The Diffusion of Management Accounting Practices in Developing Countries: Evidence from Libya

Abdulghani Leftesi

A Thesis Submitted to the University of Huddersfield in Partial Fulfilment of the Requirements for the Degree of Doctor of Philosophy

The University of Huddersfield
University of Huddersfield Business School
Department of Accountancy

2008

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Abdulghani Leftesi

Ph.D.

2008

Abstract

The transition in Libya from a planned economy to a market economy, which commenced in the late 1980s, has resulted in fundamental changes such as the restructuring of state-owed enterprises, a noticeable growth in foreign direct investment, and an emerging private sector. These changes put immediate pressure on accounting practice to change to meet the demands of the new business environment.

Based on the findings of a questionnaire-based survey, supplemented by interview data, this study explores the state of 'traditional' and 'advanced' management accounting practices (MAPs) of a mix of 81 large and medium size Libyan manufacturing companies from different industrial sectors. In addition, drawing off the existing literature on new institutional sociology and innovation diffusion theories, a model is developed and forms the basis for investigating and evaluating the factors that influence the development and change of MAPs in Libyan companies. This investigation is underlined with thorough statistical inference resulting from applying factor analysis and simple and multiple regression to the survey data as appropriate. The data collected from 10 interviews are quantified and analysed to provide more insight into MAPs in the responding companies.

Although the responding companies have reported using most of the MAPs surveyed, the adoption rates of theses practices are noticeably lower than the adoption rates of MAPs usually found in the management accounting literature. The findings also seem to confirm those of recent studies in other countries about the popularity of 'traditional' practices over the much acclaimed 'advanced' ones. However, respondents not only claim to derive higher benefits from 'traditional' MAPs than from 'advanced' MAPs, but they also express their intention to place greater emphasis on the former in the future. Thus, this study questions the exaggeration in the criticism of traditional MAPs that characterised the obsolescence campaign initially led by Kaplan (1986) and Johnson and Kaplan (1987) and the acclaimed superiority of the so-called 'advanced' MAPs.

While it is surprising to find that none of the environmental factors examined in this study (e.g. uncertainty and market competition) seems to have an important impact on MAPs diffusion, factors related to attributes of innovation (e.g. the availability of resources, the availability of training, top management support and company size) do however have a significant positive impact on the diffusion of MAPs in these Libyan manufacturing companies. Institutional factors, especially those related to the fashion perspective (e.g. use of consultants) and the fad perspective (e.g. being in a joint venture with a foreign partner) appear to also be essential in facilitating diffusion. This research concludes that the demand side perspective, which dominates the literature on innovation diffusion, is not adequate on its own and, therefore, the supply side and the institutional environment are also important factors in explaining the diffusion of MAPs.

Finally the main limitations of this study are outlined and opportunities for future research are discussed, particularly in relation to this study's findings about the need to reconsider the usefulness of traditional MAPs and also the need for a multiple perspective approach for studying the diffusion of MAPs.

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Acknowledgments

Many people have given me their support during this study and without whom I could not have completed this research. However, I would like to specially acknowledge:

My supervision team, my director of studies Dr. *Messaoud Mehafdi* for guiding and reviewing my work throughout the period of this study. He has helped me to think sharper to shape appropriate ideas into research, and this has had a great influence on me as a researcher; and also my second supervisor Professor *Chris Cowton* for his valuable advice and comments during different stages of this study. I am indebted for their kindness, encouragement and patience.

Dr. Jonathan Blacktop (School of Human and Health Sciences), *Dr. Graham Worsdale* (Associate Dean, Business School), and *Linda Pryce* (Business School, now retired), for their kindness and useful advice on the statistical methods used in this research.

The Libyan Government, particularly the *General Committee of Higher Education* and the *Elmergib University* for giving me this chance and sponsoring me to study for a Doctorate at University of Huddersfield Business School.

All the *81 manufacturing companies in Libya* who participated in the questionnaire survey and interviewees for willingly finding the time to complete the questionnaire, answer additional queries to clarify some issues further and giving me valuable insights into their management accounting practices during interviews. Also, all the other people who gave me enormous assistance, particularly during the period I spent in Libya to gather the data for this research. Without the generous help of all these people, data collection would have been difficult, if not impossible.

All my *family and friends* for their continuous support and encouragement throughout the few years that this research has taken to complete. Also, I would like to extend my deepest appreciation to my brother *Mahmud* for his continued assistance.

To

My Mother

My Wife Raba

My Sons

Abdulaziz

Ahmed and

Abdulbari

Chapter One

Introduction

1.1 Introduction

The aim of this chapter is to provide a general introduction to the thesis. It begins in sections 1.2 and 1.3 with the background and the motivation for undertaking the study. The related theories are highlighted in section 1.4, followed in section 1.5 by the research aim and objectives. The research methodology is presented in section 1.6. Finally, the structure of the thesis is outlined in section 1.7.

1.2 Background

In recent years, the advance of competition, production environment technology and business environment has brought into being significant challenges for managers and pressures on management accounting to change. Some argue that if management accounting is to maintain its relevance, it needs to meet the changes in management information needs corresponding to these significant changes.

One of the most popular criticisms of management accounting in the last two decades has been that its traditional tools such as standard costing, variance analysis, budgeting, and cost volume profit analysis are no longer adequate to today's manufacturing companies (Kaplan, 1984, 1986; Johnson and Kaplan, 1987; Cooper and Kaplan, 1991; Ashton et al., 1995). Other writers recognise the existence of a *'gap'* between theoretical models, which suggest how management accounting should be done, and management accounting practices (MAPs) (Scapens, 1985; Edwards and Emmanuel, 1990; Drury et al., 1993; Ashton et al., 1995; Drury, 1996).

Anthony (1989) criticised the claims by researchers that a specific management accounting technique is widely (or not) used where there is no statistical evidence to prove that. He further argued that there was a need for survey information concerning the use of MAPs, as information about MAPs is very poor and that almost all related information is anecdotal. Also Drury (1998) claimed further empirical studies are required to provide a detailed description and evaluation of these new systems and factors that influence change.

Management accounting researchers have responded to these concerns with survey-based studies of MAPs. Examples include studies from the UK (Drury et al., 1993 and Abdel-Kader and Luther, 2006), USA (Green and Amenkhienan, 1992), Australia (Chenhall and Langfield-Smith, 1998a), New Zealand (Waldron, 2005), and Finland (Hyvonen, 2005). Moreover, some researchers have been interested in comparing MAPs between countries. Examples include a study by Wijewardena and Zoysa (1999) comparing MAPs in Australia and Japan and a study by Luther and Longden (2001) who compared MAPs between South Africa and the UK.

The common findings from these surveys are that traditional MAPs are sill popular even outweighing advanced techniques in claimed benefits. This has raised the questions whether it is premature to assume that traditional management accounting techniques lack relevance - as was claimed by Kaplan (1986) and Johnson and Kaplan (1987) - and the conditions necessary to effectively adopt recently developed techniques (Chenhall and Langfield-Smith, 1998a). Furthermore, the 'gap' between theory and practice in management accounting seems to arise from comparing between MAPs and optimal models – usually based on neoclassical economic theory – in simple production settings that do not relate to problems faced by practitioners; hence the view that research should focus more closely on studying observed practice by drawing off organisation, social and economic theory (Scapens, 1991; Scapens, 1994; Drury and Tayles, 1995; Burns and Scapens, 2000).

1.3 Research Rationale and Significance

Although much attention has been paid to the relevance of MAPs (Drury et al., 1993), there still exists a lack of knowledge concerning the current state of MAPs, especially in less developed countries (Joshi, 2001; Lin and Yu, 2002; Waweru et al., 2004; Van Triest and Elshahat, 2007). In a market economy under construction as is now the case in Libya, the importance of studying management accounting cannot be emphasised enough. Firms in these countries offer a unique opportunity for researchers to study the evolution of MAPs in a relatively short period of time (Anderson and Lanen, 1999).

Currently, there is a growing interest in management accounting in emerging and transitional economies whether in Europe (Haldma and Laats, 2002; Szychta, 2002), Asia (Joshi, 2001, O'Connor et al., 2004) or Africa (Lather and Langden, 2000; Waweru et al., 2004; Van Triest and Elshahat, 2007). These studies indicate that, despite the tremendous social, political and economic changes affecting businesses in these countries, traditional MAPs remain the most common.

Moreover, there are certain differences in the adoption of and the benefits from MAPs between the industrialized world and the less-developed countries. For instance, Luther and Longden (2001) concluded that the benefits derived from MAPs in South Africa differ from the U.K. equivalents and the factors that influence management accounting change in South Africa are different from those which influence it in the U.K. They also found support for Hopper (2000)'s argument that MAPs are not universally uniform and cannot be understood without reference to the importance of political, cultural and economic factors in countries. They noted that

> Despite the influence of widely selling textbooks and other quick diffusion agents, management accounting practice is not universally uniform. (Luther and Longden, 2001, p. 315)

Similarly, Hopper et al. (2004) argued that management accounting in less developed countries can not be understood without referring to broader socioeconomic factors such as poverty, an incomplete set of state institutions, and weak markets. Moreover, Luther and Longden (2001), Haldma and Laats (2002) identify new factors that are more related to transitional and emerging economies such as the legal accounting environment and shortage of qualified accountants.

Other researchers argued that despite the fact that economic shock (such as the deregulation of governmental control and the increase in market pressures) in emerging and transitional economies is a necessary condition to stimulus for the diffusion of Western MAPs in these countries, they are not sufficient. They indicate that the mimetic institutional isomorphism and the diffusion of innovation literature, particularly the performance gap argument, are appropriate for explaining the diffusion of accounting innovations in developing countries (Firth, 1996; Lin and Yu, 2002; Wu et al., 2007).

This leads to questions about the factors (both impetus and impediment) that affect the diffusion of MAPs in developing countries, whether Western MAPs have been adopted in less developed countries, and the feasibility of advanced MAPs diffusion to less developed countries.

In the Libyan case, the transition from a planned economy to a market economy, which commenced in the late 1980s, has resulted in fundamental changes such as the restructuring and privatising of state-owed enterprises, a noticeable growth in foreign direct investment, and an emerging private sector. Prior to the transition period companies were predominantly owned, controlled and supervised by government institutions. These changes put immediate pressure on accounting practice to change to meet the demands of the new business environment.

The accounting profession in Libya is still in its infancy and its main emphasis is on preparing external financial reports and external auditing which is mainly imposed by the laws rather than driven by the desire to provide useful information to potential users (Bait-El-Mal et al., 1973; Kilani, 1988; Buzied, 1998).

Despite the environmental factors in Libya which are significantly different from those in the UK and the US, the Libyan accounting education system and accounting profession have been developed towards the accounting environment and the private sector of the UK and US. In this respect, it has been argued that the factors which have influenced the adoption of accounting practices (including MAPs) in Libya are multinational companies, especially in the oil sector, international accounting firms (mainly from the UK and the US), the accounting education system which relies on British and American texts, the accountants from other countries, and the Libyan accountants educated overseas (Bait-El-Mal et al., 1973; Bakar, 1997; Buzied, 1998; Saleh, 2001; Mahmud and Russell, 2003). Thus, the diffusion of Western accounting practices in Libya can be linked to two key mechanisms: foreign companies, especially the oil companies operating in Libya and the Libyan accounting education system.

The rapid developments and changes in the Libyan economy and its increasing integration with the global economy, make it an excellent site for the investigation of

the important aspects of the Western MAPs diffusion and the responsiveness (or not) of management accounting to its environment. Therefore, this is a good opportunity to undertake research on MAPs in Libyan companies in the context described above. The study is restricted to manufacturing companies; service sector companies raise their own particular issues and require separate in-depth studies.

1.4 Theoretical Considerations

In trying to understand MAPs, researchers of management accounting change have used a variety of explanatory frameworks, including contingency theory, agency theory and, more recently, the two related theories of innovation diffusion and institutionalisation. Of particular relevance to this research are innovation diffusion and institutional theories which are seen as very promising for understanding organisational change and the diffusion of innovation in emerging environments (see Tolbert and Zucker, 1983; Abrahamson, 1991; Scapens, 1994; Scott, 1995; Haunschild and Miner, 1997; Chua and Petty, 1999; Hage, 1999; Davis and Marquis, 2005).

According to Bjornenak (1997), diffusion is the process whereby the innovation is spread or disseminated. The common criterion accepted for the idea and practice to be considered as an innovation is that the idea or the practice is perceived as new by the unit of adoption (Hage and Aiken, 1970; Zaltman et at., 1973; Daft and Becker, 1978; Hage, 1980; Damanpour, 1991; Zammuto and O'Connor, 1992).

Researchers have attempted to investigate the factors that influence the diffusion of innovation by trying to answer questions on what the attributes are for early and late adopters and why some innovations are being widely adopted more than others. Many attempts have been made to classify the factors which influence the diffusion of innovation through the literature (e.g. Kwon and Zmud, 1987; Anderson, 1995; Rogers, 1995, 2003; Askarany, 2003). For instance, Rogers (1995, 2003) classified these factors into: attribute of innovations, the type of innovation decision, the nature of communication channels, the nature of social systems, and the extent of change agents' promotion efforts. Building on Rogers (1995, 2003), Askarany (2003)

developed a model that classified the factors influencing the diffusion of innovation into: attributes of innovation, attributes of adopters and attributes of social systems which include all the influential factors that could not be related to the other two groups of factors. He also supports the claim made by Rogers (1995, 2003) that the characteristics of innovation are the most important influencing factors on innovation diffusion.

