors influenced the initiation and adoption stages of ABC and how various contextual and organisational factors

influenced the implementation stages. The adoption and implementation of ABC stages are defined in Table 4.2. In this study, ABC adoption and implementation was divided into ten stages as follows: (1) not considered (2) considering (3) considered then rejected (4) approval for implementation (5) analysis (6) getting acceptance (7) implemented then abandoned (8) acceptance (9) routine (10) integrated. The data were collected through a survey instrument posted to members of the Institute of Management Accountants in 225 USA manufacturing companies.

Table 4.2 Krumwiede (1998) ABC implementation model

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 analysing 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.

Source: (Krumwiede, 1998:pp.242-243)

Organisational factors, such as top management support, the level of non-accounting ownership, the number of purposes identified for ABC and the number of years since ABC was adopted had a significant influence in the implementation stages. In interpreting the implementation model, it should be noted that the companies incorporated in this analysis had already reached the implementation stage where the contextual factors had a significant impact.

Krumweide analysed the responses over several stages of the ABC adoption process, such as adoption, implementation, acceptance, routinisation and infusion. He found evidence to suggest that the impact of the various contextual and organisational factors changes during these different stages. Commenting on the implications of the findings Krumweide (1998, p. 269) states:

“Combining implementation stages can create two problems. First, factors not found significant may have been found to be significant for certain stages but masked by less significance (or perhaps significance in the other direction) for other stages. Second, factors that were found to be significant may have had coefficients that were biased by varying parameter estimates in different stages. Thus, it is possible that no single stage had the parameter coefficients that were reported”.

Brown *et al.* (2004) sought to investigate the influence of seven technological and organisational factors on the initial interest of companies in ABC and their decisions to adopt it or not. A cross-sectional survey of Australian companies was used to examine this influence. They adopted a multi-stage framing of the ABC adoption decision based upon the model used by Krumwiede (1998). In this study, ABC adoption and implementation was divided into ten stages (shown in Table 4.3) as follows: (1) not considered (2) evaluating (3) evaluated then rejected (4) evaluated and approval for implementation (5) analysis (6) getting acceptance (7) implemented then abandoned (8) restricted use (9) used somewhat (10) used extensively.

In this model, the stages from A to D refer to the adoption decision and the stages E to J refer to the implementation decision stages. Brown *et al.* (2004) claimed that different factors influenced the progression towards interest in ABC and whether to adopt it or not. In addition, where a factor influenced more than one stage, the extent of its impact maybe different for each stage, and some factors are perhaps more important at some stages than others. The results of this study showed the organisational factors of top management support, the support of an internal champion, and organisational size associated with initial interest in ABC. The decision

to adopt or reject ABC, however, had one organisational factor associated with it, the support of an internal champion.

Table 4.3 Brown *et al.* (2004) ABC implementation model

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 analysing 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

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

Askarany and Smith (2004) explored the level of association between the diffusion of administrative changes and contextual factors. They examined the level of importance of 13 contextual factors (such as organisational culture, institutional pressure, employee awareness regarding the benefits of an innovation, the recognised need for change and the degree of uncertainty associated with the outcomes of the innovation) on the decisions(s) about whether or not to implement administrative changes. They also examined the level of association between contextual factors and the diffusion of six administrative innovations (Activity-Based Costing (ABC), Activity-Based

Management (ABM), Balanced Scorecard, Benchmarking, Strategic Management Accounting (SMA) and Target Costing).

They used a cross-sectional mail survey of all the management accountants who were CPA members (the largest professional accounting body in Australia) and employed by industries registered with CPA in Australia. The respondents to the survey were asked to determine how much importance the influence of the listed contextual factors had on their decisions to implement cost and management accounting innovations. Responses to the survey were provided by 100 questionnaires, representing a response rate of 20%.

The results of the statistical analysis in this study showed that contextual factors significantly influence decisions about whether or not to adopt administrative innovations. The findings also suggested that the diffusion of administrative innovations is significantly associated (significant at 0.005 to 0.064 levels) with five contextual factors (out of the 13 contextual factors addressed in this study). According to the results, administrative changes are positively associated with an awareness of the benefits of innovation, as well as awareness of the availability of innovation, management commitment regarding the implementation of an innovation and the use of management consultants for the implementation of an innovation. However, administrative change is negatively associated with lack of confidence in the ability of new technique.

A study conducted by Drury and Tayles (2005) examined the extent to which several factors (cost structure, the competitive environment, product diversity, the size of the company, the corporate sector within which a company operates and the importance of cost information for decision-making) influenced the level of cost system sophistication choices in UK companies. The level of sophistication of cost systems was measured based on a combination of the number of cost pools and the number of cost drivers that are used by the company. The results provided strong evidence to suggest that both the size of the company and the corporate sector influence the level of cost system sophistication. On the other hand, there is a negative relationship between standardisation/customisation and the level of cost system sophistication. Moreover, the study pointed out that there is no significant relationship between the level of completion and the level of cost system sophistication.

Ruhanita and Nasir (2006) examined the adoption and implementation of ABC as an overhead costing system among manufacturing companies in Malaysia. The data analysis showed that three factors decision usefulness, organisation support and internal measures had significant influence on ABC implementation while the other four factors, namely, cost, IT, training, learning and growth, were not found to have any significant influence.

Finally, some empirical studies have been used to explore the link between environmental factors and the decision to implement ABC. Shields (1995) claimed that changes in the environment, such as deregulation, globalisation and customer demands, will entail changes in management accounting practices. Similarly, Yakhou and Dorweiler (1995), who studied the link between competition and changes in management and control systems by comparing British, French and USA companies, found that competitive threats have influenced the implementation of management accounting innovations. Moreover, Al-Omiri and Drury (2007a) found support for a relationship between the intensity of the competitive environment and more sophisticated cost systems whilst Cobb *et al.* (1995) and Innes and Mitchell (1990) recognised several changes in the external environment (such as globalisation and lower operating costs for competitors) as motivators for management accounting change. Similarly, Baines and Langfield-Smith (2003) suggested that changes in an organisation's external environment will lead to change in its management accounting systems; this is based on the argument that managers need specific forms of management accounting information that support their decision needs within increasingly uncertain environments. A summary of the factors influencing the implementation of ABC is shown in Table 4.4.



Table 4.4 Studies relating to factors influencing the implementation of ABC systems

Factors investigated	Author(s)
Top management support	Anderson (1995), Krumwiede (1998), Brown <i>et al.</i> (2004), Ruhanita and Daing Nasir (2007)
Internal champion support	Brown <i>et al.</i> (2004)
Centralisation	Anderson (1995)
Size	Bjornenak (1997), Malmi (1997), Booth and Giacobbe (1997), Krumwiede (1998), Drury and Tayles (2005), Brown <i>et al.</i> (2004)
Product complexity and diversity	Bjornenak (1997), Malmi (1997), Booth and Giacobbe (1997), Krumwiede (1998), Drury and Tayles (2005), Brown <i>et al.</i> (2004)
Training and investment	Anderson (1995), Krumwiede (1998)
Consultants	Anderson (1995), Bjornenak (1997), Booth and Giacobbe (1997), Brown <i>et al.</i> (2004)
Competition	Shields (1995), Yakhou and Dorweiler (1995), Bjornenak (1997), Malmi (1997), Booth and Giacobbe (1997), Drury and Tayles (2005), Al-Omiri and Drury (2007a)
Information technology	Krumwiede (1998), Drury and Tayles (2005), Brown <i>et al.</i> (2004), Ruhanita and Daing Nasir (2007)
Relative advantage	Anderson (1995), Brown <i>et al.</i> (2004)
Strategy	Malmi (1997)
Existing costing system	Bjornenak (1997)
External communication	Bjornenak (1997), Booth and Giacobbe (1997)
Level of overhead	Bjornenak (1997), Booth and Giacobbe (1997), Krumwiede (1998), Drury and Tayles (2005)
Cost structure	Bjornenak (1997), Malmi (1997), Drury and Tayles (2005), Brown <i>et al.</i> (2004)
Level of clarity and consensus for ABC objectives	Krumwiede (1998)

4.3.2 Studies relating to Factors against the Implementation of ABC

Cooper *et al.* (1992a) provided insights into why companies have implementation problems. Based on their field research of eight ABC companies (including six manufacturers) in the USA, they found that some of the companies experienced delay and difficulty relating to technical issues in ABC design (such as hierarchical cost driver analysis, activity mapping, canned ABC software and external consultants). Moreover, when these do not occur, there still remains a large possibility of failure

because employees frequently resist initiating the changes that can be inferred from the ABC information.

Cooper *et al.* (1992a) noted that a key ABC implementation problem relates to ABC advocates who focus only on the technical issues involved. They suggested that the implementation of ABC would be more effective if ABC advocates began to focus on non-technical issues. This relates to the early involvement of non-accountants, who will be the primary users of ABC information, ensuring that the sponsor is a member of the top management and guaranteeing a training programme that emphasises the logic, design, implementation and use of ABC.

A postal questionnaire survey by Innes and Mitchell (1991) of 187 British management accountants found that 52% (97 companies) of the companies for which the respondents worked had not considered using ABC, while 33% (62 companies) were currently considering whether to use it. Of the 15% of companies that had decided to use it, 9% (17 companies) had subsequently rejected it and 6% (11 companies) were still using it. In other words, 60% of the 15% that had implemented it had subsequently stopped using it.

Out of 17 companies that had rejected ABC, only two companies had actually used ABC before discontinuing it. Thus, for 15 companies, the decision was not based on any experience of the ABC system. The main reasons for rejecting ABC were: ABC was an inappropriate system for their type of business, ABC was not an improvement on existing systems, the overheads were too small a percentage of the costs to justify its implementation, the lack of benefits in relation to the cost of implementing ABC, and the lack of a suitable ABC software package

30 of the 62 respondents who were considering implementing ABC were interviewed by telephone. However, 7 companies were implementing ABC, 20 companies were still assessing it and 3 companies had rejected ABC without implementing it.

The seven companies implementing ABC perceived problems during the ABC implementation. The most common problems perceived by seven companies implementing ABC related to the amount of work involved, other higher priorities, the lack of staff time, scarce computer resources, the difficulty in gathering data on cost drivers and activities, difficulties securing the necessary resources to facilitate the

change to an ABC system, the high cost of implementing the ABC system, and the lack of top management support.

Of the 30 respondents assessing ABC three rejected it without implementing it and, in all three companies, there was the perception that ABC would be costly in terms of the accountants' and managers' time and that consultancy companies would be too expensive. Of the 30 telephone interviewees, 20 companies had been assessing ABC without coming to a final decision to implement it. However, the most common reasons for not making a decision were due to the expected amount of work that they perceived to be involved in implementing ABC, the existence of other work priorities that were rated as more important than the ABC system, the lack of ABC software packages, the scarcity of accounting and computer staff resources to undertake the necessary design and implementation of the new ABC system as well as the fact that ABC would require much more work to collect data about the cost drivers and linking these cost drivers to the various product lines for product costing. The majority of the problems listed here related to the practical difficulties of change rather than to the technical difficulties of ABC.

In a study conducted by Nicholls (1992), respondents who had adopted ABC were asked to identify the difficulties that they had encountered during ABC implementation. They mentioned that the availability of data, the shortage of resources, the resistance to change, and the lack of training were the most important problems they had faced.

Companies that were not planning to adopt ABC or that had rejected ABC provided the following explanations for their decisions based on studies conducted by Armitage and Nicholson (1993) and Cobb *et al.* (1992).

- Companies products or services were not the types that would benefit from ABC.
- Information technology inadequacy.
- Lack of senior management commitment.
- Difficulties in linking cost drivers to individual products.
- Amount of work involved in comparison to the benefits resulting from ABC.
- Difficulty of collecting quantitative information on cost drivers.

Cobb *et al.* (1992) also conducted a follow-up study of the respondents to the Innes and Mitchell (1991) survey. They selected 30 of the 62 respondents that had previously mentioned that they were still considering ABC. These respondents were chosen because they had indicated that they had identified potential problems in installing ABC. The purpose of this study was an attempt to explain why so few companies implemented ABC. The first stage of the study consisted of telephone interviews while the second involved company visits and personal interviews. The most important finding of this study was that two-thirds of the 30 respondents who had considered ABC a year ago were still considering it a year later without having reached a decision. The amount of work involved and the existence of other priorities were the most commonly mentioned reasons for not having decided to install an ABC system.

The UK case study research of Friedman and Lyne (1999) also identified certain factors that affected the failure of ABC systems. According to them, resistance, the threat of redundancy, the threat of using the expertise of consultants to implement ABC, data collection problems and the delay in the time period in implementing the activity-based techniques were the reasons for the failure of ABC, or for the significant dampening of the ABC success. They also found that the high cost of implementing an ABC system was a factor that could be identified as a deterrent to the implementation of the ABC system. Likewise, the results of several surveys (Cobb *et al.*, 1992; Nicholls, 1992; Booth and Giacobbe, 1997; Innes and Mitchell, 1998; Chen *et al.*, 2001) showed that the main problems with the implementation of ABC were the difficulties pertaining to data collection. ABC involves the collection of a great deal of data relating to cost-drivers and an item's relationship to specific products (Booth and Giacobbe, 1997). Thus, the difficulties in data collection were usually the problems that both the companies implementing ABC and companies rejecting ABC were confronted with.

Booth and Giacobbe (1997) and Innes and Mitchell (1998) also found that other higher priorities was the pre-eminent problem for companies considering or rejecting ABC, especially small companies, because they thought that ABC constituted a big change for their companies. In addition, the survey results of the Chartered Institute of Management Accountants (CIMA) presented by Innes and Mitchell (1998) reported that problems in practice included activities which crossed departmental boundaries

and the difficulties in choosing suitable cost drivers (Roberts and Silvester 1996; Innes and Mitchell, 1998). Likewise, the studies of Chung *et al.* (1997) and Chen *et al.* (2001) indicated that an inability to integrate with the current accounting system is a major problem in implementing ABC.

Manalo (2004) investigated the implementation of ABC among the top 500 companies in the Philippines. A telephone survey was conducted to examine the current costing systems these companies were using. The results indicated that only a few companies had adopted ABC for their current operation. Moreover, he found that only 16 % (83 companies) were in the process of implementing ABC and 55% (275 companies out of the 500 companies) were still using TCS. According to Manalo (2004), the main reasons for the low ABC adoption among the Philippines companies were: a lack of basic knowledge about ABC systems, employee resistance, the fact that it consumed a significant amount of both managers' and computer staff's time, and the organisational change essential for the use of ABC. In Malaysia, Abdul Rahman *et al.* (2003) examined ABC systems among small and medium industrial companies and found that two of the most important problems cited by the respondents were high cost of ABC implementation and coping with changes in accounting system.

A postal questionnaire survey by Cohen *et al.* (2005) was conducted in 2003 on a sample of 88 Greek leading companies. The survey revealed that 40.9% (36 companies) were adopters of ABC and 59.1% (52 companies) were non-ABC adopters. The non-ABC adopters were further divided into the three categories according to their attitudes towards ABC. The first category had 28 companies (31.9%) that did not consider ABC as a future possibility (deniers); in the second category, 12 companies (13.6%) considered ABC implementation as a future prospect (supporters), and finally, 12 companies(13.6%) were completely ignorant of the ABC technique (unaware companies). Analysis of the ABC adopters' answers revealed that the main difficulties they faced regarding the implementation of ABC were a lack of top management support, inadequate requested resources, the personnel's resistance to ABC, a lack of ABC software packages and the difficulty in gathering data on cost drivers and activities.

An analysis of the companies that did not use ABC according to the first category (28 companies) showed that the change of their accounting system was not a priority as they were already satisfied with their existing cost accounting system, or top management was not interested in implementing ABC, the ABC implementation cost was high and they did not have adequate knowledge and resources for ABC implementation. Moreover, the companies belonging to the second category (12 companies) expected to face difficulties during implementing ABC, such as difficulty in designing the system and the problem of identifying cost drivers. Similarly, Brown (2004) reported that the main factors confronting the implementation of ABC among the top 550 Irish companies were a lack of support from the group office, a lack of experience/training/resources as well as ABC software, uncertainty about the cost-benefit and problems relating to the availability of human resources.

Liu and Pan (2007) examined ABC implementation in a large Chinese manufacturing company over a 5 year period (from 2001 to 2005). This company had replaced the traditional costing system with an ABC system, the aim being to establish accurate product costing information for cost control purposes. During the implementation period (2001-2003) the company faced problems relating to the implementation process, the most common problems being the lack of prior experience of ABC concepts, the lack of a software package, uncertainty over the ability to use ABC for external financial reporting, the necessity of integration with the current accounting system, a lack of links between ABC information and performance measures, the limited value of ABC outputs and finally, resistance to change. These results supported those of Innes and Mitchell (1991).

Abde-Alnasser and Wei Li (2008) investigated factors that led to the failure of an ABC implementation at a major Chinese financial institution. They conducted interviews with 18 employees at one branch and revealed six factors that blocked the implementation of ABC systems. These factors were: lack of a clear business purpose about the implementation of the system, lack of knowledge regarding ABC, difficulties in designing the systems which included the identification of activities and cost drivers, lack of participation and internal resistance to change. Abde-Alnasser and Wei Li (2008) argued that the Bank of China decided to implement ABC systems in 2005 in order to achieve more efficient cost control when the bank sought to become a listed company. The implementation of ABC started very slowly and then ceased in

most branches because of the previously stated reasons. A summary of studies examining the reasons for not implementing ABC is shown in Table 4.5.

Table 4.5 Studies relating to factors against the implementation of ABC

Barriers and Difficulties	Author(s)
Lack of top management support	Innes and Mitchell (1991), Brown (2004), Cohen <i>et al.</i> (2005)
Lack of resources	Innes and Mitchell (1991), Brown (2004), Cohen <i>et al.</i> (2005)
Difficulty of gathering data on cost drivers	Innes and Mitchell (1991), Cooper <i>et al.</i> (1992), Roberts and Silvester (1996), Innes and Mitchell (1998), Friedman and Lyne (1999), Cohen <i>et al.</i> (2005)
Difficulty in designing system	Innes and Mitchell (1991), Cooper <i>et al.</i> (1992), , Roberts and Silvester (1996), Innes and Mitchell (1998), Friedman and Lyne (1999), Cohen <i>et al.</i> (2005), Abde-Alnasser and Wei Li (2008)
Difficulty in identifying cost drivers	Innes and Mitchell (1991), Cooper <i>et al.</i> (1992), , Roberts and Silvester (1996), Innes and Mitchell (1998), Friedman and Lyne (1999), Cohen <i>et al.</i> (2005), Abde-Alnasser and Wei Li (2008)
Difficulty of identifying activities	Innes and Mitchell (1991), Cooper <i>et al.</i> (1992), Roberts and Silvester (1996), Innes and Mitchell (1998), Friedman and Lyne (1999), Cohen <i>et al.</i> (2005), Abde-Alnasser and Wei Li (2008)
Involves a great deal of work	Innes and Mitchell (1991), Bailey (1991), Nicholls (1992), Cobb <i>et al.</i> (1992), Booth and Giacobbe (1997), Innes and Mitchell (1998), Chen <i>et al.</i> (2001), Abde-Alnasser and Wei Li (2008)
Takes up a lot of computer staff's time	Innes and Mitchell (1991), Chen <i>et al.</i> (2001), Brown <i>et al.</i> (2004), Manalo (2004)
Take up a lot of accountant's time	Innes and Mitchell (1991), Chen <i>et al.</i> (2001), Brown <i>et al.</i> (2004), Manalo (2004)
Takes up a lot of manager's time	Innes and Mitchell (1991), Chen <i>et al.</i> (2001), Manalo (2004)
Other changes were given higher priority	Innes and Mitchell (1991), Booth and Giacobbe (1997)
Coping with changes in accounting	Innes and Mitchell (1991), Chung <i>et al.</i> (1997), Chen <i>et al.</i> (2001)
Changes required to organisation structure to fit activities selected	Innes and Mitchell (1991), Manalo (2004)
High cost of implementing system	Innes and Mitchell (1991), Abdul Rahman <i>et al.</i> (2003), Brown <i>et al.</i> (2004), Cohen <i>et al.</i> (2005)
Consultants too expensive	Innes and Mitchell (1991), Cooper <i>et al.</i> (1992)
Inadequacy of the computer software	Cooper <i>et al.</i> (1992), Friedman and Lyne (1999), Brown <i>et al.</i> (2004), Cohen <i>et al.</i> (2005), liu and pan (2007)
Personnel's resistance to ABC	Manalo (2004), Cohen <i>et al.</i> (2005), liu and pan (2007)
Lack of expertise to implement ABC	Innes and Mitchell (1991), Brown <i>et al.</i> (2004), Manalo (2004), liu and pan (2007)

4.3.3 Studies Relating to Factors Influencing the Success of ABC Systems

Numerous studies have been undertaken relating to the success of ABC amongst implementing companies. However, measuring the success of ABC is problematic and researchers have used different approaches to measure that success (Baird *et al.*, 2007). Success has been measured using management evaluation (Shields, 1995) according to the use and satisfaction of ABC (Swenson, 1995; Dosch and Wilson, 2007) and the degree of employee satisfaction (MaGowan and Klammer, 1997).

Shields (1995) investigated the factors that could be associated with the success of ABC implementation. He drew on the theoretical model relating to the implementation of cost management systems he had designed with Shields and Young (1989) and undertook a postal questionnaire survey of 143 USA manufacturing companies pertaining to the factors influencing the successful implementation of ABC. The assumption underpinning the Shields and Young model is that cost management systems (including ABC systems) are administrative innovations rather than technical innovations.

Shields (1995, p. 153) acknowledged the difficulty in defining ABC success. He stated that:

“providing a definition... was problematic, as the literature is vague about what constitutes success, and discussions with ABC experts during the construction of the survey did not result in consensus about a tangible definition. For example, success can include top management not rejecting it, an implementation of ABC per se, use of ABC information by non-accountants, gaining competitive advantage and providing additional profits. Thus, the approach adopted was to let the respondent rate the degree of success with whatever definition he deemed relevant. Future research can attempt to catalogue the various definitions or types of success”.

He determined success accordingly:

“... The fate of ABC depends on how well it matches the preference, goals, strategies, agendas, skills and resources of dominant or powerful coalitions of employees, particularly top management” (Shields, 1995, p. 149).

The findings of Shields (1995) indicated that, ABC success was associated with behavioural and organisational implementation factors, such as top management support; adequate internal resources; design training and implementing and using cost management systems. The interactions between these factors enabled a company to overcome the resistance to change and, as a result, to implement management

innovations successfully. However, the following discussion will explain each factor in more detail.

1. Top management support

Top management support for ABC is vital because managers are able to determine the goals, strategies and resources (such as capital, time and competence), and prepare the support necessary to activate employees to use ABC (Shields 1995; Shields and McEwen 1996; Brown *et al.*, 2004; Dosch and Wilson, 2007). Top management also plays a key role in using ABC information in communications with other employees in order to encourage them to utilise ABC information as well.

2. Adequate internal resources

Internal resources embrace the time and commitment not only of the top management, but also managers, accountants and operating employees. The implementation of ABC demands an adequate amount of internal resources as it builds ownership, knowledge and action within the company. These resources give employees the opportunity to learn about the ABC system and its benefits, and consequently they are less resistant to change (Shields, 1995).

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

Training encompasses reading, lectures and on-the-job training, and through these activities, employees will be told how ABC works, how to interpret and use ABC information for product design, details about product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate performance measurements (Dosch and Wilson, 2007). Training reduces employees' lack of confidence in ABC and prevents them from feeling pressured by the implementation process. Instruction in designing, implementing and using the ABC system also enables employees to understand, accept and encourage the use of ABC. Because the ABC system is designed to provide information to employees in various departments for analysis and action, training is also a good method for building non-accounting ownership (Shields, 1995).

4. Non-accounting ownership

Non-accounting ownership is the commitment of individuals or groups who are not accountants to use ABC information and is an important determinant of the success of ABC because it can provide essential economic information for people throughout the company, and not only for 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 is also the consequence of top management support for ABC.

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

The consensus and clarity of the objectives of the ABC system among ABC designers and users are essential to ensure that an ABC system is effectively implemented and that ABC information is efficiently produced (Shields, 1995). When the objectives of ABC are accurately conveyed, as with improving the precision of cost estimation for customised products, ABC designers and users can develop an idea of how ABC should be designed and how its information is to be used.

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

Allocating costs is an administrative function, thus, the transformation of the cost allocations will affect the employees' performance evaluation leading to increased resistance (Krumwiede and Roth, 1997). Generally, employees take an interest in what affects their welfare. Hence, linking the ABC system to performance evaluation and compensation stimulates employees to implement an ABC system. Such linking convinces employees that rewards depend on their behaviour and the resulting system demonstrates their performance and reflects their future compensation (Shields, 1995; Shields and McEwen, 1996). Hence, they cooperate thereby ensuring its success.

7. Linkage of the cost management system to competitive strategies

The linkage of the ABC system to competitive strategies (such as quality or speed strategies) is essential for competition since ABC information is helpful in improving the competitive position and profitability of companies. For instance, if a company utilises a low-cost strategy in competition, the ABC system will prepare precise assessments of the product or process costs so that the designers can establish the costs

of customisation. The closer the linking between ABC and competition strategy, the more potential an ABC system will have (Shields, 1995; Shields and McEwen, 1996).

Shields concluded that the key to implementing ABC successfully is effectively dealing with specific behavioural and organisational factors. Success is likely to be increased when the seven factors above are used as part of an integrated implementation strategy. Top management support for ABC is very important because senior managers can focus resources on activities they deem worthwhile and sideline innovations that they think are not. Linking ABC to competitive strategy, as well as to performance and evaluation, are also important to motivate and reward employees and encourage them to focus on using ABC information to improve their companies' competitive position and profits. Training in designing, implementing and using ABC is important for two reasons. Firstly, it is seen to be an important way to interrelate ABC in terms of strategy, performance evaluation and compensation. Secondly, it provides an opportunity to achieve non-accounting ownership, since ABC information is intended to be used by a variety of employees for analysis and action; non-accounting ownership is a result of adequate training, top management support and linking ABC to strategy, performance evaluation and compensation. Finally, Shields stated that sufficient internal resources are required so that employees do not feel that an ABC initiative is pressurising them to do more without adequate support. Resources should be provided that give employees the opportunity to learn about ABC and experiment with alternative designs.

Swenson (1995) presented the results of a telephone survey of 50 financial and operating managers at 25 USA manufacturing companies which are related to their satisfaction with ABC and their use of ABC information to support decision-making. The results indicated that the participants viewed ABC as an improvement on their old cost management accounting system and that those participants who were relatively more satisfied with their ABC systems were also more likely to use ABC information to support strategic and operating decisions.

McGowan and Klammer (1997) examined the perceptions of users of ABC systems relating to factors influencing ABC success across four sites in a USA company. While Shields (1995) focused specifically on managers' perceptions of the success of the ABC system itself, McGowan and Klammer's study focused on the satisfaction

with the implementation of ABC. Their findings suggested that three of the factors identified by Shields (top management support, the linking of ABC to performance evaluation systems and the adequacy of training and training resources) were significantly associated with ABC success. In addition, users' involvement in the implementation and their perception of the quality of information produced by the system were positively associated with ABC success.

Foster and Swenson (1997) identified four potential measures of ABC success: (1) 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 will be (Innes and Mitchell, 1995; Krumwiede, 1998); (2) the decision action taken with ABC information, in using this measure when an ABC implementation causes a change of decisions, it is viewed as successful, on the other hand, when it causes no change in decision, it is viewed as not being successful (Innes and Mitchell, 1995); (3) the dollar improvement resulting from ABC, this measure reflects either a summary management estimate, or an explicit dollar comparison of revenues and costs with and without ABC. There may be a time dimension to this success measure if there is a delay between when ABC is implemented and when dollar improvements become apparent (Shields, 1995; Krumwiede, 1998); (4) management evaluation of the overall success of ABC. This final measure is typically based on an unspecified definition as to how success is to be interpreted (Shields, 1995; Swenson, 1995; McGowan and Klammer, 1997).

Using survey data from a sample of 166 ABC sites from 132 separate implementing companies, Foster and Swenson (1997) examined the effect of using alternative success measures in models testing ABC success determinants. The results suggested that the explanatory power of these models may be highly affected by the choice of a success measure. Broad-based ABC success measures were shown to yield the highest explanatory power. Foster and Swenson (1997) reported that the variables which best explained ABC success were integration with performance evaluation linked to compensation, links to quality initiatives, top management support, implementation training and resource adequacy.

Friedman and Lyne (1999) used longitudinal case studies to investigate the factors influencing ABC success and failure in several UK companies. They found that ABC success was associated with a clearly recognised need for it at the outset, broad-based support for it beyond the accounting function, adequate resourcing and its synergistic links with other activities such as Total Quality Management (TQM).

Another UK survey by Innes *et al.* (2000) investigated the association between ABC success and top management support, the involvement of consultants, user involvement in the implementation, whether the companies were in the financial or manufacturing sector, and the length of time that ABC had been in use. Significantly, only top management support had a noteworthy impact in explaining ABC success. They also examined the impact of a factor relating to the association of ABC with TQM programmes and found some weak support for it having an impact on ABC success.

Based on a cross-sectional postal survey of responses from 210 internal auditors in USA companies, Cagwin and Bouwman (2002) used structural equation modelling to test a model hypothesising the conditions under which there is a positive association between the use of ABC and changes in financial performance. Financial performance was measured using the change in the return on investment (ROI) based on the average improvement over the previous three or five years relative to other business units in the respondents' industry. ABC usage was derived from a composite measure relating to the breadth of use by different functions within the company, the depth of use for specific applications and the level of integration into the strategic and performance evaluation system. The specific measures of success examined in this study included the perceived success of the ABC implementation, satisfaction with the cost system and the expressed belief that ABC had been worth implementing. The major result of this study was a positive association between ABC and an improved ROI was calculated (Ittner *et al.*, 2002) and Feridun *et al.*, 2005).

Additionally, Askarany (2006) investigated the level of association between the diffusion of ABC as management accounting innovation and the level of satisfaction with currently implemented accounting systems. This was based on a survey of 200 manufacturing companies registered with the Australian plastics industry (PACIA). The findings indicated that less than half of the companies (45.1% of respondents)

were satisfied with their implemented cost and management accounting innovations and the majority of (54.9 % of respondents) were either dissatisfied or believed their implemented cost and management accounting innovations needed improvement. In addition, the statistical tests showed no significant differences between the levels of satisfaction of the adopters and non-adopters of ABC. In other words, the findings of the survey suggested no significant association between the diffusion of ABC and the levels of satisfaction of the users of management accounting innovations.

This result can explain why some companies have started to implement ABC and decided to stop the implementation after a short period (Innes and Mitchell, 1991; Brown *et al.*, 2004). This view can also be supported by the findings of Chenhall and Langfield-Smith (1998, p. 16) who concluded that:

“the benefits obtained from traditional management accounting techniques were higher than those of newer techniques”.

Accordingly, the adoption rate of traditional techniques was higher than the more modern ones.

Finally, Baird *et al.* (2007) examined the success of activity management practices and organisational and cultural factors affecting success according to the three levels of the Gosselin (1997) model. They used three levels of activity analysis (AA), activity cost analysis (ACA), and activity based costing (ABC). The main finding of this study was that two organisational factors (top management support and the link to quality) were associated with success at each of the three Gosselin levels, whereas training was associated with the activity analyses and activity cost analyses levels. The cultural factor regarding the outcome orientation was associated with success at each level, with attention to detail being important at the ABC level. Organisational factors were therefore more strongly associated with activity management success than were cultural factors.

In summary, ABC implementation studies have focused on factors leading to ABC success as measured in various ways. Variables such as implementation success, satisfaction, and attainment of ABC stages are commonly examined in ABC literature. However, most of these studies have not segmented the adoption and implementation stages of ABC. Their focus has been mainly on factors that lead to ABC success,

which can be measured in various ways as shown in Table 4.6 (Ruhanita and Nasir, 2006; Dosch and Wilson, 2007).

Table 4.6 Studies relating to factors influencing the success of ABC systems

Authors	Research Method	Implementation stage(s)	Specific measures of successes
Shields (1995)	Survey of 143 firms that had implemented ABC.	Not segmented	Success of the ABC initiative and financial benefits from ABC
Swenson (1995)	A telephone survey of 50 financial and operating managers at 25 USA manufacturing companies.	Not segmented	Satisfaction with methodology for calculating product costs before ABC and after ABC and use of ABC information to support decision-making
Foster and Swenson (1997)	Survey of 166 ABC users at 132 organisation fields visits to 15 sites.	Not segmented	The use of ABC information in decision making The decision action taken with ABC information Perceived financial improvements from ABC implementation Management evaluation as to overall success of ABC.
McGowan and Klammer (1997)	Survey of 53 employees from 4 targeted sites.	Not segmented	Satisfaction with the implementation of ABC.
Cagwin and Bouwman (2002)	Examined the improvement in financial performance that is associated with the use of activity-based costing. In the companies that employ internal auditors who are members of the Institute of Internal Auditors (IIA).	Not segmented	Perceived success of the ABC implementation Satisfaction with the cost system Expressed belief that ABC has been worth implementing
Askarany (2006)	Based on a survey 200 manufacturing companies registered with the Australian plastics industry (PACIA).	Not segmented	Satisfaction with the implementation of ABC.
Baird <i>et al.</i> (2007)	Mail survey of 400 financial controllers in the manufacturing and service industries in Australia.	AA, ACA, and ABC	Based on Foster and Swenson (1997) measures

4.4 Research Model:

The development of the research model in this research 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 will explain the research model in current study in more detail.

- Factors related to creating the Potential for Change.

Innes and Mitchell (1990) defined catalysts as factors that can be directly associated with the change. Abrahamson's framework is particularly associated with this definition since it introduced the four perspectives described in the previous chapter (see section 3.2.3), namely; efficient choice, forced selection, fad and fashion perspectives to explain the diffusion of innovation and the factors associated with the decision to implement innovation techniques. Abrahamson's framework overcomes the pro-innovation bias mentioned earlier, and he also considers the supply-side of the diffusion process. Therefore, the current study will adopt Abrahamson's framework to explain the importance of specific perspectives that are directly associated with decisions to implement ABC systems in the Jordanian industrial sector.

Catalysts initiate the change process, but without their facilitator and motivator roles, the potential for change cannot be created in the company. Innes and Mitchell (1990) defined motivators as factors that influenced management accounting change in a general manner for example, the changed environment (Chung *et al.*, 1997), changed cost structure (Bjornenak, 1997) or shortcomings of the existing system (Innes and Michell 1991; Chung *et al.*, 1997; Nguyen and Brooks 1997).

In addition, facilitator factors provide managers with the favourable conditions that are necessary but not sufficient by themselves for a management accounting change. Shields and Young (1989) indicated the importance of top management support for the implementation processes of new management accounting innovation and also the commitment and active support of functional managers required in order for diffusion to occur.

Brown *et al.* (2004) argued that internal champion support is when an individual within a company significantly promotes the cause of the innovation. A champion will educate senior managers and users about an innovation such as ABC and create awareness about a company's need for it. Training is also important to ensure that employees understand ABC system practices, and to reduce resistance to change and sustain successful performance (Krumwiede, 1998).

Consultants help the companies to deal with problems and facilitate the implementation of innovation techniques. Finally, the level of information technology can play an important role in facilitating the implementation of ABC. 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. Companies with high quality information systems can provide detailed data that is easy to access and related to the cost driver information that is needed by more sophisticated costing systems. In general, companies with shared databases that track the detailed operational data needed for resource and activity analysis can more easily implement and maintain ABC. These factors appear to play a key role in providing managers in the Jordanian industrial sector with the favourable conditions that are necessary, but not sufficient by themselves, for the decision to implement ABC.

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.

- 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 rates of ABC in the Jordanian industrial sector.

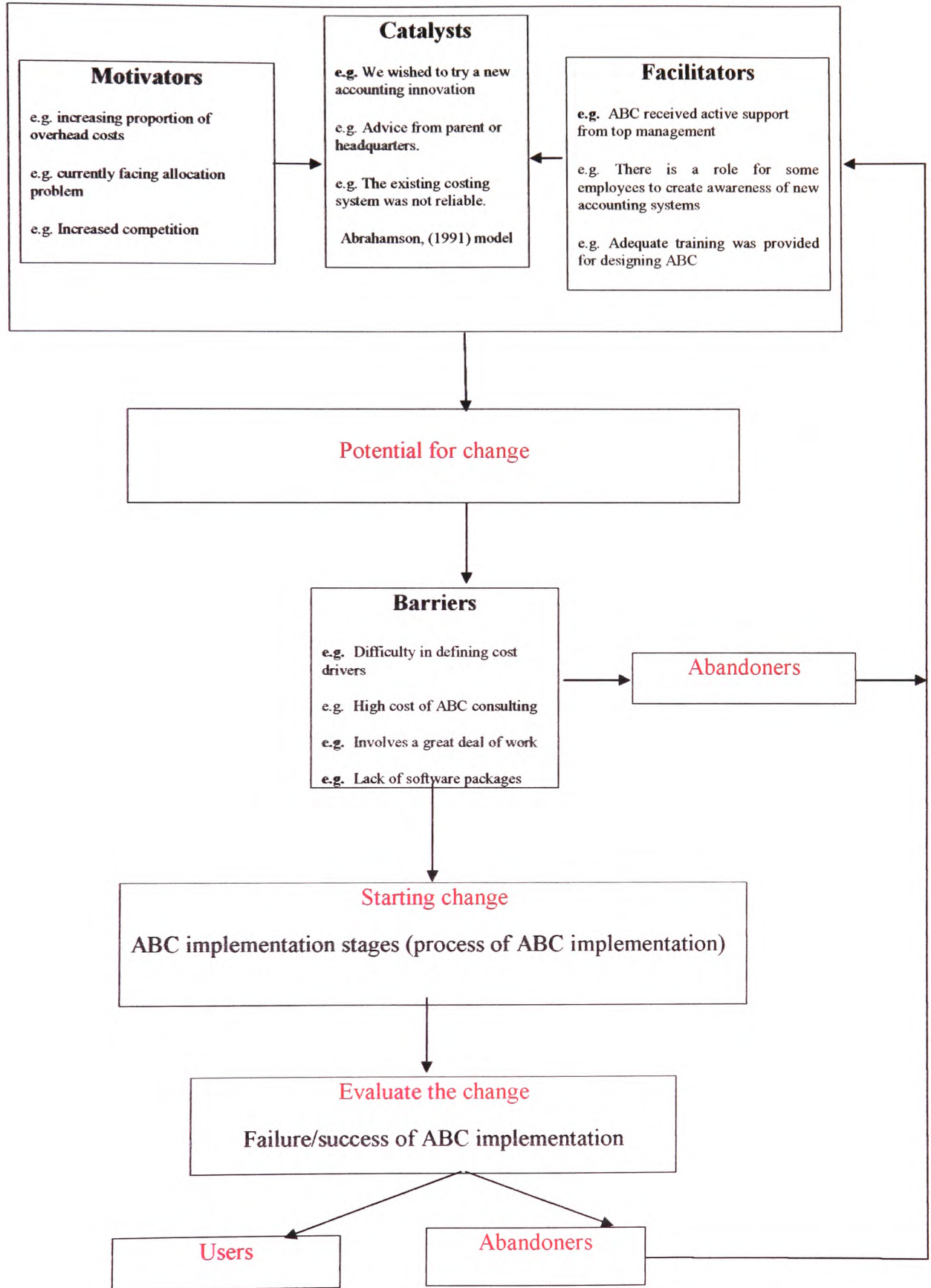
- **Evaluating the Change (Success or Failure of Change)**

Three main approaches to measure ABC implementation success have been used in previous studies. The first uses management evaluations of overall success (see Shields, 1995; Swenson, 1995; McGowan and Klammer, 1997). This approach has been criticised 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 routinisation to an integrated system. This approach is inconsistent with Gosselin (1997) and Baird *et al.* (2004).

The third approach measures success using multiple attributes (see Foster and Swenson, 1997; Anderson and Young, 1999). 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 industrial sector, and this multi-attribute approach is consisted of satisfaction with ABC implementation, the extent of using ABC in decision-making and the degree of success of ABC implementation. The research model is shown in Figure 4.1.

Figure 4.1 The research model in current study



4.5 Summary

This chapter provided a review of the empirical ABC literature. The surveys relating to ABC adoption and implementation in different countries (Europe, North America, Africa and Asia) were presented to evaluate the degree to which ABC has been implemented by companies, and further factors relating to the implementation of ABC were discussed. In addition, this section provided a review of studies that examined the factors influencing the adoption, failure and success of ABC implementation.

The previous literature review has provided the basis for the development of a research model to analyse the implementation process of ABC in the Jordanian industrial sector. 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, facilities. Cobb *et al.* (1995) and Kasurinen (2002) developed this further by adding factors that hindered, delayed, or even prevented change, thereby functioning as barriers.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Introduction

Hussey and Hussey (2003) argued that conducting a research project requires the development of an appropriate research approach and the adoption of accurate data collection methods. The quality of the collected data determines the quality of the research results (Holloway, 1997; Neuman, 1997; Collis and Hussey, 2003; Sekaran, 2003; Bouma and Ling, 2004).

The use of a particular methodology for a research project depends on the scope, purpose and target population of the study as well as the resources available to the researcher (Nachmias and Nachmias, 1996; Sekaran, 2003). Thus, it is fundamental that in order for researchers to achieve their research aims and objectives, they have to adopt the right methodology and select the appropriate data collection methods through which they can collect the required data within their available resources (Collis and Hussey, 2003; Hussey and Hussey, 2003; Bouma and Ling, 2004).

The present chapter aims to detail the processes employed in the design and execution of this study in order to obtain data that achieves the research aim and objectives. It explains the research methodology of the study, and therefore includes a presentation of the data collection and research methods employed in the study. This will include the questionnaire design, classification of questionnaire sections, pre-testing and pilot study of the questionnaire, selection of the individual respondents and reliability and validity, interview processes and interviews analysis methods.

5.2 Research Methodology

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). Hussy 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 analyse data in the current study.

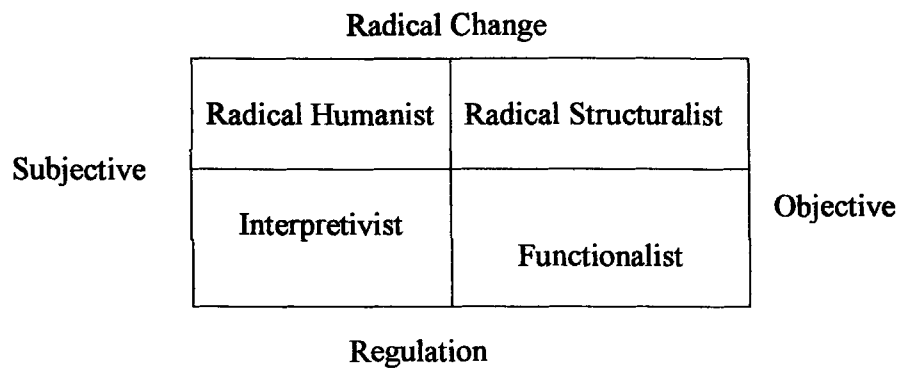
Any methodological position consists of two elements; ontology and epistemology. Guba and Lincoln, (2005) stated that Ontology refers to the nature of the world around us; in particular, that slice of reality which the scientist chooses to address. They suggested two extreme positions; realism, which 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 (Punch, 1998; Gephart, 1999; 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 5.1). Each of the four paradigms has fundamentally different assumptions concerning the nature of social science and the nature of society.

Figure 5.1: Burrell and Morgan's four paradigms



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

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 structuralist paradigm has a view of society and organisations, which emphasises the need to overthrow or transcend the limitations placed on existing social and organisational arrangements by assuming that contemporary society is characterised 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 organisational 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.

5.3 Data Collections Methods

De Vaus (2007) and Collis and Hussey (2003) claimed that it is difficult to decide which method is the best. The most appropriate method depends on the purpose of the study, sample size and distribution, time and money available, and the environment and conditions under which the study is conducted (Collis and Hussey, 2003; Sekaran, 2003; Zikmund 2003; Bouma and Ling, 2004). 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, two methods, interviews for a small number of companies and a questionnaire survey 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 and Hussey, 2003).

The interview method (Qualitative data) is more suitable for the collection of 'in-depth' data from one or a small number of companies to achieve some particular purposes, such as generating ideas and structuring hypotheses. On the other hand, collected data through interviews are usually more expensive, permit the interviewer's personal influence and bias to intrude, and may minimise the ability to maintain anonymity, which can be particularly important when sensitive issues are being researched (Nachmias and Nachmias, 1996; Sekaran, 2003).

The questionnaire (Quantitative data) is a highly structured data collection technique whereby each respondent is asked written questions. It may be mailed to respondents or can be administered personally (Openheim, 1992). The questionnaire has the following advantages namely, it is cheaper than the interview, particularly when the sample number is large and respondents are widely spread over a large geographic area, it guarantees respondent anonymity, particularly important when the survey deals with sensitive issues, it minimises bias errors that might result from interviewer influence and the respondent is given time to consider his/her answers, consult other people and look into records before answering. On the other hand, the main disadvantages of the questionnaire are that, it is difficult to control who completes the questionnaire, the researcher has no opportunity to check the accuracy of the

information received, interpret ambiguous questions and clarify ambiguous answers (Collis and Hussey, 2003; Hussey and Hussey, 2003; Bouma and Ling, 2004).