However, some have argued that most of the studies on the diffusion of innovation are based on a pro-innovation perspective, which assumes that innovations are adopted as a result of an organization's demand where the adoption of innovation decision is guided only by rational decision- making (Zaltman at al., 1973; Downs and Mohr, 1976; Kimberly, 1981; Van de Ven, 1986; Nicholson, 1990; Abrahamson, 1991, 1996; Rogers, 1995, 2003). However, this perspective underestimates the effect of the suppliers of innovations in its diffusion (Brown, 1981; Clark, 1984).

Various researchers have paid attention to diffusion of innovation in connection with a new institutional sociology theory (e.g. Scott, 1995; Haunschild and Miner, 1997; Chua and Petty, 1999; Howorth et al., 2002). The new institutional sociology theory suggests that firms within a 'field' adapt their management practices (including MAPs) to gain legitimacy and ensure survival. Organisations must be responsive to external demands/pressures and expectations in order to survive (DiMaggio and Powell, 1983; Oliver, 1991). This theory seeks to explain why organisations in the same field look similar and the pressures that shape organisations.

Central to the new institutional sociology perspective is the notion of 'isomorphism' or the process that forces organisational similarity. Institutional isomorphism takes three forms: coercive, normative and mimetic (DiMaggio and Powell, 1983). Examples of coercive isomorphism (or pressures) are governmental mandates and financial reporting requirements. Normative pressures are associated with professionalisation and derived primarily from education and professional networks. Mimetic pressures arise from standard responses to uncertainty which is a powerful force that encourages companies to imitate the more successful or the leaders in their field. Organisations may model themselves on others when organisations' technologies are poorly understood or when goals are ambiguous. Thus as a result of

institutional operations and pressures, MAPs will diffuse across organisations when they operate in the same environment, making organisations exhibit MAP similarity. In this context, Granlund and Lukka (1998) argue that MAPs tend towards homogenization within the industrialized world, although there are still notable differences in MAPs at micro level between countries, due to cultural or government regulations. Building on new institutional sociology theory, they identify the factors directing MAPs towards convergence or divergence to include both economic (e.g. market competition) and institutional perspectives (coercive pressures, normative pressures, and mimetic). In addition, an interesting alternative perspective in explaining diffusion of innovation that seems close to new institutional sociology theory is offered by Abrahamson (1991) who developed three additional perspectives to the efficient-choice perspective; they are the forced selection perspective, the fad perspective, and the fashion perspective. These alternative models will be discussed in detail in the next chapter.

1.5 Research Aim and Objectives

The main aim of this research is to investigate the state of management accounting in economic transition conditions in one of the less developed countries, namely Libya. To achieve this, the research has the following four objectives:

1. To explore the current use of MAPs in Libyan manufacturing companies during the economic transition period, the extent of benefits these companies gain from using such practices and the level of satisfaction of their current use.

2. To explore the extent of change in using MAPs by Libyan manufacturing companies during the period of investigation and to determine the priorities for the adoption of MAPs in the future.

3. To identify the factors influencing the diffusion of Western MAPs in Libyan manufacturing companies over the period of transition.

4. To identify the factors impeding the diffusion of advanced MAPs in the course of the transitional economy in Libya.

1.6 Research Methodology

For the design of this research it is decided to adopt a pragmatic approach, using both positivistic and phenomenological paradigms. Each paradigm has strengths and weaknesses and using both paradigms would maximise the advantages and minimise the disadvantages of each one. In addition, consistent with this choice, the research objectives and, based on the recommendation of using a triangulation of methods (e.g. Collis and Hussey, 2003; Bryman and Bell, 2007; Saunders et al., 2007), this research adopts a mixed methods approach. The dominant method is quantitative; it relies on data collection using a self-administered questionnaire to Libyan manufacturing companies. This is supplemented by a qualitative method in the form of in-depth interviews.

A pilot study was done prior to the distribution of the final version of the questionnaire. The final version was developed after several drafts which benefited from constructive feedback received as result of different procedures of pre-testing. A total of 154 questionnaires were distributed personally and only 81 questionnaires were returned usable, giving a response rate of 62.79%. The reliability of a measure in terms of its stability and consistency was tested through the parallel test and Cronbach's coefficient alpha and all the scales in the questionnaire were considered as reliable. Also an external and an internal validity were established in this research.

Based on its stated objectives, this research can be described as a descriptive, explanatory and exploratory type of research. The part of the research related to the first two objectives, which is to explore the state of MAPs in Libyan manufacturing companies, can be classified as descriptive. The part of the research that deals with objectives three and four, which is to identify the factors that influence the diffusion of Western MAPs in the course of the transitional economy in Libya, can be classified as exploratory and explanatory.

Descriptive statistics in terms of means and frequency were mainly used to meet the descriptive objectives. Factor analysis as well as simple and multiple regression were used to test the research hypotheses and meet the exploratory and explanatory objectives. In addition, the qualitative data gained from interviews were analysed

using frequencies and percentages, and the quoted statements where appropriate were used to support the data analysis.

1.7 Structure of the Thesis

In addition to this chapter, the thesis comprises eight further chapters. Chapter Two provides an overview of the literature related to the research interests. It shows the development of management accounting systems and the main criticisms levelled at traditional techniques. The chapter also provides insights into the diffusion of MAPs through the lens of the theory of innovation diffusion. The chapter discusses the alternative perspectives in explaining the diffusion of innovation, such as the supply side of diffusion and the new institutional sociology theory.

Chapter Three presents a summary of the previous empirical research studies that are relevant to this study. The adoption rates of advanced MAPs in developed and developing countries are presented together with summary of current adoption, the extent of benefits, and future emphasis on traditional and advanced MAPs. In addition, the chapter discusses the studies of MAPs in developing countries in detail and focuses on previous empirical studies related to the factors influencing the adoption of management accounting innovation. The chapter concludes with a summary of the limitations of the previous studies.

Chapter Four draws off the preceding chapters to discuss and to build the research framework. In this chapter the research hypotheses are formulated.

Chapter Five describes the research methodology. It provides the justifications for the philosophy chosen and the methodology adopted to achieve the research objectives. In addition, this chapter provides detailed information on the design and testing of the survey questionnaire, the content of the final version, and its translation. The chapter also explains how the questionnaire was administered, how the interviews were conducted, and how the reliability and validity of the research instruments were established. The chapter ends with a discussion of the statistical methods used in this research.

Chapters Six, Seven and Eight present the data analysis and discussion of the findings. Chapter Six is concerned with the descriptive analysis of the research results which seeks to meet the first and the second objectives of this research (listed in section 1.3). The data in this chapter show the current use of, the extent of benefits gained from, and the future emphasis on MAPs in Libyan manufacturing companies. The respondents' satisfaction levels with current MAPs and the state of advanced MAPs are shown in this chapter as well.

In Chapter Seven, factor analysis is used to analyse the respondents' points of view regarding the factors that influence the adoption of Western MAPs and the barriers to the diffusion of advanced MAPs. The interview data are then analysed in this chapter.

The testing of the research hypotheses is carried out in Chapter Eight where simple and multiple regression analysis are used. The results of both regression analysis and the analysis of interview data are presented and interpreted. The data analysis in this chapter and that in chapter Seven are used to meet the third and fourth objectives of this research.

Finally, Chapter Nine summarises the major findings of this study, discusses the contributions of this research to knowledge and its limitations as well as identifies the areas for future research.

Chapter Two

A Critical Review of the Contextual and Theoretical Considerations of the Management Accounting Diffusion Literature

2.1 Introduction

This chapter is aimed at presenting a broad literature review related to the main issues in this research. It starts with an overview of the Libyan context that underpins this study. The chapter then provides a summary of the "accounting lag" and the need for management accounting change. This is followed by a discussion of the perceived "gap" between theory and practice in management accounting. The diffusion of innovation theory is then outlined and the criticisms of the classic diffusion of innovation theory are explained. Next, the chapter provides alternative explanations to diffusion of innovation, which is offered by the new institutional sociology theory and the supply side of diffusion perspectives.

2.2 An Overview of the Libyan Context of this Study

The Libyan context of this study is summarised in terms of the three key aspects of the political environment, the economic context, and the education profession.

2.2.1 The Political Environment

Historically, Libya had been subjected to occupation by foreign powers; with the Phoenicians setting a colonisation trend that saw the Greeks, the Romans, the Ottomans and more recently the Italians taking turns in occupying the country. The Ottoman Empire's occupation was the longest from 1551-1911, followed by the Italian occupation until their defeat in the Second World War. Following the War, Britain was responsible for the Northern part of the country (Tripolitania and Cyrenaica), while the southern part (Fezzan) was controlled by the French. British and French occupation continued up to the declaration of Libyan independence by the United Nations on the 24th of December 1951.

The years following the independence witnessed the introduction of development plans, which were aimed at developing especially the agriculture and education systems. The United Nations agreed to sponsor the development plans, with an

additional substantial funding by the UK and the U.S, as they wanted to maintain and use the military bases in Libya (Fisher, 1985). Despite these plans, until the discovery of oil in 1959, Libya remained as one of the poorest countries in the world, heavily dependent on agriculture and foreign aid (Higgins, 1968; Farely, 1971; Wright, 1981). It was described by many economists, including Benjamin Higgins, who worked as an economic adviser to Libya, led the three United Nations technical assistance teams and made study-tours of Libya in 1950-1951, as a discouraging economy to both Libyans and foreigners (Higgins, 1968; Bait-El-Mal et al., 1973; Wright, 1981; Kilani, 1988).

The discovery of the oil was a key turning point; Libya had become a wealthy country that no longer needed to depend on outside aid and influence (e.g. UN, UK). Furthermore, the country introduced economic and social development plans that not only relied on oil export but also directed oil revenues to developing different sectors, especially towards establishing heavy industries and agriculture in order to attain the diversification of production, self-sufficiency and exports growth and improving the education as well (Agnaia, 1996).

In 1969, Colonel Muammar Al Gadhafi led a revolution that brought about the “Libyan Arab Republic”. Gadhafi, who is referred to as "the leader of the revolution" in Libya produced his “Third Universal Theory” in the 1970s, better known as the “Green Book”, which consists of three parts namely the Solution of the Problem of Democracy; the Solution of the Economic Problem; and the Social basis of the Third Universal Theory. It proposed an alternative to communism and capitalism and it integrated Islamic values and Arab culture with social, economic and political reforms.

These polices have greatly affected the political and economic environments in Libya. The State controlled both the production and service sectors by nationalising all the private companies, although joint ventures took place between the State and some of the petroleum sector companies and heavy industries companies. Thus, the private sector and multinational companies have been largely absent except as a joint venture with the Libyan State. Moreover, after the revolution any remaining US and UK military bases as well as remnants of the Italian administration were ended.

In the following years, the deterioration in the political relationship between the Libyan government and the West, especially the US, culminated in a ban on the import of Libyan oil and the export to Libya of U.S. oil industry technology in 1982 and the UN economic sanctions in 1992. This situation caused political and economic isolation of Libya for most of the 1990s. Since the start of the 2000s relations with the West have been gradually normalizing, ending the UN embargo in 2003, and the US embargo in 2004.

2.2.2 The Economic Context

Libya is Africa's major oil producer and one of Europe's biggest North African oil suppliers. Prior to the discovery of oil in 1959, agriculture was the primary sector. After the discovery of oil the Libyan economy grew rapidly as the country became richer, which attracted many international companies to operate in different sectors, specially the oil sector. The country's economy has become dependent on foreign oil companies predominantly from the UK and the US (Bait-El-Mal et al., 1973) and other international companies operating in different sectors such as banking, where four out of five bank branches belong to foreign banks (Bozied, 1998).

To improve the national economy the government implemented different development plans funded by the oil revenue. One important aim was to reduce the country's dependence on the oil sector and achieve a greater degree of self-sufficiency and self reliance. Thus, the emphasis was given to the industrial sector in non-oil sectors over the last three decades. However, the oil sector was the main drive of the country's economy, with the contribution of oil to GDP over 50% in the 1970s and early 1980s. As a result there was a great interest in developing the non-oil industrial sectors, which increased significantly, contributing over 70% of GDP in the late 1980s and early 1990s (Ahmed and Gao, 2004). Nevertheless, the country still faced a great difficulty in being unable to produce enough capital goods and consumer goods to achieve 'self sufficiency' and 'self-reliance' (Agnaia, 1996).

During the period 1951-1969 (i.e. from the independence to the revolution), the Libyan economic system was mainly capitalist. Private ownership existed with

minimum governmental interference. Since the revolution in 1969, the country has changed from capitalism to socialism.

The socialist philosophy that Libya adopted since the revolution affected largely the ownership of a business and its objectives. The State ownership structure of businesses started in the early 1970s, and in the 1980s both production and service sectors became owned, controlled and supervised by government institutions. The government has total authority over, for example, imports or exports of a company and even the company's location. In addition, according to the socio-economic development target of the country, the main objective of such enterprises is to offer services and goods to the public rather than to make a profit (Ahmed and Gao, 2004).

The domination of the State over economic activities has resulted in a number of problems such as the misuse of economic resources, lower productivity levels, higher production costs, lower quality, weak control in the public sector and lower return on capital (Alqadhafi, 2002). The lower productivity levels, higher production costs, and lower quality problems could be attributed to the lack of adequate economic and technical studies for establishing some industries, a shortage of training programmes, a lack of attention to cost accounting systems, the elaboration of appropriate budgets, bureaucracy, and centralisation of management (Alqadhafi, 2002).

From the late 1980s, a number of laws and resolutions were issued by the government in order to enhance economic development and to move the country from a centrally controlled economy to a liberalized economy by encouraging the private sector to emerge again and foreign investments. These include Act number 8 in 1988, Act number 9 in 1992 and Act number 5 in 1997. The introduction of the private sector was launched by issuing Act number 8 in 1988, which allowed the private ownership of economic activities, whereas Act number 9 in 1992 was aimed at enhancing and regulating the private sector activities in all the dimensions of the economy, namely agriculture, industry, commerce, tourism, transport and finance including an open door policy for the privatisation of a number of public-sector companies. According to Alsharif (2002) about 10,250 collective-ownership companies were established in different sectors between 1993 and 1997 (Alsharif, 2002). Similarly, Act number 5 in 1997 was aimed at encouraging foreign capital

investments within the overall policy of the State and the targets of economic and social developments. As a result, some foreign companies have resumed operating in Libya in the 1990s and early 2000s.

According to Act 5 in 1997, the Libyan Foreign Investment Board (LFIB) was established to attract foreign investment into Libya within a socialist framework of economic and social development. This Act and the subsequent amendments made to it in 2003 were aimed at promoting foreign investment through a partnership (joint venture) between Libyan and foreign capital in different sectors such as industry, health, agriculture, and tourism. The law embodied in this Act is there to enable the transfer of modern technologies, the technical advancement of human resources in Libya, the diversification of sources of income, and the promotion of national products to be able to gain access to international markets.

Figure 2.1 The Number of Foreign Investments Since 2000

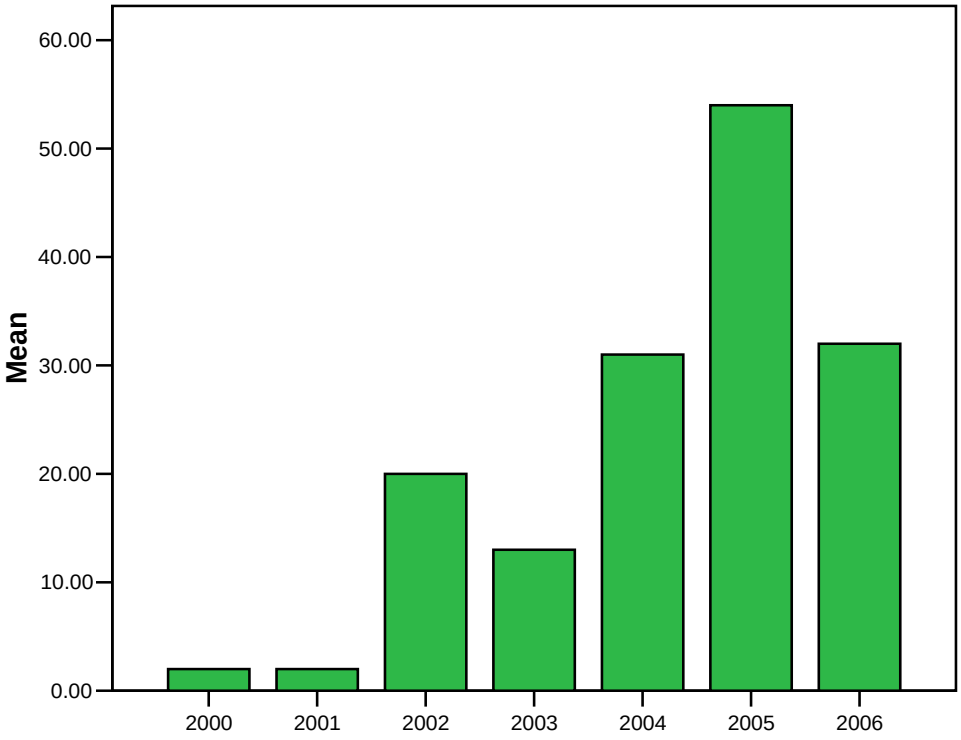
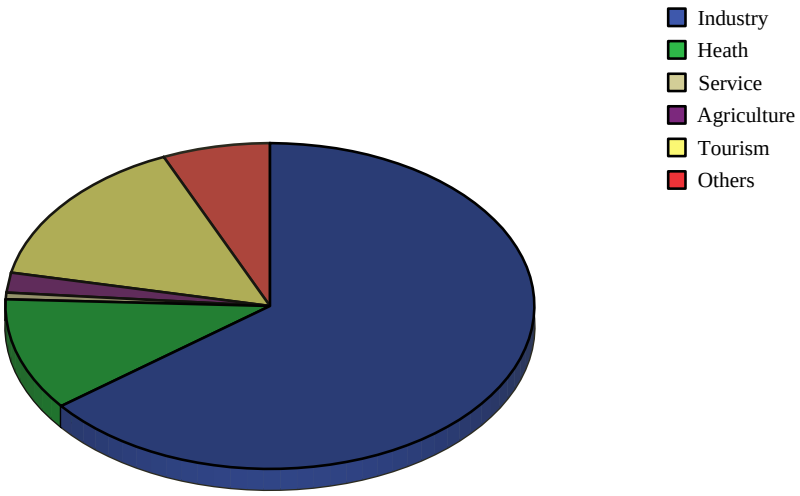


Figure 2.2 The Percentage of Foreign Investments by Sectors



As can be seen from Figure 2.1 there has been a significant increase in foreign investments in Libya since 2000. In addition, it is clear from Figure 2.2 that the vast majority of foreign investment was in manufacturing, as it represents 64.49 per cent of the total foreign investments.[1]

Libya in its intention to liberate the economy has started to implement the privatisation plan; to this end a General Board of Ownership of Public Companies and Economical units (GBOT) was established by resolution number 198 in 2000. This organization has the responsibility for overseeing the transfer of public companies and the ownership of economic units to the private sector. The GBOT is expected to achieve the privatisation of 361 State-owned enterprises by the end of 2008 in a three-stage plan that started on 1/1/2004. By the end 2006 only 69 state-owned firms were privatised[2].

With these developments and changes such as the increase in foreign direct investment, the emergence of the private sector and the privatization of the public sector, there has been a need for change in the accounting systems in general and the management accounting systems in particular to provide managers with relevant information to make their decisions.

[1] LFIB report (2006)
[2] GBOT report (2006)

2.2.3 The Accounting Profession

The accounting profession in Libya is still in its infancy with its main responsibility for the preparation of external financial reports and auditing which are the requirements imposed by the law (Bait-El-Mal et al., 1973; Kilani, 1988; Buzied, 1998). For instance, the Libyan Commercial Code (LCC), which was issued in 1953, requires companies to prepare an annual report, including an income statement and a balance sheet. Hence there is less emphasis on producing information for internal managerial use.

Moreover, there are no accounting principles or auditing standards in Libya (Bait-El-Mal et al., 1973; Kilani, 1988; Bakar, 1997; Buzied, 1998). In the absence of these principles and standards, companies in different industries or even in the same industry applied different accounting principles, rules, methods and procedures. As a result, the choice of accounting standards, methods and techniques is left entirely to the interests of each company's accountants, managers and auditors in accordance with their education background (Kilani, 1988; Buzied, 1998).

In this respect, the Libyan Accountants and Auditors Association (LAAA) was established in June 1975 with the aim of organizing and improving the conditions of the accounting profession and raising the standards of accountants and auditors professionally, academically, culturally and politically and of organizing and participating in conferences and seminars related to accounting. Some argued that the LAAA has failed to achieve its objectives of holding and participating in activities such as research, conference, seminars, continued education and training programmes, following recent developments in the profession through accounting publications to improve the status of the profession and accordingly its members (Bakar, 1997; Ahmed and Gao, 2004; Mahmud and Russell, 2003).

Factors that have influenced the development of the Libyan accounting profession include the presence of foreign companies and international accounting firms in Libya (mainly from the UK and the US), the introduction of an accounting education based on UK and US textbooks, accountants from other countries and Libyan

accountants educated in other countries (Bait-El-Mal et al., 1973; Bakar, 1997; Buzied, 1998; Mahmud and Russell, 2003).

According to Bait-El-Mal et al. (1973) and Buzied (1998), the foreign companies that came to Libya after the country's independence, particularly from the UK and the US, contributed to the development of accounting in Libya through the transfer of accounting knowledge and practice from their countries of origin to Libyan personnel. In addition, the external auditing of these companies was carried out by international accounting firms that operated in Libya. Thus, local companies that deal with these foreign companies have made considerable improvements in their accounting systems. In this respect, Saleh (2001) stated that Western accounting practices were diffused to Libya through oil companies especially from the UK and the US to Libya's oil companies, and then to non-oil companies as employees move in and out of the oil sector. This pattern continued even after the nationalisation laws of the late 1960s as there were no laws or regulations to ban Western accounting practices (Buzied, 1998).

Furthermore, the accounting education programmes were initially influenced by British education programmes, and most of the textbooks used were British or were Arabic books either translated from English or published by Arabian researchers who had been educated in UK universities before they came to Libya to teach. Since 1976 American accounting education began to have an influence and gradually overtook the British system, and many Libyan academic staff who had graduated in the USA came back to teach in Libya (Bait-El-Mal et al., 1973; Kilani, 1988; Bakar, 1997). However, both programmes focused heavily on financial accounting topics, in particular on external reporting, taxation and external auditing aspects, whereas management accounting and cost accounting were given inadequate attention (Kilani, 1988; Buzied, 1998; Ahmed and Gao, 2004).

Despite the environmental factors in Libya being significantly different from those in the UK and the US, the Libyan accounting education system and the accounting profession have been developed toward the accounting environment of the private sector of the UK and US, which are irrelevant for a developing country like Libya where most economic activities are controlled by the State - the main user of

accounting information - and the country's emerging capital market (Kilani, 1988; Buzied, 1998; Ahmed and Gao, 2004). In this respect, Ahmed and Gao (2004, p. 377) state that

> Examining the syllabuses of the accounting programme, it seems that most of the subjects are based on accounting concepts and principles from the West; and that they cover many concepts either not known in Libya or which are interpreted differently there (e.g., profit, interest, cost of capital, market value, prudence, materiality, substance over form, realization). It is also apparent that the syllabuses do not cover some areas or subjects that are considered to be directly related to the characteristics of Libya. Three important omissions in our view are accounting under Islamic Shari'a, accounting for the enterprises managed by people's committees, and the application and practice of accounting and auditing in the context of state (social) accountability.

Ahmed and Gao also draw attention to some problematic issues related to the accounting education system in Libya such as the shortage of qualified accounting educators, the disparities between academic teaching and professional training in the accounting curricula, and the inadequate accounting research effort.

Mahmud and Russell (2003) identified a number of barriers to the development of accounting education and practice in the Libyan context, the most impeding factors being the lack of active professional societies and inadequate public understanding of the role of accounting. Other factors were related to the outdated accounting curricula and syllabi and the lack of modern textbooks in Arabic. They also argued that Libya needs a strategic plan to modernise both its accounting education and practice by making the modern texts more relevant to the Libyan business and social environment.

Therefore, the diffusion of Western management accounting practices (MAPs) in Libya can be considered as the result of two mechanisms: foreign companies, especially oil companies, and the accounting education system. In order to put the diffusion of Western MAPs to Libyan companies into a clear perspective, the following sections provide a critical review of the management accounting literature, highlighting the perceived management accounting lag and the gap between theory and practice. Alternative explanations of MAPs diffusion are also presented and discussed.

2.3 Management Accounting Lag

Management accounting techniques are now expected to serve managers' needs in a business environment with a continually increasing diversity of products, local and foreign competition and complexity of manufacturing processes. The early management accounting procedures were perceived to be simple; however, they played a key role in providing managers with information about the efficiency and profitability of internal processes.

According to Kaplan (1984), Johnson and Kaplan (1987) and Johnson (1990) traditional management accounting techniques were developed in the late 1800s and early 1900s and, by 1925, most of the MAPs used in the mid-1980s had been developed. These techniques include variable costing, full costing, standard costing, budgeting, transfer pricing, break-even analysis, residual income and variance analysis.

With competition, diversity of products and the complexity of manufacturing processes on the increase since the 1920s, there have been some criticisms concerning traditional MAPs in the last four decades. A number of researchers claimed the obsolescence of existing management accounting systems (e.g. Kaplan, 1984, 1986; Johnson and Kaplan, 1987; Cooper and Kaplan, 1991 and Ashton et al., 1995). They argued that these traditional management accounting techniques were no longer adequate to provide relevant information to management operations and managers' needs as a result of these changes.

Kaplan (1984) in particular claimed that there had been little management accounting innovation since 1925, and that the data produced by management accounting systems reflected external reporting requirements far more than they did based on the reality of the new manufacturing environment. He argued that the manufacturing environment now is very different from what it was before; therefore, different management accounting techniques were required in terms of evaluating both financial and non-financial aspects of manufacturing performance. In addition, Kaplan (1986) indicated that for management accounting systems to provide relevant

information for managerial decisions and control they must change in response to any change in manufacturing processes. Moreover, he stated that

> Yet when manufacturing operations change, the last and most difficult component to change is the accounting system. (p. 194)

Also in answering why management accounting systems lagged so far behind the speed of change in manufacturing operations, he indicated that the most important explanation was top management unawareness of the need for such changes in management accounting systems.