De Vaus (2007) suggested that data can be collected and interpreted in various ways which have both advantages and disadvantages. One way of overcoming the limitations of both methods is to combine them, and such a mix data collection method approach has been adopted for this study (Nachmias and Nachmias, 1996; Neuman, 1997; Sale *et al.*, 2002; Collis and Hussey, 2003; Sekaran, 2003; Bouma and Ling, 2004; De Vaus, 2007).

Saunders *et al.* (2000, p. 98) pointed out that employing a mix-method approach in research is very common, where the researcher combines quantitative and qualitative methods. They also highlighted two main advantages from employing this approach. 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”.

Secondly, collecting data through mix-methods and from multiple sources lends rigour to research. Saunders *et al.* (2000, p 189) suggested that:

“From a combination of different research methods we may be able to develop a deeper understanding of change in accounting systems but no single method in itself should be regarded as definitive”.

In ABC literature, both quantitative and qualitative methods are employed to develop a more complete understanding of ABC implementation. For instance, Innes and Mitchell (1990) suggested that ABC researchers should invoke a mix-method approach in which quantitative and qualitative methods are used in order to achieve a better understanding of ABC adoption and implementation. In addition, Anderson and Young (1999), who studied the impact of contextual and process factors on the evaluation of ABC, also employed mix-data collection methods, including surveys and personal interviews. The interviews were designed to supplement the survey data. In addition, Chongruksut (2002), who examined ABC adoption and implementation in Thailand, also used mix-data collection methods, including mail questionnaire surveys and structured interviews. The interviews were conducted to supplement the survey data.

Several authors explain how quantitative and qualitative methods can be combined (Nachmias and Nachmias, 1996; Neuman, 1997; Sapsford and Jupp, 1998; Collis and Hussey, 2003; Sekaran, 2000; Bouma and Ling, 2004). Creswell (2003) suggested that there are four strategies for combining quantitative and qualitative methods.

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

In accordance with the first strategy of Creswell (2003), 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.

The current study has two stages: quantitative and qualitative stages. These were completed in three phases. In the first phase, the initial questionnaire survey was distributed among the Jordanian industrial sector to determine each category for each company and to determine the current state of ABC adoption and implementation within this sector.

During the second phase, the main questionnaire survey was designed to assess the extent of usage of ABC and factors facilitating, motivating and acting as barriers to the decision to adopt and implement ABC among Jordanian industrial companies and finally evaluate the degree of success of ABC.

In the third phase, personal interviews were conducted with one of the members of the ABC project team in the Jordanian industrial companies to clarify, understand and add further information about ABC and the factors that influenced the decision to adopt and implement ABC. The following subsections will discuss these processes in more detail.

5.4 The First Phase: The Initial Survey and Participation Form

The details regarding to the initial survey objectives, administration and analysis are described below:

5.4.1 Objectives of the Initial Survey

The terms of adoption have been subjected to different interpretation in previous studies with some studies defining adoption as actual ABC implementation (Shields, 1995; Swenson, 1995; Mc Gowan and Klammer, 1997; Cagwin and Bouwman, 2002) and others defining it as consisting of either actual implementation or a desire to implement it (Booth and Giacobbe, 1997; Bjornenak, 1997; Cohen *et al.*, 2005). Furthermore, comparisons have differed with some studies comparing those companies that have actually implemented ABC with those that have not and others comparing companies that have considered the implementation of ABC with those that have not-considered ABC. It is, therefore, difficult to compare the findings from the various studies (Drury and Tayles, 2005). In order to overcome the above classification difficulties, the initial questionnaire survey was designed.

The initial questionnaire survey was designed to gather evidence about the current state of ABC adoption and implementation within the Jordanian industrial sector, and it also sought to determine the category of adoption and implementation for each company. Moreover, the initial survey was used as a participation form, giving the respondent the decision to participate in the main questionnaire survey.

The consideration to implement ABC was used as basis to classify the companies into categories (Bjornenak, 1997; Gosselin, 1997). In this study, when companies have not seriously considered ABC, and still use either single or departmental allocation methods only they were classified as '**Non-considerers**'. On the other hand, when companies perceived the distortion of the existing cost system and consider ABC as the possible solution they were classified as '**Considerers**'. When the approval has

been granted to devote or spent the necessary resources to implement ABC, the companies were classified as **'Adopters'**.

When the companies had begun implementing ABC systems, were in the process of forming a team for ABC implementation, were determining project scope and objectives, were collecting data or/and analysing activities and cost drivers after the approval had been granted to implement ABC and had devoted/spent the necessary resources to implement ABC system they were categorised as **'Implementers'**. In short, when companies reached the stage of developing and installing ABC they were classified as **'Implementers'**. When the implementation of ABC was finished and companies started using ABC information as a part of daily practice or integrating ABC with other systems they were classified as **'Users'**. Finally, when companies had implemented ABC in the past, but have abandoned it, they were classified as **'Abandoners'**.

5.4.2 Administration of the Initial Questionnaire

To achieve the research objectives, the questionnaire survey was distributed among all the Jordanian industrial companies listed at the Amman Stock Exchange and included two main questions (see Appendix D). The first questions request the respondents to determine one category from six that best describes to his/her current business situation and the second question asks the respondents if he/she agrees to participate in the main questionnaire survey based on his/her answer to the first question.

This process took place from 13th October to 20th November 2007. Eighty-eight questionnaires were distributed and seventy-three questionnaires were returned, giving a rate of response of 83%. To improve the response rate after the questionnaires were distributed they were then followed-up with a phone call and later by a personal visit to collect the completed surveys. In addition, the headquarters of the companies were located in the capital of Jordan (Amman), making access easier to follow-up the respondents and to collect all responses.

Table 5.1 shows the six categories of ABC implementation. The first category includes 17 companies that are not-considering ABC. The second category includes 5 companies classified as considering ABC implementation. Meanwhile, 7 companies receive the final approval to implement ABC and are therefore classified as adopters.

27 companies currently implementing ABC were classified as implementers. Meanwhile, 10 companies who implemented ABC in full and started using ABC information for different purposes were classified as users. Finally, 6 companies that had implemented ABC in the past then abandoned it were classified as abandoners.

Table 5.1 The number of companies in each category of ABC implementation

Category	Name of the Category	Number of the Companies	Percentage	Cumulative Percentage
1	Non-considerers	17	23.3	23.3
2	Considerers	5	6.8	30.1
3	Adopters	7	9.6	39.7
4	Implementers	27	37	76.7
5	Users	10	13.6	90.3
6	Abandoners	7	9.7	100
	Total	73	100	

5.5 The Second Phase: The Main Questionnaire Survey

The aim of the main questionnaire survey was to achieve the research objectives and answer the research questions described in the previous chapter. The issues related to the main questionnaire survey design are discussed in the following sections.

This section starts with the reasons for selecting a questionnaire as the instrument for collecting data. Then, the definitions and advantages of employing a questionnaire survey are presented. The research design includes the development of the questionnaire survey and is described in the following section. The pre-test, pilot study and questionnaire administration methods are explained. Lastly, the data analysis methods that were adopted in the current study are described.

5.5.1 Questionnaire Survey

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”.

The questionnaire is the most frequently used method in the social science field (Saunders *et al.*, 2000; Leedy, 2005; Trochim, 2006). It is a highly structured method of collecting specific information as a response to highly directed questions (Fowler, 2002). It is simply a list of questions that take the form of closed-ended or/and open-

ended questions. Questionnaires tend to be used to explore attitudes and opinions about certain issues and to obtain data that are not available within the public domain (Leedy and Ormrod, 2001; Hussey and Hussey, 2003).

The questionnaire survey is one of the most widespread techniques that has been used in many previous studies to investigate the diffusion of ABC and the factors that influence its adoption and implementation (Innes and Mitchell 1991; Shield, 1995; Gosselin, 2007), and can be used for both descriptive and explanatory research. In terms of descriptive research, it allows the researcher to identify and describe the variability in different phenomena, and for explanatory research, it allows the researcher to investigate and explain relationships between variables (Saunders *et al.*, 2000).

The reasons for using a questionnaire in this research, which are also consistent with the views of Saunders *et al.*, (2000); Sekaran (2003); and Trochim (2006), are detailed as follows:

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

5.5.2 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, analysing, 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 and 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).

5.5.3 Classification of Questionnaire Sections

The questionnaire was composed of six sections that accommodated issues investigated in this research. Each section contained several questions on particular aspects of ABC adoption and implementation. As shown in Table 5.2, these sections were: company characteristics, reasons for non-considered ABC, factors against ABC implementation, ABC implementation, level of ABC success and demography questions. The aim of this division was to facilitate the answering of questions by respondents and their 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:

The first section related to 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 investigated whether these factors were associated with the use or non-use of ABC since the results of Chung *et al.* (1997), Bjornenak (1997) and Cohen *et al.* (2005) showed that the cost structure of a company and the characteristics of product/service and production influenced the capability of the company to use ABC.

The second section of the questionnaire, focused on the reasons for non-considered ABC. This section contained 20 potential reasons that had been derived from the literature review for non-consideration of ABC. For each reason, the respondents were

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 were adopted from Innes and Mitchell (1991), Chung *et al.* (1997), Gosselin (1997), and Cohen *et al.* (2005).

The third section of the questionnaire focused on factors against the implementation of ABC. This section contained 12 potential factors that had been derived from the literature review for the factors that impact the implementation of 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. The questions in this section were adopted from Innes and Mitchell (1991) and Cohen *et al.* (2005).

The purpose of **the fourth section** was to discover data about the implementation of ABC. Thus, the questions in this section were directed to implementers and users of ABC. This section involved four questions relating to companies' experience with ABC which are detailed next.

Question 1 sought to examine the reasons for implementing ABC within the Jordanian industrial sector. The specific measures of *reasons for implementing ABC* examined in the current study included the following factors; efficient-choice (5 items), forced-selection (2 items), fashion (2 items), and fad (one item). A list of 10 potential items was provided and the respondents were asked to indicate their relative importance on a 5-point scale ranging from 1 = Vitality unimportant to 5 = Vitality important. This question was adopted from Malmi (1999).

Question 2 examined factors that facilitated the process of ABC implementation. In this study, the factors that facilitated the process of ABC implementation provide managers with some favourable conditions that are necessary, but not sufficient by themselves, for implementing ABC. The specific measures of *facilitates* examined in the current study covered the following factors: top management support (3 items), internal champion support (2 items), education (2 items), training (2 items), Consultants (3 items), and higher information technology (2 items). This question contained 14 potential items that had been derived from the literature review 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), Shields (1995), Krumwiede (1998), Brown *et al.* (2004) and Cohen *et al.* (2005).

Question 3 examined factors that motivated the process of ABC implementation among the Jordanian industrial companies. In this study, the factors that motivated the process of ABC implementation were defined as factors that influenced implementation of ABC in a general manner. The specific measures of *motivators* examined in the current study 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). This question contained 11 potential items that had been derived from the literature review that motivated the process leading to the implementation of ABC. For each item, the respondents were asked to indicate their agreement rating on a five point scale ranging from 1 = Strongly disagree to 5 = Strongly agree. This question was adopted from Gosselin (1997) and Krumwiede (1998).

Question 4 involved the problems of ABC implementation that a company had experienced. As mentioned in the literature, when the installation and implementation of ABC had begun, most companies tended to encounter some problems, which may be similar or different between companies. This question covered 16 factors and was measured by a five-point scale from 1 = Strongly disagree to 5 = Strongly agree. This question was adopted from Innes and Mitchell (1991) and Cohen *et al.* (2005).

The fifth Section was used to assess the degree of ABC success among user companies. It comprised of three questions. The aim of the first question was to measure the level of the success of ABC implementation. This question was adopted from Foster and Swenson (1997). The second question was adapted from Swenson (1995) and Foster and Swenson (1997), and related to the areas in which ABC information was 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 Innes and Mitchell (2000). The third question measures the satisfaction with ABC. This question, containing 3 items, was measured by a five-point scale from 1 = Very unsatisfied to 5 = Very satisfied and was adopted from Swenson (1995) and Foster and Swenson (1997).

The final section related to the personal information of the respondents such as education, work experience and current position in the company.

Table 5.2 Classification of factors in the questionnaire

Section	Factors determined in the questionnaire
One	Questions for all respondents Company characteristics Industry group, number of employees, number of products, and level of overhead
Two	Factors determined for non-consideration of ABC 1.1 Reasons for not considering ABC
Three	Factors determined for ABC adoption 1.1 Factors against the implementation of ABC
Four	Factors determined for ABC implementation Experience with ABC implementation: 1.1 Reasons for implementing ABC 1.2 Factors that facilitate the process of ABC implementation 1.3 Factors that motivate the process of ABC implementation 1.4 Problems of ABC implementation
Five	Factors that determined the success of ABC implementation 1.1 The level of ABC success 1.3 The usage of ABC information 4.5 The degree of satisfied
Six	Questions for all respondents Personal information of the respondents

5.5.4 Pre-testing and Pilot Study of the Questionnaire

Social science researchers emphasise the importance of conducting pre-testing and a pilot study to establish that the proposed questionnaire is understandable and clear to the members of the target population (Miller, 1991). For instance, Hussey and Hussey (2003) argued that although pre-testing a questionnaire is time-consuming, it is absolutely essential to ensure a quality questionnaire.

In addition, Miller (1991) stated that even well-trained and highly experienced researchers could find some changes that would improve the performance of the questionnaire by conducting pre-testing and a pilot study. In the current study the pre-testing and pilot test were performed to:

1. Check whether respondents understood all the questions;
2. Check the logic of question order;
3. Check whether any questions had double meanings, or lead to confusion among respondents;
4. Show how long it took to complete a questionnaire;
5. Indicate whether further instructions were necessary.

This process consisted of two stages: stage one related to pre-survey issues and stage two related to the designing, classification and sequencing of the questions.

Stage one: Pre-survey issues

In order to build a good questionnaire, it was necessary to develop a series of measures that would adequately achieve the study's objectives. The questionnaire took ten months to prepare. The major source for determining the questionnaire content was the existing literature. The questions used were adopted from published research. This approach was used to maximise the validity of the research. In addition, the researcher attended conferences to provide the opportunity to meet the people who were involved in similar areas of research. For example, the researcher attended the British Accounting Association (BAA) conference held in Blackpool and discussed with some of the delegates questions relating to the study. Moreover, the researcher met people involved in ABC at the British Accounting Association Joint Conference of the Northern Region Accounting Group at Bradford University School of Management. During this period the first version of the questionnaire was constructed.

Stage two: Designing, classifying and sequencing the questions

Originally, the questionnaire was constructed in English. Because the general language of the target population was Arabic, the questionnaire had to be translated into that language. The purpose of the Arabic version of the questionnaire was to permit respondents with little or no knowledge of English to participate in the survey. This was a very important stage in the study since any mistakes in translation could change the meaning and context of the questions.

Sekaran (1992, p.242) stated that:

“it is important to ensure that the translation of the instrument to local language is equivalent to the original language in which the instrument was developed”.

Three translators were used. A translation firm produced an official translation of the questionnaire. Then, a bilingual person who grew up in Jordan who is also a native speaker of the Arabic language conducted the second translation. The last translator gained his doctorate in Accounting in the UK and has been teaching Accounting in Jordan for more than five years. The translations and the original questionnaire were carefully compared by the researcher and examined to ensure that there were no significant differences between the English and Arabic versions. No significant differences were detected.

It is essential that researchers first pre-test the questionnaire with their friends and colleagues before distributing it. It is also useful to pilot it with a small sample of respondents to check the suitability for achieving the research aim and objectives (Hussey and Hussey, 2003). In accordance with the above suggestions, in order to check the questionnaire's suitability and validity for the present study, a draft was passed to seven PhD student volunteers at different universities (one at the University of Wales, Newport, one at the University of Bradford and five at the University of Aberdeen). All the students have undertaken doctoral research in Accounting and the researcher chose them because they were involved in researching areas close to topic. They were briefed by telephone and provided many comments relating to the wording and placing of some questions. All their comments were taken into account at this stage.

Moreover, the questionnaire was passed to members of the Faculty of Economics and Managerial Sciences in the Applied Science University and Al-Hashmia University (all having obtained a PhD in Accounting from the UK and Australia) to confirm the meaning in Arabic. The researcher received many useful comments and suggestions from conducting this stage. Then, this pre-tested questionnaire was sent to two specialists in statistics at the Applied Science University to check the types of statistical tests that might be used for interpretation and analysis. Few comments and suggestions were received from the two specialists because they stated that this questionnaire seemed to be very simple and straightforward. The aim of this pilot test was to assess whether the research instrument was valid and reliable.

Finally, the draft questionnaire was sent to three chief financial managers in the Jordanian industrial sector. The reason for testing using a small number of companies for a pilot study was due to constraint factors, cost and time (Sekaran, 1992). Prior studies suggested that the pilot study group should be part of the general group being investigated in the primary survey (Hussey and Hussey, 2003). All questionnaires used to conduct the pilot study had a covering letter explaining the nature and objectives of the research and the procedures that would be undertaken to ensure confidentiality. The participants were asked to comment on the questionnaire in terms of clarity and design. They offered some suggestions related to wording and options in some questions. In the light of these comments and suggestions, a number of changes and corrections were made. The translation and piloting process in Jordan took from early June 2008 to early September 2008.

To take into account the comments and suggestions from the pilot study, the final version of the questionnaire was ready to be distributed by hand to Jordanian industrial companies. The content of the final version of the questionnaire will be described in the following sub-section.

5.5.5 Content of the final Version of the Questionnaire

Four types of questionnaire were designed based on the six categories which were defined in the initial survey. The objectives of designing four types of questionnaire were to motivate the respondents to answer all questions by reducing the number of pages for each questionnaire (Smith *et al.* 2003), in order to save the respondents' time and help them to focus on specific questions related to one category that best described

his/her business unit's current situation. Table 5.3 shows the link between the four types of questionnaire, content of questionnaire and the research questions. The aims of each type of questionnaire are described next.

- **Type One: Questionnaire for Non-considerers of ABC**

The first type of questionnaire was designed to investigate the potential reasons that may explain why the non-considerer companies had not-considered ABC. The questionnaires were sent to chief financial managers/heads of cost accounting departments and they were requested to give reasons explaining their decisions for not-considering ABC, as shown in Appendix E.

- **Type Two: Questionnaire for Considerers and Adopters of ABC**

The second type of questionnaire was designed to ascertain the potential factors that may impact upon the decision to implement ABC although the companies considered or adopted ABC; the questionnaires were sent to chief financial managers/heads of cost accounting departments and they were requested to give reasons explaining their decisions for not-implementing ABC yet, as shown in Appendix F.

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

The third type of questionnaire was designed to examine the reasons for implementing ABC, the factors that facilitated the implementation of ABC, the factors that motivated the implementation of ABC and the barriers to implementing it, as shown in Appendix G.

- **Type Four: Questionnaire for Abandoners of ABC**

The last type of questionnaire was designed to investigate the main problems encountered during the process of ABC implementation. The questionnaires were sent to chief financial managers/heads of cost accounting departments and they were asked to evaluate the difficulties in designing and implementing ABC and give reasons explaining their decisions for abandoning ABC, as shown in Appendix H.

Table 5.3 The contents of four types of questionnaire survey

Questionnaire type	Content of the questionnaire	Number of the questions
<i>Type One: Non-considerer Companies</i>	<ol style="list-style-type: none"> 1. Personal questions 2. Questions about company characteristics. 3. Question relating to reasons for non-considering ABC 	<p>4 questions</p> <p>5 questions</p> <p>1 question</p>
<i>Type Two: Considerer and Adopter Companies</i>	<ol style="list-style-type: none"> 1. Personal questions 2. Questions about company characteristics. 3. Question relating factors that impact upon ABC implementation 	<p>4 questions</p> <p>5 questions</p> <p>1 question</p>
<i>Type Three: Implementer and User Companies</i>	<ol style="list-style-type: none"> 1. Personal questions 2. Questions about company characteristics. 3. Question relating to reasons for ABC implementation. 4. Question relating to factors that facilitate ABC implementation 5. Question relating to factors that motivate ABC implementation 6. Question relating to problems encountered during ABC implementation 7. Questions relating to the level of ABC success 	<p>4 questions</p> <p>5 questions</p> <p>1 question</p> <p>1 question</p> <p>1 question</p> <p>1 question</p> <p>3 questions</p>
<i>Type Four: Abandoner Companies</i>	<ol style="list-style-type: none"> 1. Personal questions 2. Questions about company characteristics. 3. Question relating to reasons for abandoning ABC implementation 4. Stages of ABC abandonment 	<p>4 questions</p> <p>5 questions</p> <p>1 question</p> <p>1 question</p>

5.5.6 Administering the Questionnaire

Saunders *et al.* (2000) and Hussey and Hussey (2003) 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. These methods are explained as follows:

1. **Self-administered:** in self-administered questionnaires, respondents are requested to complete the questionnaires themselves. Personal delivery and collection is the most common form of self-administered questionnaire (Babbie, 1998; Dillman, 2000; Saunders *et al.*, 2000; Cavana *et al.*, 2001; Hussey and Hussey, 2003).
2. **Face-to-Face:** the process of administering survey questionnaires by interview with the respondent in a face-to-face encounter. In addition, this type of method can be defined as an interview during which a structured conversation is used to complete a survey (Saunders *et al.*, 2000; Hussey and Hussey, 2003). The advantage of personal interviews is that they tend to have high response rates (Hussey and Hussey, 2003). In addition, they provide an opportunity for direct contact between interviewee and interviewer and, therefore, may motivate interviewees to provide more reliable answers and additional information. Nevertheless, as with any method, face-to-face interviews have some disadvantages as well as benefits. The major disadvantages of face-to-face surveys are that they often require trained staff and are more time-consuming and expensive to conduct and process. There are also risks of interviewer bias and such interviews are usually too expensive to reach a widely dispersed sample (Saunders *et al.*, 2000; Hussey and Hussey, 2003).
3. **E-mail questionnaire survey:** e-mail services enable the researcher to send questionnaires directly to the respondents. E-mail surveys have several advantages. First, the costs of the paper are totally eliminated. Distribution time is greatly reduced as the e-mail system routes the survey electronically. In addition, it enables the researcher to make direct contact with the respondents. However, this method has some disadvantages. Using e-mail poses a major problem in terms of confidentiality or anonymity of response and the difficulties in relation to finding the respondent's e-mail address (Babbie, 1998; Dillman, 2000; Cavana *et al.*, 2001).
4. **Telephone survey:** the telephone survey is an alternative method to the face-to-face survey. In this method, the researcher reads the survey questionnaire over the telephone to the respondent for his/her verbal responses to the questions. The main advantages of this method are the significant savings

related to the researcher's time and costs. Also, this method combines the benefits of mail questionnaires and face-to-face questionnaire surveys, as respondents' misunderstanding of the questions can be overcome. Response rates may be increased by using telephone communication to persuade the respondents to complete the mail questionnaire (Babbie, 1998; Dillman, 2000; Saunders *et al.*, 2000; Cavana *et al.*, 2001; Hussey and Hussey, 2003).

5.5.7 Justifications of the Administration Method used in the Current Study

Although selecting a particular method depends on the research objectives, time and financial resources of the study (Hussey and Hussey, 2003), self-administered by personal delivery is the most suitable method to collect the data in the current study. Personal delivery and collection was chosen for the reasons described next.

First, the headquarters of the majority of the companies (65 companies out of 88 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 rate 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 industrial sector, 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 industrial companies, make any utilisation 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.

Many authors such as (Sekaran, 1992; Saunders *et al.*, 2000) claimed that self-administrated questionnaires are one of the most frequently used methods for collecting data in research studies. In self-administrated questionnaires, the respondents are given the questionnaires and asked to complete them in their own time and return them for collection by the researcher. There are many advantages of using self-administrated questionnaires. The greatest advantage is their lower cost compared to other methods, such as e-mail questionnaire surveys or telephone surveys. In addition, they are easy to administer to a large number of people and can be the most usable form of data gathering in survey research (Sekaran, 1992; Saunders *et al.*, 2000).

5.5.8 Target Population

The population of the study consists entirely of Jordanian Industrial Shareholding Companies which were listed on the Amman Stock Exchange at the end of 2006. The Jordanian Industrial Shareholding Companies were chosen as the arena for this study for three reasons:

1. The industrial companies sector is considered as one of the largest sectors listed on the Amman Stock Exchange. The total number of companies included was 88 at the end of 2006. This figure had increased over the preceding four years from 56 companies at the end of 2002 to 88 companies in 2006 (an increase of 36%).
2. Al-Khadash and Feridun (2006) argued that Jordanian industrial companies have a good environment to adopt new managerial initiatives such as ABC systems because they have both the funding and the human resources.
3. A great deal of data about the industrial shareholding companies is available from the Amman Stock Exchange.

5.5.9 Selection of the Individual Respondents

In ABC literature, it has been suggested that the chief financial manager is considered to be the person most likely to provide accurate and useful data concerning the design and use of product costing systems (Kaplan and Atkinson, 1998; Chenhall and Langfield-Smith, 1998). However, such a person may be too busy to answer a questionnaire and, as previous research has indicated (Chongruksut, 2002), is likely to pass the questionnaire to somebody else within the company to complete. It is likely that a person in the position of assistant chief financial manager would have more time to answer the questionnaire. Therefore, the researcher decided firstly to request that the chief financial managers or assistant chief financial managers complete the questionnaire survey. On the other hand, many researchers have used qualified management accountants, such as heads of accounting departments or heads of cost accounting departments to answer questionnaires (Innes and Mitchell, 1991; Clark *et al.*, 1999; Cohen *et al.*, 2005; Al-Khadash and Feridun, 2006). It would appear that a qualified management accountant in a company is also the best informed person concerning the product costing system. He/ she is likely to have a good knowledge of this system and more time than the chief financial manager or the assistant financial manager to answer the questionnaire.

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 maximise the response rate. Both the head of the accounting department and head of cost accounting department are most appropriate job titles 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 factors, the questionnaire requested that one of those people holding such a position complete the questionnaire namely: Chief Financial Manager, Assistant Financial Manager, Head of Accounting Department or Head of Cost Accounting Department.

5.5.10 The Features of the Covering Letters

The covering letter enclosed with the final version of the questionnaire (see Appendix A,B,C) was designed to ensure that the respondents clearly understood what was expected wherever possible; the letter included the supervisor and researcher signature, complete with their summary details.

Sekaran (2000) and Saunders *et al.* (2000) suggested that motivation is very important when using the self-administered questionnaire to collect data. Therefore, in order to establish the credentials of the researcher and to encourage responses, two covering letters were attached to the final questionnaire. The first one is known as the Plain Language Statement. In this form, the researcher provided participants (Chief Financial Manager/Head of Cost Accounting department) with specific details regarding the research aims and addressed a number of issues of particular concern to participants, such as confidentiality.

The second covering letter was from the president of the Applied Science University and this letter involves the general purpose and objectives of the research and encourages the respondents' cooperation. The original signature of the President of the Applied Science University along with the official university stamp were placed on official university paper and attached to every questionnaire. Such a letter is very important in the Jordanian business environment for two reasons. First, according to cultural expectations, it is difficult to obtain information without a formal letter. Second, as some of the information to be obtained was considered to be confidential, it was expected that this information would not be given without a formal request from a Jordanian higher educational organisation.

In summary, the two covering letters in the current study involved these steps in order to significantly increase the response rate:

1. An explanation of the purpose of the research, the reasons why it was important that the respondents should complete the questionnaire and the method by which the respondents were selected;
2. A statement that assured that the responses of respondents would be treated as confidential, an explanation of the potential uses of the results, and an offer to make the results available to the respondents;

3. The covering letter contained most of the important features that many authors recommend (Sekaran 2000; Saunders *et al.*, 2000).

5.5.11 Ethical Consideration for Questionnaire

Before conducting the questionnaire survey, an information sheet, stating that the research was being conducted in cooperation with the University of Wales, Newport and Newport Business School, was prepared in order to explain the purpose of the study and the ethical rules pertaining to this research. This was attached to each questionnaire and sent to participants (see Appendix A, B, C). The participants were informed that under the ethical code, they were participating voluntarily and no risks, such as psychological, moral, legal or other risks, would occur to them.

For administrative purposes, the questionnaires were coded. The codes were exercised for follow-up procedures. Access to the codes was restricted to the researcher. Completed questionnaires of the survey are kept in a secure place at University of Wales, Newport under the researcher's control and are available only to the researcher and supervisors. In addition, the results are reported only in aggregate form so as to prevent the identification of individual responses from the participants.

5.5.12 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.

- **Reliability**

Zikmund (2003) refers to reliability as a measure when similar results are obtained over time and across situations. Reliability tests the consistency and stability of a measurement instrument or a test (Litwin, 1985; Trochim, 2006). It is the degree to which measures are free from error and, therefore, yield consistent results across time and across various items (Sekaran, 2003; Zikmund, 2003). Two dimensions underpin the concept of reliability; internal and external reliability. The first dimension is particularly important in connection with multiple-item scales; the second dimension is the more common and refers to the degree of consistency of a measure over time. There are three common ways of estimating reliability: parallel-form reliability, test-retest reliability, and split-half reliability. Each these forms will now be explained:

1. **Parallel- form reliability.** This test involves the use of different worded items to measure the same variable or attribute. A common way here is simply to correlate the scores of two (or more) forms of a measure given to a single group of respondents (Zikmund, 2003).
2. **Test-retest reliability.** This test requires the administration of a questionnaire to the same set of respondents at two different points in time to examine to what extent responses are stable. It is commonly measured by calculating the correlation coefficient, which is called coefficient of stability (or r-value). The coefficient of stability is considered to represent stability if it equals or exceeds 0.70.
3. **Internal consistency reliability.** This method involves a measure to indicate how well the different items measure the same construct. This test is, therefore, applied only to a situation where multiple questions are used to measure the same variable. It is widely recognised to measure internal consistency by calculating a Cronbach alpha (Sekaran, 2003; Zikmund 2003; Trochim, 2006).

In the current study, it was not possible to send the same questionnaire to the same respondents to complete at two different points in time. Also, respondents would be unlikely to agree to complete the questionnaire twice. Therefore, measuring retest reliability was not possible. Moreover, measuring alternate-form reliability was not possible either, due to the fact that it would have been extremely difficult to administer two different forms of the same questionnaire to the respondents.

As a result, this study used Cronbach alpha to measure internal consistency reliability. The Cronbach alpha is considered as a good indicator in achieving reliability and is:

“one of the most important indicators of a scale’s quality in the reliability coefficient, alpha” (De Vellis, 1990, p 83).

The Cronbach alpha is a commonly used test to examine the reliability coefficient within a particular set of items by correlating performance on each of the items in a test or a scale with overall performance on the test or scale across participants (Litwin, 1985; Sekaran 2003; Zikmund 2003). Cronbach alpha is computed in terms of the average intercorrelations among the items measuring the concept (Sekaran, 2003).

Cronbach's alpha test has many interpretations. Firstly, the test shows the correlation between a particular test or scale and all other possible tests or scales containing the same number of items or questions which could be constructed from a hypothetical universe of questions that measure the given variable. In other words, it shows how much correlation is expected between the items used and all other possible items measuring the same variable (Nachmias and Nachmias, 1996; Collis and Hussey, 2003; Sekaran, 2003; Bouma and Ling, 2004).

Secondly, it measures the squared correlation between the score obtained on a particular scale (the observed score) and the score that would have been obtained if questioned on all the possible items in the universe. As alpha can be interpreted as a correlation coefficient, it ranges from 0 to 1, and negative alpha means that the items are not positively correlated among themselves, the reliability model is violated (Litwin, 1985; Zikmund, 2003; Trochim, 2006).

Thirdly, alpha can be compared to the standardised item alpha, which is the alpha value that would be obtained if all of the items were standardised to have a variance of one. Few differences between the two means that the scale has a fairly comparable variance (Oppenheim, 1998; Sekaran, 2003; Zikmund, 2003). In the current study, reliability estimates for the measures of variables were computed using the software package SPSS version 15.

Table 5.4 below shows the Cronbach α 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; Trochim, 2006).

Table 5.4 Reliability statistics

Variables	No. of items	Mean	Actual range	Alpha
Reasons for ABC implementation	10 items	3.793	3.225- 4.258	.879
Factors that facilitate the implementation of ABC	14 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 to ABC implementation	16 items	3.683	2.903- 4.548	.846

- Validity

Zikmund (2003, p. 211) defined validity as:

“an ability of the measuring instrument to measure what it is intended to be measured”.

Litwin (1985) 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, 1985; Trochim, 2006).

Three types of instrument validity are normally cited. The first type is *Construct Validity* Litwin (1985) and Trochim (2006) clarified construct validity as the extent to which the results of a test are related to an underlying construct. Construct validity examines whether the empirical evidence, or a test score, relate to some underlying theory or set of related factors. In addition, Zikmund (2003) defined construct validity as the ability of a measure to confirm a network of a related hypothesis generated from a theory based on concepts. In the current study construct validity occurs during the statistical analysis of the data.

The second type of validity is *Content / Face Validity*. This is considered as being the most important type of validity because it measures the extent to which the measurement scale reflects what is assumed to be measured (Zikmund, 2003; Trochim, 2006). Content validity is a measure of how well the items represent or tap the concept (Sekaran, 2003). Zikmund (2003) refers to content validity as the professional agreement that a scale logically appears to reflect accurately what it is intended to measure. 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 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, it should be noted that the following efforts have been made 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 a different time, 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 30 responses received (first group) were compared to the last 31 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 5-5 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 61 respondents in this study can be said to be representative of all of the Jordanian Industrial Shareholding Companies.

Table 5.5 Test of non-response bias

Variables	N	Mean	SD	Alpha
Industry Type				0.743
- First group	30	5.067	3.050	
- Second group	31	5.129	2.975	
Number of employees				0.183
- First group	30	2.333	0.661	
- Second group	31	2.000	0.894	
Number of products				0.255
- First group	30	2.700	1.417	
- Second group	31	1.967	1.251	
Level of Overhead				0.334
- First group	30	2.267	1.142	
- Second group	31	2.000	1.032	

5.5.13 Questionnaire Data Analysis

The process of analysing research data should link with the aims of the study and the nature of the data. There are generally two main categories of statistical procedures which can be used in analysing the quantitative data: parametric and non-parametric tests (Collis and 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 (Nachmias and Nachmias, 1996; Collis and Hussey, 2003; Sekaran, 2003; Bouma and Ling, 2004):

- The data are interval or ratio-scaled.
- The sample size is large.
- The data in the study are drawn from populations with normal distribution are/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 analysed 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 and 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 (Sekaran, 2003; De Vaus, 2007).

There are many reasons supporting the use of non-parametric tests in analysing data. Firstly, non-parametric tests are the most appropriate tests when the data constitutes sets of ranks or are nominal data (Nachmias and Nachmias, 1996; Neuman, 1997; Collis and Hussey, 2003; Bouma and Ling, 2004; De Vaus, 2007). Secondly, non-parametric tests make relatively few assumptions about population distributions and thus it is always safe to use them (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 and 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 (Nachmias and Nachmias, 1996; Bryman and Bell, 2003).

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 analyse the quantitative data in the current study (Bryman and Bell, 2003; Cooper and Schindler, 2003) Accordingly, the quantitative data analysis involved the use of the Statistical Package for the Social Sciences (SPSS) programme for statistical analysis. Tests included descriptive analysis such as frequencies, means and non-parametric tests using chi-square. The statistical tests and reasons for using them will be discussed next.

Frequency distributions were utilised 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 frequency of using ABC information and satisfaction with ABC systems.

Means and standard deviations were used in analysing Likert-scale data, such as the reasons for not-considering 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

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 criticised 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 (Cavana *et al.*, 2001; Babbie, 1998; Trochim, 2005). Therefore, this technique was used to examine if there were significant differences between ABC users and non-users based on company characteristics, such as type of sector, number of employees, number of products, and level of overhead.

5.6 The Third Phase: Semi-structure interviews

The qualitative stage complements and affirms the quantitative component analysed in the previous sections. The in-depth interview method for this phase of the research was designed for interviews with companies that had implemented ABC in full and are currently using ABC information (see Appendix J for a copy of in-depth interview). The reason for the selection of these companies was to provide a comprehensive picture of ABC implementation in the Jordanian industrial sector and provide in-depth insights into factors that facilitate, motivate and create barriers to ABC implementation. Such data might not be possible to collate from other categories, such as considerer, adopter and even abandoner companies that stopped the implementation of ABC at an early stage. In addition, it was noted that the use of this method might produce some additional information that it might not be possible to gather by the questionnaire survey method alone, as the questionnaire survey in this research was limited to the collection of data using a structured questionnaire. Thus, Third phase, personal interviews were conducted with one of the members of the ABC project team in the Jordanian industrial companies to clarify, understand and add further information about ABC and the factors that influenced the decision to adopt and implement ABC.

5.6.1 Interview Data Collection Method

Creswell (1994) and Cooper and Morgan (2008) suggested that there are four basic methods of the collection of qualitative data, namely: observations, documents, audiovisual and interviews. In management accounting research, researchers such as Swenson, (1995) Anderson and Young (1999) and Chongruksut, (2002) emphasised the importance of interviews as a data collection method. According to Gummesson (2000, p. 93), interviews provide the:

“opportunity for the researcher to probe deeply to uncover new clues, open up new dimensions of a problem and to secure vivid, accurate inclusive accounts that are based on personal experience”.

The justification for this and further details of the interviews as a data collection method in the current study will be explained in following sub-sections.

5.6.2 Personal Interviews

Interviewing often plays an important role in data collection in qualitative research (Pinsonneault and Kraemer, 1993; Kvale, 1996; Tellis, 1997). This technique enables a researcher to interact with the participants being interviewed, and provides an insight into what is in, and on, participants' minds regarding their behaviours, views, attitudes and feelings that cannot be directly observed (Creswell, 2003), and this is not possible with other methods, such as the questionnaire survey (Berg, 2001; Sekaran, 2003; Yin, 2003).

Creswell (1994) and Cooper and Morgan (2008) suggested that qualitative data are useful when one needs to supplement, validate, explain, illuminate, or reinterpret quantitative data gathered from the same setting. Therefore, in the second stage of data collection in the current study, qualitative data were used to interpret and supplement the quantitative finding, and to identify factors that facilitate, motivate and create barriers to ABC implementation that were not discovered in the quantitative stage. This mix of quantitative and qualitative data will strengthen the validity of the overall findings (Black, 1999).

Personal interviews have the advantage that the interviewer can see how a respondent is reacting and show the respondent items that help clarify questions and response options. Interviews allow people to answer more on their own terms than the standard questionnaire permits. In personal interviews, a descriptive questioning method was used to induce the interviewees to give as much information as possible about details on the reasons for implementing ABC, the factors that facilitate and motivate its implementation and problems in implementing it.

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 an opportunity to encourage an interviewee to provide relevant, accurate and complete information (Sekaran 1992; Saunders *et al.*, 2000). For example, Patton (1990, p. 69) stated:

“People in interviews tell you things they never intended to tell”.

- The researcher has an opportunity to help the interviewee to know the aim of the questions (Sekaran 1992; Saunders *et al.*, 2000).
- The researcher has the flexibility of asking questions. This flexibility is important for exploring whether the questions are suitably phrased and are in a logical order (Tellis, 1997; Sekaran 1992; Saunders *et al.*, 2000).
- The researcher has an opportunity to control the process of the interview, which can be stopped or continued as needed (.Carson *et al.*, 2001)
- Item non-response – social interaction between interviewer and respondent increases the likelihood that a response will be given to all items on the questionnaire. As a result, item non-response is lowest for personal interviews (Sekaran 1992; Saunders *et al.*, 2000).
- Possibility for respondent misunderstanding – the personal interview provides an opportunity to probe. If a respondent's answer is brief or unclear, the interviewer may be able to probe for a clearer or more comprehensive explanation. As a result, the possibility for respondent misunderstanding is reduced (Smith, 2003).
- High participation – the presence of an interviewer generally increases the percentage of people willing to complete the interview. As a result, response rates tend to be high (Sekaran 1992; Saunders *et al.*, 2000).

5.6.3 Selecting the Type of Interview

The advantages and disadvantages of the different types of interviews were considered in selecting the type of interview in this research. Saunders *et al.* (2000) and De Vaus (2007) argued that, interviews can be highly structured with a set of formal questions, semi-structured with greater opportunity for in-depth responses, unstructured with a general plan of enquiry but no specific set of questions that must be asked.

In the structured interview, the questions and their sequence in which to be asked are fixed in advance (Sekaran, 2003; Cassel *et al.*, 2006). In the structured interview, the interviewee is required to provide his/her answer by selecting one of the answers provided by the researcher. The answer may be in the form of a rating scale. In a way, it is similar to delivering a survey orally and the data collector filling in the survey

rather than asking the participants to fill the survey (Creswell, 1998). The advantages of this method are that it is easy to quantify and compare the responses with other participants. The disadvantages of structured interviews are that they provide little chance for unexpected answers because they limit the interviewee to what has been identified in advance by the researcher and the possibility of missing the significant issues by some interviewees is high (Denzin and Lincoln, 2000; Saunders *et al.*, 2000; Carson *et al.*, 2001; De Vaus, 2007).

In unstructured interviews, the researcher has a number of topics to cover but the precise questions and their order are not fixed. In this method, the research questions can be developed during the interview as a result of the exchange with the interviewee (Mason, 2002). The assumption is that data will be created by interaction between the researcher and interviewee (Sekaran, 2003). The disadvantage of the unstructured interview for data analysis is that it is time consuming (Zikmund, 2003). Moreover, as Sekaran (2003) highlighted totally unstructured interviews cause confusion, incoherence and can result in meaningless data (Denzin and Lincoln, 2000).

To gain the maximum advantages and eliminate the disadvantages of both the structured and unstructured interview, the semi-structured interview is applied. Smith (2003, p. 12) argued that:

“with semi-structured interviews, the investigator will have a set of questions on an interview schedule but the interview will be guided by the schedule rather than be dictated by it”.

The semi-structured interview is chosen to gain as much information as possible about details on the implementation process of ABC, problems in implementing ABC and reasons for implementing ABC. In the semi-structured interview, the interviewee is given the maximum opportunity to provide his/her perception of the questions since he/she is considered as the expert on the subject. The semi-structured interview allows the researcher to explore participants' experiences of ABC adoption and implementation and focus on the main issues, yet at the same time allows the interviewer to explore participants' responses further to clarify issues emerging during the interview (Mason, 2002; Horsburgh, 2003; Sekaran, 2003).

Interviews can be conducted either by telephone, or face-to-face which can take place anywhere. Each method has advantages and disadvantages. The type and size of the population to be interviewed, the purpose of the study, the nature of the research

question, the budget for the research and resources available, will all determine the type of data collection method to be used (Saunders *et al.*, 2000; De Vaus, 2007).

Table 5.6 shows that each of the interview methods (face-to-face, telephone interview) has both advantages and disadvantages in terms of different perspectives. However, item non-response, the possibility of respondent misunderstanding, and respondent cooperation or participation are probably the most important factors in determining the success of the interview. Therefore, in the current study, the face-to-face interview was chosen as a technique to obtain information about ABC adoption and implementation from the interviewees.

Table 5.6 Comparison between face-to-face and telephone interview

	Face-to-face interview	Telephone interview
Interview length	Long	Moderate
Speed of data collection	Moderate to fast	Very fast
Geographic flexibility	Limited to moderate	High
Respondent cooperation	Excellent	Good
Item non-response	Low	Moderate
Possibility for to be respondents misunderstood	Lowest	Average
Degree of interview influence on answer	High	Moderate
Supervision of interviewers	Moderate	High
Anonymity of respondent	Low	Moderate
Ease of call back-back or follow-up	Difficult	Easy
Cost	Highest	Low to moderate

Source: (De Vaus, 2007, p. 138)

In the current study, face-to-face semi-structured interviews were conducted with financial managers and heads of cost accounting departments in the Jordanian industrial companies. This method has been used by many researchers (such as Foster and Swenson, 1997; Anderson and Young, 1999; Chongruksut, 2002), and it has a list of themes and questions supplemented with open-ended discussion to clarify issues or answer questions raised by both interviewee and interviewer.

Arguments for the use of the face-to face interview as a means of communicating with the interviewees in this study are based on the following advantages of the face-to-face interviews compared with the telephone interview method:

- Item non-response: social interaction between the interviewer and interviewees increases the likelihood that a response will be given to all items on the interview. As a result, item non-response is low for a face-to-face interview.
- Possibility of respondent misunderstanding: personal interviews provide an opportunity to probe. If an interviewee answer is brief or unclear, the interviewer may be able to probe for a clearer or more comprehensive explanation (Gable, 1994; Horsburgh, 2003).
- Face-to-face interviews are particularly advantageous as they allow the interviewer to clarify questions and ensure the responses are understood (Glesne, 1999; Gillham, 2000; Flicks, 2002).
- Face-to-face interviews also have a better response rate than telephone interviews (Maxwell, 1996).
- While telephone interviews allow many people to be contacted in a relatively short time, interviewers are unable to pick up nonverbal signals that may lead into supplementary questions in a face-to-face interview (Smith, 2003).

5.6.4 Recording and Transcribing the Interview

In this current study, the researcher tape-recorded each interview. The interviewees were asked beforehand if they would agree to be tape-recorded and all consented; they were advised that tape recording could be discontinued at any time at their discretion.

The interviewees were advised that the transcriptions would not contain the names of any individual or organisation, and each interviewee was given a personal code. Codes for interviewees and companies were detailed separately from the transcripts and tapes to ensure confidentiality. The companies were coded as company One, Two and so on.

5.6.5 Ethical Consideration for Interviews

Ethical practice in research is vital. The researcher has an obligation to respect the rights, needs, values and desires of the participants (Creswell, 1994). There were several key ethical issues to be addressed in this study namely: informed consent, privacy and confidentiality.

- **Informed Consent**

Informed consent concerned the voluntary participation of the respondents, based on them receiving full and accurate information about the study before their involvement. The nature and consequences of the current study were explained to the interviewees and they were free to withdraw at any time.

In the current study, an *Informed Consent Form* was provided to each interviewee before the commencement of the interview and explained in detail; it was signed by both the researcher and the participant. The form detailed the procedures to be followed, the responsibilities of both parties, freedom of consent issues, the ability to withdraw at any time and the possibility of further questions and questioning being required. A copy of the *Informed Consent Form* is provided in Appendix I.

- **Privacy and Confidentiality**

The researcher's code of ethic provided safeguards to protect the identities of those interviewed as well as their companies. In the current study, only the researcher knew the identity of the participants. Both in discussions and in the written documentation, the companies have been referred to as Company One, Two, Three., Six.

5.6.6 Interview Process

The qualitative study complements and affirms the quantitative component in the previous chapter. The qualitative analysis presented here is used as a follow up for further clarification of the results of the survey and it aids the interpretation and confirms the results of the survey findings.

In the current study, the researcher performed several activities before, during and after the interviews to obtain relevant information from the interviewees and in order to increase the validity and reliability of the information.

Firstly: before the final copy of interview questions was formulated a pilot study had been conducted. Several Jordanian students were asked to translate some parts of the questions to evaluate the consistency of the translation. The pilot participants' translations were compared to the translations that the researcher made. There were no significant differences between the pilot participants' translation and the researcher's translation. Nevertheless, some improvements were made to produce a more consistent and unambiguous translation.

Secondly: the researcher mailed all 7 companies that used ABC information a covering letter to inform them about the research and started making telephone calls afterwards to identify if they were interested in participating in the study. During the telephone calls, the researcher asked the respondents if they minded if their interviews were tape-recorded. In order to convince them to participate, the researcher also informed them about the confidentiality policy set by University of Wales regarding the interviews. These included: (1) that their name and company name would not be on the cassette; (2) that the researcher would be the only person who would listen to the tape-recording; and (3) their interviews would be used only for academic purposes as shown in Appendix I. They were also informed that they might withdraw from the interview at any time simply by calling the researcher. They were also told that, if they felt that any of the questions might go against their company policies, they would not have to answer them. It was also pointed out that when the research report was being written up, the material from the interview would be handled in such a way that the risk of participant identification would be minimised. At this stage, six companies agreed to participate in the interviews. However, one company declined to participate without giving any reasonable reasons.

Thirdly: during the telephone conversation, a mutually convenient meeting time and location for conducting the interview were also sought from the respondent. The researcher also sent a copy of the questionnaire in advance to participants so they could prepare for the interview.

Fourthly: an agreement letter was provided to the interviewees with general information about the research. In this letter, it was emphasised that the information would be completely confidential and anonymous.

Fifthly: at the beginning of each interview, the researcher explained the aims of the study and encouraged respondents to ask any questions that they may have about the research topic. In addition, during the interview process, each question was fully explained to the interviewees. If there was any misunderstanding, the question was rephrased and asked again. It should be noted that the interviews started with the researcher introducing himself to the interviewee, stating his position, the research aim, objectives, and ethics of the research, and provisions for protecting the interviewee's privacy. This was done in a friendly unstructured manner before starting the interviews. This informal start gave the interviewee confidence and built trust to freely answer the questions.

Sixthly: all the interviews were conducted in Arabic because it was easier and more convenient for the interviewees to answer freely and comprehensively. Each interview lasted between 60 to 90 minutes. After each interview, the researcher wrote the whole script of the interview in the Arabic language. Then the researcher gave interviewees a written draft of the interview, discussed any conflicting issues, and made changes accordingly. All the interviews agreed to the draft and approved it. The researcher then wrote the final copy of the interview for analysis. The six semi-structure interviews took place between July and August 2009.

5.6.7 Data Analysis Methods

All the interviews were recorded and transcribed in Arabic. To reduce the risk of losing the contextual aspect of data, the interview transcripts were not translated into English. Only the results of the analysis of the data were written in English. All the participants' real identities were removed from the transcripts and a random code was assigned as a means of identification. A separate list of participants and the codes assigned to them was kept confidential. From the transcripts, a content analysis (Yin, 2003) was conducted to discover the factors that facilitate, motivate and create barriers to ABC implementation. Similar phrases and sentences spoken by the participants were grouped into categories and then a factor name was assigned to each group. In

addition, the process of coding and categorising data was conducted manually, with the aid of Microsoft Word and Excel. Qualitative data analysis software packages, such as Nud*ist or NVivo, were not used. This was primarily because the data analysis computer software did not support Arabic characters. The researcher could have translated the data into English, one of the languages supported by the available analysis programmes; however, this would have involved the risk of losing the meanings and perspectives of the interviewees in the process of translation.

In order to investigate the factors that facilitate, motivate and create barriers to ABC implementation in each company, both within-company, and across-company analysis was conducted. Within-company analysis is often done before across-company analysis, when a multiple interviews strategy is adopted for research design. Therefore, the interview analysis started with the analysis of each individual company, and explained the reason for ABC implementation, and determined the factors that facilitate, motivate and create barriers to implementation. The across-company analysis of all companies then followed, with the focus of the factors being confirmation and disconfirmation (Krippendorff, 2003)

In the current study, within-company analysis began with some demographic information on each company. This consisted of the general background of the company and the nature of the company's accounting costing systems. The discussion of the company included general information about company size and type that could assist the researcher to obtain fundamental knowledge of the company, and assist with further analysis of the company study information. Following the above general information, the analysis explained the reason for ABC implementation, and sought to determine the factors that facilitate, motivate and create barriers to implementation. Then, cross-company analysis was used to gain insights into the factors from summaries and analyses of the findings from all six companies. The intention of cross-company analysis is to generate insights, rather than to prove anything or draw generalisations. Insights into each of the factors that facilitate, motivate and create barriers to ABC implementation were drawn from similar themes and patterns that emerged from the within-company analysis.

5.7 Summary

Explaining and discussing the research methodology and tools of this study have been the main purposes of this chapter. The definition of methodology was discussed and the data collection methods described. This study uses mix data collection methods, including a questionnaire and personal interviews Data were analysed using the SPSS program for quantitative data and using content analysis for qualitative data.

In the first section of this chapter, the justification for using the personal delivery questionnaire as the appropriate method to collect the data was provided. The stages that were used to develop the questionnaire and to increase the validity of the questionnaire were also presented. The section concluded with a description of the tests that were undertaken for non-response bias and a justification of the statistical tools that will be used to analyse the data. In the second section of this chapter, the interviews and details regarding the participants and procedures involved in the data collection are presented. This section begins with an outline of the purpose for selecting the qualitative data. Following this, there is a brief overview of the data analysis techniques employed. In the next two chapters the research findings are presented.

CHAPTER SIX

QUANTITATIVE DATA ANALYSIS

6.1 Introduction

The previous chapter described and justified the overall design and methodology to be adopted in the current study. It concluded that the investigation in this study would be divided into two stages: quantitative and qualitative. This chapter consists of a comprehensive discussion of the quantitative data analysis.

As outlined in the previous section, the aims of the main questionnaire survey were sought to achieve the study objectives and to answer the research questions earlier described. The questionnaires were sent to the Financial Managers/Heads of Accounting departments in each company and they were requested to answer questions relating to reasons for not-considered ABC implementation; reasons for ABC implementation; factors that facilitate, motivate and create barriers to ABC implementation; reasons for abandoning the systems and finally to evaluate the level of ABC success that the Jordanian industrial companies had experienced.

73 questionnaires were distributed and 61 questionnaires were returned giving a rate of response of 83.6%. This process took place from 7th of October to 15th November 2008. To improve the response rate after the questionnaires were distributed they were then followed-up with a phone call and later by a personal visit to collect the completed surveys. Moreover, it was mentioned both in the covering letter and orally that it would take about 20 minutes to complete the survey. In addition, the headquarters of the companies were located in the capital of Jordan (Amman), making access easier to follow-up the respondents and to collect all responses.

In the next sections, the data collected from questionnaires are analysed and discussed. The individual respondent profiles and company characteristics are described as well as ABC adoption and implementation categories. Finally, an analysis of the differences between ABC users and non-users based on company characteristics is provided.

6.2 Profile of Respondents

The first part of this chapter provided descriptive analysis about the individual respondents and the companies under study. This information will be helpful in understanding the background of respondents and their respective companies and to show that the respondents of the questionnaire are eligible to participate in the current study.

6.2.1 Information about respondents

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

- Work Position

Table 6.1 reveals that 31.2% of those completing the questionnaire were financial managers or their assistants, 68.8% were heads of accounting or cost accounting departments.

Table 6.1 Work position of respondents

Work Position	Frequency	Percent	Cumulative Percent
Financial Manager	8	13.1	26.2
Assistant Financial Manager	11	18.1	44.3
Head of Accounting Department	26	42.6	86.9
Head of Cost Accounting Department	16	26.2	100.0
Total	61	100.0	

- Academic Qualification

Respondents were asked to state their academic qualifications. Table 6.2 shows the majority of respondents, 54.1% held a postgraduate degree, while 45.9% held an undergraduate degree. In other words, 100% have higher education qualifications.

Table 6.2 Academic qualifications of respondents

Academic Qualification	Frequency	Percent	Cumulative Percent
Undergraduate degree	28	45.9	45.9
Master Degree	23	37.7	83.6
PhD Degree	10	16.4	100.0
Others	0	0.0	100.0
Total	61	100.0	

- Experiences in Field

Respondents were asked to indicate the length of their work experience. Table 6.3 shows that 26.2% of respondents had worked less than 2 years and 31.1% of respondents had worked between 2 to 5 years. 16.1 percent had experience in accounting of between 6 to 10 years, while 26.3% had had more than 11 years experience.

Table 6.3 Respondents' work experience

Experience in Field	Frequency	Percent	Cumulative Percent
Less than 2	16	26.2	26.25
2-5	19	31.1	57.4
6-10	10	16.4	73.8
11-15	9	14.8	88.5
16-20	7	11.5	100.0
Total	61	100.0%	

- Experience in Company

Respondents were asked to indicate the length of their current work experience. Table 6.4 shows 88.5% of respondents had worked less than 10 years in their current companies, while 11.5% had worked for more than 11 years in theirs.

Table 6.4 Work experience with current company

Experience in company	Frequency	Percent	Cumulative Percent
Less than 2	13	21.3	21.3
2-5	33	54.1	75.4
6-10	8	13.1	88.5
11-15	4	6.6	95.1
16-20	3	4.9	100.0
Total	61	100.0	

6.2.2 Company Characteristics

The information presented in this sub section related to industrial type, number of employees, number of products, level of domestic competition and level of overhead. This information will be presented as descriptive statistical in this sub-section.

- Industrial type

Respondents were asked to classify their company's industry type and were presented with eleven main industrial categories which were selected to represent Jordanian industrial companies. Table 6.5 shows the categories and their frequencies. Most respondents' companies were in the following categories: engineering and construction, food and beverages, mining and extraction industries, followed by mining and extraction, chemical, pharmaceutical and medical and textiles, leathers and clothing industries.

Table 6.5 Respondent companies' industrial classification

Industrial type	Frequency	Percent	Cumulative Percent
Chemical Industries	6	9.8	9.8
Electrical Industries	2	3.3	13.1
Engineering and Construction	15	24.6	37.7
Food and Beverages	14	23.0	60.7
Tobacco and Cigarettes	2	3.3	63.9
Glass and Ceramic Industries	1	1.6	65.6
Mining and Extraction Industries	7	11.5	77.0
Paper and Cartoon Industries	2	3.3	80.3
Pharmaceutical and Medical Industries	6	9.8	90.2
Printing and Packaging	1	1.6	91.8
Textiles, Leathers and Clothing	5	8.2	100.0
Total	61	100.0	

- Number of employees

Table 6.6 shows the breakdown of respondents with respect to the size of their companies in terms of numbers employment. 21.4% of respondents companies employ less than 100 employees, while the percentage of companies that employ between 101 to 500 employees was close to 45%. Companies that employ between 501-1000 employees constitute 31.1% of the total. 2 companies (3.3%) employ more than 1000 employees. The Ministry of Industry and Trade in Jordan classifies companies with less than 100 employees as small companies, companies employed between 100-500 employees as medium-sized and those with more than 500 employees as large. In the current study, the majority of companies are classified as medium and large.

Table 6.6 Number of employees

Number of Employees	Frequency	Percent	Cumulative Percent
Less than 100	13	21.3	21.4
101 - 500	27	44.3	65.6
501 - 1000	19	31.1	96.7
More than 1000	2	3.3	100.0
Total	61	100.0	

- Number of products

Product diversity was measured by the number of products (see Bjornenak, 1997). Table 6.7 shows 31.1% of respondent companies were producing less than 20 products, while 36.1% were producing between 20-50 products. In other words, the majority of Jordanian industrial companies 67.2% were producing less than 50 products. 6.6% were producing between 101–150 products and a few companies 9.8% were producing more than 151 products.

Table 6.7 Number of products

Number of products	Frequency	Percent	Cumulative Percent
Less than 20	19	31.1	31.1
20 - 50	22	36.1	67.2
51 - 100	10	16.4	83.6
101 – 150	4	6.6	90.2
151 – 200	3	4.9	95.1
More than 200	3	4.9	100.0
Total	61	100.0	

- Level of Overhead

Respondents were asked to indicate the rate of overhead to total cost. Table 6.8 shows 31.1% of respondent companies had a level of overhead less than 20%, while 41 % had a level of overhead between 21% - 40%, and 16.4% of respondents a level of overhead between 41% - 60%.

Table 6.8 level of overhead

Level of overhead	Frequency	Percent	Cumulative Percent
0% - 20%	19	31.1	31.1
21% - 40%	25	41.0	72.1
41% - 60%	10	16.4	88.5
61% - 80%	7	11.5	100.0
81% - 100%	0	0.0	100.0
Total	61	100.0	

6.3 Categories of ABC Adoption and Implementation

Based on the results of the main questionnaire survey, the companies that returned the questionnaires are classified as follows:

The first category includes 12 companies classified as non-considerers of ABC; companies in this category still use either single or departmental allocation methods only. The second category includes 5 companies classified as considerer companies. Here, the companies perceive the distortion of the existing cost system and considered ABC as the possible solution to overcoming these limitations. Meanwhile, 7 companies devoted or spent the necessary resources to implement ABC and they were classified as adopters.

In terms of companies that were currently implementing ABC, 24 companies were classified as implementers. In this category, the companies had begun implementing ABC systems through forming a team of ABC implementation, determining project scope and objectives, collecting data or/and analysing activities and cost drivers. However, 7 companies were using ABC information for various purposes and they were classified as users. Finally, 6 companies had implemented ABC in the past and subsequently abandoned it and they were classified as the abandoners. Table 6.9 shows the six categories of ABC implementation.

Table 6.9 The number of companies in each category of ABC implementation

Category	Name of the Category	Number of the Companies	Percentage	Cumulative Percentage
1	Non-considerers	12	19.7	19.7
2	Considerers	5	8.2	27.9
3	Adopters	7	11.5	39.4
4	Implementers	24	39.3	78.7
5	Users	7	11.5	90.2
6	Abandoners	6	9.8	100
	Total	61	100	

To determine the rate of ABC implementation within the Jordanian industrial sector, the current study adopted two criteria used by (Bjornenak, 1997). The first 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 61 were using ABC information as part of daily practice or integrated with other systems. Accordingly, the rate of ABC implementation within the Jordanian industrial sectors based on this criterion is about 11.5%.

The rate of ABC implementation (11.5%) is higher than the rates found in previous studies. Khasharmeh (2002) found that the implementation rate of ABC was about 10% (4 companies out of 40 using ABC). However, the usage rate was 10.7% in the Al-Khadash and Feridun's (2006) study. It should be noted that neither studies segment ABC into stages.

The second 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 rate of ABC implementation within the Jordanian industrial sector based on this criterion is about 50.8% (11.5% had used ABC in full plus 39.3% companies that were in the process of implementing ABC).

To explain this high implementation rate, it should be noted that the Jordanian industrial companies have an environment that favours implementation of new managerial initiatives such as ABC systems because they have the funding, the human resources, the product, the input and output (Al-Khadash and Feridun, 2006). Moreover, this result supports Khasharmeh's (2002) findings where 75% of the respondents (55 industrial companies) in this study agreed and 25% strongly agreed that the use of ABC improves a company's performance in general. Therefore, there is an expectation that the Jordanian companies will be encouraged to implement ABC. Also, Khadash and Feridun (2006) pointed out that the awareness level of the importance of implementing ABC was found to be significantly higher among the Jordanian financial managers. This evidence combines to support and explain the high rate of ABC implementation within the Jordanian industrial sector.

Results and discussions pertaining to ABC adoption and implementation are reported in the next sub section. It is hoped that this will determine the reasons for non-consideration of ABC implementation, the factors that influence its implementation among the Jordanian industrial companies as well as determine the barriers to ABC implementation.

6.4 Reasons for Non-consideration of ABC

Regardless of the numerous benefits of ABC that are widespread in the literature, there are companies that strongly oppose the possibility of ABC implementation. Therefore, the second research question sought to examine the reasons for non-consideration of ABC.

The not-considered ABC category is defined in the current study when the companies have not seriously considered ABC, and still use either single or departmental allocation methods. 12 individual respondents who operated TCS and had non-considered ABC were requested to give reasons explaining their decisions.

The respondents were provided with a list of 20 potential reasons that may explain why their business units had non-considered ABC (see Appendix B). The reasons suggested in the questionnaire were broken down into three categories, namely: inherent difficulties with ABC; company's characteristics and business environment; and confidence in the existing cost systems. The individual respondents were asked to rate items on a five-point scale where one 1 = Strongly disagree and 5 = Strongly agree. The possible reasons were explored by looking at the mean scores of each item. The responses are summarised in Table 6.10.

Table 6.10 Reasons for not considering ABC

	Min	Max	Mean	SD	% of Strong Agree
<u>Category one: Inherent difficulties with ABC</u>					
Costly to switch to ABC	3.00	5.00	4.00	.603	16.7%
Consultants too costly	2.00	5.00	3.83	1.115	33.3%
Lack of expertise to implement ABC	2.00	5.00	3.50	.866	16.7%
Too complex and time-consuming	2.00	5.00	3.38	.797	8.3%
Lack of awareness of ABC	2.00	4.00	3.33	.651	0%
Difficulties in selecting appropriate software	2.00	5.00	3.33	.887	8.3%
Difficulties in collecting data on the cost drivers	2.00	5.00	3.08	.793	8.3%
Difficulties in selecting cost drivers	2.00	4.00	2.92	.668	0%
<u>Category two: Company's characteristics and business environment</u>					
The control of overheads is already adequate	2.00	4.00	3.42	.669	0%
Cost accounting change is not our priority	2.00	4.00	3.33	.651	0%
Lack of managerial initiative	2.00	5.00	3.33	.887	16.7%
Resistance from employees	1.00	5.00	3.16	1.029	8.3%
Less complexity in products/services	1.00	5.00	3.00	1.128	8.3%
Have relative small proportion of overhead in total manufacturing costs	2.00	5.00	2.92	.996	8.3%
Lack of top management support	2.00	5.00	2.92	.900	8.3%
Lack of internal resources	1.00	5.00	2.83	1.115	8.3%
No intensity of competition	2.00	4.00	2.67	.651	0%
<u>Category three: Confidence in the existing cost systems</u>					
Satisfied with the current system	3.00	5.00	3.75	.754	16.7%
The perceived benefits of ABC do not justify the cost of implementing it	3.00	4.00	3.33	.492	0%
Ambiguity of ABC benefits in the literature	2.00	5.00	3.00	.853	8.3%

The most cited reasons for not considering ABC were the inherent difficulties with ABC design and implementation category, namely: *costly to switch to ABC* (mean scores = 4.00) and *consultants too costly* (mean scores = 3.83), followed by *lack of expertise to implement ABC* (mean scores = 3.50). Similar evidence is reported by Innes and Mitchell, (1991); Cobb *et al.* (1992); Nicholls, (1992); Booth and Giacobbe, (1997); Cohen *et al.* (2005).

A company's characteristics and business environment category, such as *the control of overheads is already adequate* (mean scores = 3.42) were also cited as a major reason impeding the decision to consider ABC. In addition, *cost accounting change is not our priority* was the second major reason for not considering ABC (mean scores = 3.33). This result is similar to the results of many previous studies (Nicholls, 1992; Nguyen and Brooks, 1997; Innes and Mithchell, 1998).

The satisfaction with the current system seemed to be a common factor for the confidence in the existing cost systems category and was cited as a major reason impeding the decision to consider ABC within the Jordanian industrial sector. Similar evidence is reported by Innes and Mitchell, (1991); Chung *et al.* (1997); Nguyen and Brooks (1997); Chen *et al.* (2001).

In general, the reasons for not considering ABC among the Jordanian industrial companies are not different from those documented in other countries as reported by Innes and Mitchell, (1991); Cobb *et al.* (1992); Nicholls (1992); Chung *et al.* (1997); Nguyen and Brooks (1997) ; Innes and Mitchell (1998) ; Chen *et al.* (2001) ; Cohen *et al.* (2005).

On the other hand, there was strong disagreement with the statement that the *no intensity of competition* (mean scores = 2.67) and *resistance to change by employees* (mean scores = 3.16) were barriers to considering ABC. This result contrasts with the finding by Nguyen and Brooks (1997), who reported that resistance from management and employees appears to be an important factor for not considering ABC in the Jordanian industrial sector. Also, *the lack of top management support* and *lack of internal resources* (mean 2.92, 2.83 respectively) were not considered to be major reasons for not considering ABC within the Jordanian industrial sector.

6.5 Factors against ABC Implementation

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 innovations as an idea or project plan to its actual implementation by the company. Therefore, the aim of this sub-section is to determine

the factors that impact upon the implementation of ABC for companies that adopt the system.

The adopters' category in the current study defined when the company perceives the distortion of the existing cost system and considered ABC as the possible solution or when the approval has been granted to devote or spent the necessary resources to implement ABC.

12 individual respondents who had adopted ABC were provided with a list of 12 potential factors that may explain why their business units had not moved to implement ABC (see Appendix 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 summarised in Table 6.11.

Table 6.11 Factors against ABC implementation

	Min	Max	Mean	SD	% of Strong Agree
Costly to switch to ABC	2.00	5.00	4.08	.793	25%
Consultants too costly	2.00	5.00	4.00	.853	25%
Lack of expertise to implement ABC	2.00	4.00	3.42	.793	0%
Too complex and time-consuming	2.00	4.00	3.25	.754	0%
Ambiguity of ABC benefits in literature	3.00	4.00	3.08	.288	0%
Difficulties in selecting cost drivers	2.00	4.00	2.92	.515	0%
Difficulties in selecting appropriate software	2.00	5.00	2.83	1.193	16.7%
Difficulties in collecting data on the cost drivers	2.00	3.00	2.83	.389	0%
Lack of top management support	1.00	4.00	2.75	1.055	0%
The perceived benefits of ABC do not justify the cost of implementing it	2.00	4.00	2.66	.651	0%
Resistance from employees	1.00	4.00	2.58	.793	0%
Lack of internal resources	1.00	4.00	2.50	1.000	0%

The costly to switch to ABC (mean scores = 4.08) and *consultants too costly* (mean scores = 4.00) were cited as the most important factors that impact the implementation of ABC within the Jordanian industrial sector, followed by *lack of expertise to implement ABC* and *too complex and time-consuming* (mean scores 3.42, 3.25 respectively). Similar evidence is reported by Innes and Mitchell, (1991); Cobb *et al.* (1992); Nicholls, (1992); Booth and Giacobbe, (1997); Cohen *et al.* (2005).

Meanwhile, organisational difficulties such as *lack of top management support*, *lack of internal resources* and *resistance from employees* were cited as the less common factors that impact the implementation of ABC within the Jordanian industrial sector. This result contrasts with the findings by Shields (1995), who reports that organisational difficulties appear to be an important reason for not implementing ABC rather than technological difficulties.

The lack of organisational difficulties such as *lack of top management support* and *lack of internal resources* within the Jordanian industrial sectors could be explained by the results of Al-Khadash and Feridun (2006), as they argued that the Jordanian industrial companies have a good environment to adopt new managerial initiatives such as ABC systems because they have the funding, the human resources and the knowledge about the ABC benefits.

In general, the factors that impact the implementation of ABC among the Jordanian industrial companies are not different from those reported in other studies such as Innes and Mitchell, (1991); Cobb *et al.* (1992); Nicholls (1992); Chung *et al.* (1997); Nguyen and Brooks (1997); Innes and Mitchell (1998); Chen *et al.* (2001); Cohen *et al.* (2005).

6.6 ABC Implementation within the Jordanian Industrial Sector

Companies implementing ABC consist of implementers (companies that were currently implementing ABC) and users (companies that had implemented ABC) and are examined in this section. It is hoped that this will determine the reasons for the implementation of ABC and to determine the factors that have both facilitated and motivated the decision to implement ABC, to determine the barriers to ABC implementation.

The focus in the next sub-sections is to answer the research questions that related to the research model described in Chapter 4. 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 being catalysts, motivators and facilities. Cobb *et al.* (1995) and Kasurinen (2002) developed this further by adding factors that hindered, delayed, or even prevented change, thereby functioning as barriers.

6.6.1 Reasons for ABC Implementation (Catalysts)

Innes and Mitchell (1990) defined catalysts as factors that can be directly associated with the change. The current study adopted Abrahamson's four perspectives that were described in Chapter 3, namely: efficient choice, forced selection and fad and fashion to explain the importance of specific perspectives that are directly associated with decisions to implement ABC systems in the Jordanian industrial companies.

Regarding the reasons for 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 summarised in Table 6.12.

Table 6.12 Reasons for ABC implementation

	Min	Max	Mean	SD	% of Vital important
Advice from auditors and/or consultants	3.00	5.00	4.26	.575	32.35
We wished to try a new accounting innovation	3.00	5.00	4.22	.717	38.7%
To be seen as having a sophisticated costing system	2.00	5.00	3.97	.875	29%
Other units within the company had benefited from ABC	2.00	5.00	3.93	.892	25.8%
It was competitors were using ABC	2.00	5.00	3.90	.831	22.6%
It was necessary to update the existing information system	2.00	5.00	3.81	.543	3.2%
Advice from parent or headquarters	2.00	5.00	3.68	.791	12.9%
Pressure from government or other regulatory authorities	1.00	5.00	3.64	.985	3.2%
The existing cost system was not reliable	1.00	5.00	3.29	1.216	16.1%
The existing costing system did not provide useful information	1.00	5.00	3.23	1.055	9.7%

Table 6.12 shows that the items relating to the fad and fashion perspectives were the dominant reasons for implementing ABC, namely: *advice from auditors and/or consultants* (mean score = 4.26), *wishing to try a new accounting innovation* (mean score = 4.22) and *being seen as having a sophisticated costing system* (mean score = 3.97). This was followed by a group of reasons relating to existing costing systems items: *other units within the company had benefited from adopting ABC* (mean score = 3.93), *competitors were using ABC* (mean score = 3.90) and *it was necessary to*

update the existing information system (mean score = 3.81) all these items refer to the efficient choice perspective.

From the information presented in Table 6.12 it is apparent that the fashion and fad perspectives are the dominant reasons for implementing ABC within the Jordanian industrial sector. The first and highest item *advice from auditors and/or consultants* refers to the fashion perspective. This perspective assumes that companies will tend to imitate other companies because of conditions of uncertainty relating to goals and the technical efficiency of innovations. Accordingly, company decisions are more to do with which companies they should imitate rather than which technology they should implement. The fashion perspective assumes that under conditions of uncertainty companies in a group imitate administrative technologies promoted by 'fashion setting' companies outside the group, such as consulting companies, business school and auditors.

The second and third most important items that influenced the decision for ABC implementation in the Jordanian industrial sector were: *wishing to try a new accounting innovation* and *being seen as having a sophisticated costing system* and both items refer to fad perspective. Abrahamson (1991) claimed that the fad perspective assumes that diffusion of innovation occurs when companies within a group imitate other companies within that group. Companies imitate other companies for one or more of these reasons, namely: the communication of knowledge, social interactions, or economic interests. Certain explanations of fad perspective focusing on communication of knowledge claim that a company imitates other companies' choices of an innovation when it obtains from these adopters knowledge that reduces ambiguity about the innovation. Meanwhile, other researchers focusing on social interactions argue that a company imitates other companies in order to appear legitimate by conforming to emergent norms that sanction these innovations (Dimaggio and Powell, 1983; Abrahamson and Rosenkopf, 1993; Abrahamson, 1996). Finally, explanations that emphasise economic interests assert that a company imitates competitors' choices of innovations in order to avoid the risk that these competitors could gain a competitive advantage by using this innovation (Abrahamson, 1991).

6.6.2 Factors that Facilitated the Implementation of ABC

Innes and Mitchell (1990) claimed that catalysts initiate the change process, but without facilitator roles, the potential for change cannot be created in the company. Innes and Mitchell (1990) defined the factors that facilitate the innovation implementation as factors that provide managers with the favourable conditions that are necessary but not sufficient by themselves for a management accounting change. Therefore, the current study examined the influence of six factors on the decision to implement ABC, namely: top management support, internal champion support, higher information technology, education, training and consultants. 31 individual respondents were asked to give their opinions on the degree of importance of six factors that could facilitate the decision to implement ABC. They were asked to rate items on a five-point scale where 1 = Strongly disagree and 5 = Strongly agree. The responses are summarised in Table 6.13.

Table 6.13 Factors that facilitate the decision to implement ABC

	Min	Max	Mean	SD	% of Strong Agree
Adequate training was provided for designing ABC	3.00	5.00	4.32	.541	35.5%
Operating data in the information system are updated real time	3.00	5.00	4.09	.651	25.8%
Adequate training was provided for using ABC	3.00	5.00	4.00	.516	12.9%
ABC received active support from top management	2.00	5.00	3.97	.875	32.3%
Management has provided adequate resources	3.00	5.00	3.94	.772	25.8%
Top management have a clear commitment to use ABC	3.00	5.00	3.87	.792	22.6%
Consultant companies are regularly consulted when dealing with problems	2.00	5.00	3.87	.806	19.4%
Education is being provided	2.00	5.00	3.81	.873	22.6%
The choice of any accounting systems is influenced by consultant companies	2.00	5.00	3.71	.693	9.7%
There is a permanent managerial consultant in the company	2.00	5.00	3.61	1.022	22.6%
Detailed sales and operating data are available in the last year	2.00	5.00	3.58	1.057	22.6%
The objectives of ABC implementation were clearly understood	1.00	5.00	3.51	1.060	16.1%
There are individual within the company who promotes to adopt a new system	2.00	5.00	3.42	.992	12.9%
There is a role for some employees to create awareness of new system	2.00	5.00	3.42	.886	9.7%

The most cited factors that facilitate the decision to implement ABC were *adequate training was provided for designing ABC* (mean scores = 4.32) and *operating data in the information system are updated real-time* (mean scores = 4.09), followed by *adequate training was provided for using ABC* (mean scores = 4.00). Therefore, training and higher information technology were cited as the most important factors that facilitate the decision to implement ABC within Jordanian industrial sector.

In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Moreover, training reduces employees' lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC (Baird *et al.*, 2007).

The fact that operating data in the information system are updated real-time was cited as the second highest factor that facilitates the decision to implement ABC. Cooper (1998) suggests that ABC becomes more beneficial as the cost of data collection and processing is reduced, which requires higher levels of information technology. Cooper (1998) indicated that information technology appears to be an important factor in reaching the usage stage of ABC for most of the companies studied.

Many previous studies report that the essential and key factor that facilitates the decision to implement ABC is top management support (Shields 1995; Krumwiede 1998). According to Table 6.13, not surprisingly, *ABC received active support from top management* and *management providing adequate resources* had the highest average rating (mean scores = 3.97, 3.94 respectively). This means that most ABC implementers perceived that top management support was more important to the decision to implement ABC than other factors. These findings are consistent with the results in the study by Shields (1995) that organisational factors, especially top management support and adequate training in implementing ABC, are related to facilitating the decision to implement ABC. In general, the results of this study are similar to those of other studies (McGowan and Klammer 1997; Krumwiede 1998). Moreover, Brown *et al.* (2004) argued that if the decision to implement ABC is made by lower level management, the level of risk undertaken by them is high (Brown *et al.*,

2004). In contrast, if top management support the adoption of ABC, where senior management explicitly support the project, project uncertainty is reduced and thereby the implementation process is made easier and the risk of the project is reduced (Krumwiede, 1998).

In addition, individual respondents also reported that *consultant companies are regularly consulted when dealing with problems* (mean scores = 3.87) and *education is being provided* (mean scores = 3.81) also facilitate the decision to implement ABC within the Jordanian industrial sector.

6.6.3 Factors that Motivated the Implementation of ABC

Innes and Mitchell (1990) argued that catalysts initiate the change process, but without their motivators' roles, the potential for change cannot be created in the company. Innes and Mitchell (1990) defined motivators as factors that influence management accounting change in a general manner. As examples: the changed environment (Chung *et al.*, 1997), changed cost structure (Bjornenak, 1997) or shortcomings of the existing system (Innes and Mitchell, 1991; Chung *et al.*, 1997; Nguyen and Brooks, 1997). These factors could motivate the decision to implement ABC. The individual respondents who were implementing/using ABC were asked to rate the importance of various factors in motivating the decision to implement ABC. The individual respondents were asked to rate items on a five-point scale where 1 = Strongly disagree and 5 = Strongly agree.

Table 6.14 shows that ABC implementers and users largely indicated that *the increasing proportion of overhead costs* (mean scores = 4.29), *the increasing number of product variants* (mean scores = 4.19), and *growing costs, including production and administrative costs* (mean scores = 4.16) are the most important factors that motivate the implementation of ABC.

Increased competition (mean scores = 3.87) *currently facing allocation problems* (mean scores = 3.64), and *inability to provide relevant information in the new business environment* (mean scores = 3.55) were also cited as major factors that motivate ABC implementation. These factors that motivate the process of ABC implementation

within the Jordanian industrial sector, however, seem different from Booth and Giacobbe's (1997) findings. They found that the perception of importance of indirect costs and high number of product lines or awareness of ABC literature were the main factors that motivate the implementation of ABC. On the other hand, the factors that motivate the process of ABC implementation within the Jordanian industrial sector are similar to those documented in many studies, such as Innes and Mitchell, (1991) and Al-Omiri and Drury, (2007b). 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 6.14 Factors that motivate the decision to implement ABC

	Min	Max	Mean	SD	% of Strong Agree
Increasing proportion of overhead costs	2.00	5.00	4.29	.739	41.9%
Currently the increasing number of product variants	2.00	5.00	4.19	.792	38.7%
Growing costs, including production and administrative costs	3.00	5.00	4.16	.637	29%
Increased competition	2.00	5.00	3.87	.846	22.6%
Currently facing allocation problems	1.00	5.00	3.64	.915	9.7%
Inability of TCS to provide relevant information in new environment	2.00	5.00	3.55	.925	12.9%
The inaccuracies of product cost of the traditional cost system	2.00	5.00	3.45	.995	12.9%
Currently lack of decision-making information	2.00	5.00	3.35	1.112	19.4%
Inability of the TCS to adopt to increased automation in production process	1.00	5.00	3.12	1.056	12.9%
Globalisation of consumer and product markers	2.00	4.00	2.83	.934	0%
Increased regulation	2.00	4.00	2.58	.886	0%

6.6.4 Problems Encountered During the Implementation of ABC

During the process of implementing ABC, the company could face problems or difficulties related to change implementation in practice or be facing resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. Thus, the current study seeks to determine the barriers to change that may explain the differing implementation rates of ABC in the Jordanian industrial sector.

To shed light on this, individual respondents were asked to evaluate difficulties in designing, 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 summarised in Table 6.15.

Table 6.15 Problems of ABC implementation

	Min	Max	Mean	SD	% of Strong Agree
High cost of implementing ABC	2.00	5.00	4.55	.675	61.3%
High cost of ABC consulting	3.00	5.00	4.32	.653	41.9%
Takes up a lot of computer staffs time	2.00	5.00	4.00	.776	25.8%
Difficulty in designing system	3.00	5.00	3.90	.651	16.1%
Lack of software packages	2.00	5.00	3.90	.831	22.6%
Difficulty in gathering data on cost drivers	3.00	5.00	3.87	.718	19.4%
Changes required to company structure to fit activities selected	2.00	5.00	3.84	.898	22.6%
Difficulty in identifying activities	3.00	5.00	3.84	.583	9.7%
A higher priority of other changes/projects	2.00	5.00	3.81	.873	19.4%
Take up a lot of managers time	2.00	5.00	3.48	.889	9.7%
Difficulty in defining cost drivers	2.00	5.00	3.48	.709	6.5%
Coping with changes in accounting	2.00	5.00	3.32	1.107	16.1%
Lack of top management support	1.00	5.00	3.29	.901	12.9%
Lack of commitment and cooperation among departments	2.00	5.00	3.26	.956	6.5%
Resistance to change	2.00	5.00	3.03	1.196	16.1%
Lack of knowledge of data requirement and collection	1.00	5.00	2.90	1.011	6.5%

The greatest difficulty in implementing ABC was *the high cost of implementing ABC* (mean scores = 4.55), followed by *high cost of ABC consulting* (mean scores = 4.32) and *takes up a lot of computer staffs time* (mean scores = 4.00), *difficulty in designing system* (mean scores = 3.90) as well as *lack of software packages* (mean scores = 3.90). These results confirm the findings of Booth and Giacobbe (1997) and Innes and Mitchell (1998). In addition, difficulty in identifying activities, and higher priority of other changes/projects, as well as changes required to company structure to fit activities selected were regarded as challenging tasks during ABC implementation.

It is surprising that *resistance to change from employees* (mean scores = 3.03) was seen as a less important problem among the Jordanian industrial companies while some results in other countries reported that this problem was a major difficulty in implementing ABC (Chung *et al.*, 1997; Innes and Mitchell 1998; Chen *et al.*, 2001). This could be explained by the high level of training courses that Jordanian companies designed. The high level of training was cited as a most important factor facilitating

the decision to implement ABC. Baird *et al.* (2007) claimed that in training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Moreover, training reduces employees' lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC. Thus, resistance from employees was not seen as a serious problem.

In addition, as shown in Table 6.15, most ABC implementers in the Jordanian industrial sector perceived that top management support was an essential and key factor for facilitating the decision to implement ABC. Jordanian top management had largely provided its sufficient support for the implementation of ABC to their organisational members. Therefore, top management support was not lacking for the implementation of ABC in the Jordanian companies (mean score = 3.29).

In summary, based on the above discussion, the most problems in implementing ABC among the Jordanian industrial companies were due to more technical barriers than behavioural or organisational barriers. These findings contrast with the results of Shields (1995), who indicated that most problems with ABC are not attributed to technical barriers. Furthermore, with the finding by Krumwiede and Roth (1997), it was suggested that barriers to ABC resulted from more behavioural and organisational variables than technical variables. This could be explained by the results of Al-Khadash and Feridun (2006) who argued that the Jordanian industrial companies have a good environment to adopt new managerial initiatives such as ABC systems because they have the funding, the human resources and the knowledge about the ABC benefits.

6.6.5 Level of ABC Success within the Jordanian Industrial Sector

Several studies have been undertaken relating to the success of ABC amongst users' companies. Measuring the success of ABC is problematic (Shields, 1995) and researchers have adopted different approaches. Success has been measured by management evaluation (Shields, 1995), use and satisfaction with ABC (Swenson, 1995) and employee satisfaction (MaGowan and Klammer, 1997).

The current study used a multi-attribute approach to measure success of ABC implementation within the Jordanian industrial sector and this multi-attribute is composed of satisfaction with ABC implementation, the degree of using ABC in decision-making and the success of ABC implementation. Therefore, the next issue in this section is to assess the success level of ABC implementation among companies who had completed implementation and had started using ABC information in decision-making.

The first measure of the level of ABC success was using the management evaluation for 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 ABC success was ranked on a five-point scale where 1= Poor and 5 = Very good. Table 6.16 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 (71.6%).

Table 6.16 Level of ABC success among user companies

stages of ABC abandoned	Frequency	Percent	Cumulative Percent
Average	1	14.2	14.2
Good	5	71.6	85.8
Very good	1	14.2	100
Total	34	100	

The second 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 and Mitchell, 1995; Krumwiede, 1998). 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 6.17.

Table 6.17 Frequency of using ABC information by user companies

Purposes for used ABC	Min	Max	Mean	SD
Product costing	4.00	5.00	4.86	.378
Planning	4.00	5.00	4.43	.534
Pricing decision	3.00	5.00	4.14	.690
Decision-making	3.00	5.00	4.00	.577
Determine customer profitability	3.00	5.00	4.00	.577
Budgeting	3.00	5.00	3.86	1.069
Performance measurement	2.00	5.00	3.43	1.272

It can be seen from the Table 6.17 that ABC was widely used for many different purposes but using ABC to *determine product costing* (mean score = 4.86), *planning* (mean score = 4.43), *pricing decision* (mean score = 4.14), *decision-making* (mean score = 4.00) and *using ABC in determine customer profitability* (mean score = 4.00) represents the most widely used applications. The use of ABC in *budgeting* and *performance measurement* represents the least widely used applications (mean score = 3.86, 3.43 respectively) and Table 6.18 shows that the majority of users used ABC information for different purposes very often or always.

Table 6.18 Using ABC information among user companies

Purposes for used ABC	Never	Rarely	Sometimes	Very often	Always	Cumulative %
Product costing	0 0%	0 0%	0 0%	1 14.3%	6 85.7%	7 100%
Determine customer profitability	0 0%	0 0%	0 0%	7 100%	0 0%	7 100%
Decision-making	0 0%	0 0%	1 14.3%	5 71.4%	1 14.3%	7 100%
Planning	0 0%	0 0%	0 0%	4 57.1%	3 42.9%	7 100%
Budgeting	0 0%	0 0%	4 57.1%	0 0%	3 42.9%	7 100%
Pricing decision	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	7 100%
Performance measurement	0 0%	2 28.6%	2 28.6%	1 14.3%	2 28.6%	7 100%

The last measurement of ABC success requested the respondents to indicate on a scale where 1 = Very unsatisfied and 5 Very satisfied, how satisfied they were with the benefits, calculating method and cost reduction efforts they received after implementing ABC. Table 6.19 indicates that the majority of ABC users had a quite high level of satisfaction with the *gained benefits*, *calculating method*, and *cost reduction efforts* (mean scores = 4.14 respectively).

Table 6.19 Level of ABC satisfaction among user companies

	Min	Max	Mean	SD
Satisfied with benefits	4.00	5.00	4.14	.377
Satisfied with cost reduction efforts	3.00	5.00	4.14	.691
Satisfied with calculating method	3.00	5.00	4.14	.691

In addition, Table 6.20 shows that, the majority of companies were satisfied and very satisfied with benefits, calculating method and cost reduction effort that the companies had gathered during the use ABC in their companies. These results support the Swenson (1995) results as he found that the degree of satisfaction with costing will be high after implementing ABC.

Table 6.20 The degree of satisfaction with ABC among user companies

Satisfied with ABC implementation	Very unsatisfied	Unsatisfied	Medium Satisfied	Satisfied	Very Satisfied	Cumulative %
Satisfied with Benefits	0 0%	0 0%	0 %	6 85.7%	1 14.3%	7 100%
Satisfied with Calculating Method	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	7 100%
Satisfied with Cost Reduction efforts	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	7 100%

6.6.6 Reasons for Abandoned ABC Implementation

During the process of implementing ABC, the 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, and even preventing change. Table 6.21 shows that all abandoners stopped the implementation of ABC at an early pilot testing stage. Shanahan and Dance (1997) claimed that a pilot project is beneficial in that managers can compare the worth of ABC with minimum investment of time and other resources and produce quick results, as well as create recommendations. Therefore, many companies conducted a pilot project before making the decision to implement ABC fully.