One of the most popular publications regarding the criticisms of traditional management accounting techniques is the book by Johnson and Kaplan (1987), *Relevance Lost: the rise and fall of management accounting.* In this book, they posited that management accounting information was

> Too late, too aggregated and too distorted to be relevant for manager's planning and control' decisions. (p. 1)

They observed that, despite the fact that product lines expanded, production technology changed, product life cycles shortened, global competitive conditions shifted and the most important advances in information technology occurred, organisations were still fixated on the cost systems and management reporting methods of the 1920s. In addition, they questioned why researchers did not play a more active role to improve the art of management accounting system design.

In addition, Johnson and Kaplan (1987) summarised the consequences of stagnation in management accounting in three items. Firstly, management accounting reports did not offer much help to operating managers in their attempt to reduce costs and improve productivity by not focusing on providing timely and detailed information. Secondly, the reports failed to provide more accurate product costs, as costs were being allocated by simplistic measures, usually direct labour based, which do not represent actual product cost. As a result of this inadequate measurement, the information produced could only misguide decisions such as product pricing and product mix. Finally, more attention was paid by managers to short-term reporting

systems focusing on monthly profit, than the long term profit, which is important as well in evaluating managerial performance.

However, Drury and Tayles (2000) claimed that these criticisms were based mainly on informal observations obtained from a very small number of companies in the USA and not from large scale surveys about the current MAPs. In other words, the lack of generalisable concrete evidence calls for caution with regard to claims of obsolescence in management accounting.

Nevertheless, in response to challenges in the increasingly competitive business environment and changeable production technology, calls for revolution in traditional MAPs have been answered by academics with the introduction of a range of new management accounting techniques and practices in the last fifteen years. These new techniques include Activity-Based Costing(ABC), Activity-Based Management (ABM), Balanced Scorecard (BSC), Life Cycle Costing, Target Costing, and Cost of Quality Reporting.

2.4 The Gap between Theory and Practice in Management Accounting

Johnson and Kaplan (1987) also blamed academics for some of the weaknesses and failures of management accounting systems. They were interested in developing highly sophisticated models for management accounting in simplified, stylised production setting by focusing on simple decision-making models in a simple situation with a few products in one stage production processes instead of studying the problems actually faced by managers in real life organisational settings with complex production process, where numerous of products were produced. Hence, these models or theories were difficult to apply in organisations.

Other writers also have recognized the gap between textbook theoretical prescriptions that show how management accounting should be done, and how management accounting is done actually in practice (Scapens, 1985; Drury et at., 1993; Ashton et al., 1995; Drury, 1996). In addition, some researchers reported the fact that management accounting research has had very little impact on practice

(Scapens, 1985; Edwards and Emmanuel, 1990). Anthony (1989) criticised the claims by researchers that a specific management accounting technique is widely (or not) used where there is no statistical evidence to prove that. He further argued that there was a need for survey information concerning the use of MAPs, as information about MAPs is very poor and that almost all related information is anecdotal. Also Drury (1998) claimed further empirical studies were required to provide a detailed description and evaluation of the new techniques and factors that would influence change.

In response to these concerns, researchers in management accounting have become more interested in survey-based research of MAPs. As a result many surveys on management accounting have been undertaken especially in developed countries, for instance in the UK (Drury et at., 1993), the USA (Green and Amenkhienan, 1992), Australia (Chenhall and Langfield-Smith, 1998a), and Japan (Yoshikawa et at., 1989). Survey evidence suggested that there was a gap between the theory as portrayed in textbooks and the practices of management accounting. Despite the benefits of recently developed management accounting techniques, the common findings from these surveys are that the traditional MAPs are still popular and the adoption rates of these practices are found to be much higher than those of the so-called advanced management accounting techniques. Moreover, the benefits gained from traditional management accounting techniques are perceived to be higher than those from advanced techniques. This has raised the pertinent questions of whether it is premature to assume that traditional management accounting techniques lack relevance and the conditions necessary to effectively adopt the recently developed techniques (Chenhall and Langfield-Smith, 1998a).

As Drury and Tayles (1995) observed, the gap has not been helped by a research effort that has mostly concentrated on sophisticated methods in simplified production settings that are not related to problems faced by practitioners. Hence, they suggested that further field study research based on the neoclassical economic, organizational and social literature is required to explore why some companies had not sought to make fundamental changes to their management accounting systems even though they had to face extensive changes to their manufacturing and competitive environment. There is, therefore, a need to explain observed practices by examining

their role within the broader organizational, social, political and cultural dimensions (Drury and Tayles, 1995).

Scapens (1991) has suggested three reasons why there might be a gap between theory and practice: first, delay in theoretical development being applied in practice; second, poor communication between theorists and practitioners; and third, theorists' failure to address the reality faced by practitioners. Drury (1996) argued that the first two of Scapens's (1991) suggestions were not convincing. He argued that most management accounting techniques, traditional and advanced, were developed a long time ago and they have been part of the examinations syllabi of professional accountancy bodies; if they offered real benefits, he argued, they would be implemented widely. Moreover, according to Drury (1996) the last reason seems to explain most of the gap. There should be a change of emphasis from normative theory (what ought to be) to positive theory (what is) and seeking to explain the factors influencing observed practices. Conventional wisdom should describe both theory and practice as they should reinforce one another. Theory should represent the desired state whereas practice should represent the current state. Theory should represent all the time the updated stock of concepts and techniques that are available to practitioners and which should be considered alongside existing techniques used in practice. Thus, future generation of textbooks should identify possible implementation problems, how techniques might be modified to reflect the realities faced by practitioners and draw attention to cost and benefits in actual applications.

Scapens (1994) sent a message to researchers not to worry too much about the gap between MAPs and theoretical ideas. He argued that such a gap arises as a result of comparing between the optimal models in simple production settings, which relied primarily on neoclassical economic theory, against the MAPs in reality. He also emphasized that the focus should be more closely on studying practice and seeking to explain observed practice drawing off organization, social and economic theory. The institutional economic framework sketched out by Scapens (1994), which rejects the core assumptions of neoclassical economics in understanding the management accounting issues, provides an alternative perspective for studying MAPs as the outcome of institutional processes in which habits and routines evolve to give linkage and meaning to organizational behaviour. Although the institutional

framework takes an economics approach, it seeks to introduce into the analysis the social, political and cultural dimensions. Therefore, based on this institutional perspective, one cannot expect that all textbook techniques and procedures are to be adopted by firms.

More recently, Burns and Scapens (2000) proposed an institutional economic framework, stating that by recognizing management accounting as organizational rules and routines enables researchers to explore management accounting change as a process rather than an outcome and encourages them to focus more on management accounting ideas, concepts, techniques, systems, etc, which are likely to be more useful in practice rather than the so-called 'optimal' techniques designed for abstract rational makers. Rules comprise the formal management accounting systems as they are set out in the procedure manuals, whereas routines are the accounting practices actually in use, and when the rules are introduced, new routines will emerge and the existing institutions will shape these procedures. Over time, if they are widely accepted in the organization and if they become an unquestionable form of management control, then they can be said to be institutionalized. Such institutionalization may not always be achieved, because of the conflict and resistance which may arise over new accounting management systems, particularly if they challenge existing meanings and values. Thus, it is important to recognize the role of power in the process of change. Moreover, they pointed out that management accounting change has to be understood in terms of the behaviour of individuals and groups within the organization, which are likely to be more useful in understanding the practice rather than the so-called 'optimal' techniques designed for abstract rational makers.

It appears from the discussion so far that management accounting innovation has lagged manufacturing and technological innovations as well as a these has been a debate regarding the gap between the theory and practice of management accounting in terms of what the main cause of it is and how it could by closed. In this respect, some researchers have claimed that instead of focusing too much on comparing studies between optimal models in simple production settings and MAPs in complex reality (*what ought to be*), attention should instead be paid to studying the practice of management accounting (*what is*) and to the area of research related to identifying

and understanding the factors that influence (i.e. facilitate and impede) management accounting change drawing off organization, social and economic theory. A promising development in this respect is the use of diffusion of innovation theory to explain management accounting change.

2.5 Diffusion of Innovation Theory

Social and economic change is often the direct consequence of the diffusion of new concepts or ideas into new social settings. Therefore, understanding the diffusion process of this new concept or idea is a key to understanding change (Bjornenak, 1997). The diffusion of innovation research has attempted to investigate the factors that influence the diffusion of innovation. Researchers have tried to answer what the attributes of early and late adopters are and why some innovations are more widely adopted than others.

2.5.1 Definitional and Critical Considerations

While *diffusion* has consistently been defined as the process whereby the innovation is spread or disseminated (Bjornenak, 1997), the definition of *innovation* is not straight forward.

On its own, the word innovation may be understood to be an idea, practice, or object that is *perceived to be new* to its adopters (Zaltman et al., 1973; Rogers, 1995; 2003). Likewise, organizational innovation is consistently defined as the adoption of an idea or behaviour that is perceived as new by an organization (Hage and Aiken, 1970; Zaltman et al., 1973; Daft and Becker, 1978; Hage, 1980; Damanpour, 1988, 1991; Zammuto and O.Connor, 1992). The innovation can be a new product, a new service, a new technology, or a new administrative practice.

The common criterion accepted for the idea to be considered as an innovation is *perceived newness*. According to Rogers (1995, 2003), newness might be determined in terms of new knowledge regarding the idea, and also in terms of a first decision to

adopt this idea by the relevant adoption unit. In this context, Evan and Black (1967) and Van de Ven (1986) pointed out that innovations could be either old or new ideas adopted in new settings. Firth (1996) stated that using a new idea or even the adoption of an old idea in a new context, where this idea is regarded as new, may be viewed as an innovation. Also according to Ax and Bjornenak (2005), innovation may be old ideas applied to new settings or even old ideas being reintroduced into the same setting at a later point in time.

Newness of an idea or practice should also be considered in terms of its adoption by the unit of adoption such as organization, rather than the first use ever or its newness to a population of organizations (Zaltman et al., 1973; Pierce and Delbecq, 1977). In addition, Damanpour and Evan (1984) and Slappendel (1996) indicated that it is the perception of newness by the adoption unit that matters, not the idea or object being new to the world, to other different environments, or to the organizational populations, as adoption of new ideas in an organization is expected to affect organizational performance regardless of the time of its adoption by other organizations in the population. The newness element is also important to differentiate innovation from change. Zaltman et al. (1973) agued that, while all innovation implies change, not all change involves innovation as not everything that an organization adopts is perceived as new.

In the context of management accounting innovation, Sulaiman and Mitchell (2005) distinguish between various types of changes as follows:

- **Addition:** introduction of a new technique as extension to an existing management accounting system, such as the introduction of quality costing system or budgeting system.

- **Replacement:** introduction of a new technique as replacement for an existing part of a management accounting system such as the replacement of traditional costing with ABC, or of a fixed budgeting system with flexible budgeting.

- **Output modification:** modification of the information output of the management accounting system such as the preparation of weekly as opposed

to monthly variance reports or the re-presentation of numerical information in graphical form.

- **Operational modification:** modification of the technical operation of the management accounting system such as the use of a pre-determined as opposed to an actual overhead rate in an existing costing system or the use of regression analysis as opposed to an inspection basis for separating fixed and variable costs.

- **Reduction:** the removal of a management accounting technique with no replacement such as the abandonment of budgeting or the cessation of break-even analysis.

Thus, the addition, replacement, output modification, and operational modification changes can be regarded as innovation as long as they are perceived as new by the organizations. However, for the purpose of this research, only the addition and replacement types of change are considered, as they involve introducing a new MAP.

Another important distinction found in the literature is that between administrative and technical types of innovation (e.g. Damanpour, 1991; Utterback, 1994). Technical innovation belongs to product, services and production process technology. It is related directly to basic work activities and production process technology, such as new product or services, whereas administrative innovation affects organizational structure and procedures and, therefore, is related to organizational management such as an introduction of a new management accounting technique (Daft, 1978; Damanpour and Evan, 1984).

Therefore, for the purpose of this research on MAPs in Libya, an innovation is defined as *the adoption of an administrative innovation, namely, a management accounting technique, by Libyan manufacturing companies.*

2.5.2 Perspectives on Organisational Innovation

Given the fact that innovation is a complex and sensitive phenomenon, as explained in the foregoing discussion, Wolfe (1994, p. 406) suggests that, in order to minimize ambiguity, researchers must be clear about the following issues:

- Which of the various streams of innovation research is relevant to a research question?
- The stage(s) of innovation process upon which a study focuses,
- The types of organization included in a study,
- How a study's outcome variable (e.g. adoption, innovation, and implementation) is conceptualized?
- The attributes of the innovation(s) being investigated.

Table 2.1 Diffusion of Innovations Streams

	Research question	Research approach	Research focus
1	What is the pattern of diffusion of an innovation through a population of potential adopter organizations?	Diffusion of innovation (DI) research.	Addresses the diffusion of an innovation over time and/or space.
2	What determines organizational innovativeness?	Organisational innovativeness (OI) research.	Addresses the determinants of the innovativeness of organisations.
3	What are the processes organisations go through in implementing innovation?	Process theory (PT) research.	Addresses the process of innovation within organisations.

Adopted from Wolfe (1994, p.407)

In this respect, the organizational innovation literature can be grouped into three streams, as detailed in Table 2.1. Each of these streams is discussed below:

2.5.2.1 Diffusion of Innovation (DI)

This stream seeks to answer the question of how and why an innovation diffuses over time and space through a population of potential adopters. Therefore, the unit of analysis is innovation in extra-organizational context concerning with adoption stage. The common data collection methods are cross-sectional surveys and secondary data.

The rate of adoption over time has often been delineated by an S-shaped curve which presents an elapsed time that an adopter takes to adopt innovation (Abrahamson, 1991; Rogers, 1995, 2003). Elapsed time to adopt is defined as the time between the dates that an organization or an individual takes the decision to adopt the new idea and the date on which the new idea was launched or the new product was introduced (Taylor and McAdam, 2004). There are various explanations of the S-shaped curve. Some argue that the number of adopters should increase the information about the innovation, which results in less uncertainty and risk of using the innovation over time (e.g. Mansfield 1968; Rogers, 1995, 2003), while others argue that it occurs because of the change in balance between supply and demand of innovation, which reflects the comparison between the cost and profit of the innovation (e.g. Freeman, 1982; Jowett, 1986; Attewell, 1992). However, these explanations have provided limited understanding of the diffusion of innovation (Abrahamson, 1991; Malmi, 1999). Tornatzky and Fleischer (1990) classified the adopters, based on S-shape curve, as innovators, early adopters, early majority, late majority, and laggards.

The literature in this stream has reported various factors that influence the diffusion rate such as adopter characteristics, the social network to which the adopter belongs, innovation attributes, environmental characteristics, the process by which an innovation is communicated, and the characteristics of those who are promoting an innovation (Rogers, 1995, 2003). Others argue that these could be classified as factors related to innovation attributes, innovator attributes, and environment and social context (Wejnert, 2002; Askarany, 2003). However, there have been many studies investigating the impact of these factors on the rate of innovation diffusion. Regers (1995, 2003) argued that there was a lack of studies concerning the impact of innovation attributes on their diffusion rate. Rogers and Shoemaker (1971) and Rogers (1995, 2003) identify the innovation characteristics that influence the diffusion rate as *relative advantage* (the degree to which an innovation is perceived as better than the one that replaces it), *compatibility* (the degree to which an innovation is perceived as consistent with the potential adopter in terms of existing values, past experience, their needs), *complexity* (the degree to which an innovation is perceived as relatively complicated to understand and to use), *trainability* (the degree to which an innovation may be trialled for a limited period before full

implementation) and *observability* (the degree to which the results of adopting an innovation are visible).

2.5.2.2 Organizational Innovativeness (OI)

The organizational innovativeness stream is concerned with the determination of an organization's tendencies to adopt innovations. The organization is the unit of analysis and organizational innovativeness has been typically measured by the number of innovations adopted by the organization. Therefore, the focus in this stream is on the adoption or implementation stage using cross-sectional surveys.

Although researchers have focused on the impact of individual, organizational, and environmental variables on organizational innovativeness, they paid more attention to organizational structure because of its crucial importance as a determinant of innovation (Kim, 1980; Kimberly and Eviansko 1981; Damanpour, 1987, 1991). To what extent an organization is open to innovation depends on organizational factors such as size, professionalism, formalization, centralization, specialization, and to management support (Kim, 1980; Kimberly and Evanisko, 1981; Damanpour, 1991; Subramanian and Nilakanta, 1996).

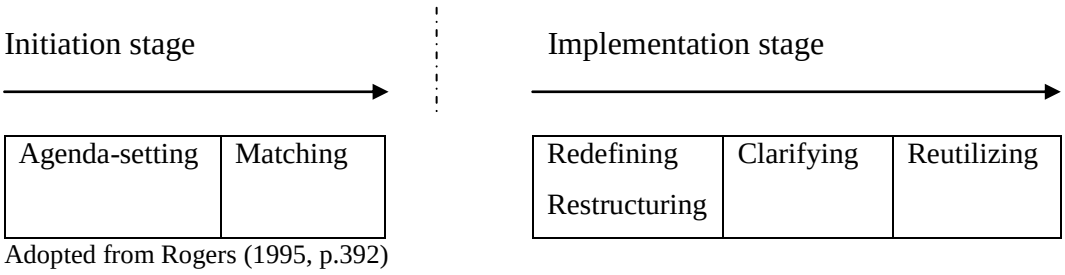
2.5.2.3 Process Theory Research (PT)

Process theory research of organizational innovation focuses on the innovation process itself. It investigates how and why innovations emerge, develop, grow and terminate. The unit of analysis is the innovation itself in intra-organizational level concerning the adoption through implementation stages. PT research focuses on the sequence of activities in the development and implementation of innovation over time.

Wolfe (1994) distinguishes between two generations of PT research. First is the stage model research. It is concerned with the identification of innovation stages and determining their order. The common methods that have been used to collect data in

this case research are retrospective surveys. Research has proposed several stage models of organizational innovation. For instance, Rogers (1995) identifies two broad activities of diffusion of innovation process in an organization: initiation and implementation each composed of stages as Figure 2.3 shows. The initiation stage is composed of all activities related to the perception of the problem, information gathering, conceptualizing and planning for the adoption leading to the decision to adopt/reject, while the implementation stage consists of all events and actions related to putting an innovation into use. Thus, the decision to adopt or reject is a line which distinguishes between the two stages of initiation and implementation (Zaltman et al., 1973; Damanpour, 1991; Rogers, 1995, 2003). Of direct relevance to this study are the decision to adopt/reject and the implementation stage.

Figure 2.3 Stages of Innovation Process in an Organization



Adopted from Rogers (1995, p.392)

Second, the other kind of PT research seeks to describe in-depth the sequences of, and the conditions which determine an organization's innovation processes. Research is often carried out by qualitative data from in-depth field studies. Researchers have reported some factors which affect innovation processes; these include factors relevant to organizational context such as strategy, structure, and financial resources, as well as factors linked to organizational policies such as decision making influence, and dependence on external groups (Van de Van and Poole, 1990).

Based on the discussion above, two streams of Wolfe's classification of the innovation literature, namely DI (Diffusion of Innovation) and OI (Organizational Innovativeness), are relevant to the purposes of this research.

2.6 Criticism of Diffusion of Innovation Theory Literature

What can be established from the review of this body of literature is its clear pro-innovation bias (Zaltman at al., 1973; Downs and Mohr, 1976; Kimberly, 1981; Rogers, 1983, 1995; Van de Ven, 1986; Nicholson, 1990). The pro-innovation bias assumes that an innovation should be diffused and adopted by all members of the social system and it should be neither reinvented/modified nor rejected. In addition, the pro-innovation view assumes that innovations will benefit the organizations adopting them and that the rational adopters make an independent and a technically efficient choice (Rogers, 1995).

According to this view, innovations will diffuse when they benefit the adopter and get rejected when they do not. In contrast, inefficient innovations will never be adopted and efficient ones will not be rejected. In this context, Van de Ven (1986) points out that innovation and adoption are often viewed as a good thing, whereas new ideas that are not perceived as useful tend to be called mistakes, rather than innovation, and the decision not to adopt is viewed as negative and called resistance to innovate.

Kimberly (1981) indicates that pro-innovation bias has been developed after World War Two in the area of US economic dominance, where a rich environment with high rates of innovations has led to continuous economic growth. In such an environment, knowledge concerning the spread of diffusion rates, the characteristics of adopters and the prevention of the laggards' diffusion appeared to be appropriate.

Newell et al. (2001) claimed that this perspective (pro-innovation) would be useful when the adoption of innovation is reasonably explained and where benefits gained from the adoption can be identified. This will be difficult to obtain in real organizational contexts, especially when dealing with the adoption of administrative innovation, like management accounting techniques.

This perspective, however, fails to explain why inefficient innovations are diffused or why efficient ones are rejected (Abrahamson, 1991, 1996; Rogers, 1995, 2003). For instance, Fineman (2001) indicated that the greening idea has diffused to some

level despite the fact that the idea and its benefits are uncertain and ambiguously defined. In addition, some authors pointed to the lack of attention that this perspective paid to the rejection of innovation (Kimberly, and Eviansko 1981; Rogers, 1995, 2003). Rogers (1995, 2003) emphasised that, as a result of pro-innovation bias, we ignore the very important aspects of diffusion as we know much more about how innovation diffused rapidly than how it diffuses slowly, about adoption than rejection, and about continued use than about discontinuance. He further suggested that, in order to overcome the pro-innovation bias, researchers should investigate the broader context where an innovation diffuses. Moreover, he emphasised that to increase our understanding of the motivation for adopting an innovation, researchers should use "why" questions which have only seldom been used in the diffusion of innovation research.

2.7 Alternative Perspectives in Explaining the Diffusion of Innovation

The classic literature of the diffusion of innovation has been criticised due to the fact that it has been dominated by a demand perspective which assumes that rational adopters make technically efficient choices (Rogers, 1995, 2003). However, this perspective underestimates the role of suppliers of innovations in providing the information to potential adopters (Brown, 1981; Clark 1984). Furthermore, it fails to address sufficiently the institutional mechanisms which can lead organizations to adopt technically inefficient innovations (DiMaggio and Powell, 1983, 1991; Abrahamson, 1991). Thus, the next three subsections will deal with possible alternative explanations of the diffusion of innovation that have been found in the literature.

2.7.1 Institutional Theory

Various researchers have paid attention to the diffusion of innovation in connection with new institutional sociology theory (e.g. Scott, 1995; Haunschild and Miner, 1997; Chua and Petty, 1999; Howorth et al., 2002). Institutional theory researchers have pointed to the influence of institutional factors such as the government role and the organizational network in the diffusion of innovation. For instance, Tolbert and

Zucker (1983) investigated the diffusion and institutionalization of civil service reforms by cities. In their study they distinguished between two different cases of diffusion. The first one found that when the civil service procedures are required by the State, they diffuse rapidly and directly from the State to each city. In the second one, when the procedures are not required by the State, they are not deemed legitimated, they diffuse gradually over time and largely through social influence. In this case, early adoption of the procedures by cities occur as a result of internal organizational factors as organizations require these procedures, but later when a number of organizations adopt the procedures increases, they become institutionalized, leading to legitimacy. Once that happens, the legitimacy of procedures facilitates the later diffusion; so organization factors no longer predict the adoption decision.

In this context, it is worthwhile to discuss briefly the various types of institutional theory that have been used in understanding organizational/ management accounting change. According to Hussain and Hoque (2002) and Scapens (2006) there are three different versions of institutional theory to study organizational/ management accounting change, namely: New Institutional Economics (NIE), Old Institutional Economics (OIE) and New Institutional Sociology (NIS).

NIE adopts a rational economic approach, which mainly focuses on making optimal choice by organizational actors to maximize the economic outcomes (Spicer and Ballew, 1983; Spicer, 1988). This type of institutional theory illustrates the economic factors which are thought to shape the structure of organizations and their MAPs; this perspective heavily influences conventional management accounting theory and research (Burns and Scapens, 2000; Hussain and Hoque, 2002).

In contrast, OIE starts from a rejection of the rational economic approach. The central core of this version is the important role of organizational routines and institutions in shaping organizational change. Based on this perspective, the changes in organizational and accounting routines should be recognized, these changes in routines may (or may not) be embedded in organizational institutions. Organizational institutions are regarded as imposing forms and social coherence upon the activities of human thought and action (Burns and Scapens, 2000).

NIS, which is largely attributed to DiMaggio and Powell (1983, 1991), suggests that within a high degree of environmental uncertainty, organizations will develop homogeneously. In NIS, however, the main question is why organizations in the same field look similar and what the pressures and processes are in shaping an organization. This version is concerned with the effect of the wider social environment, where an organization is located on organization structure. It is believed that the survival of an organization depends not only on achieving production efficiency but also on its conformity to societal norms of acceptable practice (Meyer and Rowen 1977; DiMaggio and Powell, 1983, 1991). To illustrate conformity, DiMaggio and Powell (1983, 1991) identify three types of isomorphism: coercive, normative, and mimetic.

While OIE looks closely at institutions and the pressures within the organization that shape the MAPs, NIE and NIS look to institutions that put pressures from outside the organization (Scapens, 2006).

Based on the discussion above, it seems that there is an overlap between diffusion of innovation theory and institutional theory, especially NIS. The central interest in diffusion theory is how and why (or why not) some firms adopt new ideas or practices. In this respect, NIS seems to provide an answer to these questions as it gives an explanation as to why and how some practice may diffuse through the population. Thus, this theory will be discussed further in the following.

NIS theory puts emphasis on the organization in its institutional environment, not organization's task environment as usually prescribed by contingency theory, which has received much attention in management accounting research (Covaleski et al., 1996; Hussain and Gunasekaran, 2002). These environments, which include an organization's networks such as customers, suppliers, and other organizations that influence input and output of the organization, include also the culture and social systems such as rules, beliefs and norms. Thus, in order to survive, organizations do not just need to achieve production efficiency, but they also need to adopt the practices and procedures that are acceptable in their institutional environment, and they do that to ensure continuance of support from their institutional environment and to gain legitimacy. Scott (1987, p. 507) states that

> Until the introduction of institutional conceptualizations, organizations were viewed primarily as production systems and/or exchange systems, and their structures were viewed as being shaped largely by their technologies, their transactions, or the power dependency relations growing out of such interdependencies. Environments were conceived of as task environments: as stocks of resources, sources of information, or loci of competitors and exchange partners. While such views are not wrong, they are clearly incomplete. Institutional theorists have directed attention to importance of symbolic aspects of organizations and their environments. They reflect and advance a growing awareness that no organization is just a technical system and that many organizations are not primarily technical systems. All social systems, hence all organizations, exist in an institutional environment that defines and delimits social reality.

Therefore, according to NIS theory, organizational forms, practices and procedures will diffuse within organizational fields in a similar setting. Meyer and Rowan (1977) and DiMaggio and Powell (1983) both tried to answer the same question: what makes organizations so similar? They concluded that organizations become homogeneous in the same field, not only because they need to increase efficiency but they also confirm social rules. DiMaggio and Powell (1983, p. 148) defined an organizational field as

> Those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products.