Table 6.21 Stages of ABC Abandonment

Stages of ABC Abandonment	Frequency	Percent	Cumulative Percent
A pilot project	6	100	100
Developing and installing ABC, as well as training employees	-	0.0	100
Full Implementation of ABC	-	0.0	100
Total	6	100	

The current study seeks to determine the barriers to change that may explain why the abandoners companies make this decision. To shed light on this, individual respondents who abandoned ABC were asked to evaluate difficulties in designing, 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 summarised in Table 6.22.

Table 6.22 Barriers to ABC implementation among abandoner companies

	Min	Max	Mean	SD	% of Strong Agree
High cost of implementing ABC	4.00	5.00	4.50	.547	50%
High cost of ABC consulting	4.00	5.00	4.50	.547	50%
Difficulty in gathering data on cost drivers	4.00	5.00	4.16	.408	16.7%
Take up a lot of managers time	3.00	4.00	3.83	.408	0%
Difficulty in defining cost driver	3.00	5.00	3.83	.753	16.7%
Lack of top management support	3.00	5.00	3.67	.816	16.7%
Difficulty in designing	3.00	4.00	3.67	.516	0%
Takes up a lot of computer staffs time	3.00	4.00	3.67	.516	0%
Lack of software packages	2.00	4.00	3.33	.816	0%
Lack of knowledge of data requirement and collecting	2.00	4.00	3.33	.816	0%
Coping with changes in accounting	2.00	4.00	3.33	.816	0%
A higher priority of other changes/projects	2.00	4.00	3.17	.753	0%
Difficulty in identifying activities	2.00	4.00	3.00	.632	0%
Lack of commitment and cooperation among departments	2.00	3.00	2.83	.408	0%
Changes required to company structure to fit activities selected	2.00	5.00	2.83	.283	16.7%
Resistance to change	2.00	4.00	2.50	.836	0%

The greatest difficulty in implementing ABC was *the high cost of implementing ABC* as well as *the high cost of ABC consulting* (mean scores = 4.50 respectively) followed by *difficulty in gathering data on cost driver* (mean score = 4.16), *takes up a lot of computer staffs time and difficulty in defining cost driver* (mean scores = 3.83). These results confirm the findings of Booth and Giacobbe (1997) and Innes and Mitchell (1998). In addition, *lack of software packages* and *takes up a lot of computer staffs time* (mean score = 3.67), as well as *lack of software packages, lack of knowledge of data requirement and collecting and coping with changes in accounting* (mean score 3.33) were regarded as challenging tasks during ABC implementation.

It is surprising that *resistance to change from employees* (mean scores = 2.50) was seen as a less important problem among Jordanian industrial companies while some results in other countries reported that this problem was a major difficulty in implementing ABC (Chung *et al.*, 1997; Innes and Mitchell 1998; Chen *et al.*, 2001).

In summary, based on the above discussion most problems in implementing ABC in Jordanian industrial companies related to more technical barriers than behavioural or organisational barriers. These findings contrast with the results of Shields (1995), who indicated that most problems with ABC are not attributed to technical barriers; with the finding by Krumwiede and Roth (1997), it was suggested that barriers to ABC resulted more from behavioural and organisational variables than technical variables.

6.7 Comparison of Companies as Users and Non-Users of ABC

The last issue in this chapter is to examine the extent to which ABC users are different from non-users based on group of factors such as type of sector, number of employees, number of products and level of overhead (Innes and Mitchell, 1995; Bjornenak, 1997; Clarke *et al.*, 1999; Cohen *et al.*, 2005). The current study seeks to discover whether companies that use ABC have any characteristics that distinguish them from companies that do not use ABC on the basis of the principle "ABC suits best" (Innes and Mitchell, 1995; Bjornenak, 1997; Clarke *et al.*, 1999; Cohen *et al.*, 2005). The criterion was used to classify the company into two groups ABC Users and Non-Users in this study and was based on Bjornenak (1997), who investigated the adoption of

ABC in Norway. He classified the respondents into two distinct groups: users and non-users group, based on the consideration to implement ABC criterion.

In light of the small number of ABC users in current study, the decision was made to combine users and implementers in one group as optional users of ABC. Bjornenak (1997) claimed that ABC implementers had the same characteristic that users have. Consequently, potential users in the current study included companies that had implemented and started using ABC information in decision-making and companies that are currently implementing ABC while non-users comprised of companies that were non-considering, considering, adopting, and abandoned ABC implementation. Consequently, potential users group consists of 31 companies. On the other hand, the non-users group comprised 30 companies.

This section provides the results and discussions regarding the relationships between the use of ABC and the company characteristics such as type of sector, number of employees, number of products and level of overhead, by comparing companies with non-users and potential users of ABC systems. It should be noted that, in the light of the small number of categories of company characteristics, the data in some categories were combined before the chi-square test was undertaken. This decision was made to increase the number of companies in each category to make the chi-square test valid.

6.7.1 The Differences between ABC Users and Non-Users based on Type of Sector

Shields (1995) argued that the decision to implement and design of cost accounting systems are conditional on the characteristics of industries. In order to examine if there are statistically significant differences between both ABC users and non-users based on type of sector, a chi-square was employed. As explained earlier in light of the few numbers of companies in some sectors, the sectors that had similar characteristics were combined in one group. This decision was made to increase the number of companies in each group to make the chi-square analysis valid.

The new classification of type of sectors was based on the Department of Statistics reports and Ministry of Industry and Trade in Jordan. The first group was called the Engineering sector, and this group includes two sectors, namely: Electrical, and

Engineering and Construction industries. The second group 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 group 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 6.23.

To examine if there are statistically significant differences between both ABC Users and Non-users based on the type of sector, a chi-square was employed. At the 95% confidence level, the analysis indicates that no evidence was found to refute the hypothesis that the two groups are homogeneous. Therefore, there is no major difference between ABC Users and Non-users based on type of sector (chi-square is 3.734 and Sig .155). This results support Gosselin's (1997) results; he found industry type did not have a significant effect on the adoption of the activity-based costing technique within Canadian manufacturing companies.

Table 6.23 Classification of ABC users and non-ABC users based on type of sector

Number of Employees	ABC Users	Non-ABC Users	Total
<i>Engineering Sector</i>			
Count	12	5	17
% within type of sector	70.6%	29.4%	100%
% within Users and Non-users of ABC	38.7%	16.7%	27.9%
% of Total	19.7%	8.2%	27.9%
<i>Processing sector</i>			
Count	9	11	20
% within type of sector	45%	55%	100%
% within Users and Non-users of ABC	29%	36.7%	32.8%
% of Total	14.8%	18%	32.8%
<i>Consumers Product Sector</i>			
Count	10	14	24
% within type of sector	41.7%	58.3%	100%
% within Users and Non-users of ABC	32.3%	46.7%	39.3%
% of Total	16.4%	23%	39.3%
<i>Total</i>			
Count	31	30	61
% within type of sector	50.8%	49.2%	100%
% within Users and Non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.7.2 The Differences between ABC Users and Non-Users based on Number of Employees

There are a variety of factors, such as number of employees, annual sales, total revenue, net worth, total assets and capital, which could be used to define company size. Askarany and Smith (2008) suggested that companies are most frequently classified by size according to the number of employees and size of capital. They also claimed that, as changes in factors such as annual sales, total revenue, total assets, and net worth of companies occur more frequently than changes in the number of employees and capital each year, defining companies based on such unstable factors may result in a change in the classification of companies each year. Therefore, the number of employees was used to measure the company size in the current study.

The relationship between company size and ABC Users and Non-users is examined in Table 6.24. The majority of Non-Users companies which are listed at the Amman Stock exchange have less than 500 employees. (11 companies have less than 100 and 11 companies employee between 101–500 employees). Meanwhile, the majority of Users (29 companies) have more 500 employees.

The Ministry of Industry and Trade in Jordan classifies companies as those employing less than 100 employees as small companies, companies with between 100-500 employees as medium-sized companies and those with more than 500 employees as large companies.

Table 6.24 shows that the majority of the users' companies were classified as medium or large companies while non-users' companies were classified as small or medium companies. In ABC literature, the influence of company size on diffusion of ABC has produced mixed results (Bjornenak, 1997; Krumwiede, 1998; Clarke *et al.*, 1999; Brown *et al.*, 2004; Askarany and Smith, 2008). Many researchers claimed that large companies have several advantages over smaller companies when implementing ABC. For instance, the large companies are more likely to have greater access to individuals with the knowledge to use ABC. In addition, large companies have greater ability to afford capital, to support the costs of ABC implementation and bear the risk of failure. On the other hand, other researchers argue that small companies have several advantages over larger companies when implementing ABC such as greater proximity

to the market and better overview of the entirety of the project (Askarany and Smith, 2008).

In the Jordanian industrial sector a significant number of companies which used ABC are classified as medium and large companies. This result supports the previous research results that in the industrial sector large and medium companies are the prime source of technological change and implementation of a new management innovation such as ABC, and they made an important contribution to the diffusion of innovation (Bjornenak, 1997; Krumwiede, 1998; Clarke *et al.*, 1999; Brown *et al.* 2004).

To examine if there are statistically significant differences between both ABC Users and Non-users based on number of employees a chi-square was employed. The analysis indicates that there is no evidence of homogeneity between the two groups at the 95% confidence level. Therefore, the number of employees influences the decision to implement ABC within Jordanian industrial sector (chi-square is 8.333 and Sig .016).

Table 6.24 Classification of ABC users and non-ABC users based on number of employees

Number of Employees	ABC Users	Non-ABC Users	Total
1-100 Employees			
Count	2	11	13
% within Number of Employees	15.4%	84.6%	100%
% within Users and Non-users of ABC	6.5%	36.7%	21.3%
% of Total	3.3%	18%	21.3%
101-500 Employees			
Count	16	11	27
% within Number of Employees	59.3%	40.7%	100%
% within Users and Non-users of ABC	51.6%	36.7%	44.3%
% of Total	26.2%	18%	44.3%
More than 500 Employees			
Count	13	8	21
% within Number of Employees	61.9%	38.1%	100%
% within Users and Non-users of ABC	41.9%	26.7%	34.4%
% of Total	21.3%	13.1%	34.4%
Total			
Count	31	30	61
% within Number of Employees	50.8%	49.2%	100%
% within Users and Non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.7.3 The Differences between ABC Users and Non- Users based on Number of Products

Several studies have investigated the relationship between the decision to implement ABC and the products' diversity. For instance, Cooper, (1988b); Cooper and Kaplan, (1998); Abernethy *et al.* (2008) suggested that product diversity leads to a higher potential for cost distortion and applies when products consume activity resources in different proportions.

High product diversity increased the costing distortions arising from TCS. Therefore, greater product diversity requires more sophisticated costing systems (such as ABC) to capture the variation in resource consumption by different products (Abernethy *et al.*, 2008). This suggestion was supported by Bjornenak (1997); Krumwiede (1998); both found a positive relationship between the level of product diversity and ABC implementation.

Table 6.25 indicates that for ABC users 13 companies were producing between 20–50 products and 12 companies were producing more than 50 products. Meanwhile, for the non-user group, 9 companies were producing between 20–50 products and 14 companies were producing less than 20 products.

To examine if there are statistically significant differences between both ABC Users and Non-users based on number of products a chi-square was employed. The analysis shows that no evidence was found at the 95% confidence level to refute the hypothesis that the two groups are homogeneous. Therefore, there is no major difference between ABC Users and Non-users based on number of products (chi-square is 5.228 and Sig .073).

Table 6.25 Classification of ABC users and non-users based on numbers of products

Number of Product	ABC Users	Non-ABC Users	Total
Less than 20			
Count	6	14	20
% within Number of products	30%	70%	100%
% within users and non-users of ABC	19.4%	46.7%	32.8%
% of Total	9.8%	23%	32.8%
20 – 50			
Count	13	9	22
% within Number of product	59.1%	40.9%	100%
% within users and non-users of ABC	41.9%	30%	36.1%
% of Total	21.3%	14.8%	36.1%
More than 50			
Count	12	7	19
% within Number of product	60.2%	36.8%	100%
% within users and non-users of ABC	38.7%	23.3%	31.1%
% of Total	19.7%	11.5%	31.1%
Total			
Count	31	30	61
% within Number of products	50.8%	49.2%	100%
% within users and non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.7.4 The Differences between ABC Users and Non- Users based on Level of Overhead

The early published ABC literature argued that overhead was becoming an increasingly larger component of product cost, and that this led to the distortions inherent in traditional costing systems becoming more problematic. Therefore, ABC was seen as a more accurate method of overhead allocation and a better costing system for contemporary companies (Cooper, 1988a; Cooper and Kaplan, 1988a)

Table 6.26 indicates that, for ABC users 13 companies were at a rate of overhead to total cost of between 21%–40% and 11 companies had the rate of overhead at more than 41% to total cost. For non-user group, 6 companies had the rate of overhead at more than 41% to total cost. 12 companies were at the rate of overhead to total cost of between 21% – 40% and for 12 companies the rate of overhead was less than 20% to total cost

To examine if there are statistically significant differences between both ABC Users and Non-users based on level of overhead a chi-square was employed. The analysis shows that no evidence was found at the 95% confidence level to refute the hypothesis that the two groups are homogeneous. Therefore, there is no major difference between

ABC Users and Non-users based on level of overhead (chi-square is 2.811 and Sig .245).

Table 6.26 Classification of ABC users and non-users based on level of overhead

Level of Overhead	ABC Users	Non-ABC User	Total
0% - 20%			
Count	7	12	19
% within level of overhead	36.8%	63.2%	100%
% within users and non-users of ABC	22.6%	40%	31.1%
% of Total	11.5%	19.7%	31.1%
21% - 40%			
Count	13	12	25
% within level of overhead	52%	48%	100%
% within users and non-users of ABC	41.9%	40%	41%
% of Total	21.3%	19.7%	41%
More than 41%			
Count	11	6	17
% within level of overhead	64.7%	35.3%	100%
% within users and non-users of ABC	35.5%	20%	27.9%
% of Total	18%	9.8%	27.9%
Total			
Count	31	30	61
% within level of overhead	50.8%	49.2%	100%
% within users and non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.8 Summary

The findings drawn from the analysis of questionnaire data that were reported in this chapter highlight the views of chief financial managers/heads of cost accounting departments in relation to the adoption and implementation of ABC within the Jordanian industrial sector. Many key findings were discussed in this chapter. First, the rate of ABC implementation with the Jordanian industrial sector based on the first criterion was 11.5% (7 companies out of 61 using ABC information as a part of daily practices or integrating with other systems). The rate of ABC implementation based on the second criterion was based on implementation as processing to implement ABC rather than using ABC information as a part of daily practices or integrating with other systems and this increased to 50.8% (11.5% had used ABC in full plus 39.3% companies, which are in the process of implementing ABC).

Second, regarding the reason for non-considered ABC implementation, the results indicated that the most cited reasons for not considering ABC were the inherent difficulties with ABC design and implementation group namely: costly to switch to ABC (mean scores = 4.00) and consultants too costly (mean scores = 3.83) was cited as the most important reason for not considering ABC within the Jordanian industrial sector, followed by Satisfied with the current system (mean scores = 3.75).

Third, costly to switch to ABC (mean scores = 4.08) and consultants too costly (mean scores = 4.00) were cited as the most important factors against the implementation of ABC within the Jordanian industrial sector, followed by lack of expertise to implement ABC and too complex and time-consuming (mean scores = 3.42, 3.25 respectively).

Fourth, in respect to the reason for ABC implementation the analysis indicated the fad and fashion perspectives were the dominant reasons for implementing ABC, namely: advice from auditors and/or consultants (mean score = 4.26), we wished to try a new accounting innovation (mean score = 4.22) and to be seen as having a sophisticated costing system (mean score = 3.97).

Fifth, the most cited factors that facilitated the decision to implement ABC were that adequate training was provided for designing ABC (mean scores = 4.32) and operating data in the information system were updated inreal time (mean scores = 4.09),

followed by adequate training was provided for using ABC (mean scores = 4.00). Therefore, training and higher information technology were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian industrial sector.

Sixth, the analysis of factors that motivate the process of ABC implementation has shown that both ABC implementers and users largely indicated that the increasing proportion of overhead costs, (mean scores = 4.29), currently the increasing number of product variants (mean scores =4.19), and growing costs, including production and administrative costs (mean scores = 4.16) were also cited as major factors that motivate ABC implementation.

Seventh, regarding the analysis of the main problems encountered during the implementation of ABC, the results have shown that the greatest difficulty in implementing ABC was the high cost of implementing ABC (mean scores = 4.55), followed by high cost of ABC consulting (mean scores = 4.32) and takes up a lot of computer staffs time (mean scores = 4.00), difficulty in designing the system as well as lack of software packages (mean scores = 3.90). These results confirm the findings of Innes and Mitchell (1998) and Booth and Giacobbe (1997).

Eighth, the Jordanian industrial companies assess the degree of ABC success as good and very good, and the majority of Jordanian companies are using ABC to determine product costing (mean score = 4.86), planning (mean score = 4.43) and for pricing decision (mean score = 4.14). Finally, the majority of ABC users had quite a high level of satisfaction with the gained benefits, calculating method, and cost reduction efforts (mean scores = 4.14 respectively). In the next chapter, the discussion of the interview data analysis is provided.

CHAPTER SEVEN

QUALITATIVE DATA ANALYSIS

7.1 Introduction:

The qualitative stage complements and affirms the quantitative component analysed in the previous chapter. The qualitative analysis presented here is used as a follow-up for further clarification of the results of the survey and is also used to aid the interpretation and confirm 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 method for this phase of the study was designed for interviews with companies that had implemented ABC in full and are currently using ABC information. Each company in this chapter was examined as an entity to obtain an understanding of the process of ABC adoption and implementation as well as the respondents' opinions and perspectives of each individual company as to what are considered to be the important factors in the company. By firstly using within-company analysis has the potential to aid in-depth views of the issues and their impact on each particular company. Then, cross-company analysis was used to analyse the similarities and differences of the six companies.

7.2 Within-Company Analysis

This section describes within-company analysis, but before the discussion of detailed findings of individual companies, a summary of background information is provided which gives an overall picture of each company. It includes the general background information, such as the type of sector and the size of the company in terms of number of employees and of capital of company, and the year of establishing their work and starting ABC implementation.

7.2.1 Implementation of ABC in Company One

Company One is in the Tobacco and Cigarette sector with a total workforce around 430 in 2008. The capital of company at the end of 2008 was 15 million JD (1 JD = £1 approximately). The company was established in 1993. In 2001 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in March 2004.

- The Reason for ABC Implementation

Abrahamson (1991) argued that implementation of innovations can occur through the imitation of companies outside their own social group. Abrahamson called this type of implementation the 'fashion' perspective. This perspective assumes that companies will tend to imitate other companies because of conditions of uncertainty relating to goals and the efficiency of innovations. Therefore, under conditions of uncertainty, companies in a group imitate administrative innovation promoted by consulting companies. According to the interview data from the head of the cost accounting department in Company One:

“On behalf of my top management, I was requested to bring in a consultant to replace the old cost accounting system and implement a new system to fit our business and production processes”.

Anderson (1995) found that once the problem with the current costing system in her case site had been identified, the choice of ABC was profoundly influenced by opinions of external experts. The head of the cost accounting department in Company One said that:

“The company decided to deal with experts at that time. Actually, we got them here; they spoke to our managers, stock department manager, IT manager, and me. One of the consultants said why is ABC an appropriate system for the company”.

- Factors that Facilitate the Implementation of ABC

Top management support is the most crucial factor influencing the success of ABC implementation. Anderson (1995) argues that top management is needed as it is difficult to implement an advanced system such ABC in companies without their full support, and to make sure that the system is used for its intended purpose (Brown *et al.*, 2004). These findings are, in fact, consistent with the more general finding that

most successful innovations require the support of top management. Top management should commit resources and develop goals and strategies to enable the implementation of ABC. The head of cost accounting department in Company One said:

“The role of our managers was in supporting us during the implementation of ABC. They encouraged the use of ABC system. The company designed many good training programmes for the employees and for me to update myself with the system”.

Top management plays an important role in relation to the availability of necessary resources the company needs for the implementation of ABC. The commitment and support of top management have emerged in the literature as a key factor evident in an ABC implementation (Krumwiede, 1998; Brown *et al.*, 2004). This top management support is argued to be critical due to the ability of managers to focus resources on the implementation process and to help motivate those who are resistant to the operation of the system (Shields, 1995). The head of the cost accounting department in Company One added:

“Our managers have been involved with the ABC system since its implementation, so they are very comfortable with it and what happens with it, and they have rigorous confidence about the results that can be gained from ABC”.

- **Training**

The training factor is considered to play a key role in the implementation of ABC system. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Training reduces employees' lack of confidence in ABC and prevents them from feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC (Shields, 1995). According to the interview data from the head of the cost accounting department in Company One:

“Both training and education facilitated the implementation of ABC. Firstly, the Egyptian expert provided information about the concept and the benefits of ABC for managers and our employees. Then he explained the term of activity and cost driver. Secondly, our managers provided training and a workshop about the process of ABC implementation for the ABC project team. By the way, this training course was designed also by the Egyptian expert”.

During the earlier decades of the 20th century accessing and processing information was a tedious task with non-computerised information systems. However, the developments in computerised information technology over the past three decades have considerably reduced information-processing costs. The advanced information technology has also facilitated the flexibility of extracting information as and when needed. For most companies these developments have reduced the costs and barriers of operating management accounting innovations such as the ABC system (Krumwiede, 1998; Brown *et al.* 2004). The head of the cost accounting department said:

“The higher information technology (sophistication) is the key to change; absolutely, the key to change. The technology here is to facilitate producing information and the information is the knowledge that will create change. ABC as a system needs really good information to create change”.

He added:

“ABC requires a lot of data and without a higher information system, we can’t deal with all these requirements of the ABC system”.

- Factors that Motivate the Implementation of ABC

Shields (1995) considered competition as the most important external factor for stimulating managers to choose implementing ABC. Cooper (1988b) has also identified that companies facing fierce competition should implement ABC as it is argued that companies operating in a more competitive environment have a greater need for advanced costing systems such as ABC that more accurately assign costs to cost products. This is because competitors are more likely to take advantage of any errors by managers having relied on inaccurate cost information to make decisions. The head of the cost accounting department points out that:

“We work in a highly competitive environment. Using ABC is a key to our success and to being competitive in the market. ABC plays an important role in the company daily tasks such as decision-making especially in uncertain situations”.

The size of the company has been found to be an important factor influencing the implementation of ABC (Bjornenak, 1997). Previous studies have also noted a positive relationship between company size and the implementation of ABC systems (Innes and Mitchell, 1995; Bjornenak, 1997; Malmi, 1999). A possible reason for this

is that larger companies have relatively greater access to resources to experiment with the introduction of ABC. The head of the cost accounting department said:

“In the past, every morning I was responsible for gathering all data, putting it into EXCEL for analysis and then reporting to my top management. But, the growing size of our company, leading to an increased number of products, made it difficult to manage information manually or even by our old system”.

- Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting on the success of implementing ABC. The main barrier to ABC implementation encountered in Company One is the lack of local consultant companies. The head of the cost accounting department said that:

“There are not enough consultants that provide education about ABC. We should have more practical ABC training. Each company wanting to implement ABC should have advisers to check and give advice”.

The issues related to the supply side of diffusion of ABC innovation were mentioned during the interview with the head of the cost accounting department in Company One, for example, the need for more conferences and seminars in accounting issues in general and ABC in particular as well as the need for journals specialising in management accounting to be made available to accountants and financial managers in Jordan. He also commented on the shortage of management accounting research and PhD degrees in this area of management accounting within Jordanian public universities:

“Our universities are not active in management accounting research. For example, this is the first time I have seen a questionnaire or participated in an interview on the process of ABC implementation in our sector in such detail as yours. Actually, I wanted to apply to do a PhD in accounting in Jordan but we do not have such doctoral courses in our public universities”.

Argyris and Kaplan (1994) suggested that education about ABC system is a crucial step of success in ABC implementation as, in this step, both managers and employees identified the differences between the TCS and the ABC systems. They describe how the processes of ABC overcome the shortcomings of the TCS. The head of the cost accounting department points out that:

“Most staff, at every level, do not understand exactly what ABC is and how to do it. The lack of knowledge and insufficient documentation make it more complicated to work on ABC. There is a need to educate all staff about ABC especially those who work on it and those who gather the information about cost drivers and cost centres”.

The implementation of ABC demands an adequate amount of internal resources as it builds ownership, knowledge and action within the company. These resources give employees the opportunity to learn about the ABC system and the ABC benefits, and make them less resistant to change (Shields, 1995). According to the interview data from the head of the cost accounting department:

“We need a huge amount of money to spend on training programmes, hardware and network after ABC is really implemented. ... I do not believe we have enough money for that”.

Innes and Mitchell (1991) point out that the most common problems perceived by companies implementing ABC related to the amount of work involved in ABC implementation. The head of the cost accounting department said that:

“Implementation of ABC is a full time occupation when it gets going. When the top management chose me to move to the ABC implementation team, I lost my daily operations”.

He added:

“There is a shortage of staff in many major areas of ABC implementation process. Most of them require a high salary. ... It takes time and hard effort to find them”.

Summary

In Company One, the company deals with consultants to assist them with their implementation of ABC. Companies deal with consultants because of the conditions of uncertainty relating to goals and efficiency of innovations. Consequently, companies implemented the system that was promoted by consultant companies. Top management support, training and higher information technology are the most crucial factors that influence the decision to ABC implementation. In addition, size of the company and operating in a more competitive environment have been found to be an important factor influencing the implementation of ABC. On the other hand, the main barriers to ABC implementation encountered in Company One are the lack of local consultant companies, the fact that it is regarded as time consuming and the lack of education about ABC.

7.2.2 Implementation of ABC in Company Two

Company Two is listed in the Mining and Extraction industry sector with a total workforce around 395 in 2008. The capital of company at the end of 2008 was 46 million JD (1 JD = £1 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.

- The Reason for ABC Implementation

Cohen *et al.* (2005) suggested that companies should use outside experts to help them choose a more sophisticated costing system and deal with problems that are encountered during the implementation. According to the interview data from the financial manager of Company Two:

“The implementing of ABC in our company started with meetings between American experts and our top managers from various departments”.

- Factors that Facilitate the Implementation of ABC

The commitment and support of top management has emerged in the literature as a key factor evident in an ABC implementation (Krumwiede, 1998; Brown *et al.*, 2004). The financial manager in Company Two said:

“Our managers are supporting the change and implementing ABC, they provide all the necessary basics we needed for implementation”.

He added:

“Our managers all the time encourage us to use ABC, without their encouragement we would not be using these advanced techniques”.

Brown *et al.* (2004) argued that top management must develop a strong business justification for the implementation of ABC, set clear and measurable goals and hold direct reports accountable for achieving them. According to the interview data from the financial manager of Company Two:

“Since the company started implementing the system our managers are actually doing a review each three months, talking to all managers in the departments. They need to review ABC to see if the system we have now is meeting our requirements. So they will either decide whether to stay with it or to change to something else”.

Chanegrih (2008) pointed out that top management support, as well as level of training play a key role in the implementation of ABC and in overcoming the resistance to change. According to the interview data from the financial manager of Company Two

“Probably training is the most important factor that facilitates the implementation of it. We have central training units in our company for our employees, the aim here is to educate them about the concept of ABC and encourage them to use it”.

- Factors that Motivate the Implementation of ABC

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information all encourage companies to seek a solution to overcoming these limitations by implementing ABC to generate more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. The financial manager of Company Two said:

“We do not identify our product cost well and in the correct way, we don’t believe the allocation process we used at that time was that accurate. But we know that with ABC system we can correctly allocate our overhead costs”.

He added:

“The product profitability was built on assumptions which are completely wrong”.

Anderson (1995) and Gosselin (1997) suggested that companies facing intensely competitive market environments tend to employ ABC. According to the interview data from the financial manager of Company Two

“We work in a very tough market if we continue working with the old costing system we will withdraw from the market very soon. The information we gathered from the old system is too slow and unreliable”.

- Barriers to ABC Implementation

Cohen *et al.* (2005) found that the main difficulties encountered the implementation of ABC were the high cost of implementing the system and high cost of consultants’ companies. The financial manager said that:

“After making a large investment in ABC, companies may be unwilling to invest in the skills needed to keep these vital systems running. High cost of consulting and lack of staff to support the implementation of ABC are the main difficulties”.

Friedman and Lyne (1999) found that the difficulty in the selection cost drivers was a factor that could be identified as a critical technical issue that could influence the implementation of the ABC system. The financial manager in Company Two said that:

“The processes of selecting cost drivers were changed all the time, we had a hard time to select appropriate cost drivers then to cope with them”.

Friedman and Lyne (1999) found that the lack of internal recourse was a factor that could be identified as a barrier to the implementation of the ABC system. Chanegrih (2008) pointed out that top management support, as well as level of training play a key role in the implementation of ABC and in overcoming the resistance to change. According to the interview data from the financial manager of Company Two:

“My top management encouraged us from the beginning to implement ABC but everyone here knows that the company is working on a limited budget for ABC implementation. Due to cost constraints, there is insufficient training for existing and new employees”.

Summary

In Company Two, The implementation of ABC started with meetings between American experts and top managers from various departments. Top management support and training are the most crucial factors influencing the decision to implement and the success of ABC implementation. In addition, the shortcomings of the existing costing system and competition are the main factors motivating the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Two are namely: the high cost of implementation and consultants' companies, difficulties in the selection of cost drivers and lack of internal resources and current lack of training.

7.2.3 Implementation of ABC in Company Three

Company Three is listed in the Tobacco and Cigarette sector with a total workforce around 523 in 2008. The capital of THE company at the end of 2008 was 44 million JD (1 JD = £1 approximately). The company was established in 1992 and in 2002 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in June 2004.

- The Reason for ABC Implementation

Cohen *et al.* (2005) suggested that companies should use outside experts to help them in choosing a sophisticated costing system and dealing with problems that may be encountered during the implementation of ABC. According to the interview data from the head of the cost accounting department in Company Three:

“The implementing of ABC in our company started with meetings between experts and our top managers from various departments”.

He added:

“Before implementing ABC, one of the American experts had provided a presentation for our managers as well as our employees in order to inform employees about the clarity of objectives and the necessity of understanding the philosophy behind ABC systems”.

- Factors that Facilitate the Implementation of ABC

Top management support is the most crucial factor influencing the success of ABC implementation. Krumwiede (1998) argues that top management is needed as it is difficult to implement advanced systems such ABC in companies without their full support, and to make sure that the system is used for its intended purpose (Brown *et al.*, 2004). These findings are in fact consistent with the more general finding that almost all successful innovation requires the support of top management. Top management should commit resources and develop goals and strategies to enable the implementation of ABC. The head of the cost accounting department in Company Three stated that:

“Top managers encourage us to use ABC, without their encouragement we would not be using this advanced costing technique”.

Top management plays an important role in relation to the availability of these resources. The commitment and support of top management has emerged in the literature as a key factor evident in an ABC adoption (Krumwiede, 1998; Brown *et al.*, 2004). This top management support is argued to be critical due to the ability of managers to focus resources on the adoption process and to help motivate those who are resistant to the operation of the system (Shields, 1995). The head of the cost accounting department in Company Three added:

“Our managers are supporting us to change and implement ABC. They provided all the necessary resources we need for implementation”.

Education and training of the people who were using the system is considered to be of the same importance as the system investment, because when people do not have the necessary skills to implement and control the system, even ‘perfect’ systems would not be able to produce high quality information. From the existing literature it is clear that lack of appropriate education and training can cause serious problems during the implementation. According to the interview data from the head of the cost accounting department in Company Three:

“Before implementing ABC, an American expert had provided a seminar to educate our top managers and our employees about the concept and benefits of ABC and to plan what the company wanted from ABC”.

- Factors that Motivate the Implementation of ABC

Bjornenak (1997) claimed that competition was the most important external factor for stimulating managers to consider implementing ABC. According to him, organisations operating in a more competitive environment have a greater need for ABC that reports more accurate product costs because competitors are more likely to take advantage of any errors arising from managers having to rely on distorted product costs to make decisions. Cooper (1988b) has also identified that companies facing fierce competition should implement ABC as it is argued that companies operating in a more competitive environment have a greater need for advanced costing systems such as ABC that more accurately assign costs to cost products. This is because competitors are more likely to take advantage of any errors by managers having relied on inaccurate cost information to make decisions. The head of the cost accounting department in Company Three points out that:

“We work in a highly competitive environment; implementing ABC is a key to our success and being competitive in the industry sector. ABC information plays an important role in achieving that”.

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy product costs and allocation and lack of timely cost information all encourage companies to seek solutions to these limitations by implementing ABC to generate more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the head of the cost accounting department in Company Three:

“In the past, the company could not know the exact profit or loss of each business or factory. Also, the company could not know how much each factory had wasted and in which process the waste occurred. The management felt that it wanted more clarity of information for decision-making and the development of an efficient operation. Thus, the company has implemented ABC.”

- Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting on the success of implementing ABC. The main barriers to ABC implementation encountered in Company Three were the number and lack of local consultants companies in Jordan. The head of cost accounting department said that:

“In Jordan there is a lack of consultant companies, which makes the company depend fully on expensive foreign expertise”.

The head of the cost accounting department in Company Three pointed out the importance of cooperation between industrial companies and universities and companies. He stated that such cooperation does not exist or is very weak at present. If promoted, such cooperation would certainly improve accounting practices and knowledge about advanced costing techniques in the Jordanian industrial sector.

“To be honest with you, from the past and until today the relationship and cooperation between accounting professionals in the field and academics in universities is very weak. I only communicate when somebody comes to ask me to fill in a questionnaire or is asking to conduct an interview. I think we should communicate more often if we really need to improve our costing system and implement advanced ones such as ABC”.

Innes and Mitchell (1991) pointed out that the most common problems perceived by UK's companies during implementation of ABC related to the lack of co-operation between departments during the implementation. Summarily, the head of the cost accounting department in Company Three said that:

“There is a lack of involvement from non-accounting employees in the process of ABC implementation”.

Innes and Mitchell (1991) and Cohen *et al.* (2005) argued that companies are likely to face more resistance during the implementation of ABC, which occurs as a result of change in structure of the company. According to the interview data from the head of the cost accounting department of Company Three:

“There was a need to change the structure and parts of the company in order to get our employees to participate in the process of ABC implementation”.

Friedman and Lyne (1999) found that the difficulty in the selection of cost drivers was a factor that could be identified as a critical technical factor that could influence the implementation of ABC system. The head of the cost department in Company Three said that:

“Probably, selecting cost drivers were the biggest challenge, we need to get everyone aware of why we need to collect this information and what the benefits are”.

Summary

In Company Three, the implementation of ABC was promoted by consultant companies. Top management support, education and training are the most crucial factors influencing the decision to implement and ABC successfully. Shortcomings of the existing costing system and competition are the main factors that motivate the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Three are: high cost of implementation and consultant companies, co-operation between departments, change to the company's cost structure and difficulties in the selection of cost drivers.

7.2.4 Implementation of ABC in Company Four

Company Four is listed in electrical industries with a total workforce of around 242 in 2008. The capital of the company at the end of 2008 was 20 million JD (1 JD = £1 approximately). The company was established in 1983. In 2004 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in June 2006.

- The Reason for ABC Implementation

Abrahamson (1991) argued that diffusion of innovation occurs when companies within a group imitate other companies within that group. Companies imitate other companies either in order to appear legitimate by conforming to emergent norms, or to avoid the risk that competitors will gain a competitive advantage by using the innovation. Abrahamson (1991) suggested that companies adopt innovations because other companies have adopted it rather than on the basis of an evaluation of the innovation's efficiency. According to the interview data from the head of the cost accounting department in Company Four:

“ABC at that time was the style (fashion), so everybody, every manager in each company in our industry jumped quickly to look at it or even use it.”

He added:

“We have heard how good ABC is for many years ... There is nothing wrong with our old system. It still works well. But we considered implementing ABC as we have reason to believe it may improve our ineffective business processes. And it may help us in our new project”.

- Factors that Facilitate the Implementation of ABC

Shields (1995) suggested that, top management support is the most crucial factor in the success of ABC implementation, due to the ability of managers to focus resources into the adoption process and to help motivate those who are resistant to the operation of the system. According to the interview data from the head of the cost accounting department in Company Four:

“My top manager has been involved with the ABC system since its implementation until now. For instance, he has registered to get his CMA certificate to be up dated 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. According to the interview data from the head of the cost accounting department in Company Four:

“Our managers have the basic skills needed to implement ABC and we can always start with the simple system then build up all that they need”.

The training factor is considered to play a key role in the success of the ABC. In relation to ABC, training relates to design, implementation, and usage of ABC. Shields and McEwen (1996) suggested that if people do not know why or how the ABC system works, they are more likely to ignore or misunderstand it and less likely to design a more accurate costing model. Training in implementation will help the team to understand the correct way to implement the ABC. Training in the usage of ABC helps the members to know how to interpret ABC information and how to use it for target goals. According to the interview data from the head of the cost accounting department in Company Four:

“The company often provides workshops about the processes of ABC implementation for middle managers and heads of departments. On the other hand, all accountants have been provided with training about the implementation of ABC and the benefits we expect to gain from it.”

It was found that people must first have an awareness of the ABC concept, and then get a deep understanding of the ABC implementation process and how the system impacts on the organisation performance. According to the interview data from the head of the cost accounting department in Company Four:

“ABC creates massive change, I think everyone has to be ready to deal with change, or at least know what their responsibilities are and what they need to do. So things need to be well-planned and well-documented, if the company is just suddenly moves to using ABC and there hasn’t been enough thought about what procedures need to change, it will cause serious problems”.

- Factors that Motivate the Implementation of ABC

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek solutions by

implementing ABC. ABC system generates more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the head of the cost accounting department in Company Four:

“We do not identify our product cost well and in the correct way, but we know with ABC system we can. 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 for our products”.

He added:

“We don’t actually have confidence in any figures that come out from our old costing system to make any decisions. We solve this problem by implementing ABC”.

- Barriers to ABC Implementation

Cohen *et al.* (2005) found that the main difficulties encountered in the implementation of ABC related to high cost of implementation the system. In Company Four, the head of the cost department said that:

“We spent a huge amount of money on training programmes, hardware and software before ABC was really implemented”.

Friedman and Lyne (1999) found that the difficulty in the selection cost drivers was a factor that could be identified as a critical technical factor that could influence the implementation of ABC system. According to the interview data from the head of the cost accounting department in Company Four:

“The processes of selecting cost drivers were changing all the time, we had a hard time to select appropriate cost drivers then to cope with it”.

Summary

In Company Four, the implementation of ABC was a fashionable topic. Top management support, education and training are the most crucial factors influencing the decision to implement successfully. Shortcomings in the existing costing systems are the main factors motivating the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Four were high cost of ABC implementation and difficulties in the selection of cost drivers.

7.2.5 Implementation of ABC in Company Five

Company Five is listed in Chemical industries with a total workforce around 693 in 2008. The capital of company at the end of 2008 was 20 million JD (1 JD = £1 approximately). The company was established in 1993. In 2005 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in March 2007.

- The Reason for ABC Implementation

Dimaggio and Powell (1983) suggested that companies imitate other companies in order to appear legitimate by conforming to emergent norms or to avoid the risk that competitors will gain a competitive advantage by using the innovation. According to the interview data from the head of the cost accounting department in Company Five:

“ABC was a bright phrase, at this time our engineers and managers in the company were running around saying we should have an ABC in our company”.

- Factors that Facilitate the Implementation of ABC

The commitment and support of top management has emerged in the literature as a key factor evident in an ABC implementation (Krumwiede, 1998; Cotton *et al.*, 2003; Kiani and Sangaladji, 2003; Brown *et al.*, 2004). This top management support is argued to be critical due to the ability of managers to focus resources into the adoption process and to help motivate those who are resistant to the operation of the system (Shields, 1995). According to the interview data from the head of the cost accounting department in Company Five:

“Top management dedicated significant time and resources in order to support their staff in implementing ABC. Although they were not directly involved they encouraged us to learn how to use the system, they helped to run many training courses”.

He added:

“Management commitment and communication of ABC concepts were the keys to implementation and the success of the project”.

Krumwiede (1998) claimed that training is important to ensure that employees understand activity management practice, to reduce resistance to change and to sustain successful performance. According to the interview data from the head of the cost accounting department in Company Five:

“The process of ABC implementation started when the consultants launched the project by conducting a two-day training seminar about ABC concepts”.

He added:

“Training is very important. If people don’t know what they are doing, what they are supposed to be doing, they can’t cope with the system”.

- Factors that Motivate the Implementation of ABC

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek to find solutions to overcoming these limitations by implementing ABC to generate more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the head of the cost accounting department in Company Five:

“The benefits that I received from the traditional costing system were too little too late”.

- Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during process of ABC implementation as a most important factor impacting on the success of implementing ABC. The main barrier to ABC implementation encountered in Company Five was the lack of consultants. The head of the cost accounting department said that:

“In Jordan there is a lack of consultant companies in ABC, which makes the company fully dependent on expensive foreign expertise”.

Friedman and Lyne (1999) found that the difficulty of selecting cost drivers was a factor that could be identified as a critical technical factor that could influence the implementation of ABC system. According to the interview data from the head of the cost accounting department in Company Five:

“There has been a need for long time for research to identify cost drivers that are applicable to our business”.

Argyris and Kaplan (1994) and Argyris (1999) suggested that education about ABC system was a crucial step of success in ABC implementation as, in this step, both the managers and employees identified the differences between the TCS and the ABC systems, and were told how the processes of ABC would overcome the shortcomings of the TCS. The head of the cost accounting department pointed out that:

“Most of our employees, at every level, do not understand exactly what ABC is and how to cope with it. The lack of knowledge and insufficient documentation make ABC more complicated. There is a need to educate all staff about ABC especially those who work on it and those who are gather information about activities and cost drivers”.

He added:

“Overall, there is not enough knowledge about ABC. Clear policies will make a better system”.

Summary

In Company Five, top management support and training are the most crucial factors that influence the decision to implement ABC. Shortcomings of the existing costing system are the main factor that motivates the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Five are the high cost of implementation and consultant companies, difficulties in selection of cost drivers, and education and awareness of ABC.

7.2.6 Implementation of ABC in Company Six

Company Six is listed in the Engineering and Construction sector with a total workforce around 366 in 2008. The capital of company at the end of 2008 was 100 million JD (1 JD = £1 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.

- The Reason for ABC Implementation

Cohen *et al.* (2005) suggested that companies should use outside experts to help them in choosing sophisticated costing systems and in dealing with problems encountered during the implementation of ABC. According to the interview data from the financial manager of Company Six:

“My managers asked me to start to explore the potential benefits of ABC. Also, to investigate the use of an external consultant company to assist in the implementation of ABC”.

He added:

“The process began with a two-day session. That was conducted by an independent consultant firm, which was closely monitored by our manager. Then the involved team started to implement the first steps toward ABC”.

Anderson (1995) found that once the problem with the current costing system in her case site had been identified, the choice of ABC was profoundly influenced by the opinions of external experts. The financial manager of Company Six said that:

“The independent consultant firm performed the required analysis which helped in collecting the effective data. For example, the sales and marketing cost driver was developed by them based on this process”.

- Factors that Facilitate the Implementation of ABC

Anderson (1995) argued that top management is needed as it is difficult to implement advanced systems such as ABC in a companies without their full support, and to make sure that the system is used for its intended purpose (Brown *et al.*, 2004). These findings are, in fact, consistent with the more general finding that almost all successful innovation requires the support of top management. Top management should commit

resources and develop goals and strategies to enable the implementation of ABC. According to the interview data from the financial manager of Company Six:

“The managers’ knowledge was the key issue in the process of the implementation of ABC. The role of the managers was vital during the implementation of ABC”.

The training factor is considered to play a key role in the implementation of ABC system. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Training reduces employees’ lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC (Shields, 1995). The financial manager said:

“The consultant firm was invited to our factory to discuss its methodology and approach of ABC implementation. The consultants, after a general ABC introduction, proposed something called cost object approach. They said our cost of activities should be assigned to the cost objects demand for consumption of each activity”.

Argyris and Kaplan (1994) suggested that education about ABC system is a crucial step of success of ABC implementation as, in this step, both the managers and employees identified the differences between the TCS and the ABC systems, and were told how the processes of ABC would overcome the shortcomings of the TCS. The financial manager pointed out that:

“ABC is a new system to be used in Jordan. Only a few companies had the chance to implement it. I know that the process of implementing ABC in our company would rely on re-educating my staff for this new process.

Brown *et al.* (2004) claimed that ABC becomes more beneficial as the cost of data collection and processing is reduced, which requires higher levels of information technology. An information system providing detailed historical data and easy access to users may provide much of the driver information needed by ABC. Krumwiede (1998) suggested that an integrated ABC system pre-supposes a relatively high level of information sophistication with extensive and flexible information stratification and real-time activity driver information. The financial manager said:

“Collecting the data about cost drivers is a complicated process. One really needs to have advanced and practical systems in place before initiating the ABC”.

- Factors that Motivate the Implementation of ABC

Bjornenak (1997) claimed that competition was the most important external factor for stimulating managers to consider implementing ABC. Cooper (1988b) has also identified that companies facing fierce competition should implement ABC as it is argued that companies operating in a more competitive environment have a greater need for advanced costing systems such as ABC that 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. According to the interview data from the financial manager of Company Six:

“Our old system was good for steady state market with few products and limited number of customers. But with all the changes and new markets we suffered a lot, because it became a totally inadequate system”.