They state that the concept that best captures the process of homogenization is isomorphism; they define organizational isomorphism as the resemblance of a local organization to other organizations in its environment or field.

They distinguish between competitive and institutional isomorphism. Competitive isomorphism is more concerned with efficiency and market competition; hence it assumes that the adoption of practices and forms is based on a rational assessment of their benefits. This makes this type of isomorphism as the most relevant to an organization that exists in free and open market competition, particularly for an early adoption of innovation. For a fuller picture of the diffusion of innovation, however, DiMaggio and Powell suggest that an additional insight using institutional isomorphism is necessary. Institutional isomorphism occurs when an organization is subject to pressure from other organizations or institutions operating in its

environment. DiMaggio and Powel (1983, 1991) identify three types of institutional isomorphism/pressures:

1. Coercive pressure concerns the external pressures (both formal and informal) that are exerted on an organization from other organizations upon which they are dependent, and from society to conform to culture expectations. Such pressures may be felt as force, as persuasion, or as invitation to join in collusion. For instance, organizations adopt new techniques as a result of government regulations, or large manufacturing companies may force their suppliers to standardize their shipping operations.

2. Mimetic pressure emphasises uncertainty as a powerful force for imitation. In the situation when organizations are uncertain about their environment, goals, and technology efficiency, organizations tend to copy certain practices from other organization, that are considered being legitimate or successful, in their field. In this context, John and Meyer (1981) in DiMaggio and Powel (1983, p. 152) claim that

   > It is easy to predict the organization of a newly emerging nation's administration without knowing anything about the nation itself, since "peripheral nations are far more isomorphic - in administrative form and economic pattern - than any theory of the world system of economic division of labour word lead one to expect".

3. Normative pressure focuses on the pressures for change that occur when organizations seek institutional legitimacy for their activities (DiMaggio and Powel, 1983, 1991). DiMaggio and Powel (1983, 1991) state that this kind of pressures stems primarily from professionlization. They identify two aspects of professionlization that are important sources of isomorphism. First, the formal education produced by universities and professional training institutions, as they play a central role in developing organizational norms among managers and their staff. Second, the growth of professional networks that span organization and across which new techniques diffuse, for instance, individuals who occupy similar positions in many organizations, or who are hired from other organization.

One of the criticisms of NIS theory is that it often dichotomises between the public and the private sector organizations, arguing that institutional and market pressures are mutually exclusive and each set of pressures is confined to a particular class of organizations. It is assumed that the former are subject to institutional pressure, whereas the latter are shaped by competitive market pressures. Researchers using this theory have emphasised mostly on non-profit organizations and public agencies such as schools, universities, hospitals and voluntary associations. Thus, the effects of economic pressure have been neglected (Meyer and Rowan, 1977; Powell, 1991; Scott, 2001; Major and Hopper, 2003).

However, the validity of dichotomising between efficiency and legitimacy has been questioned, as economic and institutional pressures can exist in either private or public organizations (Orrù et al., 1991; Powell, 1991; Singh et al., 1991; Scott, 2001; Lee and Pennings, 2002; Tsamenyi et al., 2006; Yazdifar et al., 2008). In this context, Major and Hopper, (2003, p. 10) state that

> Private firms too can be subject to coercive, mimetic and normative isomorphism, for example regarding practices of governance. Moreover, technical means of achieving efficiency are not given but are socially constructed. Thus businesses may mimetically copy practices of apparently successful firms, often following normative advice from outside experts.

To summaries, NIS suggests that within a high degree of environmental uncertainty, organizations will develop homogeneously. With respect to the diffusion of innovation, the implications of this theory are that potential adopters may base their decisions to adopt or reject an innovation on one or more of the following forces, which would make inter-organization diffusion of practices, occur:

a) They may mimic other organizations within their sector that they perceive to be successful (mimetic force);

b) They may experience pressure from other organizations or institutions upon which they are dependent on to adopt a particular innovation (coercive force);

c) The norms established by professionals and professional associations may exert pressure on them to adopt a particular innovation in order to gain legitimacy in their field (normative force).

2.7.2 Abrahamson's (1991) Framework

An interesting alternative perspective in explaining diffusion of innovation that seems close to NIS theory is offered by Abrahamson, 1991, who argued that as a result of the domination of pro-innovation biases in the diffusion of innovation literature, it is difficult to answer questions such as when and why inefficient innovations do diffuse, and when and why efficient innovations are rejected. To answer these questions, he suggests counter assumptions of pro-innovation bias which would underline less dominant perspectives that do not reinforce pro-innovation bias.

Figure 2.4 Theoretical Perspectives Explaining the Diffusion and Rejection of Administrative Technologies

		Imitation–Focus Dimension	
		Imitation processes do not impel the diffusion or rejection	**Imitation processes impel the diffusion and rejection**
Outside–Influence Dimension	**Organizations within a group determine the diffusion and rejection within this group**	**Efficient choice**	**Fad**
	Organizations outside a group determine the diffusion and rejection within this group	**Forced selection**	**Fashion**

Adopted from Abrahamson (1991, p. 591)

The efficient-choice perspective is based on two major assumptions (March, 1978), organizations within a group can freely and independently choose to adopt an administrative technology and organizations are relatively certain about their goals and their assessment of how official technologies will be in attainting these goals. In order to overcome the limitations of efficient choice perspectives which reinforce pro-innovation bias, he argued that organizations may also imitate or be affected by other organizations' decisions, or forced to adopt or reject the administrative innovation. Therefore, he developed three additional perspectives based on a

contrary assumption, namely the forced selection, the fad, and the fashion perspectives (see Figure 2.4).

This framework is relevant to the objectives of this research as it provides alternative explanations for the adoption and rejection of efficient administrative innovation (e.g. MAPs). Therefore, it is worthwhile to explain it in more detail.

2.7.2.1 The Efficient Choice Perspective

This perspective, which reinforces pro-innovation bias, assumes that organizations have little uncertainty about their goals or preferences, how to maximise their profit, market share growth, completive advantage or any other strategic preference. Also these organizations can measure the efficiency of administrative innovation (Grandori, 1987). Therefore, organizations rationally choose the most efficient innovations that are useful for attainting their goals.

Based on this perspective, environmental uncertainty creates similar performance gaps across organizations (Grandori, 1987). Organizations that have similar goals tend to adopt the same efficient administrative innovation in order to close performance gaps. In contrast, organizations that either do not experience these environmental changes or have different goals will reject these innovations.

Furthermore, the innovation could be rejected as a result of the supply side, when organizations outside the group such as consulting organizations, introduce new techniques to close an old performance gap or disclose a new one. This introduction of the new will consider the old technique as inefficient in closing these organisations' performance gap, which rationally will lead to adopting the new one and widespread rejection of the old technique.

2.7.2.2 The Forced-Selection Perspective

This perspective assumes that organizations outside a group, such as governmental bodies or labour unions, which control sufficient power, can decide which administrative innovation should diffuse and which should be rejected by organizations. These organizations may be interested in either forcing the diffusion/rejection of inefficient administrative innovations or the rejection/diffusion of efficient ones. In addition, these powerful organizations may have conflicting views in their preferences as to which administrative innovation should be diffused or rejected. In this case organizations that have greater power will force others to adopt or reject the innovations that they support. So if the organizations that have greater power have an interest to reject the innovation, they will do so.

2.7.2.3 The Fashion Perspective

Organizations will tend to imitate other organizations under conditions of uncertainty concerning environmental force, goals, and technical efficiency (DiMaggio and Powel, 1983, 1991). Accordingly, the fashion perspective assumes that organizations in a group under conditions of uncertainty imitate administrative models promoted by "fashion-setting organizations" outside this group such as consulting firms, business mass media, and business schools.

These fashion setter organizations do not have the coercive power necessary to force organizations to imitate innovation that for example a government organization or a labour union has, but they do have another power which is their capacity to encourage/induce organizations to trust and imitate innovations they promote (DiMaggio and Powell, 1983, 1991; Ginsberg and Abrahamson, 1991).

Moreover, fashion-setting organizations may not only promote efficient administrative technologies, but also may select administrative techniques that would be more profitable for them, regardless of whether these techniques are efficient or not for other organizations. In addition, organizations tend to reject old efficient innovations when fashion-setting organizations introduce new ones which could be

mutually replaced. Therefore, the diffusion of inefficient techniques or the rejection of efficient ones may be facilitated by fashion-setting organizations.

2.7.2.4 The Fad Perspective

Although the fad perspective corresponds with the fashion perspective in that under conditions of uncertainty an organization imitates another organization's adoption decision, the fad perspective differs because it assumes that organizations within a group imitate each other within that group. Explanations as to why this might happen include the need for organisations to a) reduce ambiguity about innovation (Regers, 1995, 2003), b) appear legitimate by conforming to emergent norms that sanction this innovation (DiMaggio and Powel, 1983, 1991), or c) avoid the risk of letting competitors gain competitive advantage by using this innovation (Abrahamson and Rosenkopf, 1993).

Organizations' degree of imitating each other would vary with immunization of organizations to imitate. Organizations that are not linked to others in a communication network or have differences in certain attributes, should learn less from adopters and should be more immune to imitating the adopters' decision.

Moreover, the pressures on an organization to imitate could increase according to the number of adopters. Also organizations' reputation may increase the pressure, such that higher reputation organizations have a greater effect in triggering imitation. It must be noted that these pressures and immunities to adopt could also vary for the rejection of the innovation. For instance, an organization that adopts an innovation to distinguish itself from organizations with a lower reputation will face greater pressure to reject that innovation as more organizations with lower reputation adopt it.

Similarly, in the context of management accounting, Granlund and Lukka (1998) observed that there was a growing global tendency for homogenization of MAPs over the entire industrialized world. They argued that as the drivers of convergence had started to dominate those of divergence, the world of MAPs seemed to be setting

smaller. However, the usage of MAPs is still different from one country to another due to cultural factors or government regulation.

Granlund and Lukka (1998) also believe that the drivers of global homogenization emerge from the search for legitimacy (social fitness) and efficiency (economic fitness). To identify and analyze the factors directing MAPs towards convergence or divergence, they developed a framework which includes both economic and institutional perspectives. They believe that both the economic and institutional pressures have an important role to play in analysing modern organizations, and simultaneously affect MAPs; however, they are theoretically separate categories. In terms of economic pressure, advances in information technology intensified the globalization of markets and the increase of competition may encourage global value chains, foreign investments, and international joint ventures, which lead to global management accounting homogenization. They used the NIS theory to classify the explanatory variables of global homogenization of MAPs into: coercive pressures, normative pressures, and mimetic processes.

2.7.3 The Supply Side of the Diffusion of Innovation

Some researchers (e.g. Brown, 1981; Clark, 1984; Clark and Staunton, 1989; Bjornenak, 1997) advocate the use of both the demand and supply sides in the explanation of innovation diffusion. The demand approach, which dominates the diffusion of innovation literature, assumes that different adopters demand different innovations according to some features such as organizational, environmental and adopter characteristics. In addition, in explaining differences in times of adoption, it is assuming the availability of the innovation to everyone.

In contrast, the supply approach deals with cases where the innovation is not universally available due to the fact that the supply is under control, as it focuses on the process by which innovations and the conditions for adoption are made available to organisations, and thus it pays attention to the characteristics of diffusion agent, (Brown, 1981; Clark, 1984). Clark and Staunton (1989) stated that as a result of the activities of supply side agencies, organizations do not have equal access to

information and innovations by controlling the process of spread of information and innovation through time and space.

In a similar manner, Clark (1984) pointed out that the demand approach can only be an adequate explanation if the supply of the innovation was not universal. In such cases it is essential to discover and explain the rationale behind the strategy for making the innovation available. He argued that, when every potential adopter of an innovation did not have equal access to an innovation, supply factors might be considered as an important influencing factor in the diffusion process of that innovation. In addition, Griliches (1957) pointed out that it did not make sense to blame potential adopters for being non-adopters or slower in adoption than others, if particular innovations were not available to them or were being made available to them at a later date in contrast to adopters.

The widest analysis of diffusion using a supply approach was developed by Brown (1981). He explained that the supply side of diffusion consisted of market and infrastructure factors which influence the rate and patterning diffusion. He focused on how innovations could be diffused (i.e. marketed) by considering the marketing strategies used by diffusion agencies (i.e. propagators) which supply innovations. It is through these agencies that the innovation is made available to potential adopters. Therefore, each potential adopter may or may not know the innovation. In addition, the innovation may require some pre-existing infrastructure such as financial resources, information, and appropriate skills. In other words, knowledge about the innovation and the availability of needed infrastructure largely shape the diffusion of innovation.

Bjornrnak (1997) emphasises the important role of institutions in defining the organization's information field. He points out that the innovator, the first organization to adopt an innovation and, where applicable, a diffusion agent such as a consultant, could play important roles in the diffusion process as propagators. In addition, the role of infrastructure such as books and articles make the potential adopters aware of available innovation and convince them to adopt it. In this respect, it should be noted that propagators are not free agents able to control the availability of the innovation to their best advantage. Just as potential customers are subject to

constraints of knowledge, conservatism or poverty, so organizations too are limited in what they can do.

To summarise, the supply side of diffusion seems to play a key role in explaining the diffusion of innovation. The supply side sheds lights on the marketing strategies used by diffusion agencies (propagators), which supply innovations to potential adopters. In addition, this perspective appears to be more important when potential adopters do not have equal access to an innovation in terms of the knowledge about the innovation and provision of necessary infrastructure such as financial resources, information, and appropriate skills.