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek a solution by implementing ABC. ABC system generates more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the financial manager of Company Six:

“The view of the top managers was that, they believed that they don’t have the full picture which will enable them to analyse the wide range of products and the accuracy of the cost”.

He added:

“At the end of the day, our managers would like to know the accurate costs of the products. The old costing system will not help in this matter at all, because it was based on invalid assumptions.

Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting on the success of implementing ABC. The main barriers to ABC implementation encountered in Company Six were the number and lack of local consultants companies in Jordan. The head of the cost accounting department said that:

“In Jordan there is a lack of consultant firms, which makes our company fully depend on expensive foreign expertises”.

He added:

“For a small company like our company, ABC is expensive to implement we cannot bear the cost”.

The importance of professional accounting bodies in Jordan was highlighted during interview with the head of the cost accounting department in Company Six. The interviewee emphasised the role and importance of such bodies for improving and supporting the companies to adopt and implement ABC within the industrial sector. The role and importance of such accounting bodies is very clear in other countries, such as the USA and the UK. However, in Jordan there is no professional management accounting body yet.

“We don't have well-established professional accounting bodies in Jordan. Such institutions would help to improve and support the implementation of management accounting innovations such as ABC, like CIMA in the UK”.

Summary

In Company Six, the implementation of ABC was promoted by consultant Companies. Top management support, higher information technology, education and training are the most crucial factors that influence the decision to implement ABC. Shortcomings in the existing costing system and competition are the main factors that motivate the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Six were high cost of implementation and consultant companies.

7.3 Cross-company Analysis

The section provides an outline of a cross-company analysis. It includes all factors identified by companies and their overall assessments in each individual company. To assist in arriving at an overall assessment of the important factors that impact the implementation of ABC within the Jordanian industrial sector, the analysis of the six companies has been summarised in Table 7.1. Qualitative analyses together with quantitative ratings were employed to create the summary.

Table 7.1 Summary of cross-company analysis

Factors	Company	1	2	3	4	5	6
Reason for ABC implementation							
- Efficiency choice		X	X	X	X	X	X
- Fashion		✓	✓	✓	X	X	✓
- Fad		X	X	X	✓	✓	X
- Forced selection		X	X	X	X	X	X
Factors that facilitate ABC implementation							
The role of top management support							
- Financial support		✓	✓	✓	✓	✓	✓
- Involvement		✓	✓	✓	✓	✓	✓
Training		✓	✓	✓	✓	✓	✓
Education		✓	X	✓	✓	✓	✓
Higher information technology		✓	X	X	X	X	✓
Factors that motivate ABC implementation							
Shortcoming of existing system		X	✓	✓	✓	✓	✓
Competition		✓	✓	✓	X	X	✓
Size of company		✓	X	X	X	X	X
Barriers to ABC implementation							
Lack of knowledge of ABC implementation		✓	X	X	X	✓	X
Time consuming		✓	X	X	X	X	X
High cost of ABC implementation		X	✓	X	✓	X	✓
High cost consultants		✓	✓	✓	X	✓	✓
Lack of local consultants		✓	✓	✓	X	✓	✓
Lack of internal recourses		✓	✓	X	X	X	X
Difficulties of selection of cost drivers		X	✓	✓	✓	✓	✓
Lack of accounting bodies		X	X	X	X	X	✓
Lack of journals, conferences about ABC in Jordan		✓	X	X	X	X	X
Co-operation between departments		X	X	✓	X	X	X

Legend:

✓□= the factor that are supported by interviewee X□= the factors that not supported by interviewee

The six companies interviewed gradually moved to using ABC system over the last seven years. 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 dominant reasons for ABC implementation within the Jordanian industrial sector. Four companies out of six who implemented ABC used consultants to assist them with their implementation. Companies dealt with consultants because of conditions of uncertainty relating to goals and efficiency of innovations. Consequently, companies implemented the system that was promoted by consultant companies.

Two companies out of six implemented ABC because it was a fashionable topic. Implementing ABC was not therefore because of any specific rational based upon, for instance, increasing product cost accuracy or better decision-making, but in order to imitate other companies in order to appear legitimate by conforming to emergent norms or to avoiding the risk that competitors would gain a competitive advantage by using ABC.

Top management support is the most crucial factor to influence ABC implementation. According to findings from qualitative data, all companies agreed that top management are fully supported, committed and involved in the process of ABC implementation. This finding is consistent with the more general finding that almost all successful innovations require the support of top management. Top management should focus resources, goals, and strategies on the implementation of ABC. They must demonstrate a commitment to ABC by using it as the basis for decision-making. To encourage the use of ABC information, top management must use ABC information in communications and agreements with other employees.

All companies agreed that training was the most important factor to facilitate their decision to implement ABC. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Training reduces employees' lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC.

The majority of the respondents from the participating companies (5 companies out of 6) indicated that the managers and employees are fully educated about ABC system before, during and after their companies implemented it. This result supports Argyris and Kaplan's (1994) findings that education about ABC system is crucial step in the success of ABC implementation as, in this step, both managers and employees identified the differences between the TCS and the ABC systems, and knew how the processes of ABC would overcome the shortcomings of the TCS.

The limitations of traditional costing systems, such as lack of details of cost information for decision-making, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek a solution by implementing ABC. Five companies out of six indicated that, the limitations of existing costing 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.

The majority of the respondents from the participating companies (5 companies out of 6) indicated that the increase of competitive markets 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 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 the process of implementing ABC, the company could be faced with problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hinder it, and even prevent change. The high cost of ABC implementation, high cost of consultants, and difficulties in the selection of cost drivers are indicated by six companies as the most common barriers encountered during the implementation of ABC.

Finally, interviewees revealed several factors from both the demand and supply side that influence implementation of ABC within the Jordanian industrial companies. Respondents mentioned and emphasised the important effect of the following factors: top management support, education about ABC concept and benefits, training programmes, shortcoming of existing cost system, competition, size of company, professional accounting bodies, management accounting journals, management accounting research and PhD degrees, and cooperation between universities and companies.

7.4 Summary

This chapter analysed the data collected from interviews with representatives of six companies that have implemented ABC in full and currently using ABC information are using for different purposes. The analysis of the data was done by using both within company and cross-company analysis facilitated by detailed content analysis. Firstly, the background of the company study was provided. Secondly, within-company analysis for six companies was conducted to determine the reason for ABC implementation, factors that facilitate, motivate and create barriers to implementation. Thirdly, the findings of all six companies were summarised. For each proposed factor, an across-company analysis was provided.

CHAPTER EIGHT

CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

8.1 Introduction

The literature review was presented in Chapters 2, 3 and 4. The research questions relating to the objectives of this study were posed in Chapter 5. In addition, the research methodologies for the collection of data and analyses were also described in the same chapter. The data have been examined using different statistical techniques according to the nature of the data. Therefore, in Chapter 6, the results of the analysis of data gathered by questionnaires' were presented. Data gathered by interview were evaluated in Chapter 7. In Chapter 8, an overview of the research questions, conclusions, confirmation of the research model, limitations and suggestions for future research are provided.

8.2 An Overview of the Research Problem

Since the beginning of the 1990s, a number of surveys from several European countries, USA, Australia, North America, Africa and Asia have pointed out that ABC is implemented only by between 20% and 30% of companies (Innes and Mitchell, 1995; and Innes *et al.*, 2000; Kaplan and Anderson, 2004; Askarany and Smith, 2008), whereas Traditional Costing System (TCS) continues to be widely implemented (Innes *et al.*, 2000; Al-Omiri and Drury, 2007a; Askarany and Smith, 2008). The low rate of ABC implementation, as empirically observed across a range of countries and industries have motivated some researcher to find a solution for the "ABC Paradox" a term coined by Gosselin (1997). Moreover, there is growing evidence suggests that most of these companies encountered problems in implementing ABC and, in extreme cases, are not having success with it, which later resulted in abandoning the ABC system altogether. This suggests that if ABC has demonstrated benefits, why then, is it not actually implemented by a gradually increasing number of companies?

Several recent studies have started to explore this issue by considering the implementation rate of ABC, the reasons for implementing ABC, the problems associated with ABC and the critical success factors relating to its successful implementation (Gosselin, 2007; Kaplan and Anderson, 2007; Askarany and Smith, 2008). However, the empirical evidence from ABC research is inconsistent for two reasons.

Firstly, the extent of ABC implementation in a range of developed countries varies widely. Some countries report an increase in the use of ABC while other countries report the exact reverse. In some instances researchers in the same country have reported widely different trends (Booth and Giacobbe, 1997; Baird *et al.*, 2004; 2007; Brown *et al.*, 2004). It is, therefore, difficult to compare the findings from the various studies, particularly relating to usage rates or the ability to discriminate between implementers and non-implementers when the term “adoption” has been subject to different definitions (Al-Omiri and Drury, 2007b). Secondly, the reasons for implementing ABC, the barriers to ABC implementation and critical success factors appear to differ widely (Brown *et al.*, 2004), since different researchers often defined these in different ways (Swenson, 1995; Cohen *et al.*, 2005; Baird *et al.*, 2007).

Based upon the discussion, the importance of the industrial sector to the Jordanian economy, the increased number of companies in the Jordanian industrial sector, and because there has been little empirical research undertaken on the diffusion of ABC in Jordan general, and in the Jordan industrial sector in particular, it is argued that there is a critical need to conduct an empirical investigation, which aims to determine the current state of ABC adoption and implementation and determine the main reasons for its implementation and identify the main problems associated with its implementation.

8.3 Conclusions of Research Questions

In Chapters 6 and 7, the results of research questions were analysed. In this section, conclusions of these research questions are presented.

8.3.1 Conclusion of Research Question 1

What is the current state of ABC implementation among the Jordanian industrial companies?

The main results based on the questionnaire survey are that 12 companies (19.7%) have not considered ABC, and were still using either single or departmental allocation methods, while 5 companies (8.2%) were considering it. The latter companies perceived the distortions arising from the existing cost system and considered ABC as the possible solution to overcoming these limitations. 7 companies (11.5%) had adopted ABC systems, and they devoted or spent the necessary resources for implementation. 24 companies out of 61 (39.3%) were currently implementing ABC, and had begun implementing ABC systems through forming a team of ABC implementation, determining project scope and objectives, collecting data or/and analysing activities and cost drivers. 7 companies (11.5%) were currently using ABC information for various purposes/departments and 6 companies (9.8%) had implemented ABC in the past then abandoned it.

The rate of ABC implementation within the Jordanian industrial sector is about 50.8% (11.5% had used ABC in full plus 39.3% are in the process of implementing ABC). The rates of ABC implementation identified in this research are higher than the rate found in previous studies. For instance, Khasharmeh (2002) found that, the implementation rate of ABC was about 10% (4 companies out of 40 using ABC). Meanwhile, the implementation rate was 10.7% in the Al-Khadash and Feridun (2006) study. It should be noted that neither studies segment ABC into stages.

8.3.2 Conclusion of Research Question 2

For companies that are Not-considering ABC, what are the main reasons for not considering it?

The respondents were given 20 statements and asked to indicate the extent to which they agreed with the statement relating to the reasons for their business units' not-

considering ABC implementation. The findings from the questionnaire survey indicated that the most cited reasons for not-considering ABC implementation were within the inherent difficulties with ABC design and implementation group, namely; costly to switch to ABC and consultants too costly were cited as the most important reason for not considering ABC within the Jordanian industrial sector, followed by a lack of expertise in implementing ABC.

A company's characteristics and business environment group such as, the control of overheads is already adequate were also cited as a major factor impacting on the decision to implement ABC. In addition, cost accounting change was not our priority was the second major reason for not considering ABC in the firm's characteristics and business environment group. In general, the reasons for not considering ABC among the Jordanian industrial companies are not different from those documented in other countries as reported by Innes and Mitchell, (1991); Cobb *et al.* (1992); Nicholls (1992); Chung *et al.* (1997); Nguyen and Brooks (1997); Innes and Mitchell (1998); Chen *et al.* (2001); Cohen *et al.* (2005).

8.3.3 Conclusion of Research Question 3

For companies that are Considering/Adopting ABC, what are the main factors against ABC implementation?

12 individual respondents who had adopted ABC were provided with a list of 12 potential reasons that may explain why their business units had not implemented ABC, although they adopted it. The individual respondents were asked to rate items on a five-point scale where 1 = Strongly disagree and 5 = Strongly agree.

The most cited factors against the implementation of ABC were that it was costly to switch to ABC and consultants were too costly, followed by lack of expertise to implement ABC and it being too complex and time-consuming. Meanwhile, organisational difficulties such as, lack of top management support, lack of internal resources and resistance from employees were cited as the lesser factors that impacted upon the implementation of ABC within the Jordanian industrial sector. In general, the most cited factors against the implementation of ABC among the Jordanian industrial companies are not different from those documented in other countries as reported by Innes and Mitchell, (1991); Innes and Mitchell (1998); Brown (2004); Cohen *et al.* (2005).

8.3.4 Conclusion of Research Question 4

For companies that are currently Implementing/Using ABC, what are the reasons for its implementation?

The findings from the questionnaire survey research indicated that the dominant reasons for implementing ABC related to fad and fashion and the least important reasons were concerned with forced selection/efficient choice perspectives. Advice from auditors and/or consultants, we wished to try a new accounting innovation and being seen as having a sophisticated costing system were cited as the dominant reasons for implementing ABC within the Jordanian industrial sector.

Findings from the semi-structure interviews revealed that, in all companies, there was strong evidence that fad and fashion were the dominant reasons for ABC implementation within the Jordanian industrial sector. 4 out of 6 companies that had implemented ABC had used consultants to assist them with their implementation. Companies deal with consultants because of conditions of uncertainty relating to goals and the efficiency of innovations. Consequently, companies implemented the system that was promoted by consultant companies.

Two companies out of six implemented ABC because it was a fashionable topic. Here, the companies were implementing ABC not because of any specific rational based upon, for instance, increasing product cost accuracy or better decision-making, but in order to imitate other companies in order to appear legitimate by conforming to emergent norms or to avoid the risk that competitors would gain a competitive advantage by using ABC. Finally, the results of the interviews are consistent with questionnaire survey findings presented in Chapter 6 (see section 6.6.1); both reveal and emphasise the important effect of professional management/accounting bodies and cooperation between academics and professionals upon implementing ABC within the Jordanian industrial sector.

8.3.5 Conclusion of Research Question 5

For companies that are currently Implementing/Using ABC, what are the main factors that facilitate its implementation?

Analysis of the quantitative research results revealed that the most cited factors that facilitate the decision to implement ABC were that adequate training was provided for designing ABC, operating data in the information system are updated real-time, followed by adequate training being provided for using ABC and management has provided adequate resources and ABC received active support from top management. Therefore, training, higher information technology and top management support were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian industrial sector.

The qualitative research finding supports this quantitative research finding and all companies agreed that top management is fully supported, committed and involved in the process of ABC implementation. This finding is consistent with the more general finding that most successful innovations require the support of top management. Top management should focus resources, goals, and strategies in the implementation of ABC. They must demonstrate a commitment to ABC by using it as the basis for decision-making. To encourage the use of ABC information, top management must use ABC information in communications and agreements with other employees.

All companies agreed that training was the most important factor to facilitate their decision to implement ABC. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement. In addition, training reduces employees' lack of confidence in ABC and prevents them from feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC. These findings are consistent with the results in the study by Shields (1995) that organisational factors, especially top management support and adequate training in implementing ABC, are related to facilitating the decision to implement ABC. In general, the results of this study are similar to those of other studies such as McGowan and Klammer 1997 and Krumwiede 1998.

8.3.6 Conclusion of Research Question 6

For companies that are currently Implementing/Using ABC, what are the main factors that motivate its implementation?

Analysis of the quantitative research results revealed that ABC users largely indicated that increasing proportions of overhead costs, growing costs, including product costs and administrative costs, and the currently increasing number of product variants were more important reasons for implementing ABC than other reasons. Increased competition, currently facing allocation problems, inability to provide relevant information in the new business environment and the existing cost systems' inaccuracies of product cost were also cited as major factors that motivate ABC implementation.

This finding was further supported by the qualitative research findings as the participating companies indicated that the limitations of traditional costing systems, such as lack of details of cost information for decision-making, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek to find solutions by implementing ABC. 5 companies out of 6 indicated that the limitations of existing costing system motivated their decision to implement ABC. They also indicated that the ABC system generates more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. In addition, the majority of the respondents from the participating companies (5 companies out of 6) indicated that the increase of competitive market motivates their decision to implement ABC. Companies operating in a more competitive environment have a greater need for advanced costing system such as ABC that more accurately assign costs to cost products. This is because competitors are more likely to take advantage of any errors by managers having relied on inaccurate cost information to make decisions. The factors that motivate the process of ABC implementation within the Jordanian industrial sector are similar to those documented in many studies, such as Innes and Mitchell, (1991) and Al-Omiri and Drury, (2007b). 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.

8.3.7 Conclusion of Research Question 7

For companies that are currently Implementing/Using ABC, what are the main barriers to ABC implementation that the companies have encountered?

During the process of implementing ABC the company could be facing problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. Thus, the current study seeks to determine the barriers to change that may explain the differing implementation rates of ABC in the Jordanian industrial sector (Nicholls, 1992; Chung *et al.*, 1997; Chen *et al.*, 2001). To shed light on this, individual respondents were asked to evaluate difficulties in designing and implementing ABC. The level of difficulty encountered was ranked on a five-point scale where 1= Strongly disagree and 5 = Strongly agree.

Analysis of the quantitative research results revealed that the greatest difficulty in implementing ABC was the high cost of implementation, followed by the high cost of ABC consulting and taking up a lot of computer staff time, difficulty in gathering data on cost drivers as well as difficulty in designing system drivers were also cited. This was further supported by the qualitative research findings as the participating companies pointed out that high cost of implementation and lack of local consultants, and difficulties of selection of cost drivers are indicated by six companies as the most commonly encountered barriers during the implementation of ABC. In addition, interviews revealed several factors that influence implementation of ABC within the Jordanian industrial companies. Interviewees mentioned and emphasised the important effect of the following factors: top management support, education about ABC concept and benefits, training programmes, professional accounting bodies, management accounting journals, management accounting research and PhD degrees, and cooperation between universities and companies. In general, the barriers encountered during the implementation of ABC among the Jordanian industrial companies are not different from those documented in other countries as reported by Innes and Mitchell, (1991); Innes and Mitchell (1998); Chen *et al.* (2001); Cohen *et al.* (2005).

8.3.8 Conclusion of Research Question 8

For companies that are currently Using ABC, what is the degree of ABC success?

The current study used a multi-attribute to measure success of ABC implementation within the Jordanian industrial sector. The first measure of the level of ABC success is based on the management evaluation as to the 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 is 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 its implementation will be (Innes and Mitchell. 1995a; Krumwiede 1998). The respondents were asked to indicate on a five-point scale where 1 = Never and 5 = Always the frequency of use of ABC information for each of the 7 different purposes listed in the question.

The results show that ABC is widely used for many different purposes but using ABC to determine product costing, planning, determine customer profitability, budgeting and decision-making represent the most widely used applications.

The last measurement of ABC success requested from the respondents to indicate, on a scale where 1 = Very unsatisfied and 5 = Very satisfied how satisfied they were with ABC benefits, calculating methods and cost reduction efforts they received after implementing the system. The analysis indicates that the majority of ABC users had quite a high level of satisfaction with the gained benefits and calculating method, and cost reduction efforts.

8.3.9 Conclusion of Research Question 9

For companies that have Abandoned ABC, what are the main reasons for abandonment?

During the process of implementing ABC the company could be facing problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. Thus, the current study seeks to determine the barriers to change that may explain why the abandoner companies make such a decision. To shed light on this, individual respondents who abandoned ABC were asked to evaluate difficulties in designing, 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 greatest difficulty of implementing ABC was high cost of implementing ABC and high cost of ABC consulting followed by difficulty in gathering data on cost driver, takes up a lot of computer staffs time and difficulty in defining cost driver. These results confirm the findings of Booth and Giacobbe (1997) and Innes and Mitchell (1998). It should be noted that all abandoners stopped the implementation of ABC at an early pilot testing stage.

8.4 An Overview of ABC Implementation and Confirmation of Research Model

This study provides a framework (research model) as shown in Figure 8.1 for companies attempting to implement ABC system by determining the dominant reason for implementation and investigating the factors that facilitate, motivate and create barriers to implementation. The development of the research model in this research is based on the theoretical framework of management accounting change models that were introduced by Innes and Mitchell (1990), these being catalysts, motivators, facilities. Cobb *et al.* (1995) and Kasurinen (2002) developed this further by adding factors that hindered, delayed, or even prevented change, thereby functioning as barriers.

Both quantitative and qualitative data indicated that the dominant reasons for implementing ABC related to fad and fashion perspectives (Advice from auditors and/or consultants, we wished to try a new accounting innovation and being seen as

having a sophisticated costing system) and the least important reasons were concerned with forced selection/efficient choice perspectives.

Analysis of the quantitative and qualitative data results revealed that the most cited factors that facilitate the decision to implement ABC were that adequate training was provided for designing ABC, operating data in the information system are updated real time, followed by adequate training being provided for using ABC and management has provided adequate resources and ABC received active support from top management. Therefore, training, higher information technology and top management support were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian industrial sector.

Analysis of the quantitative and qualitative data results revealed that ABC implementers and users largely indicated that increasing proportion of overhead costs, growing costs, including product costs and administrative costs, and the currently increasing number of product variants were more important reasons for implementing ABC than other reasons. Increased competition, currently facing allocation problems, inability to provide relevant information in the new business environment and the existing cost systems' inaccuracies of product cost were also cited as major factors that motivate ABC implementation. Therefore, this study also suggests that information provided by the traditional cost systems was not sufficient for management in the current environment and the implementation of ABC was a solution in the changed environment.

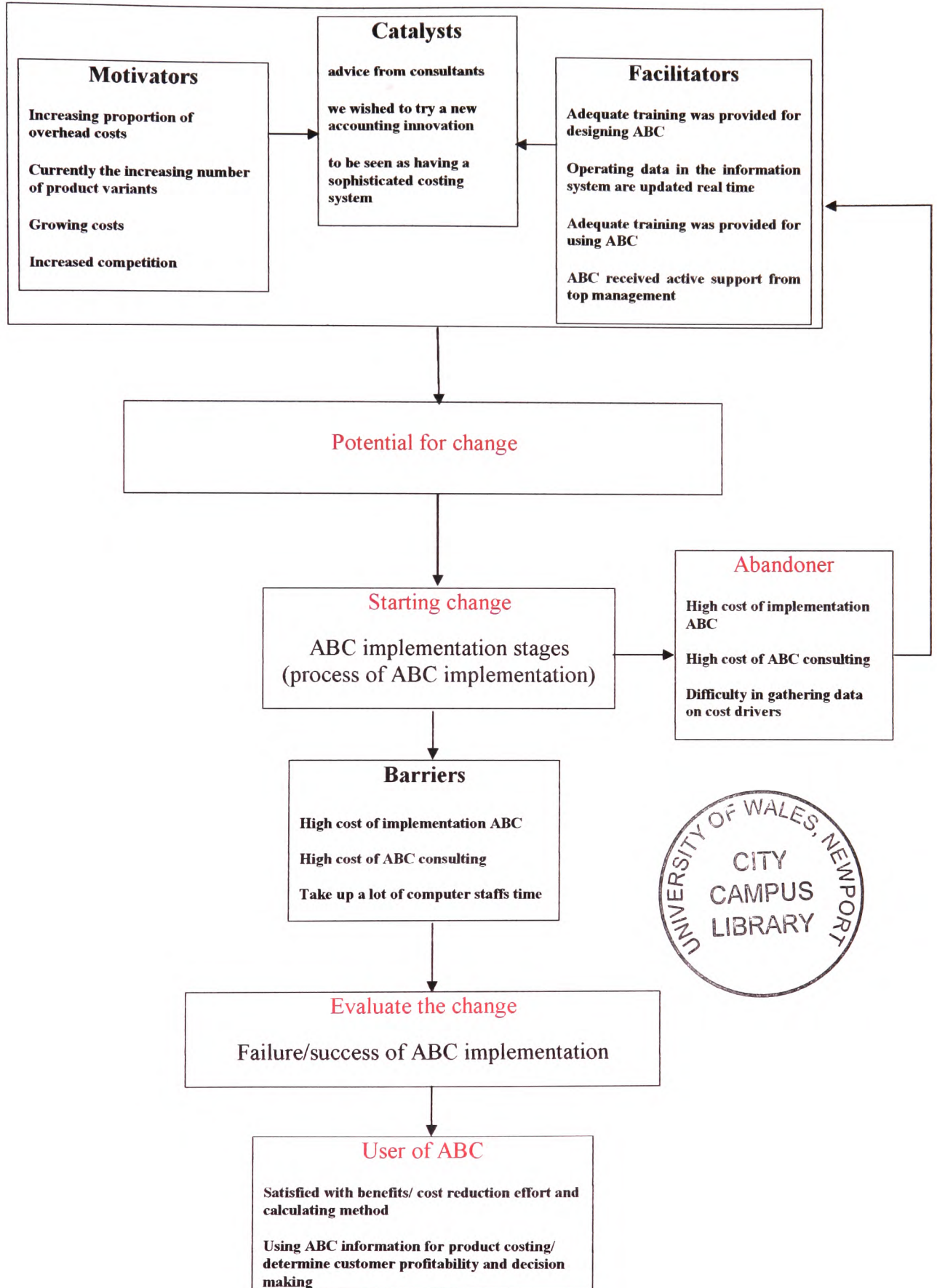
As a result, the interaction of these three types of factors (Catalysts, Motivators, and Facilitators) can create the potential for change in the company and while catalysts are regarded as the generators of change; the potential for change will not occur without the presence of facilitators and motivators. However, during the process of implementing ABC the company could be facing problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. As such, the current study determined the barriers to change that may explain the differing implementation rates of ABC in the Jordanian industrial sector.

Analysis of the quantitative research results revealed that the greatest difficulty in implementing ABC was high cost of implementation, followed by the high cost of ABC consulting and taking up a lot of computer staff time; difficulty in gathering data on cost drivers as well as difficulty in designing system drivers were also cited. This was further supported by the qualitative research findings as the participating companies pointed out that high cost of consultants, and difficulties in the selection of cost drivers are indicated by six companies as the most common barriers encountered during the implementation of ABC.

The current study also showed that the success level of implementing ABC by the Jordanian industrial companies was high. Furthermore, the Jordanian industrial companies using ABC were satisfied with the gained benefits of ABC, and they were satisfied with cost reduction efforts and satisfied with the calculating method. Finally, ABC is widely used for many different purposes but using it to determine product costing, planning, determine customer profitability, budgeting and in decision-making represent the most widely used applications. It is least commonly used in performance measurement.

Companies that abandoned ABC were asked to evaluate difficulties in designing, implementing and using ABC. The greatest difficulties in implementing ABC were related to the high cost of implementing ABC and cost of ABC consulting followed by difficulty in gathering data on cost driver, takes up a lot of computer staffs time and difficulty in defining cost driver. It should be noted that all abandoners stopped the implementation of ABC at an early pilot testing stage.

Figure 8.1 Confirmation of research model



8.5 Contributions

The first contribution of this study is to examine the diffusion of ABC within the Jordanian industrial sector. The lack of empirical research effort on the adoption and implementation of ABC in the Jordanian industrial sector is a prime motive for conducting this study. The previous review of the focal literature established that previous studies focused only on the implementation of ABC in western developed countries. Therefore, this study presents an attempt to fill a part of the gap in the literature and reduce the ambiguity regarding the current state of ABC adoption and implementation among the Jordanian industrial companies. Accordingly, six categories will be examined namely, non-consideration, consideration, adoption, implementation, abandonment and usage category. Thus the study finding will be an original contribution to the field of ABC implementation in the country.

Moreover, taking into consideration the very limited literature regarding the innovation process in Jordan in general and the Jordanian industrial sector in particular, one of the important contributions of this study has been the development of the research model for better understanding of the diffusion of ABC in this sector. In addition, the empirical results, in particular the factors that facilitate, motivate and create barriers to ABC implementation, contribute to knowledge of the process of adoption and implementation of ABC among the Jordanian industrial companies. It should be noted that the development of the research model in this research 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 further contribution of this study is the use of a multi-attribute approach to measure the success of ABC implementation within the Jordanian industrial sector. Numerous studies have been undertaken relating to the success of ABC amongst implementing companies. However, measuring the success of ABC is problematic and researchers have used different approaches to measure that success (Baird *et al.*, 2007). Success has been measured using management evaluation (Shields, 1995)

according to the use and satisfaction of ABC (Swenson, 1995; Dosch and Wilson, 2007) and the degree of employee satisfaction (MaGowan and Klammer, 1997). In this study, the success of ABC were measured by degree of satisfaction with ABC implementation, the degree of using ABC in decision-making and the overall of success of ABC implementation.

Finally, most of the previous studies such as Booth and Giacobbe (1997); Krumwiede (1998); Brown *et al.* (2004); Cohen *et al.* (2005); Al-Omiri and Drury (2007b); Baird *et al.* (2007), have relied on respondents self-rating their systems as ABC or non-ABC. In this study, several control questions were included in questionnaire to check the respondent' claims that they were operating ABC system is actually ABC users. In addition, semi-structure interviews were conducted with six user companies for further clarification. Therefore, compared with previous studies, there is a much higher probability in this study that those respondents claiming to use ABC were actually ABC users.

8.6 Limitations of the Current Study

Some limitations should be noted when interpreting the results of this study. There are seven limitations in the current study. The limitations, however, present opportunities for future study.

First: The scope of the study is limited by the population which included only industrial Jordanian companies listed on the Amman stock exchange. This limitation may restrict the generalisability of the findings to only industrial shareholding companies. The findings of this study may have been different if a broader range of companies had been selected within the industrial sector. In addition, the results of this study may have been different if the sample had included the service sector and non-profit companies. Therefore, there is a need to find ways to increase the coverage of similar surveys so as to obtain a more comprehensive picture of Jordanian company perceptions of ABC.

Second: Although the response rate for this survey was high relative to similar studies that have explored ABC, the number of companies in each category of ABC adoption and implementation was very small. Therefore, it was difficult to conduct meaningful statistical tests. The discussions concerning the adoption and implementation of ABC in this study mainly relied on description as the means to communicate the survey results. The results may have been different if the number of companies in each category had been higher and the number of ABC users had been larger.

Third: Although the distribution of questionnaires were sent to the financial manger/head of cost accounting department of the company, it cannot be assumed that the person who completed the questionnaire had knowledge and understanding of all or most of the questions. Ideally future research should target only the person who is in charge to implementing cost accounting systems but this may not be possible in Jordanian industrial companies because they are unlikely to have established separate management and financial accounting functions or personnel with the title of 'management accountants'.

Fourth: In the second stage of this study the semi-structure interviews were conducted only with companies that had implemented ABC in full and are currently using ABC information. Therefore, the implications for this study may have been enhanced if the number of interviewees had been expanded to include another category such as abandonment companies.

Fifth: As compared to the case study method, a questionnaire survey is less effective at producing in-depth findings when focusing on specific issues. Therefore future studies should begin to concentrate on more in-depth case study research that examines those issues that cannot easily be explored by questionnaire surveys such as understanding the change as an ongoing process rather than a static relationship.

Sixth: The required data regarding technical barriers encountered during the implementation processes of ABC were collected through conducting questionnaires and semi-structured interviews with financial managers and/or heads of cost accounting department only. It was not possible in the current study therefore to directly collect data from Information Technology and/or Manufacturing Engineering

departments. As a result of this restriction, the researcher had to accept the statements made by financial managers and/or heads of cost accounting departments only and the data analysis had to be limited to the results of questionnaire and semi-structured interviews collected by them

Seventh: During the coding process of interview data, interpretations and judgements by the researcher were required to categorise the interview data. Subjectivity was therefore unavoidable, which could lead to possible bias in the results. To reduce the level of this subjectivity, efforts were undertaken to ensure consistency while conducting interviews, and the analytical procedures of this study were well documented.

8.7 Recommendations and Suggestions for Future Research

As a result of undertaking this research it is possible to identify several areas for future research. There are seven recommendations for further research:

First: The scope of the current study is limited by focusing only on Jordanian industrial companies that are listed on the Amman Stock Exchange. This limitation may restrict the generalisability of the findings. The results of this research may have been different if a broader range of companies had been selected. Therefore, there is a need to find ways to increase the coverage of surveys so as to obtain a more comprehensive picture of the Jordanian industrial sector's perceptions of ABC.

Second: The research identified several categories in the process of ABC adoption and implementation. Of the 61 respondents, 19.7% had not seriously considered ABC, 8.2% had considered ABC and 11.5% had approved ABC for implementation. Because of the small numbers within some of these categories, it was not possible to undertake any advanced statistical analysis. Therefore, more in-depth case studies should be undertaken to examine relevant issues that are appropriate to each category. Case studies that seek to explain why some companies have not seriously considered ABC or other accounting innovations would be appropriate. Such studies should attempt to identify the circumstances under which the existing costing system is considered to be suitable.

Third: Few studies have examined the abandonment of ABC systems either before or after implementation. It is likely that case studies will be more appropriate for studying abandonment. Based on the findings of this study, the numbers falling within either or both categories is likely to be too small to undertake statistical analysis. Such studies should examine whether abandonment represents a failure or whether ABC has met the objectives that were specified resulting in there being no further need to maintain the system.

Fourth: The characteristics of the product costing system are measured in the current research by two discrete alternatives, either TCS or ABC systems. Such a classification does not adequately capture the diversity of practices that exist. TCS vary from simplistic (consisting of a single cost pool and cost driver) to sophisticated, consisting of hundreds of first-stage cost pools and a small number of different types of second stage volume-related cost drivers. Similarly, ABC systems can also vary from very simplistic, consisting of a small number of highly aggregated first-stage cost pools and a small number of different types of different types of second-stage drivers (say, two volume-related and one-volume related driver), to many pools and many different types of cost drivers. Because of such diversity, further research could consider developing alternative measures of the characteristics of the product costing system that better capture the diversity of practices. As well as this, future surveys investigating diffusion levels in the Jordanian industrial sector could consider testing the implementation of ABC at different levels of activity management, namely, activity analysis (AA), activity cost analysis (ACA) and activity-based costing (ABC).

Fifth: The literature review also indicated that few studies had examined the impact of ABC on financial performance. These studies used cross-sectional surveys but such surveys cannot fully hold constant 'other factors' ; there is scope for future research involving longitudinal studies that investigate the improvement in financial performance within companies before and after the implementation of ABC. Future research within the Jordanian industrial sector should seek to determine the relationship between the use of ABC costing and the improvement of financial performance.

Sixth: In the current study, 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 being catalysts, motivators, facilities. Cobb *et al.* (1995) and Kasurinen (2002) developed this further by adding factors that hindered, delayed, or even prevented change, thereby functioning as barriers. Thus, longitudinal case study-based research using the institutional theory approach is needed to investigate the impact of organisation-specific factors on the implementation of ABC systems and to follow-up the ongoing change of this practice. These studies should also investigate in-depth change motivations and momentums as well as the barriers and obstacles to better understand the change as an ongoing process rather than a static relationship.

Seventh: The current study was not specific to any particular manufacturing industry. Hence, further study could be carried out with regard to specific types of manufacturing industry and therefore, future studies should be conducted for individual industrial sectors to examine differences and similarities between industries. Moreover, the limitations of this study may constitute a basis for prospective research and further investigation. Such research might include all the manufacturing companies in Jordan to explore the differences that might exist between ABC users and non-user companies within the same sector.

8.8 Summary

As the final chapter, this chapter provided the summary of the whole thesis. It discussed the major findings of the nine research questions, and compared the findings with the literature to identify the contributions this research makes to the understanding of the implementation of ABC systems within the Jordanian industrial sector. Next, the research problem was concluded by the development of the final comprehensive research framework. The chapter then presented the contributions and implications for the theory and practice of this research. Finally, the limitations of the research and recommendations for further research directions were outlined.

In brief, the study has provided new knowledge relating to the adoption and implementation of ABC in the Jordanian industrial sector, especially in the areas of ABC implementation, and has determined the factors that facilitate, motivate and create barriers to implementation. In implementation of ABC, it is likely that two sets of factors are at work – the factors that facilitate and motivate the implementation of ABC and the company's ability to address and overcome the barriers and difficulties associated with implementation. Within the Jordanian industrial sector the interaction between the following factors namely: top management support (financial support, involvement in implementation and commitment to use the system), both training (designing, implementing and using the systems) and education about the system, higher information technology, increasing proportion of overhead costs, growing costs, including product costs and administrative costs, and increasing number of product variants facilitate and motivate the implementation of ABC.

On the other hand, the results from both questionnaire survey and semi-structured interviews have shown that the greatest difficulties in implementing ABC are high costs of implementation, followed by the high cost of ABC consulting and taking up a lot of computer staff time, difficulty in gathering data on cost drivers are also cited. Therefore, it can be concluded that it is not only behavioural issues, as suggested by the extant management accounting literature, which influence ABC implementation, but also technical issues which are highly significant.

The interviews with financial managers/heads of cost accounting department are consistent with the questionnaire survey findings presented in chapter six, as both reveal and emphasise the important effect of consultants, professional management/accounting bodies and cooperation between academics and professionals upon implementing ABC within the Jordanian industrial sector. Therefore, it can be concluded that it is not only demand factors that influence implementation of ABC within the Jordanian industrial companies, such as top management support, education about ABC concept and benefits, training programmes as well as the supply side factors, Interviewees also mentioned and emphasised the important effect of the following factors: professional accounting bodies, management accounting journals, management accounting research and PhD degrees, and cooperation between universities and companies.

Finally, generally all research has limitations, and even if performed well will leave scope for future work. Nevertheless, this project has attempted to minimise the limitations by making considerable efforts in the data collection stage and the data analysis stage to obtain meaningful results. It is hoped that these results will contribute to the fruitful development of knowledge, both in terms of theory construction and practical implementation.

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Appendix A

Questionnaire Covering Letter

(English version)

Dear Respondent,

I am a doctoral programme researcher in the Department of business at the University of Wales, Newport in United Kingdom. I am writing to ask for your participation in my research project. My research aims to study diffusion of Activity-Based costing within Jordanian industrial sector and to determine the factors that have facilitated, motivated and barriers of ABC implementation among Jordanian industrial companies.

The result of this study will enable both professionals and academics to assess the extent of adoption and implementation of ABC among Jordanian industrial companies thus, enabling them to make decisions and recommendations that would help Jordanian companies face the challenges in the new business environment.

In answering each question, please be as **objective** as possible remembering that biases sometimes “cloud” the real answer. You should not tick a box for example because the answer sounds more like what your “want” to hear but rather, indicate an answer which in your opinion **accurately depicts the present situation in the company.** Your responses should reflect the overall situation in your company, not just in your particular area of responsibility. The validity of this research largely depends on the accuracy of your answers.

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,

Mahmoud Nassar

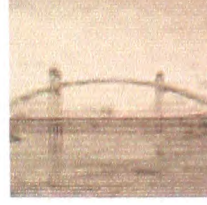
Tele: 5604287 or 0796545999

E-mail: Mahmoud.nassar@newport.ac.uk or aman_spic@yahoo.com.

Appendix B

Questionnaire Covering Letter

(Arabic version)



بسم الله الرحمن الرحيم

تحية طيبة وبعد

أرجو من سعادتكم التكرم بمساعدتي على ملء هذه الاستبانة والتي تعد جزءاً مهماً لاستكمال بحثي لدرجة الدكتوراه والتي أقوم بها في المملكة المتحدة.

ويهدف البحث الى التعرف على مدى تطبيق نظام محاسبة التكاليف المبنى على اساس الانشطة في الشركات الصناعية الاردنية المساهمة والتعرف على العوامل المساعدة والمحفزة لاستخدام هذا النظام. ومن أهداف الدراسة ايضا التعرف على صعوبات تطبيق النظام وتقييم درجة نجاح استخدام هذا النظام في الشركات الصناعية الاردنية المساهمة.

وبالرغم من ان ملء الاستبانة امر تطوعي فاني اقدر لكم تعاونكم لانجاح هذا البحث، هذا مع ملاحظة ان الاطلاع على المعلومات الواردة في الاستبانة سوف يقتصر على الباحث والمشرفين على الرسالة فقط مما يعني ان سرية ردودكم محفوظة ومؤكدة وان نتائج البحث سيتم عرضها بشكل اجمالي من دون تحديد اسماء الشركات محل الدراسة.

ولمعرفتي بكثرة مشاغلكم وقتكم الثمين فقد تم تصميم الاستبانة لتكون قصيرة وواضحة حيث ان الوقت المقدر لملئها ما بين 10 الى 15 دقيقة. وأحيطكم علماً بان الوقت المتاح لي في الاردن محدود، لذا أرجو التكرم بأعادتها خلال خمسة عشر يوماً. وذلك كسباً للوقت.


ولكم جزيل الشكر والعرفان على وقتكم وجهدكم في تعبئة هذا الاستبيان راجياً منكم عدم التردد بالاتصال على هاتف رقم (5604287) أو (0796545999) للاستفسار أو طلب اي معلومات اضافية.

وتفضلوا بقبول فائق الاحترام والتقدير

Signed 

Dr Andrew Thomas

Associate Dean (Research and Enterprise)
Newport Business School
University of Wales Newport
E-mail / andrew.thomas@newport.ac.uk

Signed 

Mahmoud Nassar

PhD student
Newport Business School
University of Wales Newport
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Appendix C

Questionnaire Covering Letter (Sponsor version)



فلنجدل من أردن جامعة للعرب

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التاريخ

لمن يهمة الأمر

تشهد عمادة البحث العلمي والدراسات العليا في جامعة العلوم التطبيقية الخاصة بأن السيد محمود داود نصار هو أحد مبعوثيها لنيل درجة الدكتوراه في المحاسبة في المملكة المتحدة (University of Wales, Newport) وأن موضوع بحثه يختص بمدى استخدام نظام محاسبة التكاليف المبني على أساس الأنشطة في الشركات الصناعية الأردنية، أرجو التكرم بتسهيل مهمة الباحث في الحصول على المعلومات المطلوبة، هذا مع ملاحظة أن الاطلاع على المعلومات الواردة في الاستبانة سوف يقتصر على الباحث والمشرفين على الرسالة فقط مما يعني أن سرية ردودكم محفوظة ومؤكدة وأن نتائج البحث سوف يتم عرضها بشكل إجمالي من دون تحديد أسماء الشركات محل الدراسة .

مع عاطر التحية وموفور الاحترام ،،،

رئيس الجامعة

أ.د. زياد سليم رمضان



نسخة :
- الشؤون الإدارية /البعثات
ع. ط. س. د.

Appendix D

Initial Questionnaire Survey and Participation Form

Welcome

You are requested to participate in my study of Activity Based Costing (ABC) system in the Jordanian industrial sector. Your participation is highly appreciated. Please fill in the questionnaire below through check 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 of Wales, Newport.

Yours sincerely,

Mahmoud Nassar

Tele: 5604287 or 0796545999

E-mail: Mahmoud.nassar@newport.ac.uk or aman_spic@yahoo.com.

What is ABC?

Activity-based costing (ABC) is a method of allocating costs to products and services. It is generally used as a tool for planning and control. It was developed by Robin Cooper and Robert Kaplan as an approach to address problems associated with traditional cost management systems that tend to have the inability to accurately determine actual production and service costs, or provide useful information for operating decisions. With these deficiencies, managers can be exposed to making decisions based on inaccurate data. The higher exposure is for companies with multiple products or services. ABC allows managers to attribute costs to activities and products more accurately than traditional cost accounting methods. The activities responsible for the costs can be identified and passed on to users only when the product or service uses the activity. Some of the advantages ABC offers is an improved means of identifying high overhead costs per unit and finding ways to reduce the costs

Researcher

Q1: Regarding Activity-based costing (ABC), please check one of the following stages that best describes your business unit's current situation (Please tick one box only).

A	<input type="checkbox"/>	Non-considerer	The companies have not been seriously considered ABC, and still use either single or departmental allocation methods.
B	<input type="checkbox"/>	Considerer	The company perceives the distortion of the existing cost system and the possible solution by implementing ABC.
C	<input type="checkbox"/>	Adopter	The company gets approval to invest the resources necessary for implementing ABC.
D	<input type="checkbox"/>	Implementer	The companies have begun implementing ABC systems, and the company in the process of forming a team for ABC implementation, determining project scope and objectives, collecting data or/and analysing activities and cost drivers and gaining organisational members' commitment to use ABC.
E	<input type="checkbox"/>	User	The implementation of ABC was finished and the companies have starting using ABC information as a part of daily practices or integrating it with other systems.
F	<input type="checkbox"/>	Abandoner	The companies have implemented ABC in the past, but have abandoned it

Q2: Would you like to participate in the main questionnaire survey next year?

No

yes

update the existing information system (mean score = 3.81) all these items refer to the efficient choice perspective.

From the information presented in Table 6.12 it is apparent that the fashion and fad perspectives are the dominant reasons for implementing ABC within the Jordanian industrial sector. The first and highest item *advice from auditors and/or consultants* refers to the fashion perspective. This perspective assumes that companies will tend to imitate other companies because of conditions of uncertainty relating to goals and the technical efficiency of innovations. Accordingly, company decisions are more to do with which companies they should imitate rather than which technology they should implement. The fashion perspective assumes that under conditions of uncertainty companies in a group imitate administrative technologies promoted by 'fashion setting' companies outside the group, such as consulting companies, business school and auditors.

The second and third most important items that influenced the decision for ABC implementation in the Jordanian industrial sector were: *wishing to try a new accounting innovation* and *being seen as having a sophisticated costing system* and both items refer to fad perspective. Abrahamson (1991) claimed that the fad perspective assumes that diffusion of innovation occurs when companies within a group imitate other companies within that group. Companies imitate other companies for one or more of these reasons, namely: the communication of knowledge, social interactions, or economic interests. Certain explanations of fad perspective focusing on communication of knowledge claim that a company imitates other companies' choices of an innovation when it obtains from these adopters knowledge that reduces ambiguity about the innovation. Meanwhile, other researchers focusing on social interactions argue that a company imitates other companies in order to appear legitimate by conforming to emergent norms that sanction these innovations (Dimaggio and Powell, 1983; Abrahamson and Rosenkopf, 1993; Abrahamson, 1996). Finally, explanations that emphasise economic interests assert that a company imitates competitors' choices of innovations in order to avoid the risk that these competitors could gain a competitive advantage by using this innovation (Abrahamson, 1991).

6.6.2 Factors that Facilitated the Implementation of ABC

Innes and Mitchell (1990) claimed that catalysts initiate the change process, but without facilitator roles, the potential for change cannot be created in the company. Innes and Mitchell (1990) defined the factors that facilitate the innovation implementation as factors that provide managers with the favourable conditions that are necessary but not sufficient by themselves for a management accounting change. Therefore, the current study examined the influence of six factors on the decision to implement ABC, namely: top management support, internal champion support, higher information technology, education, training and consultants. 31 individual respondents were asked to give their opinions on the degree of importance of six factors that could facilitate the decision to implement ABC. They were asked to rate items on a five-point scale where 1 = Strongly disagree and 5 = Strongly agree. The responses are summarised in Table 6.13.

Table 6.13 Factors that facilitate the decision to implement ABC

	Min	Max	Mean	SD	% of Strong Agree
Adequate training was provided for designing ABC	3.00	5.00	4.32	.541	35.5%
Operating data in the information system are updated real time	3.00	5.00	4.09	.651	25.8%
Adequate training was provided for using ABC	3.00	5.00	4.00	.516	12.9%
ABC received active support from top management	2.00	5.00	3.97	.875	32.3%
Management has provided adequate resources	3.00	5.00	3.94	.772	25.8%
Top management have a clear commitment to use ABC	3.00	5.00	3.87	.792	22.6%
Consultant companies are regularly consulted when dealing with problems	2.00	5.00	3.87	.806	19.4%
Education is being provided	2.00	5.00	3.81	.873	22.6%
The choice of any accounting systems is influenced by consultant companies	2.00	5.00	3.71	.693	9.7%
There is a permanent managerial consultant in the company	2.00	5.00	3.61	1.022	22.6%
Detailed sales and operating data are available in the last year	2.00	5.00	3.58	1.057	22.6%
The objectives of ABC implementation were clearly understood	1.00	5.00	3.51	1.060	16.1%
There are individual within the company who promotes to adopt a new system	2.00	5.00	3.42	.992	12.9%
There is a role for some employees to create awareness of new system	2.00	5.00	3.42	.886	9.7%

The most cited factors that facilitate the decision to implement ABC were *adequate training was provided for designing ABC* (mean scores = 4.32) and *operating data in the information system are updated real-time* (mean scores = 4.09), followed by *adequate training was provided for using ABC* (mean scores = 4.00). Therefore, training and higher information technology were cited as the most important factors that facilitate the decision to implement ABC within Jordanian industrial sector.

In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Moreover, training reduces employees' lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC (Baird *et al.*, 2007).

The fact that operating data in the information system are updated real-time was cited as the second highest factor that facilitates the decision to implement ABC. Cooper (1998) suggests that ABC becomes more beneficial as the cost of data collection and processing is reduced, which requires higher levels of information technology. Cooper (1998) indicated that information technology appears to be an important factor in reaching the usage stage of ABC for most of the companies studied.

Many previous studies report that the essential and key factor that facilitates the decision to implement ABC is top management support (Shields 1995; Krumwiede 1998). According to Table 6.13, not surprisingly, *ABC received active support from top management* and *management providing adequate resources* had the highest average rating (mean scores = 3.97, 3.94 respectively). This means that most ABC implementers perceived that top management support was more important to the decision to implement ABC than other factors. These findings are consistent with the results in the study by Shields (1995) that organisational factors, especially top management support and adequate training in implementing ABC, are related to facilitating the decision to implement ABC. In general, the results of this study are similar to those of other studies (McGowan and Klammer 1997; Krumwiede 1998). Moreover, Brown *et al.* (2004) argued that if the decision to implement ABC is made by lower level management, the level of risk undertaken by them is high (Brown *et al.*,

2004). In contrast, if top management support the adoption of ABC, where senior management explicitly support the project, project uncertainty is reduced and thereby the implementation process is made easier and the risk of the project is reduced (Krumwiede, 1998).

In addition, individual respondents also reported that *consultant companies are regularly consulted when dealing with problems* (mean scores = 3.87) and *education is being provided* (mean scores = 3.81) also facilitate the decision to implement ABC within the Jordanian industrial sector.

6.6.3 Factors that Motivated the Implementation of ABC

Innes and Mitchell (1990) argued that catalysts initiate the change process, but without their motivators' roles, the potential for change cannot be created in the company. Innes and Mitchell (1990) defined motivators as factors that influence management accounting change in a general manner. As examples: the changed environment (Chung *et al.*, 1997), changed cost structure (Bjornenak, 1997) or shortcomings of the existing system (Innes and Mitchell, 1991; Chung *et al.*, 1997; Nguyen and Brooks, 1997). These factors could motivate the decision to implement ABC. The individual respondents who were implementing/using ABC were asked to rate the importance of various factors in motivating the decision to implement ABC. The individual respondents were asked to rate items on a five-point scale where 1 = Strongly disagree and 5 = Strongly agree.

Table 6.14 shows that ABC implementers and users largely indicated that *the increasing proportion of overhead costs* (mean scores = 4.29), *the increasing number of product variants* (mean scores = 4.19), and *growing costs, including production and administrative costs* (mean scores = 4.16) are the most important factors that motivate the implementation of ABC.

Increased competition (mean scores = 3.87) *currently facing allocation problems* (mean scores = 3.64), and *inability to provide relevant information in the new business environment* (mean scores = 3.55) were also cited as major factors that motivate ABC implementation. These factors that motivate the process of ABC implementation

within the Jordanian industrial sector, however, seem different from Booth and Giacobbe's (1997) findings. They found that the perception of importance of indirect costs and high number of product lines or awareness of ABC literature were the main factors that motivate the implementation of ABC. On the other hand, the factors that motivate the process of ABC implementation within the Jordanian industrial sector are similar to those documented in many studies, such as Innes and Mitchell, (1991) and Al-Omiri and Drury, (2007b). 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 6.14 Factors that motivate the decision to implement ABC

	Min	Max	Mean	SD	% of Strong Agree
Increasing proportion of overhead costs	2.00	5.00	4.29	.739	41.9%
Currently the increasing number of product variants	2.00	5.00	4.19	.792	38.7%
Growing costs, including production and administrative costs	3.00	5.00	4.16	.637	29%
Increased competition	2.00	5.00	3.87	.846	22.6%
Currently facing allocation problems	1.00	5.00	3.64	.915	9.7%
Inability of TCS to provide relevant information in new environment	2.00	5.00	3.55	.925	12.9%
The inaccuracies of product cost of the traditional cost system	2.00	5.00	3.45	.995	12.9%
Currently lack of decision-making information	2.00	5.00	3.35	1.112	19.4%
Inability of the TCS to adopt to increased automation in production process	1.00	5.00	3.12	1.056	12.9%
Globalisation of consumer and product markers	2.00	4.00	2.83	.934	0%
Increased regulation	2.00	4.00	2.58	.886	0%

6.6.4 Problems Encountered During the Implementation of ABC

During the process of implementing ABC, the company could face problems or difficulties related to change implementation in practice or be facing resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. Thus, the current study seeks to determine the barriers to change that may explain the differing implementation rates of ABC in the Jordanian industrial sector.

To shed light on this, individual respondents were asked to evaluate difficulties in designing, 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 summarised in Table 6.15.

Table 6.15 Problems of ABC implementation

	Min	Max	Mean	SD	% of Strong Agree
High cost of implementing ABC	2.00	5.00	4.55	.675	61.3%
High cost of ABC consulting	3.00	5.00	4.32	.653	41.9%
Takes up a lot of computer staffs time	2.00	5.00	4.00	.776	25.8%
Difficulty in designing system	3.00	5.00	3.90	.651	16.1%
Lack of software packages	2.00	5.00	3.90	.831	22.6%
Difficulty in gathering data on cost drivers	3.00	5.00	3.87	.718	19.4%
Changes required to company structure to fit activities selected	2.00	5.00	3.84	.898	22.6%
Difficulty in identifying activities	3.00	5.00	3.84	.583	9.7%
A higher priority of other changes/projects	2.00	5.00	3.81	.873	19.4%
Take up a lot of managers time	2.00	5.00	3.48	.889	9.7%
Difficulty in defining cost drivers	2.00	5.00	3.48	.709	6.5%
Coping with changes in accounting	2.00	5.00	3.32	1.107	16.1%
Lack of top management support	1.00	5.00	3.29	.901	12.9%
Lack of commitment and cooperation among departments	2.00	5.00	3.26	.956	6.5%
Resistance to change	2.00	5.00	3.03	1.196	16.1%
Lack of knowledge of data requirement and collection	1.00	5.00	2.90	1.011	6.5%

The greatest difficulty in implementing ABC was *the high cost of implementing ABC* (mean scores = 4.55), followed by *high cost of ABC consulting* (mean scores = 4.32) and *takes up a lot of computer staffs time* (mean scores = 4.00), *difficulty in designing system* (mean scores = 3.90) as well as *lack of software packages* (mean scores = 3.90). These results confirm the findings of Booth and Giacobbe (1997) and Innes and Mitchell (1998). In addition, difficulty in identifying activities, and higher priority of other changes/projects, as well as changes required to company structure to fit activities selected were regarded as challenging tasks during ABC implementation.

It is surprising that *resistance to change from employees* (mean scores = 3.03) was seen as a less important problem among the Jordanian industrial companies while some results in other countries reported that this problem was a major difficulty in implementing ABC (Chung *et al.*, 1997; Innes and Mitchell 1998; Chen *et al.*, 2001). This could be explained by the high level of training courses that Jordanian companies designed. The high level of training was cited as a most important factor facilitating

the decision to implement ABC. Baird *et al.* (2007) claimed that in training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Moreover, training reduces employees' lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC. Thus, resistance from employees was not seen as a serious problem.

In addition, as shown in Table 6.15, most ABC implementers in the Jordanian industrial sector perceived that top management support was an essential and key factor for facilitating the decision to implement ABC. Jordanian top management had largely provided its sufficient support for the implementation of ABC to their organisational members. Therefore, top management support was not lacking for the implementation of ABC in the Jordanian companies (mean score = 3.29).

In summary, based on the above discussion, the most problems in implementing ABC among the Jordanian industrial companies were due to more technical barriers than behavioural or organisational barriers. These findings contrast with the results of Shields (1995), who indicated that most problems with ABC are not attributed to technical barriers. Furthermore, with the finding by Krumwiede and Roth (1997), it was suggested that barriers to ABC resulted from more behavioural and organisational variables than technical variables. This could be explained by the results of Al-Khadash and Feridun (2006) who argued that the Jordanian industrial companies have a good environment to adopt new managerial initiatives such as ABC systems because they have the funding, the human resources and the knowledge about the ABC benefits.

6.6.5 Level of ABC Success within the Jordanian Industrial Sector

Several studies have been undertaken relating to the success of ABC amongst users' companies. Measuring the success of ABC is problematic (Shields, 1995) and researchers have adopted different approaches. Success has been measured by management evaluation (Shields, 1995), use and satisfaction with ABC (Swenson, 1995) and employee satisfaction (MaGowan and Klammer, 1997).

The current study used a multi-attribute approach to measure success of ABC implementation within the Jordanian industrial sector and this multi-attribute is composed of satisfaction with ABC implementation, the degree of using ABC in decision-making and the success of ABC implementation. Therefore, the next issue in this section is to assess the success level of ABC implementation among companies who had completed implementation and had started using ABC information in decision-making.

The first measure of the level of ABC success was using the management evaluation for 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 ABC success was ranked on a five-point scale where 1= Poor and 5 = Very good. Table 6.16 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 (71.6%).

Table 6.16 Level of ABC success among user companies

stages of ABC abandoned	Frequency	Percent	Cumulative Percent
Average	1	14.2	14.2
Good	5	71.6	85.8
Very good	1	14.2	100
Total	34	100	

The second 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 and Mitchell, 1995; Krumwiede, 1998). 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 6.17.

Table 6.17 Frequency of using ABC information by user companies

Purposes for used ABC	Min	Max	Mean	SD
Product costing	4.00	5.00	4.86	.378
Planning	4.00	5.00	4.43	.534
Pricing decision	3.00	5.00	4.14	.690
Decision-making	3.00	5.00	4.00	.577
Determine customer profitability	3.00	5.00	4.00	.577
Budgeting	3.00	5.00	3.86	1.069
Performance measurement	2.00	5.00	3.43	1.272

It can be seen from the Table 6.17 that ABC was widely used for many different purposes but using ABC to *determine product costing* (mean score = 4.86), *planning* (mean score = 4.43), *pricing decision* (mean score = 4.14), *decision-making* (mean score = 4.00) and *using ABC in determine customer profitability* (mean score = 4.00) represents the most widely used applications. The use of ABC in *budgeting* and *performance measurement* represents the least widely used applications (mean score = 3.86, 3.43 respectively) and Table 6.18 shows that the majority of users used ABC information for different purposes very often or always.

Table 6.18 Using ABC information among user companies

Purposes for used ABC	Never	Rarely	Sometimes	Very often	Always	Cumulative %
Product costing	0 0%	0 0%	0 0%	1 14.3%	6 85.7%	7 100%
Determine customer profitability	0 0%	0 0%	0 0%	7 100%	0 0%	7 100%
Decision-making	0 0%	0 0%	1 14.3%	5 71.4%	1 14.3%	7 100%
Planning	0 0%	0 0%	0 0%	4 57.1%	3 42.9%	7 100%
Budgeting	0 0%	0 0%	4 57.1%	0 0%	3 42.9%	7 100%
Pricing decision	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	7 100%
Performance measurement	0 0%	2 28.6%	2 28.6%	1 14.3%	2 28.6%	7 100%

The last measurement of ABC success requested the respondents to indicate on a scale where 1 = Very unsatisfied and 5 Very satisfied, how satisfied they were with the benefits, calculating method and cost reduction efforts they received after implementing ABC. Table 6.19 indicates that the majority of ABC users had a quite high level of satisfaction with the *gained benefits*, *calculating method*, and *cost reduction efforts* (mean scores = 4.14 respectively).

Table 6.19 Level of ABC satisfaction among user companies

	Min	Max	Mean	SD
Satisfied with benefits	4.00	5.00	4.14	.377
Satisfied with cost reduction efforts	3.00	5.00	4.14	.691
Satisfied with calculating method	3.00	5.00	4.14	.691

In addition, Table 6.20 shows that, the majority of companies were satisfied and very satisfied with benefits, calculating method and cost reduction effort that the companies had gathered during the use ABC in their companies. These results support the Swenson (1995) results as he found that the degree of satisfaction with costing will be high after implementing ABC.

Table 6.20 The degree of satisfaction with ABC among user companies

Satisfied with ABC implementation	Very unsatisfied	Unsatisfied	Medium Satisfied	Satisfied	Very Satisfied	Cumulative %
Satisfied with Benefits	0 0%	0 0%	0 %	6 85.7%	1 14.3%	7 100%
Satisfied with Calculating Method	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	7 100%
Satisfied with Cost Reduction efforts	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	7 100%

6.6.6 Reasons for Abandoned ABC Implementation

During the process of implementing ABC, the 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, and even preventing change. Table 6.21 shows that all abandoners stopped the implementation of ABC at an early pilot testing stage. Shanahan and Dance (1997) claimed that a pilot project is beneficial in that managers can compare the worth of ABC with minimum investment of time and other resources and produce quick results, as well as create recommendations. Therefore, many companies conducted a pilot project before making the decision to implement ABC fully.

Table 6.21 Stages of ABC Abandonment

Stages of ABC Abandonment	Frequency	Percent	Cumulative Percent
A pilot project	6	100	100
Developing and installing ABC, as well as training employees	-	0.0	100
Full Implementation of ABC	-	0.0	100
Total	6	100	

The current study seeks to determine the barriers to change that may explain why the abandoners companies make this decision. To shed light on this, individual respondents who abandoned ABC were asked to evaluate difficulties in designing, 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 summarised in Table 6.22.

Table 6.22 Barriers to ABC implementation among abandoner companies

	Min	Max	Mean	SD	% of Strong Agree
High cost of implementing ABC	4.00	5.00	4.50	.547	50%
High cost of ABC consulting	4.00	5.00	4.50	.547	50%
Difficulty in gathering data on cost drivers	4.00	5.00	4.16	.408	16.7%
Take up a lot of managers time	3.00	4.00	3.83	.408	0%
Difficulty in defining cost driver	3.00	5.00	3.83	.753	16.7%
Lack of top management support	3.00	5.00	3.67	.816	16.7%
Difficulty in designing	3.00	4.00	3.67	.516	0%
Takes up a lot of computer staffs time	3.00	4.00	3.67	.516	0%
Lack of software packages	2.00	4.00	3.33	.816	0%
Lack of knowledge of data requirement and collecting	2.00	4.00	3.33	.816	0%
Coping with changes in accounting	2.00	4.00	3.33	.816	0%
A higher priority of other changes/projects	2.00	4.00	3.17	.753	0%
Difficulty in identifying activities	2.00	4.00	3.00	.632	0%
Lack of commitment and cooperation among departments	2.00	3.00	2.83	.408	0%
Changes required to company structure to fit activities selected	2.00	5.00	2.83	.283	16.7%
Resistance to change	2.00	4.00	2.50	.836	0%

The greatest difficulty in implementing ABC was *the high cost of implementing ABC* as well as *the high cost of ABC consulting* (mean scores = 4.50 respectively) followed by *difficulty in gathering data on cost driver* (mean score = 4.16), *takes up a lot of computer staffs time* and *difficulty in defining cost driver* (mean scores = 3.83). These results confirm the findings of Booth and Giacobbe (1997) and Innes and Mitchell (1998). In addition, *lack of software packages* and *takes up a lot of computer staffs time* (mean score = 3.67), as well as *lack of software packages, lack of knowledge of data requirement and collecting and coping with changes in accounting* (mean score 3.33) were regarded as challenging tasks during ABC implementation.

It is surprising that *resistance to change from employees* (mean scores = 2.50) was seen as a less important problem among Jordanian industrial companies while some results in other countries reported that this problem was a major difficulty in implementing ABC (Chung *et al.*, 1997; Innes and Mitchell 1998; Chen *et al.*, 2001).

In summary, based on the above discussion most problems in implementing ABC in Jordanian industrial companies related to more technical barriers than behavioural or organisational barriers. These findings contrast with the results of Shields (1995), who indicated that most problems with ABC are not attributed to technical barriers; with the finding by Krumwiede and Roth (1997), it was suggested that barriers to ABC resulted more from behavioural and organisational variables than technical variables.

6.7 Comparison of Companies as Users and Non-Users of ABC

The last issue in this chapter is to examine the extent to which ABC users are different from non-users based on group of factors such as type of sector, number of employees, number of products and level of overhead (Innes and Mitchell, 1995; Bjornenak, 1997; Clarke *et al.*, 1999; Cohen *et al.*, 2005). The current study seeks to discover whether companies that use ABC have any characteristics that distinguish them from companies that do not use ABC on the basis of the principle "ABC suits best" (Innes and Mitchell, 1995; Bjornenak, 1997; Clarke *et al.*, 1999; Cohen *et al.*, 2005). The criterion was used to classify the company into two groups ABC Users and Non-Users in this study and was based on Bjornenak (1997), who investigated the adoption of

ABC in Norway. He classified the respondents into two distinct groups: users and non-users group, based on the consideration to implement ABC criterion.

In light of the small number of ABC users in current study, the decision was made to combine users and implementers in one group as optional users of ABC. Bjornenak (1997) claimed that ABC implementers had the same characteristic that users have. Consequently, potential users in the current study included companies that had implemented and started using ABC information in decision-making and companies that are currently implementing ABC while non-users comprised of companies that were non-considering, considering, adopting, and abandoned ABC implementation. Consequently, potential users group consists of 31 companies. On the other hand, the non-users group comprised 30 companies.

This section provides the results and discussions regarding the relationships between the use of ABC and the company characteristics such as type of sector, number of employees, number of products and level of overhead, by comparing companies with non-users and potential users of ABC systems. It should be noted that, in the light of the small number of categories of company characteristics, the data in some categories were combined before the chi-square test was undertaken. This decision was made to increase the number of companies in each category to make the chi-square test valid.

6.7.1 The Differences between ABC Users and Non-Users based on Type of Sector

Shields (1995) argued that the decision to implement and design of cost accounting systems are conditional on the characteristics of industries. In order to examine if there are statistically significant differences between both ABC users and non-users based on type of sector, a chi-square was employed. As explained earlier in light of the few numbers of companies in some sectors, the sectors that had similar characteristics were combined in one group. This decision was made to increase the number of companies in each group to make the chi-square analysis valid.

The new classification of type of sectors was based on the Department of Statistics reports and Ministry of Industry and Trade in Jordan. The first group was called the Engineering sector, and this group includes two sectors, namely: Electrical, and

Engineering and Construction industries. The second group 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 group 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 6.23.

To examine if there are statistically significant differences between both ABC Users and Non-users based on the type of sector, a chi-square was employed. At the 95% confidence level, the analysis indicates that no evidence was found to refute the hypothesis that the two groups are homogeneous. Therefore, there is no major difference between ABC Users and Non-users based on type of sector (chi-square is 3.734 and Sig .155). This results support Gosselin's (1997) results; he found industry type did not have a significant effect on the adoption of the activity-based costing technique within Canadian manufacturing companies.

Table 6.23 Classification of ABC users and non-ABC users based on type of sector

Number of Employees	ABC Users	Non-ABC Users	Total
<i>Engineering Sector</i>			
Count	12	5	17
% within type of sector	70.6%	29.4%	100%
% within Users and Non-users of ABC	38.7%	16.7%	27.9%
% of Total	19.7%	8.2%	27.9%
<i>Processing sector</i>			
Count	9	11	20
% within type of sector	45%	55%	100%
% within Users and Non-users of ABC	29%	36.7%	32.8%
% of Total	14.8%	18%	32.8%
<i>Consumers Product Sector</i>			
Count	10	14	24
% within type of sector	41.7%	58.3%	100%
% within Users and Non-users of ABC	32.3%	46.7%	39.3%
% of Total	16.4%	23%	39.3%
<i>Total</i>			
Count	31	30	61
% within type of sector	50.8%	49.2%	100%
% within Users and Non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.7.2 The Differences between ABC Users and Non-Users based on Number of Employees

There are a variety of factors, such as number of employees, annual sales, total revenue, net worth, total assets and capital, which could be used to define company size. Askarany and Smith (2008) suggested that companies are most frequently classified by size according to the number of employees and size of capital. They also claimed that, as changes in factors such as annual sales, total revenue, total assets, and net worth of companies occur more frequently than changes in the number of employees and capital each year, defining companies based on such unstable factors may result in a change in the classification of companies each year. Therefore, the number of employees was used to measure the company size in the current study.

The relationship between company size and ABC Users and Non-users is examined in Table 6.24. The majority of Non-Users companies which are listed at the Amman Stock exchange have less than 500 employees. (11 companies have less than 100 and 11 companies employee between 101–500 employees). Meanwhile, the majority of Users (29 companies) have more 500 employees.

The Ministry of Industry and Trade in Jordan classifies companies as those employing less than 100 employees as small companies, companies with between 100-500 employees as medium-sized companies and those with more than 500 employees as large companies.

Table 6.24 shows that the majority of the users' companies were classified as medium or large companies while non-users' companies were classified as small or medium companies. In ABC literature, the influence of company size on diffusion of ABC has produced mixed results (Bjornenak, 1997; Krumwiede, 1998; Clarke *et al.*, 1999; Brown *et al.*, 2004; Askarany and Smith, 2008). Many researchers claimed that large companies have several advantages over smaller companies when implementing ABC. For instance, the large companies are more likely to have greater access to individuals with the knowledge to use ABC. In addition, large companies have greater ability to afford capital, to support the costs of ABC implementation and bear the risk of failure. On the other hand, other researchers argue that small companies have several advantages over larger companies when implementing ABC such as greater proximity

to the market and better overview of the entirety of the project (Askarany and Smith, 2008).

In the Jordanian industrial sector a significant number of companies which used ABC are classified as medium and large companies. This result supports the previous research results that in the industrial sector large and medium companies are the prime source of technological change and implementation of a new management innovation such as ABC, and they made an important contribution to the diffusion of innovation (Bjornenak, 1997; Krumwiede, 1998; Clarke *et al.*, 1999; Brown *et al.* 2004).

To examine if there are statistically significant differences between both ABC Users and Non-users based on number of employees a chi-square was employed. The analysis indicates that there is no evidence of homogeneity between the two groups at the 95% confidence level. Therefore, the number of employees influences the decision to implement ABC within Jordanian industrial sector (chi-square is 8.333 and Sig .016).

Table 6.24 Classification of ABC users and non-ABC users based on number of employees

Number of Employees	ABC Users	Non-ABC Users	Total
1-100 Employees			
Count	2	11	13
% within Number of Employees	15.4%	84.6%	100%
% within Users and Non-users of ABC	6.5%	36.7%	21.3%
% of Total	3.3%	18%	21.3%
101-500 Employees			
Count	16	11	27
% within Number of Employees	59.3%	40.7%	100%
% within Users and Non-users of ABC	51.6%	36.7%	44.3%
% of Total	26.2%	18%	44.3%
More than 500 Employees			
Count	13	8	21
% within Number of Employees	61.9%	38.1%	100%
% within Users and Non-users of ABC	41.9%	26.7%	34.4%
% of Total	21.3%	13.1%	34.4%
Total			
Count	31	30	61
% within Number of Employees	50.8%	49.2%	100%
% within Users and Non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.7.3 The Differences between ABC Users and Non- Users based on Number of Products

Several studies have investigated the relationship between the decision to implement ABC and the products' diversity. For instance, Cooper, (1988b); Cooper and Kaplan, (1998); Abernethy *et al.* (2008) suggested that product diversity leads to a higher potential for cost distortion and applies when products consume activity resources in different proportions.

High product diversity increased the costing distortions arising from TCS. Therefore, greater product diversity requires more sophisticated costing systems (such as ABC) to capture the variation in resource consumption by different products (Abernethy *et al.*, 2008). This suggestion was supported by Bjornenak (1997); Krumwiede (1998); both found a positive relationship between the level of product diversity and ABC implementation.

Table 6.25 indicates that for ABC users 13 companies were producing between 20–50 products and 12 companies were producing more than 50 products. Meanwhile, for the non-user group, 9 companies were producing between 20–50 products and 14 companies were producing less than 20 products.

To examine if there are statistically significant differences between both ABC Users and Non-users based on number of products a chi-square was employed. The analysis shows that no evidence was found at the 95% confidence level to refute the hypothesis that the two groups are homogeneous. Therefore, there is no major difference between ABC Users and Non-users based on number of products (chi-square is 5.228 and Sig .073).

Table 6.25 Classification of ABC users and non-users based on numbers of products

Number of Product	ABC Users	Non-ABC Users	Total
Less than 20			
Count	6	14	20
% within Number of products	30%	70%	100%
% within users and non-users of ABC	19.4%	46.7%	32.8%
% of Total	9.8%	23%	32.8%
20 – 50			
Count	13	9	22
% within Number of product	59.1%	40.9%	100%
% within users and non-users of ABC	41.9%	30%	36.1%
% of Total	21.3%	14.8%	36.1%
More than 50			
Count	12	7	19
% within Number of product	60.2%	36.8%	100%
% within users and non-users of ABC	38.7%	23.3%	31.1%
% of Total	19.7%	11.5%	31.1%
Total			
Count	31	30	61
% within Number of products	50.8%	49.2%	100%
% within users and non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.7.4 The Differences between ABC Users and Non- Users based on Level of Overhead

The early published ABC literature argued that overhead was becoming an increasingly larger component of product cost, and that this led to the distortions inherent in traditional costing systems becoming more problematic. Therefore, ABC was seen as a more accurate method of overhead allocation and a better costing system for contemporary companies (Cooper, 1988a; Cooper and Kaplan, 1988a)

Table 6.26 indicates that, for ABC users 13 companies were at a rate of overhead to total cost of between 21%–40% and 11 companies had the rate of overhead at more than 41% to total cost. For non-user group, 6 companies had the rate of overhead at more than 41% to total cost. 12 companies were at the rate of overhead to total cost of between 21% – 40% and for 12 companies the rate of overhead was less than 20% to total cost

To examine if there are statistically significant differences between both ABC Users and Non-users based on level of overhead a chi-square was employed. The analysis shows that no evidence was found at the 95% confidence level to refute the hypothesis that the two groups are homogeneous. Therefore, there is no major difference between

ABC Users and Non-users based on level of overhead (chi-square is 2.811 and Sig .245).

Table 6.26 Classification of ABC users and non-users based on level of overhead

Level of Overhead	ABC Users	Non-ABC User	Total
<i>0% - 20%</i>			
Count	7	12	19
% within level of overhead	36.8%	63.2%	100%
% within users and non-users of ABC	22.6%	40%	31.1%
% of Total	11.5%	19.7%	31.1%
<i>21% - 40%</i>			
Count	13	12	25
% within level of overhead	52%	48%	100%
% within users and non-users of ABC	41.9%	40%	41%
% of Total	21.3%	19.7%	41%
<i>More than 41%</i>			
Count	11	6	17
% within level of overhead	64.7%	35.3%	100%
% within users and non-users of ABC	35.5%	20%	27.9%
% of Total	18%	9.8%	27.9%
<i>Total</i>			
Count	31	30	61
% within level of overhead	50.8%	49.2%	100%
% within users and non-users of ABC	100%	100%	100%
% of Total	50.8%	49.2%	100%

6.8 Summary

The findings drawn from the analysis of questionnaire data that were reported in this chapter highlight the views of chief financial managers/heads of cost accounting departments in relation to the adoption and implementation of ABC within the Jordanian industrial sector. Many key findings were discussed in this chapter. First, the rate of ABC implementation with the Jordanian industrial sector based on the first criterion was 11.5% (7 companies out of 61 using ABC information as a part of daily practices or integrating with other systems). The rate of ABC implementation based on the second criterion was based on implementation as processing to implement ABC rather than using ABC information as a part of daily practices or integrating with other systems and this increased to 50.8% (11.5% had used ABC in full plus 39.3% companies, which are in the process of implementing ABC).

Second, regarding the reason for non-considered ABC implementation, the results indicated that the most cited reasons for not considering ABC were the inherent difficulties with ABC design and implementation group namely: costly to switch to ABC (mean scores = 4.00) and consultants too costly (mean scores = 3.83) was cited as the most important reason for not considering ABC within the Jordanian industrial sector, followed by Satisfied with the current system (mean scores = 3.75).

Third, costly to switch to ABC (mean scores = 4.08) and consultants too costly (mean scores = 4.00) were cited as the most important factors against the implementation of ABC within the Jordanian industrial sector, followed by lack of expertise to implement ABC and too complex and time-consuming (mean scores = 3.42, 3.25 respectively).

Fourth, in respect to the reason for ABC implementation the analysis indicated the fad and fashion perspectives were the dominant reasons for implementing ABC, namely: advice from auditors and/or consultants (mean score = 4.26), we wished to try a new accounting innovation (mean score = 4.22) and to be seen as having a sophisticated costing system (mean score = 3.97).

Fifth, the most cited factors that facilitated the decision to implement ABC were that adequate training was provided for designing ABC (mean scores = 4.32) and operating data in the information system were updated inreal time (mean scores = 4.09),

followed by adequate training was provided for using ABC (mean scores = 4.00). Therefore, training and higher information technology were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian industrial sector.

Sixth, the analysis of factors that motivate the process of ABC implementation has shown that both ABC implementers and users largely indicated that the increasing proportion of overhead costs, (mean scores = 4.29), currently the increasing number of product variants (mean scores =4.19), and growing costs, including production and administrative costs (mean scores = 4.16) were also cited as major factors that motivate ABC implementation.

Seventh, regarding the analysis of the main problems encountered during the implementation of ABC, the results have shown that the greatest difficulty in implementing ABC was the high cost of implementing ABC (mean scores = 4.55), followed by high cost of ABC consulting (mean scores = 4.32) and takes up a lot of computer staffs time (mean scores = 4.00), difficulty in designing the system as well as lack of software packages (mean scores = 3.90). These results confirm the findings of Innes and Mitchell (1998) and Booth and Giacobbe (1997).

Eighth, the Jordanian industrial companies assess the degree of ABC success as good and very good, and the majority of Jordanian companies are using ABC to determine product costing (mean score = 4.86), planning (mean score = 4.43) and for pricing decision (mean score = 4.14). Finally, the majority of ABC users had quite a high level of satisfaction with the gained benefits, calculating method, and cost reduction efforts (mean scores = 4.14 respectively). In the next chapter, the discussion of the interview data analysis is provided.

CHAPTER SEVEN

QUALITATIVE DATA ANALYSIS

7.1 Introduction:

The qualitative stage complements and affirms the quantitative component analysed in the previous chapter. The qualitative analysis presented here is used as a follow-up for further clarification of the results of the survey and is also used to aid the interpretation and confirm 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 method for this phase of the study was designed for interviews with companies that had implemented ABC in full and are currently using ABC information. Each company in this chapter was examined as an entity to obtain an understanding of the process of ABC adoption and implementation as well as the respondents' opinions and perspectives of each individual company as to what are considered to be the important factors in the company. By firstly using within-company analysis has the potential to aid in-depth views of the issues and their impact on each particular company. Then, cross-company analysis was used to analyse the similarities and differences of the six companies.

7.2 Within-Company Analysis

This section describes within-company analysis, but before the discussion of detailed findings of individual companies, a summary of background information is provided which gives an overall picture of each company. It includes the general background information, such as the type of sector and the size of the company in terms of number of employees and of capital of company, and the year of establishing their work and starting ABC implementation.

7.2.1 Implementation of ABC in Company One

Company One is in the Tobacco and Cigarette sector with a total workforce around 430 in 2008. The capital of company at the end of 2008 was 15 million JD (1 JD = £1 approximately). The company was established in 1993. In 2001 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in March 2004.

- The Reason for ABC Implementation

Abrahamson (1991) argued that implementation of innovations can occur through the imitation of companies outside their own social group. Abrahamson called this type of implementation the 'fashion' perspective. This perspective assumes that companies will tend to imitate other companies because of conditions of uncertainty relating to goals and the efficiency of innovations. Therefore, under conditions of uncertainty, companies in a group imitate administrative innovation promoted by consulting companies. According to the interview data from the head of the cost accounting department in Company One:

“On behalf of my top management, I was requested to bring in a consultant to replace the old cost accounting system and implement a new system to fit our business and production processes”.

Anderson (1995) found that once the problem with the current costing system in her case site had been identified, the choice of ABC was profoundly influenced by opinions of external experts. The head of the cost accounting department in Company One said that:

“The company decided to deal with experts at that time. Actually, we got them here; they spoke to our managers, stock department manager, IT manager, and me. One of the consultants said why is ABC an appropriate system for the company”.

- Factors that Facilitate the Implementation of ABC

Top management support is the most crucial factor influencing the success of ABC implementation. Anderson (1995) argues that top management is needed as it is difficult to implement an advanced system such ABC in companies without their full support, and to make sure that the system is used for its intended purpose (Brown *et al.*, 2004). These findings are, in fact, consistent with the more general finding that

most successful innovations require the support of top management. Top management should commit resources and develop goals and strategies to enable the implementation of ABC. The head of cost accounting department in Company One said:

“The role of our managers was in supporting us during the implementation of ABC. They encouraged the use of ABC system. The company designed many good training programmes for the employees and for me to update myself with the system”.

Top management plays an important role in relation to the availability of necessary resources the company needs for the implementation of ABC. The commitment and support of top management have emerged in the literature as a key factor evident in an ABC implementation (Krumwiede, 1998; Brown *et al.*, 2004). This top management support is argued to be critical due to the ability of managers to focus resources on the implementation process and to help motivate those who are resistant to the operation of the system (Shields, 1995). The head of the cost accounting department in Company One added:

“Our managers have been involved with the ABC system since its implementation, so they are very comfortable with it and what happens with it, and they have rigorous confidence about the results that can be gained from ABC”.

- **Training**

The training factor is considered to play a key role in the implementation of ABC system. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Training reduces employees' lack of confidence in ABC and prevents them from feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC (Shields, 1995). According to the interview data from the head of the cost accounting department in Company One:

“Both training and education facilitated the implementation of ABC. Firstly, the Egyptian expert provided information about the concept and the benefits of ABC for managers and our employees. Then he explained the term of activity and cost driver. Secondly, our managers provided training and a workshop about the process of ABC implementation for the ABC project team. By the way, this training course was designed also by the Egyptian expert”.

During the earlier decades of the 20th century accessing and processing information was a tedious task with non-computerised information systems. However, the developments in computerised information technology over the past three decades have considerably reduced information-processing costs. The advanced information technology has also facilitated the flexibility of extracting information as and when needed. For most companies these developments have reduced the costs and barriers of operating management accounting innovations such as the ABC system (Krumwiede, 1998; Brown *et al.* 2004). The head of the cost accounting department said:

“The higher information technology (sophistication) is the key to change; absolutely, the key to change. The technology here is to facilitate producing information and the information is the knowledge that will create change. ABC as a system needs really good information to create change”.

He added:

“ABC requires a lot of data and without a higher information system, we can’t deal with all these requirements of the ABC system”.

- Factors that Motivate the Implementation of ABC

Shields (1995) considered competition as the most important external factor for stimulating managers to choose implementing ABC. Cooper (1988b) has also identified that companies facing fierce competition should implement ABC as it is argued that companies operating in a more competitive environment have a greater need for advanced costing systems such as ABC that more accurately assign costs to cost products. This is because competitors are more likely to take advantage of any errors by managers having relied on inaccurate cost information to make decisions. The head of the cost accounting department points out that:

“We work in a highly competitive environment. Using ABC is a key to our success and to being competitive in the market. ABC plays an important role in the company daily tasks such as decision-making especially in uncertain situations”.

The size of the company has been found to be an important factor influencing the implementation of ABC (Bjornenak, 1997). Previous studies have also noted a positive relationship between company size and the implementation of ABC systems (Innes and Mitchell, 1995; Bjornenak, 1997; Malmi, 1999). A possible reason for this

is that larger companies have relatively greater access to resources to experiment with the introduction of ABC. The head of the cost accounting department said:

“In the past, every morning I was responsible for gathering all data, putting it into EXCEL for analysis and then reporting to my top management. But, the growing size of our company, leading to an increased number of products, made it difficult to manage information manually or even by our old system”.

- Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting on the success of implementing ABC. The main barrier to ABC implementation encountered in Company One is the lack of local consultant companies. The head of the cost accounting department said that:

“There are not enough consultants that provide education about ABC. We should have more practical ABC training. Each company wanting to implement ABC should have advisers to check and give advice”.

The issues related to the supply side of diffusion of ABC innovation were mentioned during the interview with the head of the cost accounting department in Company One, for example, the need for more conferences and seminars in accounting issues in general and ABC in particular as well as the need for journals specialising in management accounting to be made available to accountants and financial managers in Jordan. He also commented on the shortage of management accounting research and PhD degrees in this area of management accounting within Jordanian public universities:

"Our universities are not active in management accounting research. For example, this is the first time I have seen a questionnaire or participated in an interview on the process of ABC implementation in our sector in such detail as yours. Actually, I wanted to apply to do a PhD in accounting in Jordan but we do not have such doctoral courses in our public universities”.

Argyris and Kaplan (1994) suggested that education about ABC system is a crucial step of success in ABC implementation as, in this step, both managers and employees identified the differences between the TCS and the ABC systems. They describe how the processes of ABC overcome the shortcomings of the TCS. The head of the cost accounting department points out that:

“Most staff, at every level, do not understand exactly what ABC is and how to do it. The lack of knowledge and insufficient documentation make it more complicated to work on ABC. There is a need to educate all staff about ABC especially those who work on it and those who gather the information about cost drivers and cost centres”.

The implementation of ABC demands an adequate amount of internal resources as it builds ownership, knowledge and action within the company. These resources give employees the opportunity to learn about the ABC system and the ABC benefits, and make them less resistant to change (Shields, 1995). According to the interview data from the head of the cost accounting department:

“We need a huge amount of money to spend on training programmes, hardware and network after ABC is really implemented. ... I do not believe we have enough money for that”.

Innes and Mitchell (1991) point out that the most common problems perceived by companies implementing ABC related to the amount of work involved in ABC implementation. The head of the cost accounting department said that:

“Implementation of ABC is a full time occupation when it gets going. When the top management chose me to move to the ABC implementation team, I lost my daily operations”.

He added:

“There is a shortage of staff in many major areas of ABC implementation process. Most of them require a high salary. ... It takes time and hard effort to find them”.

Summary

In Company One, the company deals with consultants to assist them with their implementation of ABC. Companies deal with consultants because of the conditions of uncertainty relating to goals and efficiency of innovations. Consequently, companies implemented the system that was promoted by consultant companies. Top management support, training and higher information technology are the most crucial factors that influence the decision to ABC implementation. In addition, size of the company and operating in a more competitive environment have been found to be an important factor influencing the implementation of ABC. On the other hand, the main barriers to ABC implementation encountered in Company One are the lack of local consultant companies, the fact that it is regarded as time consuming and the lack of education about ABC.

7.2.2 Implementation of ABC in Company Two

Company Two is listed in the Mining and Extraction industry sector with a total workforce around 395 in 2008. The capital of company at the end of 2008 was 46 million JD (1 JD = £1 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.

- The Reason for ABC Implementation

Cohen *et al.* (2005) suggested that companies should use outside experts to help them choose a more sophisticated costing system and deal with problems that are encountered during the implementation. According to the interview data from the financial manager of Company Two:

“The implementing of ABC in our company started with meetings between American experts and our top managers from various departments”.

- Factors that Facilitate the Implementation of ABC

The commitment and support of top management has emerged in the literature as a key factor evident in an ABC implementation (Krumwiede, 1998; Brown *et al.*, 2004). The financial manager in Company Two said:

“Our managers are supporting the change and implementing ABC, they provide all the necessary basics we needed for implementation”.

He added:

“Our managers all the time encourage us to use ABC, without their encouragement we would not be using these advanced techniques”.

Brown *et al.* (2004) argued that top management must develop a strong business justification for the implementation of ABC, set clear and measurable goals and hold direct reports accountable for achieving them. According to the interview data from the financial manager of Company Two:

“Since the company started implementing the system our managers are actually doing a review each three months, talking to all managers in the departments. They need to review ABC to see if the system we have now is meeting our requirements. So they will either decide whether to stay with it or to change to something else”.

Chanegrih (2008) pointed out that top management support, as well as level of training play a key role in the implementation of ABC and in overcoming the resistance to change. According to the interview data from the financial manager of Company Two

“Probably training is the most important factor that facilitates the implementation of it. We have central training units in our company for our employees, the aim here is to educate them about the concept of ABC and encourage them to use it”.

- Factors that Motivate the Implementation of ABC

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information all encourage companies to seek a solution to overcoming these limitations by implementing ABC to generate more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. The financial manager of Company Two said:

“We do not identify our product cost well and in the correct way, we don’t believe the allocation process we used at that time was that accurate. But we know that with ABC system we can correctly allocate our overhead costs”.

He added:

“The product profitability was built on assumptions which are completely wrong”.

Anderson (1995) and Gosselin (1997) suggested that companies facing intensely competitive market environments tend to employ ABC. According to the interview data from the financial manager of Company Two

“We work in a very tough market if we continue working with the old costing system we will withdraw from the market very soon. The information we gathered from the old system is too slow and unreliable”.

- Barriers to ABC Implementation

Cohen *et al.* (2005) found that the main difficulties encountered the implementation of ABC were the high cost of implementing the system and high cost of consultants’ companies. The financial manager said that:

“After making a large investment in ABC, companies may be unwilling to invest in the skills needed to keep these vital systems running. High cost of consulting and lack of staff to support the implementation of ABC are the main difficulties”.