2.8 Summary

This chapter has presented a literature review related to the main issues in this research. After an overview of the Libyan context for this research, the chapter summarized the main arguments about the obsolescence of management accounting techniques and the perceived gap between theory and practice as has been claimed in the literature since the 1980s. An exposition of the diffusion of innovation theory and its limitations then followed, together with alternative explanations of diffusion of innovation, which are the NIS theory and the supply side of diffusion. Finally the framework developed by Abrahamson (1991), which presents alternative innovation models based on an institutional perspective and diffusion of innovation theory, is covered as part of this literature review.

In the next chapter empirical studies relating to management accounting diffusion in both developed and developing countries are reviewed and discussed.

Chapter Three

Review of Empirical Studies of Management Accounting Practices (MAPs) Diffusion

3.1 Introduction

In the previous chapter the relevant theoretical literature on MAPs diffusion in Libya was discussed. In this chapter, an overview of the findings of empirical studies relating to the issues discussed in the previous chapter such as the gap between theory and practice and the factors that influence the diffusion of MAPs are provided. In order to present the empirical studies on the perceived gap, the adoption rates of advanced MAPs in developed and developing countries are presented in the second and third sections respectively. Also a summary of the current adoption and the future emphasis of traditional and advanced MAPs as well as the extent of benefits gained from these techniques are presented in the fourth section. In addition, an overview of empirical studies regarding the diffusion of MAPs was presented in the next two sections. In the fifth section, MAPs in developing countries are investigated. This is followed by a summary of the findings relating to the factors influencing the adoption of management accounting innovation. The seventh section summarises the imitations of previous studies and identifies the gap in the related literature.

3.2 The Adoption of Advanced MAPs in Developed Countries

As a response to the wide criticisms that faced management accounting such as its lag behind production techniques and the gap between theory and practice, many surveys have been conducted in different countries around the world concerning the diffusion of advanced MAPs. Activity-based costing (ABC) is considered to be one of the most written and talked about innovations in management accounting (Johnson, 1990; Shields, 1995; Booth and Giacobbe, 1998a; Clarke et al., 1999; Brown et al., 2004). Despite the argument regarding the benefits of ABC; surveys have reported considerable variations in its adoption (Baird et al., 2004; Drury, 2004). In this context, Drury (2004, p. 394) states that

> Significant variations in the usage of ABC both within the same country and across different countries have been reported. These differences may arise from the difficulty in precisely defining the difference between traditional costing systems and ABC systems and the specific time period the surveys were actually undertaken.

In the UK many surveys have been conducted on the adoption rate of ABC, Table 3.1 gives a summary of some of these surveys.

Table 3.1 ABC adoption in UK companies (%)

	Innes and Mitchell (1991)	Drury and Tayles (1994)	Innes and Mitchell (1995)	Innes et al. (2000)
ABC currently used	6	4	21	17.5
ABC currently under consideration	33	37	29.6	20.3
ABC considered then rejected	9	5	13.3	15.3
ABC not considered	52	44	36.1	46.9
Intended to introduce ABC	*	9	*	*

* This information was not gathered in the study.

As can be seen from Table 3.1, in the beginning of the 1990s there was a growing interest in ABC by UK companies although the adoption rates were low. Innes and Mitchell's (1991) research on the implementation and use of ABC systems reveals that only 6% of surveyed UK firms had begun to implement ABC by 1990. A higher rate of adoption was found by Bright et al. (1992) who reported a 32% adoption rate, although they were doubtful about its correctness.

Drury and Tayles (1994) reported that 4% of UK manufacturing firms had adopted ABC by 1991, with 9% intending to use it. Moreover, they reported a growth in companies considering the usage of ABC. Innes and Mitchell (1995) reported a continuing trend in the adoption of ABC, as 21% of the top 1,000 firms in the UK had adopted it. However, there was a decline in companies considering ABC with an increasing number of companies rejecting it. In 1999, Innes and Mitchell repeated their survey; they reported a decrease in both the use and the number of companies considering ABC. On the other hand they indicated an increase in the number of companies rejecting and not considering ABC. They concluded that the popularity of ABC declined over the period of investigation between 1994 and 1999. Similar results were reported in recent research by Drury and Tayles (2000) indicating that only 15% of the organizations surveyed had implemented full ABC, 5% indicated partial implementation and a further 3% were in the process of implementing it.

A low adoption rate among Irish manufacturing companies was reported by Clarke et al. (1999), with only 12% using ABC and 20% considered it, while 55% did not even consider it, and 13% rejected it. Recently Pierce (2004) conducted a survey of large Irish companies using ABC/M; he reported an increase in the adoption rate to 27.9%. However, there was a noticeable drop in the companies considering ABC with the adoption rate falling to 9%, while over 50% of the companies had not ever considered ABC/M.

Studies from other parts of Europe reported similar ABC adoption rates. In Greece an early survey by Ballas and Venieris (1996) revealed that Greek companies did not adopt ABC at all, while a more recent study by Venieris et al. (2000) in manufacturing companies reported a 12.7% adoption rate. In Belgium, the adoption rate was 19% (Bruggeman et al., 1996). In the Netherlands, Groot (1999) found that 12% of the firms had implemented ABC, and in France it was 20 % (Bescos et al., 2001). Finland seemed to have had an increase in the adoption rates during the 1990s, as can be seen from the adoption rates; 6% in 1992, 11% in 1993, and 24% in 1995 (Virtanen et al., 1996). In Norway, Bjonenak (1997) indicated a high adoption rate, with 40% of the companies surveyed having implemented ABC or planned to do so. No evidence of ABC adoption was found in Italy (Barbato et al., 1996) or Spain (Saez-Torrecilla et al., 1996).

In the USA several surveys have examined the adoption of ABC in companies and reported a range of results, although they recorded higher rates compared with other countries. For example, Green and Amenkhienan (1992) state that 45% of responding manufacturing firms in their study using advanced technologies have implemented ABC to some degree. A study conducted by the Cost Management Group of the Institute of Management Accountants (1993) found that 36% of responding US firms had implemented ABC, and a later survey in 1996 by the same group showed that the adoption rate had increased to 41%. More recently, a study by Shim and Sudit (1995) indicated that 27% of the manufacturing firms surveyed had fully or partially implemented ABC, while a study by Hrisak (1996) reported a higher adoption rate of 53%. More recent surveys show a relatively low adoption rate. For example, Shim and Stagliano (1997) reported the usage rate being 27%,

Groot (1999) found that 17.7% of the companies investigated had adopted ABC, and Frey and Gordon (1999) identified a higher rate of 24.4 %.

Australia's findings present a mixed picture regarding ABC diffusion. Booth and Giacobbe (1998a) found a low adoption rate of 12%. Chenhall and Langfield-Smith (1998a) recorded a much higher adoption rate of 56% for ABC and 68% for ABM. However, they were ranked 24 and 21 respectively out of 42 MAPs listed in their study, and located ABC in a low adoption category. Moreover, the respondents ranked ABC and ABM in a low benefits group with ABC being ranked 42 as the least beneficial practice among all the practices studied. Likewise, both were not among the MAPs that the respondents expected to emphasise in the future as they were ranked 36 and 30 respectively.

A comparative study between MAPs in large manufacturing companies in Australia and Japan by Wijewardena and Zoysa (1999) showed a remarkable difference; with 23% of users of ABC in Australia, compared with 2% in Japan. Moreover, while the Australian companies gave the fourth highest ranking to this tool, the Japanese companies ranked it as the least important tool among the 11 studied MAPs. A later study by Bescos et al. (2001) in Japan revealed a low adoption rate of ABC but higher than previous study, about 7%, although 34.5% of the companies are studying the possibility of such an adoption. In Canada, Gosselin (1997) reported that out of 161 Canadian organisations, 36% implemented ABC, and 29% implemented an activity-based management approach. However, later, Bescos et al. (2001) found an adoption rate of ABC of 23.1%.

Since its introduction in the early 1990s, the balanced scorecard BSC has attracted a great deal of interest as a new management accounting technique for integrating financial and non-financial performance measures (Lipe and Salterio, 2000; Malmi, 2001). Thus, several studies surveyed the implementation of this technique. For example, a survey conducted in US estimates that 60% of the 1000 firms studied have experimented with the BSC (Silk, 1998). Moreover, Frigo and Krumwiede, (1999) report that about 37% use BSC, with 16% planning to implement it in the

future, while 14% are still considering implementing it, and only 2% are reported rejecting or abandoning BSC.

Studies in Europe indicate the current and future popularity of the BSC approach. For instance, Pere (1999) indicated that BSC is widely used in Finland, as 31% of the respondents indicated that they use it and 30% were in the process of implementing it. A study on Swedish companies reported that 27% have already implemented the BSC, and if the companies that state they expect to have the BSC within 2 years are included, the adoption rate rises to 61% (Kald and Nilsson, 2000). Recently, Nielsen and Sorensen (2003) carried out a study to investigate BSC in 53 Danish medium-sized and large manufacturing companies and indicated that 32% of the companies use BSC while 80% of the sample confirmed the need for balanced performance measures.

In the UK, Francis and Minchington (2000) reported that 24% in all sectors and 21% of manufacturing sector use BSC. Anonymous (2001) reported that in the UK, 57% of the businesses are reported to use the BSC, and 56% of non-users are discussing implementing this approach.

Giannetti et al. (2002) conducted a survey of 39 Italian large and medium size industrial companies. Their findings revealed that the non-financial performance measures were generally used in management accounting systems in an integrated way with financial performance measures. However, only one company explicitly declared the implementation of the BSC approach, while the reminder of the sample used an approach which included all the perspectives of the BSC without declaring that they used this approach.

A comparative study conducted by Gehrke and Horvath (2002) on some of European countries showed that companies in Germany, the United Kingdom, Italy and France are familiar with the BSC, as 98%, 83%, 72% and 41% of the responding companies have knowledge of it, respectively. Moreover, the study revealed that approximately 20% of the companies in Germany, the United Kingdom and Italy intended to implement the BSC. Another comparative study was undertaken by Speckbacher et

al. (2003) in German-speaking countries (Germany, Austria and Switzerland). The results of the study showed that 26% of 201 companies surveyed have implemented the BSC.

In Australia, Chenhall and Langfield-Smith (1998a) conducted a survey on a sample comprised of 140 large manufacturing companies. The BSC was adopted by 89% of the companies and ranked 10 among a total of 42 MAPs surveyed. However, it was ranked 23 regarding future emphasis.

Little research has been undertaken on the extent to which companies use strategic MAPs, such as target costing, life cycle costing and quality costing (Drury, 2004). An earlier study by Tani et al. (1994) found that 60.6% of their sample of 180 listed Japanese manufacturing firms used some form of target costing. Wijewardena and Zoysa (1999) found in their study of 209 Japanese manufacturing companies and 225 Australian manufacturing, that target costing was perceived as the most important practice used in Japan, while it ranked only tenth in importance of the 11 MAPs studied in Australia. Chenhall and Langfield-Smith (1998a) found that of 78 respondents of large Australian manufacturing firms, 38% confirmed the use of target costing, although this adoption rate was relatively low compared to the adoption of other accounting practices and was ranked 27 as the least adoption rate among all the 42 MAPs surveyed. Moreover, their findings reveal that the target costing provided a low benefit in the past (ranked 30) and expected to have a lower emphasis in the future (ranked 40). Dekker and Smidt (2003) argued that many studies surveying the adoption of target costing inquired about the adoption of a technique called target costing, but not whether costing practices with similar characteristics as target costing were used. Their study, of 32 respondent Dutch manufacturing companies reported that 59.4% of the respondents claimed to use a technique similar to the Japanese target costing concept, although they use different names for them.

Hyvonen (2005) undertook a similar study in Finland; although the study indicated a higher adoption rate, as 78% of Finnish manufacturing companies currently use target costing, considering the fact that benefits received from it in the past were low (ranked 39 out of 45 MAPs studied) and in the future target costing still will not have

the priority (ranked 38). Guilding et al. (2000) carried out a study about strategic MAPs across three countries: New Zealand, the UK, and US. The adoption rate of target costing was relatively moderate in all these countries. However, non-manufacturing firms were surveyed, where target costing can be irrelevant. More recently, Abdel-Kader and Luther (2006) conducted a survey on the frequency and the importance of 38 MAPs in the British food and drinks industry. The results show that out of 112 companies that responded to the questions on target costing, 42% regarded it as not important, 37% as moderately important and only 21% perceived target costing as an important technique. In addition, 43% never used target costing, and 57% used it to a different extent; 33 % indicated they rarely or sometimes used it, while 24% often or very often used it.

In respect of the diffusion of quality cost reporting, a comparative study by Wijewardena and Zoysa (1999) of MAPs in Australia and Japan found that quality cost reporting ranked similarly in importance by the respondents in large manufacturing companies in both countries, 9 in Australia, 7 in Japan. Adler et al. (2000) reported that 19.4% of 165 New Zealand manufacturing companies currently use quality cost reporting, while 6% used it in the past. In addition, 4% of respondents indicated that the technique is being installed, another 7% were investigating its potential and only 3% of the respondents had not heard of it before.