Friedman and Lyne (1999) found that the difficulty in the selection cost drivers was a factor that could be identified as a critical technical issue that could influence the implementation of the ABC system. The financial manager in Company Two said that:

“The processes of selecting cost drivers were changed all the time, we had a hard time to select appropriate cost drivers then to cope with them”.

Friedman and Lyne (1999) found that the lack of internal recourse was a factor that could be identified as a barrier to the implementation of the ABC system. Chanegrih (2008) pointed out that top management support, as well as level of training play a key role in the implementation of ABC and in overcoming the resistance to change. According to the interview data from the financial manager of Company Two:

“My top management encouraged us from the beginning to implement ABC but everyone here knows that the company is working on a limited budget for ABC implementation. Due to cost constraints, there is insufficient training for existing and new employees”.

Summary

In Company Two, The implementation of ABC started with meetings between American experts and top managers from various departments. Top management support and training are the most crucial factors influencing the decision to implement and the success of ABC implementation. In addition, the shortcomings of the existing costing system and competition are the main factors motivating the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Two are namely: the high cost of implementation and consultants' companies, difficulties in the selection of cost drivers and lack of internal resources and current lack of training.

7.2.3 Implementation of ABC in Company Three

Company Three is listed in the Tobacco and Cigarette sector with a total workforce around 523 in 2008. The capital of THE company at the end of 2008 was 44 million JD (1 JD = £1 approximately). The company was established in 1992 and in 2002 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in June 2004.

- The Reason for ABC Implementation

Cohen *et al.* (2005) suggested that companies should use outside experts to help them in choosing a sophisticated costing system and dealing with problems that may be encountered during the implementation of ABC. According to the interview data from the head of the cost accounting department in Company Three:

“The implementing of ABC in our company started with meetings between experts and our top managers from various departments”.

He added:

“Before implementing ABC, one of the American experts had provided a presentation for our managers as well as our employees in order to inform employees about the clarity of objectives and the necessity of understanding the philosophy behind ABC systems”.

- Factors that Facilitate the Implementation of ABC

Top management support is the most crucial factor influencing the success of ABC implementation. Krumwiede (1998) argues that top management is needed as it is difficult to implement advanced systems such ABC in companies without their full support, and to make sure that the system is used for its intended purpose (Brown *et al.*, 2004). These findings are in fact consistent with the more general finding that almost all successful innovation requires the support of top management. Top management should commit resources and develop goals and strategies to enable the implementation of ABC. The head of the cost accounting department in Company Three stated that:

“Top managers encourage us to use ABC, without their encouragement we would not be using this advanced costing technique”.

Top management plays an important role in relation to the availability of these resources. The commitment and support of top management has emerged in the literature as a key factor evident in an ABC adoption (Krumwiede, 1998; Brown *et al.*, 2004). This top management support is argued to be critical due to the ability of managers to focus resources on the adoption process and to help motivate those who are resistant to the operation of the system (Shields, 1995). The head of the cost accounting department in Company Three added:

“Our managers are supporting us to change and implement ABC. They provided all the necessary resources we need for implementation”.

Education and training of the people who were using the system is considered to be of the same importance as the system investment, because when people do not have the necessary skills to implement and control the system, even ‘perfect’ systems would not be able to produce high quality information. From the existing literature it is clear that lack of appropriate education and training can cause serious problems during the implementation. According to the interview data from the head of the cost accounting department in Company Three:

“Before implementing ABC, an American expert had provided a seminar to educate our top managers and our employees about the concept and benefits of ABC and to plan what the company wanted from ABC”.

- Factors that Motivate the Implementation of ABC

Bjornenak (1997) claimed that competition was the most important external factor for stimulating managers to consider implementing ABC. According to him, organisations operating in a more competitive environment have a greater need for ABC that reports more accurate product costs because competitors are more likely to take advantage of any errors arising from managers having to rely on distorted product costs to make decisions. Cooper (1988b) has also identified that companies facing fierce competition should implement ABC as it is argued that companies operating in a more competitive environment have a greater need for advanced costing systems such as ABC that more accurately assign costs to cost products. This is because competitors are more likely to take advantage of any errors by managers having relied on inaccurate cost information to make decisions. The head of the cost accounting department in Company Three points out that:

“We work in a highly competitive environment; implementing ABC is a key to our success and being competitive in the industry sector. ABC information plays an important role in achieving that”.

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy product costs and allocation and lack of timely cost information all encourage companies to seek solutions to these limitations by implementing ABC to generate more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the head of the cost accounting department in Company Three:

“In the past, the company could not know the exact profit or loss of each business or factory. Also, the company could not know how much each factory had wasted and in which process the waste occurred. The management felt that it wanted more clarity of information for decision-making and the development of an efficient operation. Thus, the company has implemented ABC.”

- Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting on the success of implementing ABC. The main barriers to ABC implementation encountered in Company Three were the number and lack of local consultants companies in Jordan. The head of cost accounting department said that:

“In Jordan there is a lack of consultant companies, which makes the company depend fully on expensive foreign expertise”.

The head of the cost accounting department in Company Three pointed out the importance of cooperation between industrial companies and universities and companies. He stated that such cooperation does not exist or is very weak at present. If promoted, such cooperation would certainly improve accounting practices and knowledge about advanced costing techniques in the Jordanian industrial sector.

“To be honest with you, from the past and until today the relationship and cooperation between accounting professionals in the field and academics in universities is very weak. I only communicate when somebody comes to ask me to fill in a questionnaire or is asking to conduct an interview. I think we should communicate more often if we really need to improve our costing system and implement advanced ones such as ABC”.

Innes and Mitchell (1991) pointed out that the most common problems perceived by UK's companies during implementation of ABC related to the lack of co-operation between departments during the implementation. Summarily, the head of the cost accounting department in Company Three said that:

“There is a lack of involvement from non-accounting employees in the process of ABC implementation”.

Innes and Mitchell (1991) and Cohen *et al.* (2005) argued that companies are likely to face more resistance during the implementation of ABC, which occurs as a result of change in structure of the company. According to the interview data from the head of the cost accounting department of Company Three:

“There was a need to change the structure and parts of the company in order to get our employees to participate in the process of ABC implementation”.

Friedman and Lyne (1999) found that the difficulty in the selection of cost drivers was a factor that could be identified as a critical technical factor that could influence the implementation of ABC system. The head of the cost department in Company Three said that:

“Probably, selecting cost drivers were the biggest challenge, we need to get everyone aware of why we need to collect this information and what the benefits are”.

Summary

In Company Three, the implementation of ABC was promoted by consultant companies. Top management support, education and training are the most crucial factors influencing the decision to implement and ABC successfully. Shortcomings of the existing costing system and competition are the main factors that motivate the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Three are: high cost of implementation and consultant companies, co-operation between departments, change to the company's cost structure and difficulties in the selection of cost drivers.

7.2.4 Implementation of ABC in Company Four

Company Four is listed in electrical industries with a total workforce of around 242 in 2008. The capital of the company at the end of 2008 was 20 million JD (1 JD = £1 approximately). The company was established in 1983. In 2004 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in June 2006.

- The Reason for ABC Implementation

Abrahamson (1991) argued that diffusion of innovation occurs when companies within a group imitate other companies within that group. Companies imitate other companies either in order to appear legitimate by conforming to emergent norms, or to avoid the risk that competitors will gain a competitive advantage by using the innovation. Abrahamson (1991) suggested that companies adopt innovations because other companies have adopted it rather than on the basis of an evaluation of the innovation's efficiency. According to the interview data from the head of the cost accounting department in Company Four:

“ABC at that time was the style (fashion), so everybody, every manager in each company in our industry jumped quickly to look at it or even use it.”

He added:

“We have heard how good ABC is for many years ... There is nothing wrong with our old system. It still works well. But we considered implementing ABC as we have reason to believe it may improve our ineffective business processes. And it may help us in our new project”.

- Factors that Facilitate the Implementation of ABC

Shields (1995) suggested that, top management support is the most crucial factor in the success of ABC implementation, due to the ability of managers to focus resources into the adoption process and to help motivate those who are resistant to the operation of the system. According to the interview data from the head of the cost accounting department in Company Four:

“My top manager has been involved with the ABC system since its implementation until now. For instance, he has registered to get his CMA certificate to be up dated 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. According to the interview data from the head of the cost accounting department in Company Four:

“Our managers have the basic skills needed to implement ABC and we can always start with the simple system then build up all that they need”.

The training factor is considered to play a key role in the success of the ABC. In relation to ABC, training relates to design, implementation, and usage of ABC. Shields and McEwen (1996) suggested that if people do not know why or how the ABC system works, they are more likely to ignore or misunderstand it and less likely to design a more accurate costing model. Training in implementation will help the team to understand the correct way to implement the ABC. Training in the usage of ABC helps the members to know how to interpret ABC information and how to use it for target goals. According to the interview data from the head of the cost accounting department in Company Four:

“The company often provides workshops about the processes of ABC implementation for middle managers and heads of departments. On the other hand, all accountants have been provided with training about the implementation of ABC and the benefits we expect to gain from it.”

It was found that people must first have an awareness of the ABC concept, and then get a deep understanding of the ABC implementation process and how the system impacts on the organisation performance. According to the interview data from the head of the cost accounting department in Company Four:

“ABC creates massive change, I think everyone has to be ready to deal with change, or at least know what their responsibilities are and what they need to do. So things need to be well-planned and well-documented, if the company is just suddenly moves to using ABC and there hasn’t been enough thought about what procedures need to change, it will cause serious problems”.

- Factors that Motivate the Implementation of ABC

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek solutions by

implementing ABC. ABC system generates more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the head of the cost accounting department in Company Four:

“We do not identify our product cost well and in the correct way, but we know with ABC system we can. 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 for our products”.

He added:

“We don’t actually have confidence in any figures that come out from our old costing system to make any decisions. We solve this problem by implementing ABC”.

- Barriers to ABC Implementation

Cohen *et al.* (2005) found that the main difficulties encountered in the implementation of ABC related to high cost of implementation the system. In Company Four, the head of the cost department said that:

“We spent a huge amount of money on training programmes, hardware and software before ABC was really implemented”.

Friedman and Lyne (1999) found that the difficulty in the selection cost drivers was a factor that could be identified as a critical technical factor that could influence the implementation of ABC system. According to the interview data from the head of the cost accounting department in Company Four:

“The processes of selecting cost drivers were changing all the time, we had a hard time to select appropriate cost drivers then to cope with it”.

Summary

In Company Four, the implementation of ABC was a fashionable topic. Top management support, education and training are the most crucial factors influencing the decision to implement successfully. Shortcomings in the existing costing systems are the main factors motivating the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Four were high cost of ABC implementation and difficulties in the selection of cost drivers.

7.2.5 Implementation of ABC in Company Five

Company Five is listed in Chemical industries with a total workforce around 693 in 2008. The capital of company at the end of 2008 was 20 million JD (1 JD = £1 approximately). The company was established in 1993. In 2005 the decision was made to move from the traditional cost system to ABC system. The process of ABC implementation approximately finished in March 2007.

- The Reason for ABC Implementation

Dimaggio and Powell (1983) suggested that companies imitate other companies in order to appear legitimate by conforming to emergent norms or to avoid the risk that competitors will gain a competitive advantage by using the innovation. According to the interview data from the head of the cost accounting department in Company Five:

“ABC was a bright phrase, at this time our engineers and managers in the company were running around saying we should have an ABC in our company”.

- Factors that Facilitate the Implementation of ABC

The commitment and support of top management has emerged in the literature as a key factor evident in an ABC implementation (Krumwiede, 1998; Cotton *et al.*, 2003; Kiani and Sangaladji, 2003; Brown *et al.*, 2004). This top management support is argued to be critical due to the ability of managers to focus resources into the adoption process and to help motivate those who are resistant to the operation of the system (Shields, 1995). According to the interview data from the head of the cost accounting department in Company Five:

“Top management dedicated significant time and resources in order to support their staff in implementing ABC. Although they were not directly involved they encouraged us to learn how to use the system, they helped to run many training courses”.

He added:

“Management commitment and communication of ABC concepts were the keys to implementation and the success of the project”.

Krumwiede (1998) claimed that training is important to ensure that employees understand activity management practice, to reduce resistance to change and to sustain successful performance. According to the interview data from the head of the cost accounting department in Company Five:

“The process of ABC implementation started when the consultants launched the project by conducting a two-day training seminar about ABC concepts”.

He added:

“Training is very important. If people don’t know what they are doing, what they are supposed to be doing, they can’t cope with the system”.

- Factors that Motivate the Implementation of ABC

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek to find solutions to overcoming these limitations by implementing ABC to generate more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the head of the cost accounting department in Company Five:

“The benefits that I received from the traditional costing system were too little too late”.

- Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during process of ABC implementation as a most important factor impacting on the success of implementing ABC. The main barrier to ABC implementation encountered in Company Five was the lack of consultants. The head of the cost accounting department said that:

“In Jordan there is a lack of consultant companies in ABC, which makes the company fully dependent on expensive foreign expertise”.

Friedman and Lyne (1999) found that the difficulty of selecting cost drivers was a factor that could be identified as a critical technical factor that could influence the implementation of ABC system. According to the interview data from the head of the cost accounting department in Company Five:

“There has been a need for long time for research to identify cost drivers that are applicable to our business”.

Argyris and Kaplan (1994) and Argyris (1999) suggested that education about ABC system was a crucial step of success in ABC implementation as, in this step, both the managers and employees identified the differences between the TCS and the ABC systems, and were told how the processes of ABC would overcome the shortcomings of the TCS. The head of the cost accounting department pointed out that:

“Most of our employees, at every level, do not understand exactly what ABC is and how to cope with it. The lack of knowledge and insufficient documentation make ABC more complicated. There is a need to educate all staff about ABC especially those who work on it and those who are gather information about activities and cost drivers”.

He added:

“Overall, there is not enough knowledge about ABC. Clear policies will make a better system”.

Summary

In Company Five, top management support and training are the most crucial factors that influence the decision to implement ABC. Shortcomings of the existing costing system are the main factor that motivates the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Five are the high cost of implementation and consultant companies, difficulties in selection of cost drivers, and education and awareness of ABC.

7.2.6 Implementation of ABC in Company Six

Company Six is listed in the Engineering and Construction sector with a total workforce around 366 in 2008. The capital of company at the end of 2008 was 100 million JD (1 JD = £1 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.

- The Reason for ABC Implementation

Cohen *et al.* (2005) suggested that companies should use outside experts to help them in choosing sophisticated costing systems and in dealing with problems encountered during the implementation of ABC. According to the interview data from the financial manager of Company Six:

“My managers asked me to start to explore the potential benefits of ABC. Also, to investigate the use of an external consultant company to assist in the implementation of ABC”.

He added:

“The process began with a two-day session. That was conducted by an independent consultant firm, which was closely monitored by our manager. Then the involved team started to implement the first steps toward ABC”.

Anderson (1995) found that once the problem with the current costing system in her case site had been identified, the choice of ABC was profoundly influenced by the opinions of external experts. The financial manager of Company Six said that:

“The independent consultant firm performed the required analysis which helped in collecting the effective data. For example, the sales and marketing cost driver was developed by them based on this process”.

- Factors that Facilitate the Implementation of ABC

Anderson (1995) argued that top management is needed as it is difficult to implement advanced systems such as ABC in a companies without their full support, and to make sure that the system is used for its intended purpose (Brown *et al.*, 2004). These findings are, in fact, consistent with the more general finding that almost all successful innovation requires the support of top management. Top management should commit

resources and develop goals and strategies to enable the implementation of ABC. According to the interview data from the financial manager of Company Six:

“The managers’ knowledge was the key issue in the process of the implementation of ABC. The role of the managers was vital during the implementation of ABC”.

The training factor is considered to play a key role in the implementation of ABC system. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Training reduces employees’ lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC (Shields, 1995). The financial manager said:

“The consultant firm was invited to our factory to discuss its methodology and approach of ABC implementation. The consultants, after a general ABC introduction, proposed something called cost object approach. They said our cost of activities should be assigned to the cost objects demand for consumption of each activity”.

Argyris and Kaplan (1994) suggested that education about ABC system is a crucial step of success of ABC implementation as, in this step, both the managers and employees identified the differences between the TCS and the ABC systems, and were told how the processes of ABC would overcome the shortcomings of the TCS. The financial manager pointed out that:

“ABC is a new system to be used in Jordan. Only a few companies had the chance to implement it. I know that the process of implementing ABC in our company would rely on re-educating my staff for this new process.

Brown *et al.* (2004) claimed that ABC becomes more beneficial as the cost of data collection and processing is reduced, which requires higher levels of information technology. An information system providing detailed historical data and easy access to users may provide much of the driver information needed by ABC. Krumwiede (1998) suggested that an integrated ABC system pre-supposes a relatively high level of information sophistication with extensive and flexible information stratification and real-time activity driver information. The financial manager said:

“Collecting the data about cost drivers is a complicated process. One really needs to have advanced and practical systems in place before initiating the ABC”.

- Factors that Motivate the Implementation of ABC

Bjornenak (1997) claimed that competition was the most important external factor for stimulating managers to consider implementing ABC. Cooper (1988b) has also identified that companies facing fierce competition should implement ABC as it is argued that companies operating in a more competitive environment have a greater need for advanced costing systems such as ABC that 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. According to the interview data from the financial manager of Company Six:

“Our old system was good for steady state market with few products and limited number of customers. But with all the changes and new markets we suffered a lot, because it became a totally inadequate system”.

The limitations of traditional costing systems, such as lack of details of cost information for decisions, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek a solution by implementing ABC. ABC system generates more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. According to the interview data from the financial manager of Company Six:

“The view of the top managers was that, they believed that they don’t have the full picture which will enable them to analyse the wide range of products and the accuracy of the cost”.

He added:

“At the end of the day, our managers would like to know the accurate costs of the products. The old costing system will not help in this matter at all, because it was based on invalid assumptions.

- Barriers to ABC Implementation

Friedman and Lyne (1999) identified the role of consultants during the process of ABC implementation as the most important factor impacting on the success of implementing ABC. The main barriers to ABC implementation encountered in Company Six were the number and lack of local consultants companies in Jordan. The head of the cost accounting department said that:

“In Jordan there is a lack of consultant firms, which makes our company fully depend on expensive foreign expertises”.

He added:

“For a small company like our company, ABC is expensive to implement we cannot bear the cost”.

The importance of professional accounting bodies in Jordan was highlighted during interview with the head of the cost accounting department in Company Six. The interviewee emphasised the role and importance of such bodies for improving and supporting the companies to adopt and implement ABC within the industrial sector. The role and importance of such accounting bodies is very clear in other countries, such as the USA and the UK. However, in Jordan there is no professional management accounting body yet.

“We don't have well-established professional accounting bodies in Jordan. Such institutions would help to improve and support the implementation of management accounting innovations such as ABC, like CIMA in the UK”.

Summary

In Company Six, the implementation of ABC was promoted by consultant Companies. Top management support, higher information technology, education and training are the most crucial factors that influence the decision to implement ABC. Shortcomings in the existing costing system and competition are the main factors that motivate the implementation of ABC. The main barriers encountered during the implementation of ABC in Company Six were high cost of implementation and consultant companies.

7.3 Cross-company Analysis

The section provides an outline of a cross-company analysis. It includes all factors identified by companies and their overall assessments in each individual company. To assist in arriving at an overall assessment of the important factors that impact the implementation of ABC within the Jordanian industrial sector, the analysis of the six companies has been summarised in Table 7.1. Qualitative analyses together with quantitative ratings were employed to create the summary.

Table 7.1 Summary of cross-company analysis

Factors	Company	1	2	3	4	5	6
Reason for ABC implementation							
- Efficiency choice		X	X	X	X	X	X
- Fashion		✓	✓	✓	X	X	✓
- Fad		X	X	X	✓	✓	X
- Forced selection		X	X	X	X	X	X
Factors that facilitate ABC implementation							
The role of top management support							
- Financial support		✓	✓	✓	✓	✓	✓
- Involvement		✓	✓	✓	✓	✓	✓
Training		✓	✓	✓	✓	✓	✓
Education		✓	X	✓	✓	✓	✓
Higher information technology		✓	X	X	X	X	✓
Factors that motivate ABC implementation							
Shortcoming of existing system		X	✓	✓	✓	✓	✓
Competition		✓	✓	✓	X	X	✓
Size of company		✓	X	X	X	X	X
Barriers to ABC implementation							
Lack of knowledge of ABC implementation		✓	X	X	X	✓	X
Time consuming		✓	X	X	X	X	X
High cost of ABC implementation		X	✓	X	✓	X	✓
High cost consultants		✓	✓	✓	X	✓	✓
Lack of local consultants		✓	✓	✓	X	✓	✓
Lack of internal recourses		✓	✓	X	X	X	X
Difficulties of selection of cost drivers		X	✓	✓	✓	✓	✓
Lack of accounting bodies		X	X	X	X	X	✓
Lack of journals, conferences about ABC in Jordan		✓	X	X	X	X	X
Co-operation between departments		X	X	✓	X	X	X

Legend:

✓ = the factor that are supported by interviewee X = the factors that not supported by interviewee

The six companies interviewed gradually moved to using ABC system over the last seven years. 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 dominant reasons for ABC implementation within the Jordanian industrial sector. Four companies out of six who implemented ABC used consultants to assist them with their implementation. Companies dealt with consultants because of conditions of uncertainty relating to goals and efficiency of innovations. Consequently, companies implemented the system that was promoted by consultant companies.

Two companies out of six implemented ABC because it was a fashionable topic. Implementing ABC was not therefore because of any specific rational based upon, for instance, increasing product cost accuracy or better decision-making, but in order to imitate other companies in order to appear legitimate by conforming to emergent norms or to avoiding the risk that competitors would gain a competitive advantage by using ABC.

Top management support is the most crucial factor to influence ABC implementation. According to findings from qualitative data, all companies agreed that top management are fully supported, committed and involved in the process of ABC implementation. This finding is consistent with the more general finding that almost all successful innovations require the support of top management. Top management should focus resources, goals, and strategies on the implementation of ABC. They must demonstrate a commitment to ABC by using it as the basis for decision-making. To encourage the use of ABC information, top management must use ABC information in communications and agreements with other employees.

All companies agreed that training was the most important factor to facilitate their decision to implement ABC. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement, as well as how the compensation system will be accommodated to incorporate the performance measurement. Training reduces employees' lack of confidence in ABC and prevents them feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC.

The majority of the respondents from the participating companies (5 companies out of 6) indicated that the managers and employees are fully educated about ABC system before, during and after their companies implemented it. This result supports Argyris and Kaplan's (1994) findings that education about ABC system is crucial step in the success of ABC implementation as, in this step, both managers and employees identified the differences between the TCS and the ABC systems, and knew how the processes of ABC would overcome the shortcomings of the TCS.

The limitations of traditional costing systems, such as lack of details of cost information for decision-making, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek a solution by implementing ABC. Five companies out of six indicated that, the limitations of existing costing 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.

The majority of the respondents from the participating companies (5 companies out of 6) indicated that the increase of competitive markets 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 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 the process of implementing ABC, the company could be faced with problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hinder it, and even prevent change. The high cost of ABC implementation, high cost of consultants, and difficulties in the selection of cost drivers are indicated by six companies as the most common barriers encountered during the implementation of ABC.

Finally, interviewees revealed several factors from both the demand and supply side that influence implementation of ABC within the Jordanian industrial companies. Respondents mentioned and emphasised the important effect of the following factors: top management support, education about ABC concept and benefits, training programmes, shortcoming of existing cost system, competition, size of company, professional accounting bodies, management accounting journals, management accounting research and PhD degrees, and cooperation between universities and companies.

7.4 Summary

This chapter analysed the data collected from interviews with representatives of six companies that have implemented ABC in full and currently using ABC information are using for different purposes. The analysis of the data was done by using both within company and cross-company analysis facilitated by detailed content analysis. Firstly, the background of the company study was provided. Secondly, within-company analysis for six companies was conducted to determine the reason for ABC implementation, factors that facilitate, motivate and create barriers to implementation. Thirdly, the findings of all six companies were summarised. For each proposed factor, an across-company analysis was provided.

CHAPTER EIGHT

CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

8.1 Introduction

The literature review was presented in Chapters 2, 3 and 4. The research questions relating to the objectives of this study were posed in Chapter 5. In addition, the research methodologies for the collection of data and analyses were also described in the same chapter. The data have been examined using different statistical techniques according to the nature of the data. Therefore, in Chapter 6, the results of the analysis of data gathered by questionnaires' were presented. Data gathered by interview were evaluated in Chapter 7. In Chapter 8, an overview of the research questions, conclusions, confirmation of the research model, limitations and suggestions for future research are provided.

8.2 An Overview of the Research Problem

Since the beginning of the 1990s, a number of surveys from several European countries, USA, Australia, North America, Africa and Asia have pointed out that ABC is implemented only by between 20% and 30% of companies (Innes and Mitchell, 1995; and Innes *et al.*, 2000; Kaplan and Anderson, 2004; Askarany and Smith, 2008), whereas Traditional Costing System (TCS) continues to be widely implemented (Innes *et al.*, 2000; Al-Omiri and Drury, 2007a; Askarany and Smith, 2008). The low rate of ABC implementation, as empirically observed across a range of countries and industries have motivated some researcher to find a solution for the "ABC Paradox" a term coined by Gosselin (1997). Moreover, there is growing evidence suggests that most of these companies encountered problems in implementing ABC and, in extreme cases, are not having success with it, which later resulted in abandoning the ABC system altogether. This suggests that if ABC has demonstrated benefits, why then, is it not actually implemented by a gradually increasing number of companies?

Several recent studies have started to explore this issue by considering the implementation rate of ABC, the reasons for implementing ABC, the problems associated with ABC and the critical success factors relating to its successful implementation (Gosselin, 2007; Kaplan and Anderson, 2007; Askarany and Smith, 2008). However, the empirical evidence from ABC research is inconsistent for two reasons.

Firstly, the extent of ABC implementation in a range of developed countries varies widely. Some countries report an increase in the use of ABC while other countries report the exact reverse. In some instances researchers in the same country have reported widely different trends (Booth and Giacobbe, 1997; Baird *et al.*, 2004; 2007; Brown *et al.*, 2004). It is, therefore, difficult to compare the findings from the various studies, particularly relating to usage rates or the ability to discriminate between implementers and non-implementers when the term “adoption” has been subject to different definitions (Al-Omiri and Drury, 2007b). Secondly, the reasons for implementing ABC, the barriers to ABC implementation and critical success factors appear to differ widely (Brown *et al.*, 2004), since different researchers often defined these in different ways (Swenson, 1995; Cohen *et al.*, 2005; Baird *et al.*, 2007).

Based upon the discussion, the importance of the industrial sector to the Jordanian economy, the increased number of companies in the Jordanian industrial sector, and because there has been little empirical research undertaken on the diffusion of ABC in Jordan general, and in the Jordan industrial sector in particular, it is argued that there is a critical need to conduct an empirical investigation, which aims to determine the current state of ABC adoption and implementation and determine the main reasons for its implementation and identify the main problems associated with its implementation.

8.3 Conclusions of Research Questions

In Chapters 6 and 7, the results of research questions were analysed. In this section, conclusions of these research questions are presented.

8.3.1 Conclusion of Research Question 1

What is the current state of ABC implementation among the Jordanian industrial companies?

The main results based on the questionnaire survey are that 12 companies (19.7%) have not considered ABC, and were still using either single or departmental allocation methods, while 5 companies (8.2%) were considering it. The latter companies perceived the distortions arising from the existing cost system and considered ABC as the possible solution to overcoming these limitations. 7 companies (11.5%) had adopted ABC systems, and they devoted or spent the necessary resources for implementation. 24 companies out of 61 (39.3%) were currently implementing ABC, and had begun implementing ABC systems through forming a team of ABC implementation, determining project scope and objectives, collecting data or/and analysing activities and cost drivers. 7 companies (11.5%) were currently using ABC information for various purposes/departments and 6 companies (9.8%) had implemented ABC in the past then abandoned it.

The rate of ABC implementation within the Jordanian industrial sector is about 50.8% (11.5% had used ABC in full plus 39.3% are in the process of implementation ABC). The rates of ABC implementation identified in this research are higher than the rate found in previous studies. For instance, Khasharmeh (2002) found that, the implementation rate of ABC was about 10% (4 companies out of 40 using ABC). Meanwhile, the implementation rate was 10.7% in the Al-Khadash and Feridun (2006) study. It should be noted that neither studies segment ABC into stages.

8.3.2 Conclusion of Research Question 2

For companies that are Not-considering ABC, what are the main reasons for not considering it?

The respondents were given 20 statements and asked to indicate the extent to which they agreed with the statement relating to the reasons for their business units' not-

considering ABC implementation. The findings from the questionnaire survey indicated that the most cited reasons for not-considering ABC implementation were within the inherent difficulties with ABC design and implementation group, namely; costly to switch to ABC and consultants too costly were cited as the most important reason for not considering ABC within the Jordanian industrial sector, followed by a lack of expertise in implementing ABC.

A company's characteristics and business environment group such as, the control of overheads is already adequate were also cited as a major factor impacting on the decision to implement ABC. In addition, cost accounting change was not our priority was the second major reason for not considering ABC in the firm's characteristics and business environment group. In general, the reasons for not considering ABC among the Jordanian industrial companies are not different from those documented in other countries as reported by Innes and Mitchell, (1991); Cobb *et al.* (1992); Nicholls (1992); Chung *et al.* (1997); Nguyen and Brooks (1997); Innes and Mitchell (1998); Chen *et al.* (2001); Cohen *et al.* (2005).

8.3.3 Conclusion of Research Question 3

For companies that are Considering/Adopting ABC, what are the main factors against ABC implementation?

12 individual respondents who had adopted ABC were provided with a list of 12 potential reasons that may explain why their business units had not implemented ABC, although they adopted it. The individual respondents were asked to rate items on a five-point scale where 1 = Strongly disagree and 5 = Strongly agree.

The most cited factors against the implementation of ABC were that it was costly to switch to ABC and consultants were too costly, followed by lack of expertise to implement ABC and it being too complex and time-consuming. Meanwhile, organisational difficulties such as, lack of top management support, lack of internal resources and resistance from employees were cited as the lesser factors that impacted upon the implementation of ABC within the Jordanian industrial sector. In general, the most cited factors against the implementation of ABC among the Jordanian industrial companies are not different from those documented in other countries as reported by Innes and Mitchell, (1991); Innes and Mitchell (1998); Brown (2004); Cohen *et al.* (2005).

8.3.4 Conclusion of Research Question 4

For companies that are currently Implementing/Using ABC, what are the reasons for its implementation?

The findings from the questionnaire survey research indicated that the dominant reasons for implementing ABC related to fad and fashion and the least important reasons were concerned with forced selection/efficient choice perspectives. Advice from auditors and/or consultants, we wished to try a new accounting innovation and being seen as having a sophisticated costing system were cited as the dominant reasons for implementing ABC within the Jordanian industrial sector.

Findings from the semi-structure interviews revealed that, in all companies, there was strong evidence that fad and fashion were the dominant reasons for ABC implementation within the Jordanian industrial sector. 4 out of 6 companies that had implemented ABC had used consultants to assist them with their implementation. Companies deal with consultants because of conditions of uncertainty relating to goals and the efficiency of innovations. Consequently, companies implemented the system that was promoted by consultant companies.

Two companies out of six implemented ABC because it was a fashionable topic. Here, the companies were implementing ABC not because of any specific rational based upon, for instance, increasing product cost accuracy or better decision-making, but in order to imitate other companies in order to appear legitimate by conforming to emergent norms or to avoid the risk that competitors would gain a competitive advantage by using ABC. Finally, the results of the interviews are consistent with questionnaire survey findings presented in Chapter 6 (see section 6.6.1); both reveal and emphasise the important effect of professional management/accounting bodies and cooperation between academics and professionals upon implementing ABC within the Jordanian industrial sector.

8.3.5 Conclusion of Research Question 5

For companies that are currently Implementing/Using ABC, what are the main factors that facilitate its implementation?

Analysis of the quantitative research results revealed that the most cited factors that facilitate the decision to implement ABC were that adequate training was provided for designing ABC, operating data in the information system are updated real-time, followed by adequate training being provided for using ABC and management has provided adequate resources and ABC received active support from top management. Therefore, training, higher information technology and top management support were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian industrial sector.

The qualitative research finding supports this quantitative research finding and all companies agreed that top management is fully supported, committed and involved in the process of ABC implementation. This finding is consistent with the more general finding that most successful innovations require the support of top management. Top management should focus resources, goals, and strategies in the implementation of ABC. They must demonstrate a commitment to ABC by using it as the basis for decision-making. To encourage the use of ABC information, top management must use ABC information in communications and agreements with other employees.

All companies agreed that training was the most important factor to facilitate their decision to implement ABC. In training, employees will be told how ABC works, how to interpret and how to use ABC information for product design, product pricing and process improvement. In addition, training reduces employees' lack of confidence in ABC and prevents them from feeling pressed by the implementation process. Training in designing, implementing and using the ABC system leads employees to understand, accept and encourage the use of ABC. These findings are consistent with the results in the study by Shields (1995) that organisational factors, especially top management support and adequate training in implementing ABC, are related to facilitating the decision to implement ABC. In general, the results of this study are similar to those of other studies such as McGowan and Klammer 1997 and Krumwiede 1998.

8.3.6 Conclusion of Research Question 6

For companies that are currently Implementing/Using ABC, what are the main factors that motivate its implementation?

Analysis of the quantitative research results revealed that ABC users largely indicated that increasing proportions of overhead costs, growing costs, including product costs and administrative costs, and the currently increasing number of product variants were more important reasons for implementing ABC than other reasons. Increased competition, currently facing allocation problems, inability to provide relevant information in the new business environment and the existing cost systems' inaccuracies of product cost were also cited as major factors that motivate ABC implementation.

This finding was further supported by the qualitative research findings as the participating companies indicated that the limitations of traditional costing systems, such as lack of details of cost information for decision-making, lack of accuracy of product costs and cost allocation and lack of timely cost information encourage companies to seek to find solutions by implementing ABC. 5 companies out of 6 indicated that the limitations of existing costing system motivated their decision to implement ABC. They also indicated that the ABC system generates more detailed and accurate accounting information. The information is useful in assisting the management in making various decisions. In addition, the majority of the respondents from the participating companies (5 companies out of 6) indicated that the increase of competitive market motivates their decision to implement ABC. Companies operating in a more competitive environment have a greater need for advanced costing system such as ABC that more accurately assign costs to cost products. This is because competitors are more likely to take advantage of any errors by managers having relied on inaccurate cost information to make decisions. The factors that motivate the process of ABC implementation within the Jordanian industrial sector are similar to those documented in many studies, such as Innes and Mitchell, (1991) and Al-Omiri and Drury, (2007b). 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.

8.3.7 Conclusion of Research Question 7

For companies that are currently Implementing/Using ABC, what are the main barriers to ABC implementation that the companies have encountered?

During the process of implementing ABC the company could be facing problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. Thus, the current study seeks to determine the barriers to change that may explain the differing implementation rates of ABC in the Jordanian industrial sector (Nicholls, 1992; Chung *et al.*, 1997; Chen *et al.*, 2001). To shed light on this, individual respondents were asked to evaluate difficulties in designing and implementing ABC. The level of difficulty encountered was ranked on a five-point scale where 1= Strongly disagree and 5 = Strongly agree.

Analysis of the quantitative research results revealed that the greatest difficulty in implementing ABC was the high cost of implementation, followed by the high cost of ABC consulting and taking up a lot of computer staff time, difficulty in gathering data on cost drivers as well as difficulty in designing system drivers were also cited. This was further supported by the qualitative research findings as the participating companies pointed out that high cost of implementation and lack of local consultants, and difficulties of selection of cost drivers are indicated by six companies as the most commonly encountered barriers during the implementation of ABC. In addition, interviews revealed several factors that influence implementation of ABC within the Jordanian industrial companies. Interviewees mentioned and emphasised the important effect of the following factors: top management support, education about ABC concept and benefits, training programmes, professional accounting bodies, management accounting journals, management accounting research and PhD degrees, and cooperation between universities and companies. In general, the barriers encountered during the implementation of ABC among the Jordanian industrial companies are not different from those documented in other countries as reported by Innes and Mitchell, (1991); Innes and Mitchell (1998); Chen *et al.* (2001); Cohen *et al.* (2005).

8.3.8 Conclusion of Research Question 8

For companies that are currently Using ABC, what is the degree of ABC success?

The current study used a multi-attribute to measure success of ABC implementation within the Jordanian industrial sector. The first measure of the level of ABC success is based on the management evaluation as to the 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 is 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 its implementation will be (Innes and Mitchell. 1995a; Krumwiede 1998). The respondents were asked to indicate on a five-point scale where 1 = Never and 5 = Always the frequency of use of ABC information for each of the 7 different purposes listed in the question.

The results show that ABC is widely used for many different purposes but using ABC to determine product costing, planning, determine customer profitability, budgeting and decision-making represent the most widely used applications.

The last measurement of ABC success requested from the respondents to indicate, on a scale where 1 = Very unsatisfied and 5 = Very satisfied how satisfied they were with ABC benefits, calculating methods and cost reduction efforts they received after implementing the system. The analysis indicates that the majority of ABC users had quite a high level of satisfaction with the gained benefits and calculating method, and cost reduction efforts.

8.3.9 Conclusion of Research Question 9

For companies that have Abandoned ABC, what are the main reasons for abandonment?

During the process of implementing ABC the company could be facing problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. Thus, the current study seeks to determine the barriers to change that may explain why the abandoner companies make such a decision. To shed light on this, individual respondents who abandoned ABC were asked to evaluate difficulties in designing, 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 greatest difficulty of implementing ABC was high cost of implementing ABC and high cost of ABC consulting followed by difficulty in gathering data on cost driver, takes up a lot of computer staffs time and difficulty in defining cost driver. These results confirm the findings of Booth and Giacobbe (1997) and Innes and Mitchell (1998). It should be noted that all abandoners stopped the implementation of ABC at an early pilot testing stage.

8.4 An Overview of ABC Implementation and Confirmation of Research Model

This study provides a framework (research model) as shown in Figure 8.1 for companies attempting to implement ABC system by determining the dominant reason for implementation and investigating the factors that facilitate, motivate and create barriers to implementation. The development of the research model in this research is based on the theoretical framework of management accounting change models that were introduced by Innes and Mitchell (1990), these being catalysts, motivators, facilities. Cobb *et al.* (1995) and Kasurinen (2002) developed this further by adding factors that hindered, delayed, or even prevented change, thereby functioning as barriers.

Both quantitative and qualitative data indicated that the dominant reasons for implementing ABC related to fad and fashion perspectives (Advice from auditors and/or consultants, we wished to try a new accounting innovation and being seen as

having a sophisticated costing system) and the least important reasons were concerned with forced selection/efficient choice perspectives.

Analysis of the quantitative and qualitative data results revealed that the most cited factors that facilitate the decision to implement ABC were that adequate training was provided for designing ABC, operating data in the information system are updated real time, followed by adequate training being provided for using ABC and management has provided adequate resources and ABC received active support from top management. Therefore, training, higher information technology and top management support were cited as the most important factors that facilitate the decision to implement ABC within the Jordanian industrial sector.

Analysis of the quantitative and qualitative data results revealed that ABC implementers and users largely indicated that increasing proportion of overhead costs, growing costs, including product costs and administrative costs, and the currently increasing number of product variants were more important reasons for implementing ABC than other reasons. Increased competition, currently facing allocation problems, inability to provide relevant information in the new business environment and the existing cost systems' inaccuracies of product cost were also cited as major factors that motivate ABC implementation. Therefore, this study also suggests that information provided by the traditional cost systems was not sufficient for management in the current environment and the implementation of ABC was a solution in the changed environment.

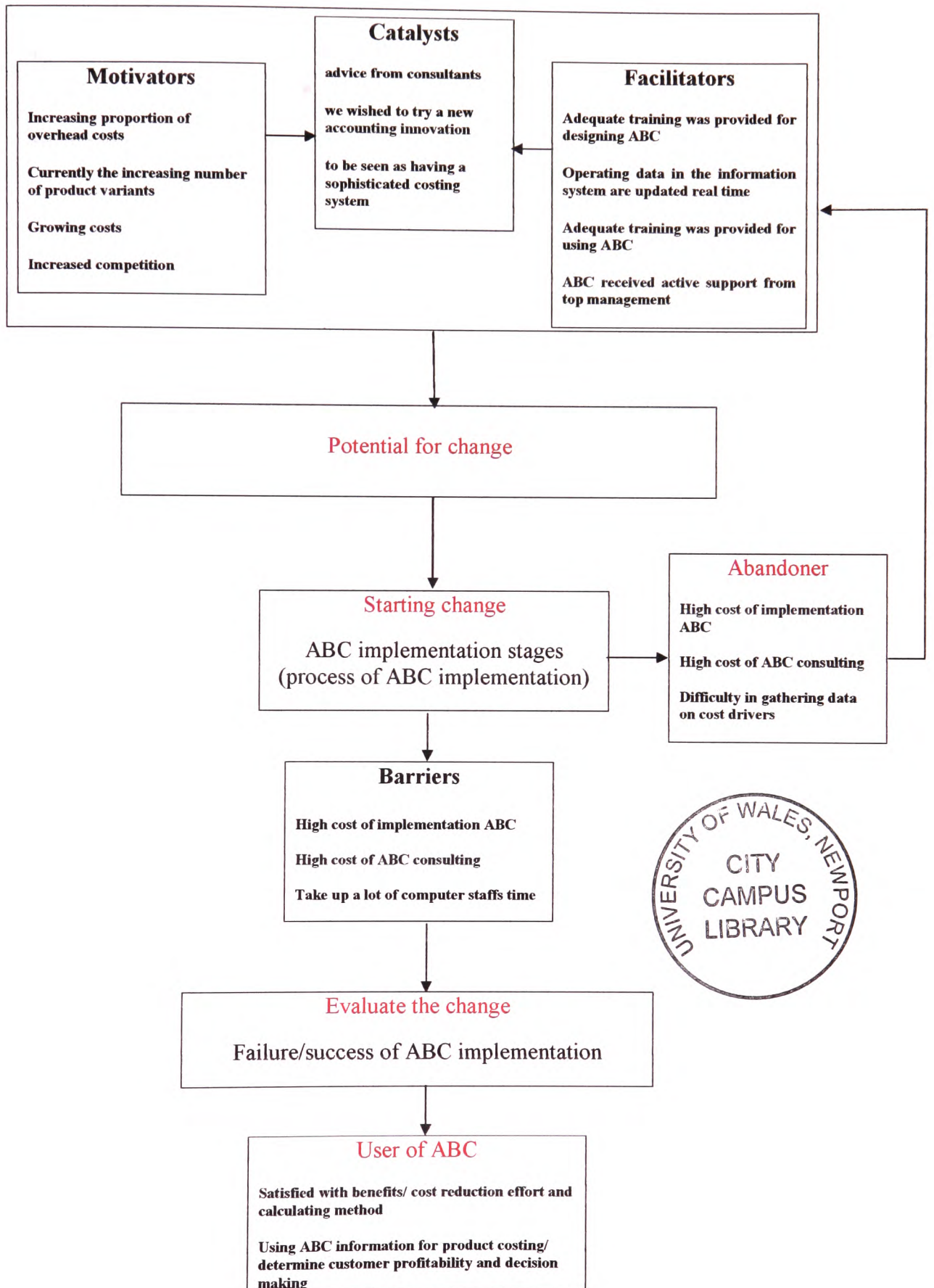
As a result, the interaction of these three types of factors (Catalysts, Motivators, and Facilitators) can create the potential for change in the company and while catalysts are regarded as the generators of change; the potential for change will not occur without the presence of facilitators and motivators. However, during the process of implementing ABC the company could be facing problems or difficulties related to changing implementation in practice or resistance to change from the employees. Thus, barriers to change could make the change process slower, hindering, and even preventing change. As such, the current study determined the barriers to change that may explain the differing implementation rates of ABC in the Jordanian industrial sector.

Analysis of the quantitative research results revealed that the greatest difficulty in implementing ABC was high cost of implementation, followed by the high cost of ABC consulting and taking up a lot of computer staff time; difficulty in gathering data on cost drivers as well as difficulty in designing system drivers were also cited. This was further supported by the qualitative research findings as the participating companies pointed out that high cost of consultants, and difficulties in the selection of cost drivers are indicated by six companies as the most common barriers encountered during the implementation of ABC.

The current study also showed that the success level of implementing ABC by the Jordanian industrial companies was high. Furthermore, the Jordanian industrial companies using ABC were satisfied with the gained benefits of ABC, and they were satisfied with cost reduction efforts and satisfied with the calculating method. Finally, ABC is widely used for many different purposes but using it to determine product costing, planning, determine customer profitability, budgeting and in decision-making represent the most widely used applications. It is least commonly used in performance measurement.

Companies that abandoned ABC were asked to evaluate difficulties in designing, implementing and using ABC. The greatest difficulties in implementing ABC were related to the high cost of implementing ABC and cost of ABC consulting followed by difficulty in gathering data on cost driver, takes up a lot of computer staffs time and difficulty in defining cost driver. It should be noted that all abandoners stopped the implementation of ABC at an early pilot testing stage.

Figure 8.1 Confirmation of research model



8.5 Contributions

The first contribution of this study is to examine the diffusion of ABC within the Jordanian industrial sector. The lack of empirical research effort on the adoption and implementation of ABC in the Jordanian industrial sector is a prime motive for conducting this study. The previous review of the focal literature established that previous studies focused only on the implementation of ABC in western developed countries. Therefore, this study presents an attempt to fill a part of the gap in the literature and reduce the ambiguity regarding the current state of ABC adoption and implementation among the Jordanian industrial companies. Accordingly, six categories will be examined namely, non-consideration, consideration, adoption, implementation, abandonment and usage category. Thus the study finding will be an original contribution to the field of ABC implementation in the country.

Moreover, taking into consideration the very limited literature regarding the innovation process in Jordan in general and the Jordanian industrial sector in particular, one of the important contributions of this study has been the development of the research model for better understanding of the diffusion of ABC in this sector. In addition, the empirical results, in particular the factors that facilitate, motivate and create barriers to ABC implementation, contribute to knowledge of the process of adoption and implementation of ABC among the Jordanian industrial companies. It should be noted that the development of the research model in this research 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 further contribution of this study is the use of a multi-attribute approach to measure the success of ABC implementation within the Jordanian industrial sector. Numerous studies have been undertaken relating to the success of ABC amongst implementing companies. However, measuring the success of ABC is problematic and researchers have used different approaches to measure that success (Baird *et al.*, 2007). Success has been measured using management evaluation (Shields, 1995)

according to the use and satisfaction of ABC (Swenson, 1995; Dosch and Wilson, 2007) and the degree of employee satisfaction (MaGowan and Klammer, 1997). In this study, the success of ABC were measured by degree of satisfaction with ABC implementation, the degree of using ABC in decision-making and the overall of success of ABC implementation.

Finally, most of the previous studies such as Booth and Giacobbe (1997); Krumwiede (1998); Brown *et al.* (2004); Cohen *et al.* (2005); Al-Omiri and Drury (2007b); Baird *et al.* (2007), have relied on respondents self-rating their systems as ABC or non-ABC. In this study, several control questions were included in questionnaire to check the respondent' claims that they were operating ABC system is actually ABC users. In addition, semi-structure interviews were conducted with six user companies for further clarification. Therefore, compared with previous studies, there is a much higher probability in this study that those respondents claiming to use ABC were actually ABC users.

8.6 Limitations of the Current Study

Some limitations should be noted when interpreting the results of this study. There are seven limitations in the current study. The limitations, however, present opportunities for future study.

First: The scope of the study is limited by the population which included only industrial Jordanian companies listed on the Amman stock exchange. This limitation may restrict the generalisability of the findings to only industrial shareholding companies. The findings of this study may have been different if a broader range of companies had been selected within the industrial sector. In addition, the results of this study may have been different if the sample had included the service sector and non-profit companies. Therefore, there is a need to find ways to increase the coverage of similar surveys so as to obtain a more comprehensive picture of Jordanian company perceptions of ABC.

Second: Although the response rate for this survey was high relative to similar studies that have explored ABC, the number of companies in each category of ABC adoption and implementation was very small. Therefore, it was difficult to conduct meaningful statistical tests. The discussions concerning the adoption and implementation of ABC in this study mainly relied on description as the means to communicate the survey results. The results may have been different if the number of companies in each category had been higher and the number of ABC users had been larger.

Third: Although the distribution of questionnaires were sent to the financial manger/head of cost accounting department of the company, it cannot be assumed that the person who completed the questionnaire had knowledge and understanding of all or most of the questions. Ideally future research should target only the person who is in charge to implementing cost accounting systems but this may not be possible in Jordanian industrial companies because they are unlikely to have established separate management and financial accounting functions or personnel with the title of 'management accountants'.

Fourth: In the second stage of this study the semi-structure interviews were conducted only with companies that had implemented ABC in full and are currently using ABC information. Therefore, the implications for this study may have been enhanced if the number of interviewees had been expanded to include another category such as abandonment companies.

Fifth: As compared to the case study method, a questionnaire survey is less effective at producing in-depth findings when focusing on specific issues. Therefore future studies should begin to concentrate on more in-depth case study research that examines those issues that cannot easily be explored by questionnaire surveys such as understanding the change as an ongoing process rather than a static relationship.

Sixth: The required data regarding technical barriers encountered during the implementation processes of ABC were collected through conducting questionnaires and semi-structured interviews with financial managers and/or heads of cost accounting department only. It was not possible in the current study therefore to directly collect data from Information Technology and/or Manufacturing Engineering

departments. As a result of this restriction, the researcher had to accept the statements made by financial managers and/or heads of cost accounting departments only and the data analysis had to be limited to the results of questionnaire and semi-structured interviews collected by them

Seventh: During the coding process of interview data, interpretations and judgements by the researcher were required to categorise the interview data. Subjectivity was therefore unavoidable, which could lead to possible bias in the results. To reduce the level of this subjectivity, efforts were undertaken to ensure consistency while conducting interviews, and the analytical procedures of this study were well documented.

8.7 Recommendations and Suggestions for Future Research

As a result of undertaking this research it is possible to identify several areas for future research. There are seven recommendations for further research:

First: The scope of the current study is limited by focusing only on Jordanian industrial companies that are listed on the Amman Stock Exchange. This limitation may restrict the generalisability of the findings. The results of this research may have been different if a broader range of companies had been selected. Therefore, there is a need to find ways to increase the coverage of surveys so as to obtain a more comprehensive picture of the Jordanian industrial sector's perceptions of ABC.

Second: The research identified several categories in the process of ABC adoption and implementation. Of the 61 respondents, 19.7% had not seriously considered ABC, 8.2% had considered ABC and 11.5% had approved ABC for implementation. Because of the small numbers within some of these categories, it was not possible to undertake any advanced statistical analysis. Therefore, more in-depth case studies should be undertaken to examine relevant issues that are appropriate to each category. Case studies that seek to explain why some companies have not seriously considered ABC or other accounting innovations would be appropriate. Such studies should attempt to identify the circumstances under which the existing costing system is considered to be suitable.

Third: Few studies have examined the abandonment of ABC systems either before or after implementation. It is likely that case studies will be more appropriate for studying abandonment. Based on the findings of this study, the numbers falling within either or both categories is likely to be too small to undertake statistical analysis. Such studies should examine whether abandonment represents a failure or whether ABC has met the objectives that were specified resulting in there being no further need to maintain the system.

Fourth: The characteristics of the product costing system are measured in the current research by two discrete alternatives, either TCS or ABC systems. Such a classification does not adequately capture the diversity of practices that exist. TCS vary from simplistic (consisting of a single cost pool and cost driver) to sophisticated, consisting of hundreds of first-stage cost pools and a small number of different types of second stage volume-related cost drivers. Similarly, ABC systems can also vary from very simplistic, consisting of a small number of highly aggregated first-stage cost pools and a small number of different types of different types of second-stage drivers (say, two volume-related and one-volume related driver), to many pools and many different types of cost drivers. Because of such diversity, further research could consider developing alternative measures of the characteristics of the product costing system that better capture the diversity of practices. As well as this, future surveys investigating diffusion levels in the Jordanian industrial sector could consider testing the implementation of ABC at different levels of activity management, namely, activity analysis (AA), activity cost analysis (ACA) and activity-based costing (ABC).

Fifth: The literature review also indicated that few studies had examined the impact of ABC on financial performance. These studies used cross-sectional surveys but such surveys cannot fully hold constant 'other factors' ; there is scope for future research involving longitudinal studies that investigate the improvement in financial performance within companies before and after the implementation of ABC. Future research within the Jordanian industrial sector should seek to determine the relationship between the use of ABC costing and the improvement of financial performance.

Sixth: In the current study, 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 being catalysts, motivators, facilities. Cobb *et al.* (1995) and Kasurinen (2002) developed this further by adding factors that hindered, delayed, or even prevented change, thereby functioning as barriers. Thus, longitudinal case study-based research using the institutional theory approach is needed to investigate the impact of organisation-specific factors on the implementation of ABC systems and to follow-up the ongoing change of this practice. These studies should also investigate in-depth change motivations and momentums as well as the barriers and obstacles to better understand the change as an ongoing process rather than a static relationship.

Seventh: The current study was not specific to any particular manufacturing industry. Hence, further study could be carried out with regard to specific types of manufacturing industry and therefore, future studies should be conducted for individual industrial sectors to examine differences and similarities between industries. Moreover, the limitations of this study may constitute a basis for prospective research and further investigation. Such research might include all the manufacturing companies in Jordan to explore the differences that might exist between ABC users and non-user companies within the same sector.

8.8 Summary

As the final chapter, this chapter provided the summary of the whole thesis. It discussed the major findings of the nine research questions, and compared the findings with the literature to identify the contributions this research makes to the understanding of the implementation of ABC systems within the Jordanian industrial sector. Next, the research problem was concluded by the development of the final comprehensive research framework. The chapter then presented the contributions and implications for the theory and practice of this research. Finally, the limitations of the research and recommendations for further research directions were outlined.

In brief, the study has provided new knowledge relating to the adoption and implementation of ABC in the Jordanian industrial sector, especially in the areas of ABC implementation, and has determined the factors that facilitate, motivate and create barriers to implementation. In implementation of ABC, it is likely that two sets of factors are at work – the factors that facilitate and motivate the implementation of ABC and the company's ability to address and overcome the barriers and difficulties associated with implementation. Within the Jordanian industrial sector the interaction between the following factors namely: top management support (financial support, involvement in implementation and commitment to use the system), both training (designing, implementing and using the systems) and education about the system, higher information technology, increasing proportion of overhead costs, growing costs, including product costs and administrative costs, and increasing number of product variants facilitate and motivate the implementation of ABC.

On the other hand, the results from both questionnaire survey and semi-structured interviews have shown that the greatest difficulties in implementing ABC are high costs of implementation, followed by the high cost of ABC consulting and taking up a lot of computer staff time, difficulty in gathering data on cost drivers are also cited. Therefore, it can be concluded that it is not only behavioural issues, as suggested by the extant management accounting literature, which influence ABC implementation, but also technical issues which are highly significant.

The interviews with financial managers/heads of cost accounting department are consistent with the questionnaire survey findings presented in chapter six, as both reveal and emphasise the important effect of consultants, professional management/accounting bodies and cooperation between academics and professionals upon implementing ABC within the Jordanian industrial sector. Therefore, it can be concluded that it is not only demand factors that influence implementation of ABC within the Jordanian industrial companies, such as top management support, education about ABC concept and benefits, training programmes as well as the supply side factors, Interviewees also mentioned and emphasised the important effect of the following factors: professional accounting bodies, management accounting journals, management accounting research and PhD degrees, and cooperation between universities and companies.

Finally, generally all research has limitations, and even if performed well will leave scope for future work. Nevertheless, this project has attempted to minimise the limitations by making considerable efforts in the data collection stage and the data analysis stage to obtain meaningful results. It is hoped that these results will contribute to the fruitful development of knowledge, both in terms of theory construction and practical implementation.

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Appendix A

Questionnaire Covering Letter

(English version)

Dear Respondent,

I am a doctoral programme researcher in the Department of business at the University of Wales, Newport in United Kingdom. I am writing to ask for your participation in my research project. My research aims to study diffusion of Activity-Based costing within Jordanian industrial sector and to determine the factors that have facilitated, motivated and barriers of ABC implementation among Jordanian industrial companies.

The result of this study will enable both professionals and academics to assess the extent of adoption and implementation of ABC among Jordanian industrial companies thus, enabling them to make decisions and recommendations that would help Jordanian companies face the challenges in the new business environment.

In answering each question, please be as **objective** as possible remembering that biases sometimes “cloud” the real answer. You should not tick a box for example because the answer sounds more like what your “want” to hear but rather, indicate an answer which in your opinion **accurately depicts the present situation in the company.** Your responses should reflect the overall situation in your company, not just in your particular area of responsibility. The validity of this research largely depends on the accuracy of your answers.

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,

Mahmoud Nassar

Tele: 5604287 or 0796545999

E-mail: Mahmoud.nassar@newport.ac.uk or aman_spic@yahoo.com.

Appendix B

Questionnaire Covering Letter

(Arabic version)



بسم الله الرحمن الرحيم

تحية طيبة وبعد

أرجو من سعادتكم التكرم بمساعدتي على ملء هذه الاستبانة والتي تعد جزءا مهما لاستكمال بحثي لدرجة الدكتوراة والتي أقوم بها في المملكة المتحدة

ويهدف البحث الى التعرف على مدى تطبيق نظام محاسبة التكاليف المبني على اساس الانشطة في الشركات الصناعية الاردنية المساهمة والتعرف على العوامل المساعدة والمحفزة لاستخدام هذا النظام. ومن أهداف الدراسة ايضا التعرف على صعوبات تطبيق النظام وتقييم درجة نجاح استخدام هذا النظام في الشركات الصناعية الاردنية المساهمة

وبالرغم من ان ملء الاستبانة امر تطوعي فانني اقدر لكم تعاونكم لانجاح هذا البحث. هذا مع ملاحظة ان الاطلاع على المعلومات الواردة في الاستبانة سوف يقتصر على الباحث والمشرفين على الرسالة فقط مما يعني ان سوية ردونكم محفوظة ومؤكدة وان نتائج البحث سيتم عرضها بشكل اجمالي من دون تحديد اسماء الشركات محل الدراسة

ولمعرفتي بكثرة مشاغلکم ووقتکم الثمين فقد تم تصميم الاستبانة لتكون قصيرة وواضحة حيث ان الوقت المقدر لملئها ما بين 10 الى 15 دقيقة. وأحيطكم علما بان الوقت المتاح لي في الاردن محدود. لذا أرجو التكرم بأعادتها خلال خمسة عشر يوما. وذلك كسبا للوقت.

ولكم جزيل الشكر والعرفان على وقتكم وجهدكم في تعبئة هذا الاستبيان راجيا منكم عدم التردد بالاتصال على هاتف رقم (5604287) أو (0796545999) للاستفسار أو طلب اي معلومات اضافية

وتفضلوا بقبول فائق الاحترام والتقدير

Signed

Dr Andrew Thomas

Associate Dean (Research and Enterprise)
Newport Business School
University of Wales Newport
E-mail / andrew.thomas@newport.ac.uk

Signed

Mahmoud Nassar

PhD student
Newport Business School
University of Wales Newport
E-mail / Mahmoud.Nassar@student-newport.ac.uk

Appendix C

Questionnaire Covering Letter (Sponsor version)



ولنجعل من أردن العرب جامعة للعرب

2275/419
رقم
2008/8/25 التاريخ

لمن يهمه الأمر

تشهد عمادة البحث العلمي والدراسات العليا في جامعة العلوم التطبيقية الخاصة بأن السيد محمود داود نصار هو أحد مبعوثيها لنيل درجة الدكتوراه في المحاسبة في المملكة المتحدة (University of Wales, Newport) وأن موضوع بحثه يختص بمدى استخدام نظام محاسبة التكاليف المبني على أساس الأنشطة في الشركات الصناعية الأردنية، أرجو التكرم بتسهيل مهمة الباحث في الحصول على المعلومات المطلوبة، هذا مع ملاحظة ان الاطلاع على المعلومات الواردة في الاستبانة سوف يقتصر على الباحث والمشرفين على الرسالة فقط مما يعني أن سرية ردودكم محفوظة ومؤكدة وأن نتائج البحث سوف يتم عرضها بشكل إجمالي من دون تحديد أسماء الشركات محل الدراسة .

مع عاطر التحية وموفور الاحترام ،،،

رئيس الجامعة

أ.د. زياد سليم رمضان



نسخة :
- الشؤون الإدارية /البعثات
ع. ط. م. د.

Appendix D

Initial Questionnaire Survey and Participation Form

Welcome

You are requested to participate in my study of Activity Based Costing (ABC) system in the Jordanian industrial sector. Your participation is highly appreciated. Please fill in the questionnaire below through check 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 of Wales, Newport.

Yours sincerely,

Mahmoud Nassar

Tele: 5604287 or 0796545999

E-mail: Mahmoud.nassar@newport.ac.uk or aman_spic@yahoo.com.

What is ABC?

Activity-based costing (ABC) is a method of allocating costs to products and services. It is generally used as a tool for planning and control. It was developed by Robin Cooper and Robert Kaplan as an approach to address problems associated with traditional cost management systems that tend to have the inability to accurately determine actual production and service costs, or provide useful information for operating decisions. With these deficiencies, managers can be exposed to making decisions based on inaccurate data. The higher exposure is for companies with multiple products or services. ABC allows managers to attribute costs to activities and products more accurately than traditional cost accounting methods. The activities responsible for the costs can be identified and passed on to users only when the product or service uses the activity. Some of the advantages ABC offers is an improved means of identifying high overhead costs per unit and finding ways to reduce the costs

Researcher

Q1: Regarding Activity-based costing (ABC), please check one of the following stages that best describes your business unit's current situation (Please tick one box only).

A	<input type="checkbox"/>	Non-considerer	The companies have not been seriously considered ABC, and still use either single or departmental allocation methods.
B	<input type="checkbox"/>	Considerer	The company perceives the distortion of the existing cost system and the possible solution by implementing ABC.
C	<input type="checkbox"/>	Adopter	The company gets approval to invest the resources necessary for implementing ABC.
D	<input type="checkbox"/>	Implementer	The companies have begun implementing ABC systems, and the company in the process of forming a team for ABC implementation, determining project scope and objectives, collecting data or/and analysing activities and cost drivers and gaining organisational members' commitment to use ABC.
E	<input type="checkbox"/>	User	The implementation of ABC was finished and the companies have starting using ABC information as a part of daily practices or integrating it with other systems.
F	<input type="checkbox"/>	Abandoner	The companies have implemented ABC in the past, but have abandoned it

Q2: Would you like to participate in the main questionnaire survey next year?

No

yes

Appendix E

Questionnaire Category A

**(Non-considerer
Companies)**

Section one: Company Type and Costing System Techniques

The information in this section is about the company in general. (Please try to answer all questions)

1. Please indicate your type of business: (Please tick one box only).

- | | |
|---|--|
| <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. Please indicate the number of employees in your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 100 | <input type="checkbox"/> 101 - 500 |
| <input type="checkbox"/> 501- 1000 | <input type="checkbox"/> More than 1000 |

3. How many products/service are produced by your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 20 products | <input type="checkbox"/> 20 – 50 |
| <input type="checkbox"/> 51 - 100 | <input type="checkbox"/> 101 – 150 |
| <input type="checkbox"/> 151 - 200 | <input type="checkbox"/> More than 200 products |

4. The Overhead Costs to Total Cost (Overhead & Direct Costs) in your company is between. (Please tick one box only).

- | | | |
|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> 0% - 20% | <input type="checkbox"/> 21% - 40% | <input type="checkbox"/> 41% - 60% |
| <input type="checkbox"/> 61% - 80% | <input type="checkbox"/> 81% - 100% | |

Section Two: Reasons for Non-considered of ABC

1. Please indicate reasons that your company has not considered ABC by ticking the appropriate box

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 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					

Section Three: General Questions

The information in this section is about you in general. (Please try to 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 Above 20 years

4. Your total experience in this field is.

- Less than 2 years 2 – 5 years 6 – 10 years
 11 – 15 years 16 – 20 years Above 20 years

Many thanks for your participation and cooperation in completing this questionnaire

Mahmoud Nassar

Appendix F

Questionnaire Category B

**(Considerer/Adopter
Companies)**

Section one: Company Type and Costing System Techniques

The information in this section is about the company in general. (Please try to answer all questions)

2. Please indicate your type of business: (Please tick one box only).

- | | |
|---|--|
| <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. Please indicate the number of employees in your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 100 | <input type="checkbox"/> 101 - 500 |
| <input type="checkbox"/> 501- 1000 | <input type="checkbox"/> More than 1000 |

3. How many products/service are produced by your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 20 products | <input type="checkbox"/> 20 – 50 |
| <input type="checkbox"/> 51 - 100 | <input type="checkbox"/> 101 – 150 |
| <input type="checkbox"/> 151 - 200 | <input type="checkbox"/> More than 200 products |

4. The Overhead Costs to Total Cost (Overhead & Direct Costs) in your company is between. (Please tick one box only).

- | | | |
|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> 0% - 20% | <input type="checkbox"/> 21% - 40% | <input type="checkbox"/> 41% - 60% |
| <input type="checkbox"/> 61% - 80% | <input type="checkbox"/> 81% - 100% | |

Section Two: factors that impact the implementation of ABC

2. Please indicate reasons that your company has not implemented ABC or is not currently implementing by ticking the appropriate box

Factors	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
1. Too complex and 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: General Questions

The information in this section is about you in general. (Please try to answer all questions)

5. 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).....

6. Your highest academic qualification is.

- PhD degree Master degree
 Bachelor degree Other (please specify).....

7. Your total experience in this field is.

- Less than 2 years 2 – 5 years 6 – 10 years
 11 – 15 years 16 – 20 years Above 20 years

8. Your total experience in this field is.

- Less than 2 years 2 – 5 years 6 – 10 years
 11 – 15 years 16 – 20 years Above 20 years

Many thanks for your participation and cooperation in completing this questionnaire

Mahmoud Nassar

Appendix G

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 try to answer all questions)

3. Please indicate your type of business: (Please tick one box only).

- | | |
|---|--|
| <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. Please indicate the number of employees in your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 100 | <input type="checkbox"/> 101 - 500 |
| <input type="checkbox"/> 501- 1000 | <input type="checkbox"/> More than 1000 |

3. How many products/service are produced by your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 20 products | <input type="checkbox"/> 20 – 50 |
| <input type="checkbox"/> 51 - 100 | <input type="checkbox"/> 101 – 150 |
| <input type="checkbox"/> 151 - 200 | <input type="checkbox"/> More than 200 products |

4. The Overhead Costs to Total Cost (Overhead & Direct Costs) in your company is between. (Please tick one box only).

- | | | |
|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> 0% - 20% | <input type="checkbox"/> 21% - 40% | <input type="checkbox"/> 41% - 60% |
| <input type="checkbox"/> 61% - 80% | <input type="checkbox"/> 81% - 100% | |

Section Two: ABC implementation

1. Please indicate the level of importance of each of the following factors in the decision to implement ABC. (Please tick one box per row)

Factors	Vitaly unimportant	unimportant	Medium important	Important	Vitaly important
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 per row)

Factors	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
1. Adequate training was provided for designing ABC.					
2. Adequate training was provided for using ABC.					
3. Education (such as benefits of ABC, the need for implementation of ABC and so on) is being provided					
4. When the ABC began, the objectives of ABC implementation were clearly understood both by designers and users					
5. ABC received active support from top management					
6. Management has provided adequate resources, such as time and commitment to the ABC implementation effort.					
7. Top management or senior managers have a clear commitment to use ABC information as the basis for decision-making.					
8. <i>The choice of any accounting systems is influenced by consultant companies</i>					
9. Consultant companies are regularly consulted when dealing with problems					
10. There is a permanent managerial consultant in the company					
11. There are individual within the company who significantly promotes the cause of adopt a new accounting systems.					
12. There is a role for some employees to create awareness of new accounting systems.					
13. Detailed sales and operating data are available in the information system for the last 12 months					
14. Operating data in the information system are updated "real time" rather than periodically.					

3. In your opinion, how have the following factors motivates your decision to implement ABC in your company (Please tick one box per row)

Factors	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
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. The inaccuracies of product/ service cost of the traditional cost systems					
5. Currently lack of decision-making information (such as non-financial information)					
6. Inability of the traditional cost systems to adopt to increased automation in the production service process					
7. Currently facing allocation problems					
8. Inability of the traditional cost systems to provide relevant information in the new business environment					
9. Increased competition					
10. Increased regulation (such as investment)					
11. Globalisation of consumer and producer markets					

4. What problems has your company encountered during the implementation of ABC? (Please tick one box per row)

Factors	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
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 and cooperation 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. Lack of knowledge of data requirement and collection					
14. Resistance to change					
15. Coping with changes in accounting					
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 how ABC is consistently used for the following purposes in your company by tick one 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					

3. 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 method for 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 try to 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 Above 20 years

4. Your total experience in this field is.

- Less than 2 years 2 – 5 years 6 – 10 years
 11 – 15 years 16 – 20 years Above 20 years

Many thanks for your participation and cooperation in completing this questionnaire

Mahmoud Nassar

Appendix H

Questionnaire Category D (Abandoner Companies)

Section One: Company Type and Costing System Techniques

The information in this section is about the company in general. (Please try to answer all questions)

4. Please indicate your type of business: (Please tick one box only).

- | | |
|---|--|
| <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. Please indicate the number of employees in your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 100 | <input type="checkbox"/> 101 - 500 |
| <input type="checkbox"/> 501- 1000 | <input type="checkbox"/> More than 1000 |

3. How many products/service are produced by your company: (Please tick one box only).

- | | |
|--|---|
| <input type="checkbox"/> Less than 20 products | <input type="checkbox"/> 20 – 50 |
| <input type="checkbox"/> 51 - 100 | <input type="checkbox"/> 101 – 150 |
| <input type="checkbox"/> 151 - 200 | <input type="checkbox"/> More than 200 products |

4. The Overhead Costs to Total Cost (Overhead & Direct Costs) in your company is between. (Please tick one box only).

- | | | |
|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> 0% - 20% | <input type="checkbox"/> 21% - 40% | <input type="checkbox"/> 41% - 60% |
| <input type="checkbox"/> 61% - 80% | <input type="checkbox"/> 81% - 100% | |

Section two: Problems of ABC

1. In your company, at which stage did your implementation of ABC stop?

A pilot project

Developing and installing ABC, as well as training employees

Full Implementation of ABC

2. What problems has your company encountered during the implementation of ABC? (Please tick one box per row)

Factors	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
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 and cooperation 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. Lack of knowledge of data requirement and collection					
14. Resistance to change					
15. Coping with changes in accounting					
16. Changes required to company structure to fit Activities Selected					

Section Three: General Questions

The information in this section is about you in general. (Please try to 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 Above 20 years

4. Your total experience in this field is.

- Less than 2 years 2 – 5 years 6 – 10 years
 11 – 15 years 16 – 20 years Above 20 years

Many thanks for your participation and cooperation in completing this questionnaire

Mahmoud Nassar

Appendix I

Covering Letter and Consent Form

Dear Participant,

My name is Mahmoud Nassar, I am a doctoral programme researcher in the Department of business at the University of Wales, Newport in Wales. My research aims to study diffusion of Activity-Based costing within the Jordanian industrial sector and to determine the factors that have facilitated, motivated and create barriers to ABC implementation among the Jordanian industrial companies.

This interview is part of my research project and it aims to enlist your experience, opinion, attitude and perception about the implementation of Activity-based costing systems (ABC). Your response will be very valuable for the success of the implementation of the ABC.

I am inviting you to participate in my research. Your participation will involve a phone interview, which takes around 30 to 45 minutes to complete. Participation in this research is voluntary and you may withdraw at anytime.

The data collected will be analysed for my thesis and the results may appear in publications. The results will be reported in a manner which does not enable you to be identified. Thus the reporting will protect your anonymity.

If you have any queries regarding this project please contact my senior supervisor, Prof. David Morris. E mail profdsmorris@hotmail.com , or my second supervisor, Dr Andrew Thomas E mail Andrew.thomas@newport.ac.uk , Tel +44(0)1633432442

Thank you very much for your participation and co-operation

Yours sincerely,

Mahmoud Nassar

Consent form

Dear participate...

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 researcher'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 Mahmoud.nassar@newport.ac.uk or with the researcher's supervisor by e mail profdsmorris@hotmail.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 J

Interview Questions

Interview Questions

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?

- Consultant companies
- Shortcoming of existing costing system
- Competitive companies in the same group of work that implement ABC
- Accounting bodies, media , journals, and conferences

Factors that Facilitate the Implementation of ABC within JIS

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?

- Training (designing/implementing/using)
- Top Management Support
- Higher Information Technology

Factors that Motivate the Implementation of ABC within JIS

Q1: Could you please describe how these factors motivate the implementation of ABC in your company?

- Environmental change (competition/globalisation/regulation)
- Change in companies structure (level of overhead/growing cost)
- Company characteristics (size/number of products/level of competition/complexity of production)

Barriers to ABC Implementation within JIS

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 K

Questionnaire Category A

(Non-considerer
Companies)

(Arabic Version)

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 X 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. عدد موظفي الشركة الحالي هو.

<input type="checkbox"/>	أقل من 100 موظفا	<input type="checkbox"/>
<input type="checkbox"/>	101- 500 موظفا	<input type="checkbox"/>
<input type="checkbox"/>	501- 1000 موظفا	<input type="checkbox"/>
<input type="checkbox"/>	أكثر من 1000 موظفا	<input type="checkbox"/>

3. يتراوح عدد منتجات شركتكم حاليا ما بين.

<input type="checkbox"/>	أقل من 20 منتج	<input type="checkbox"/>
<input type="checkbox"/>	20- 50 منتج	<input type="checkbox"/>
<input type="checkbox"/>	51- 100 منتج	<input type="checkbox"/>
<input type="checkbox"/>	101- 150 منتج	<input type="checkbox"/>
<input type="checkbox"/>	151 - 200 منتج	<input type="checkbox"/>
<input type="checkbox"/>	أكثر من 200 منتج	<input type="checkbox"/>

4. الرجاء تحديد نسبة التكاليف الصناعية غير المباشرة الى مجموع التكاليف داخل شركتكم .

<input type="checkbox"/>	0%-20%	<input type="checkbox"/>	21%-40%	<input type="checkbox"/>	41%-60%
<input type="checkbox"/>	61%-80%	<input type="checkbox"/>	81%-100%	<input type="checkbox"/>	

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 X 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 وحاجة لوقت كبير					
4. ضعف المبادرات الادارية من قبل الادارة لدعم وتشجيع استخدام النظام					
5. هنالك ضبط في تخصيص التكاليف الصناعية غير المباشرة في الشركة					
6. هنالك اولويات اخرى للشركة					
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 الشركة (بشرية ، مالية ... 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					

القسم الثالث: معلومات عامة

هذا الجزء من الاستبانة هو عبارة عن معلومات عامة عن معبئ الاستبانة (الرجاء محاولة الاجابة على جميع الاسئلة بوضع إشارة X واحدة في المربع المناسب).

1. ما هو المسمى الوظيفي لكم في هذه الشركة.

<input type="checkbox"/>	مدير مالي	<input type="checkbox"/>	مساعد مدير مالي
<input type="checkbox"/>	رئيس قسم المحاسبة	<input type="checkbox"/>	رئيس قسم التكاليف
<input type="checkbox"/>	أخرى (الرجاء التحديد).....		

2. ما هي أعلى درجة علمية حصلت عليها.

<input type="checkbox"/>	دكتوراه	<input type="checkbox"/>	ماجستير
<input type="checkbox"/>	بكالوريوس	<input type="checkbox"/>	أخرى (الرجاء التحديد).....

3. عدد سنوات خبرتك في مجال المحاسبة ما بين.

<input type="checkbox"/>	أقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	11 - 15 سنة	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	أكثر من 20 سنة

4. عدد سنوات عملك لدى هذه الشركة ما بين

<input type="checkbox"/>	أقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	11 - 15 سنة	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	أكثر من 20 سنة

شكرا جزيلاً على مشاركتكم في هذه الدراسة وتعبئة الاستبانة

الباحث: محمود داود نصار

Appendix L

Questionnaire Category B

**(Considerer/Adopter
Companies)**

(Arabic Version)

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 X 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 الترمونية 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. عدد موظفي الشركة الحالي هو.

أقل من 100 موظفا	<input type="checkbox"/>	101- 500 موظفا	<input type="checkbox"/>
501- 1000 موظفا	<input type="checkbox"/>	أكثر من 1000 موظفا	<input type="checkbox"/>

3. يتراوح عدد منتجات شركتكم حاليا ما بين.

أقل من 20 منتج	<input type="checkbox"/>	20- 50 منتج	<input type="checkbox"/>
51- 100 منتج	<input type="checkbox"/>	101- 150 منتج	<input type="checkbox"/>
151 - 200 منتج	<input type="checkbox"/>	أكثر من 200 منتج	<input type="checkbox"/>

4. الرجاء تحديد نسبة التكاليف الصناعية غير المباشرة الى مجموع التكاليف داخل شركتكم .

0%-20%	<input type="checkbox"/>	21%-40%	<input type="checkbox"/>	41%-60%	<input type="checkbox"/>
61%-80%	<input type="checkbox"/>	81%-100%	<input type="checkbox"/>		

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 X واحدة فقط لكل صف).

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	اسباب عدم تطبيق نظام محاسبة التكاليف المبني على اساس الانشطة (ABC).
					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 ، مالية)
					10. ضعف الدعم من قبل الادارة العليا
					11. مقاومة التغيير من قبل بعض الموظفين
					12. ضعف الخبرة المتوفرة لاستخدام النظام

القسم الثالث: معلومات عامة

هذا الجزء من الاستبانة هو عبارة عن معلومات عامة عن معبئ الاستبانة (الرجاء محاولة الاجابة على جميع الاسئلة بوضع إشارة X واحدة في المربع المناسب).

1. ما هو المسمى الوظيفي لكم في هذه الشركة.

<input type="checkbox"/>	مدير مالي	<input type="checkbox"/>	مساعد مدير مالي
<input type="checkbox"/>	رئيس قسم المحاسبة	<input type="checkbox"/>	رئيس قسم التكاليف
.....أخرى (الرجاء التحديد).....			

2. ما هي أعلى درجة علمية حصلت عليها.

<input type="checkbox"/>	دكتوراه	<input type="checkbox"/>	ماجستير
<input type="checkbox"/>	بكالوريوس	<input type="checkbox"/>	أخرى (الرجاء التحديد).....

3. عدد سنوات خبرتك في مجال المحاسبة ما بين.

<input type="checkbox"/>	اقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	12 - 15 س	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	اكثر من 20 سنة

4. عدد سنوات عملك لدى هذه الشركة ما بين

<input type="checkbox"/>	اقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	11 - 15 سنة	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	اكثر من 20 سنة

شكرا جزيلاً على مشاركتكم في هذه الدراسة وتعبئة الاستبانة

الباحث: محمود داود نصار

Appendix M

Questionnaire Category C

**(Implementer/User
Companies)**

(Arabic Version)

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 X واحدة في المربع المناسب) .

1. تحت اي من القطاعات الرئيسية التالية تدرج طبيعة عمل شركتكم.

<input type="checkbox"/> 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

2. عدد موظفي الشركة الحالي هو.

<input type="checkbox"/> أقل من 100 موظفا	<input type="checkbox"/> 101- 500 موظفا
<input type="checkbox"/> 501- 1000 موظفا	<input type="checkbox"/> أكثر من 1000 موظفا

3. يتراوح عدد منتجات شركتكم حاليا ما بين.

<input type="checkbox"/> أقل من 20 منتج	<input type="checkbox"/> 20- 50 منتج
<input type="checkbox"/> 51- 100 منتج	<input type="checkbox"/> 101- 150 منتج
<input type="checkbox"/> 151 - 200 منتج	<input type="checkbox"/> أكثر من 200 منتج

4. الرجاء تحديد نسبة التكاليف الصناعية غير المباشرة الى مجموع التكاليف داخل شركتكم .

<input type="checkbox"/> 0%-20%	<input type="checkbox"/> 21%-40%	<input type="checkbox"/> 41%-60%
<input type="checkbox"/> 61%-80%	<input type="checkbox"/> 81%-100%	

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 X واحدة فقط لكل صف).

اسباب تبني النظام	مهم جدا	مهم	متوسط الاهمية	قليل الاهمية	غير مهم
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 دعم قرار استخدام نظام محاسبة تكاليف المبني على أساس الأنشطة (ABC) في شركتكم. (الرجاء وضع إشارة X واحدة فقط لكل صف).

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	العوامل المساعدة في استخدام نظام محاسبة التكاليف المبني على أساس الأنشطة (ABC)
					1. تدريب الموظفين بشكل كافي حول تصميم نظام محاسبة التكاليف المبني على أساس الأنشطة في شركتكم.
					2. تدريب الموظفين بشكل كافي حول استخدام نظام محاسبة التكاليف المبني على أساس الأنشطة في شركتكم.
					3. عند البدء باستخدام نظام محاسبة التكاليف المبني على أساس الأنشطة كانت اهداف النظام مدركة من قبل المصممين والمستخدمين.
					4. هنالك المام ومعرفة من قبل كادر الشركة بفوائد نظام محاسبة التكاليف المبني على أساس الأنشطة والحاجة لاستخدامه في شركتكم.
					5. تدعم الإدارة العليا في شركتكم استخدام نظام محاسبة التكاليف المبني على أساس الأنشطة.
					6. يستخدم المديرون في شركتكم سلطاتهم ومسؤولياتهم في دعم استخدام نظام محاسبة التكاليف المبني على أساس الأنشطة.
					7. هنالك التزام من قبل المديرين في شركتكم باستخدام معلومات نظام محاسبة تكاليف المبني على أساس الأنشطة في اتخاذ القرارات
					8. تؤثر آراء الخبراء والمستشارين الخارجيين على تبني أي نظام محاسبي في شركتكم.
					9. يتم استشارة الخبراء والمستشارين بشكل منتظم لحل المشاكل والصعوبات في نظام محاسبة التكاليف المبني على أساس الأنشطة.
					10. هنالك مستشار متخصص لتطوير الأنظمة المحاسبية في شركتكم.
					11. وجود موظف مبدع في شركتكم يعمل بشكل مستمر من أجل تبني نظام محاسبة التكاليف المبني على أساس الأنشطة.
					12. يقوم بعض الموظفين بدور التوعية بأهمية نظام محاسبة تكاليف المبني على أساس الأنشطة في شركتكم.
					13. نظام معلومات الشركة لديكم يوفر بيانات تفصيلية عن مبيعات وتكاليف الشركة لسنة سابقة
					14. يتم تحديث البيانات التشغيلية في نظام معلومات شركتكم بشكل مستمر

3. الرجاء تحديد دور العوامل المذكوره ادناه في تحفيزكم على استخدام نظام محاسبة تكاليف المبني على اساس الانشطة (ABC) في شركتكم. (الرجاء وضع اشارة X واحدة فقط لكل صف).

غير موافق بشدة	غير موافق	محايد	موافق	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 اتمة الانتاج
					7. تواجده 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 X واحدة فقط لكل صف).

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	<u>صعوبات</u> 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 مسببات التكلفة
					10. صعوبات في تحديد مسببات التكلفة
					11. صعوبات في تصميم النظام
					12. صعوبات في تحديد الانشطة
					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 الانشطة يتطلب تغير في هيكله الشركة بما ينسجم مع الانشطة المختاره

**القسم الثالث: تقييم النجاح في تطبيق نظام محاسبة التكاليف المبني على اساس
الانشطة (ABC).**

1. ما هي نسبة نجاح استخدام نظام محاسبة التكاليف المبني على اساس الانشطة (ABC) في شركتكم
(الرجاء الاجابة بوضع اشارة X في المربع المناسب)

ممتاز جيدة مقبولة ضعيفة ضعيفه جدا

2. الرجاء تحديد ما هي درجة استخدام نظام محاسبة التكاليف المبني على اساس الانشطه (ABC) في
المجالات المذكورة أدناه في شركتكم.

مجالات الاستخدام	دائما	غالبا	احيانا	نادرا	ابدا
1. تكلفة المنتج					
2. تحديد ربحية العميل					
3. اتخاذ القرارات					
4. التخطيط					
5. الموازنة					
6. قرارات التسعير					
7. مقاييس الاداء					

3. الرجاء تحديد درجة الرضى عن استخدام نظام محاسبة التكاليف المبني على اساس الانشطة (ABC)
في شركتكم

درجة الرضى	راضي جدا	راضي	غير متأكد	غير راضي	غير راضي جدا
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 معبئ الاستبانة (الرجاء محاولة الاجابة هلى جميع الاسئلة بوضع اشارة X واحدة في المربع المناسب).

1. ما هو المسمى الوظيفي لكم في هذه الشركة.

<input type="checkbox"/>	مدير مالي	<input type="checkbox"/>	مساعد مدير مالي
<input type="checkbox"/>	رئيس قسم المحاسبة	<input type="checkbox"/>	رئيس قسم التكاليف
.....أخرى (الرجاء التحديد)			

2. ما هي أعلى درجة علمية حصلت عليها.

<input type="checkbox"/>	دكتوراه	<input type="checkbox"/>	ماجستير
<input type="checkbox"/>	بكالوريوس	<input type="checkbox"/>	أخرى (الرجاء التحديد)

3. عدد سنوات خبرتك في مجال المحاسبة ما بين.

<input type="checkbox"/>	اقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	13 - 15 سنة	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	اكثر من 20 سنة

4. عدد سنوات عملك لدى هذه الشركة ما بين

<input type="checkbox"/>	اقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	11 - 15 سنة	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	اكثر من 20 سنة

شكرا جزيلا على مشاركتكم في هذه الدراسة وتعبئة الاستبانة

الباحث: محمود داود نصار

Appendix N

Questionnaire Category D

(Abandoner Companies)

(Arabic Version)

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 X 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 الترمونية 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. عدد موظفي الشركة الحالي هو.

أقل من 100 موظفا	<input type="checkbox"/>	101- 500 موظفا	<input type="checkbox"/>
501- 1000 موظفا	<input type="checkbox"/>	أكثر من 1000 موظفا	<input type="checkbox"/>

3. يتراوح عدد منتجات شركتكم حاليا ما بين.

أقل من 20 منتج	<input type="checkbox"/>	20- 50 منتج	<input type="checkbox"/>
51- 100 منتج	<input type="checkbox"/>	101- 150 منتج	<input type="checkbox"/>
151 - 200 منتج	<input type="checkbox"/>	أكثر من 200 منتج	<input type="checkbox"/>

4. الرجاء تحديد نسبة التكاليف الصناعية غير المباشرة الى مجموع التكاليف داخل شركتكم .

0%-20%	<input type="checkbox"/>	21%-40%	<input type="checkbox"/>	41%-60%	<input type="checkbox"/>
61%-80%	<input type="checkbox"/>	81%-100%	<input type="checkbox"/>		

القسم الثاني: الشركات غير المستخدمة لنظام محاسبة تكاليف المبني على اساس الانشطة

1. في شركتكم في اي من المراحل التالية تم التوقف عن استخدام النظام؟

في مرحلة تشكيل نموذج مقترح للنظام

في مرحلة انشاء النظام وتدريب الموظفين

في مرحلة الاستخدام الواسع للنظام

2. الرجاء تحديد الصعوبات التي واجهتكم أثناء تبني نظام محاسبة التكاليف المبني على اساس الانشطة (ABC) في شركتكم. (الرجاء وضع اشارة X واحدة فقط لكل صف).

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	<u>صعوبات</u> 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 مسببات التكلفة
					10. صعوبات في تحديد مسببات التكلفة
					11. صعوبات في تصميم النظام
					12. صعوبات في تحديد الانشطة
					13. ضعف الامام ببيانات ومتطلبات النظام
					14. مقاومة التغير من قبل بعض الموظفين
					15. التعامل مع التغيرات المحاسبية
					16. نظام محاسبة التكاليف المبني على اساس الانشطة يتطلب تغير في هيكله الشركة بما ينسجم مع الانشطة المختاره

لقسم الثالث: معلومات عامة

هذا الجزء من الاستبانة هو عبارة عن معلومات عامة عن معبئ الاستبانة (الرجاء محاولة الاجابة على جميع الاسئلة بوضع إشارة X واحدة في المربع المناسب).

1. ما هو المسمى الوظيفي لكم قي هذه الشركة.

<input type="checkbox"/>	مدير مالي	<input type="checkbox"/>	مساعد مدير مالي
<input type="checkbox"/>	رئيس قسم المحاسبة	<input type="checkbox"/>	رئيس قسم التكاليف
<input type="checkbox"/>	أخرى (الرجاء التحديد).....		

2. ما هي أعلى درجة علمية حصلت عليها.

<input type="checkbox"/>	دكتوراه	<input type="checkbox"/>	ماجستير
<input type="checkbox"/>	بكالوريوس	<input type="checkbox"/>	أخرى (الرجاء التحديد).....

3. عدد سنوات خبرتك في مجال المحاسبة ما بين.

<input type="checkbox"/>	اقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	11 - 15 سنة	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	اكثر من 20 سنة

4. عدد سنوات عملك لدى هذه الشركة ما بين

<input type="checkbox"/>	اقل من 2 سنة	<input type="checkbox"/>	2 - 5 سنة	<input type="checkbox"/>	6 - 10 سنة
<input type="checkbox"/>	11 - 15 سنة	<input type="checkbox"/>	16 - 20 سنة	<input type="checkbox"/>	اكثر من 20 سنة

شكرا جزيلاً على مشاركتكم في هذه الدراسة وتعبئة الاستبانة

الباحث: محمود داود نصار