Guilding et al. (2000) carried out a study about the extent of using strategic MAPs across three countries: New Zealand, The United Kingdom, and the United States. The adoption rate of quality costing was relatively moderate among the sample and for each of these three countries. However, it was ranked the third most adopted techniques for the full sample and the second in New Zealand, the third in the UK, and the fifth in the USA. Recently in the UK, Abdel-Kader and Luther (2006) reported that the cost of quality was regarded to be not important by 41%, moderately important by 44%, and important by 14% of the respondents in British food and drink companies. Moreover, their study reveals that 54% of the companies surveyed use the cost of quality (24% use it rarely, 18% sometimes, 10% often and 4% use it very often).

Wijewardena and Zoysa (1999) conducted a survey of MAPs in large manufacturing companies in Australia and Japan. Their study findings indicate that only 5% of the respondents use life cycle costing in Australia, whereas 13% of them use it in Japan. Similarly, Guilding et al. (2000) carried out a survey of strategic MAPs across three countries: New Zealand, UK, and USA. Life cycle costing was the second least adopted practice among the full sample and for each country of seven practices surveyed.

In New Zealand, Adler et al. (2000) undertook a survey of MAPs in manufacturing companies. The survey results reveal that only 3% of the respondents use life cycle costing, with 1.8% considering it, and in none of them was the technique being installed or used in the past. However, most of the respondents are familiar with life cycle costing; only 3% of them have not heard of it before.

To summarise, the findings from the above studies indicate a mixed picture regarding advanced MAPs diffusion in developed countries. Despite the long period of emergence of these techniques and the claims of their high benefits in the literature, the adoption rates of advanced MAPs are still low. The reported adoption rates of advanced MAPs in these countries range between 3% and 30%, except for target costing, which seems to have relatively a higher adoption rate (the adoption rates range between 35% and 60%). This indicates that the gap between theory and practice in management accounting still exists. Also ABC is the most advanced MAPs studied in these countries, while other advanced MAPs, such as target costing, life cycle costing and quality costing have received less attention.

3.3 The Adoption of Advanced MAPs in Less Developed Countries

In less developed countries, there is a lack of studies concerning advanced MAPs, and their adoption rates reported are very significantly lower compared with those in developed countries. Similar to developed countries, ABC was the most surveyed MAP. For example, Ghosh and Chan (1997) surveyed 109 companies in different industries in Singapore; they reported that 13% of the respondents use ABC, although it was ranked the last in the adoption rate out of 12 MAPs surveyed. In

India the adoption rates of ABC and ABM in 60 large and medium companies were 20% and 13% respectively (Joshi, 2001).

Firth (1996) reported a lower adoption rate of ABC in China: 1% in State-owned enterprises and 2% in Chinese partner firms in joint ventures. However, amongst foreign firms and joint ventures between State-owned enterprises and foreign firms ABC usage was much higher. In the former the adoption rate was 15% and in the latter it was 10%. In Malaysia, Abdul Rahman et al. (1998) found that about 4% of the companies surveyed used ABC. Sulaiman et al. (2004, p. 504), who reviewed the literature on the adoption of MAPs in four Asian countries, concluded that

> It would seem that the use of ABC has not caught on in the four countries surveyed. Consequently, an interesting area to address in the future research is the obstacles to ABC implementation in Asian firms.

In Estonia only 7% of 62 manufacturing companies use ABC (Haldma and Laats, 2002), and in Poland, Szychta (2002) found that while one large company with a dominance of foreign capital has started preparations for the implementation of ABC, none of the 60 companies in different sectors that responded to his survey use ABC. Khalid (2005), based on 39 respondents of the largest 100 companies studied in Saudi Arabia, reveals that thirteen firms (33.3 %) are using ABC, three firms (7.7 %) are still considering it, nine firms (23.0 %) rejected it after evaluation, and fourteen firms (35.9 %) have never considered it. Recently, Van Triest and Elshahat (2007) investigated the use of ABC in costing information in Egypt; he concluded that not only advanced accounting practices, such as ABC, seem not applied, but also they are virtually unknown. In this context, he states that

> Knowledge and practice of modern western management accounting techniques can be low, especially of more advanced techniques like activity-based costing. (p. 330)

Regarding BSC use, Joshi (2001)'s survey indicates that 40% of the Indian companies surveyed used BSC. In Malaysia, Sulaiman et al. (2002) found 13 % of the 61 companies surveyed actually used a BSC (quoted in Sulaiman et al., 2004). In India, although only 35 % of the companies surveyed reported the usage of target costing, it was ranked the fourth in terms of the extent of its benefits. In the future,

target costing looks promising as it was regarded the most important among all MAPs surveyed, ranked 1 (Joshi, 2001). In Malaysia, Tho et al. (1998) reported that about 41% of the 214 companies surveyed use target costing and another 4 % said that they would implement target costing in the next five years (quoted in Sulaiman et al. 2004).

In the case of Libya, Alkizza (2006)'s study found that no company currently uses or is planning to use the ABC or BSC techniques among the 79 companies studied. However, in the entire sample, only 8.9 % of the respondent companies currently use the target costing technique while 11.4% of them are considering adopting it; the rates were higher for manufacturing companies, as 10.3% use target costing and 31% are planning to do so. Moreover, life-cycle cost is used by only 3.8% of the surveyed companies, while 13.9% of them indicated that they are planning to do so. Similarly, there was high interest among manufacturing companies in this technique as 34.5% indicated planning to use it. Likewise, another study undertook by Abulghasim (2006) indicated that out of 41 Libyan manufacturing companies surveyed, no company reported the use or even considered adopting ABC and target costing techniques. In addition, most of the responding companies (70.7% for ABC, 92.6% for target costing) do not even have any knowledge about these techniques.

Although the range of studies across several countries regarding the adoption of advanced MAPs in less developed countries, they indicated the unpopularity of these techniques in the context of these countries as the adoption rates range between none and 15%; however; few studies reported high adoption rates of these techniques (e.g. Joshi, 2001). Moreover, the knowledge regarding these techniques in these countries seems to be also low. In addition, the adoption rates of advanced MAPs in these countries are lower than developed countries (see the previous section). In the last two sections the adoption of advanced MAPs was reviewed, in both developed and developing countries. In the next section the focus will be on the adoption rates of MAPs, the extent of benefits received from them and the expect emphasis of MAPs in the future as well.

3.4 The Adoption, Extent of Benefits, and Future Emphasis of MAPs

Several studies have tried to investigate the adoption rate of broad MAPs, traditional and advanced. They have been also interested in comparing the benefits gained from both groups of techniques as well as their priority ranking among the companies surveyed in the future.

Chenhall and Langfield-Smith (1998a) conducted a survey of Australian manufacturing companies to find out the current use of MAPs, benefits received from these practices and future emphasis on MAPs. The findings indicate that overall, the adoption rates of traditional MAPs were higher than recently developed techniques, and the benefits gained from traditional MAPs were higher than those of recently developed techniques. However, many of the recently developed techniques, like ABC, were more widely adopted than reported in prior surveys from other countries, and there is intention to put greater emphasis on these newer techniques in the future, particularly activity based techniques and benchmarking. In addition, Australian companies adopted a range of management accounting techniques that are related to non-financial information, and take a more strategic focus.

Following Chenhall and Langfield-Smith (1998a), a study by Joshi (2001) examined the MAPs of Indian manufacturing companies in terms of the adoption, perceived benefits, and future emphasis. The study reveals that Indian companies rely heavily on the traditional MAPs, and the adoption rates of recently developed practices were low. In addition, higher benefits were gained from traditional management accounting, which will have high future emphasis. In contrast, Indian companies will emphasise less on newly developed practice. That may be because most of these practices were perceived as less beneficial. However, there are signal shifts towards adopting some of these practices such as ABC and target costing. There was great emphasis on MAPs related to traditional budgeting and performance evaluation systems in Indian companies. Moreover, performance evaluations based on financial measures were still relied upon heavily with less reliance on the use of non-financial measures such as customer satisfaction.

A comparison of the results of this study with the results of an Australian study that was conducted by Chenhall and Langfield-Smith (1998a) reveals similarities between them regarding the reliance on traditional MAPs such as budgeting, although statistically significant differences were found in respect of adoption rates, benefits derived, and future emphasis. Joshi (2001) argued that these differences resulted from the differences in cultural values. In this context, he states that

> Indian management generally avoids risk, is quite conservative, and less innovative in adopting new management accounting techniques. Since, Indians have a long history of their heritage; it takes them longer time to change their societal values and practices, which also seems true in the case of adopting new management accounting practices. (p.85)

The results by Luther and Longden (2001) indicated that the benefits derived from management accounting techniques in South Africa and the U.K. changed between 1996 and 1999 and were expected to change again by 2002, and in most of the cases the techniques became more beneficial over time. Also the benefits derived from management accounting techniques in South Africa differ from the U.K. equivalents. In addition, these authors observed that there were significant increases in the benefits derived from certain management accounting techniques in South Africa, and argued that this rise in benefits may be due to innovation, such as IT advances or the balanced scorecard, and to changes in the local business environment.

A comparative study by Wijewardena and Zoysa (1999) of MAPs between Australia and Japan found that budgets were considered to be an equally important management accounting tool for planning and controlling product costs in both countries. In addition, while Australian companies placed greater emphasis on planning and cost control tools such as budgeting, standard costing and variance analysis at the manufacturing stage, Japanese companies concentrated more heavily on target costing, cost-volume-profit analysis and budgets, and the concentration of Japanese companies, particularly on target costing, indicates their greater attention to cost management and cost reduction tools. Moreover, Japanese companies introduced more frequent changes in MAPs than Australian companies. They also indicate that another important MAPs difference between two countries is the importance placed on ABC. While it was ranked the fourth highest in Australian companies, ABC was ranked the least important tool in Japanese companies.

Hyvonen (2005) also provided empirical evidence on MAPs in Finnish manufacturing companies. The study results indicate that most of the highly adopted practices are traditional MAPs; however, some of the newer MAPs are widely adopted such as qualitative measures and employee attitudes. Moreover, the most beneficial practices are traditional financial measures including divisional profit in performance evaluation, budgeting for controlling costs and variable costing. Financial measures like product profitability analysis and budgeting for controlling costs are likely to be important in the future as well. The results also pointed out that greater emphasis will be put on newer practices like customer satisfaction surveys and qualitative measures. Comparing these results with those of the Chenhall and Langfield-Smith (1998a) study in Australia shows that the recently developed techniques are relatively more adopted in Finland than in Australia. However, this may be partly because of the different periods that each study was conducted in; the Australian study was reported in 1998, while the Finnish study was reported in 2005.

Abdel-kader and Luther (2006) looked at MAPs in the British food and drinks industry, and found that traditional MAPs were "alive and well". In this recent study, traditional MAPs are ranked in the first level of usage and importance and the more recent MAPs are ranked in the sixth level, which is the last level of usage and importance. Despite the criticisms of budgets, they remain a central management accounting "pillar" and are frequently used, as budgeting for planning and control is either "important "or "moderately important" for more than 90 per cent of companies. In addition, most of the companies consider financial measures of performance to be fully important; balance scorecard and non financial performance measures are perceived to be highly important especially in connection with customer satisfaction but never or rarely used by 40 per cent of companies. Thus, financial performance measurement is still very much dominant.

To conclude, despite the criticisms on the shortcomings of traditional MAPs and recommendation of using advanced ones, the above review confirms the popularity of traditional MAPs, which is expected to remain so in the future as well. This popularity may in part be due to the higher benefits perceived from traditional techniques, than from so-called advanced MAPs.

3.5 Factors Influencing MAPs Diffusion

Several studies tried to explain how and why management accounting innovations diffuse among organizations. The following studies are the most relevant to this study in terms of the framework they used and the potential factors influencing MAPs diffusion investigated.

The study by Bjornenak (1997) is among the earliest to focus on both the demand and supply side of diffusion. His study was aimed at understanding the diffusion of ABC in Norway. The relation between ABC (planned or actual) adoption and different variables related to the demand side such as cost structure, competition, existing costing system and product diversity was tested. Only cost structure was found to be significantly associated with the ABC adoption. Moreover, it was found that these variables (i.e. demand side variables) did not fully explain the diffusion of ABC. Thus, the study gave attention to the other side of diffusion, which is the supply side. The study results indicated that all ABC adopters have used consultants, and companies that have ABC knowledge are larger than companies which do not have knowledge of it. Moreover, the sources of information (e.g. magazine, courses, and internet) have a positive effect on ABC adoption. These findings indicate the essential role of market and infrastructure perspective and give some insight to how propagators affect the diffusion process. Bjornenak (1997) concluded that both demand side and supply perspectives should be taken into account for a better understanding of management accounting innovation diffusion.

Building on Abrahamson (1991)'s framework (the efficient-choice, forced selection, fad, fashion perspectives), Malmi (1999) investigated the driving forces behind the diffusion in management accounting of the ABC innovation in Finland over the course of diffusion. The study collected data from both organizations adopting ABC (demand side) and from those supplying or promoting it (supply side). In order to discover the motives for ABC adoption, the respondents were asked directly on both demand and supply side. In addition, the relationship between several factors related to the demand side (e.g. competition, business strategy, size), and the adoption of ABC were investigated. Moreover, to provide a secondary source of evidence on the

supply side effect, consultants, and academic persons were interviewed, and the published material on ABC (articles and books) were checked over time as well.

Malmi concluded that the efficient choice perspective is the most appropriate for explaining the diffusion of management accounting innovation in the earliest stages, whereas both efficient choice and fashion-setting organization perspectives have the most influence in the take-off stage of diffusion of management accounting innovation. Later on, the diffusion of management accounting innovation is explained both by efficient-choice and fad/mimetic perspectives. Thus, the motivations for the diffusion of management accounting innovations change over the course of their diffusion. The driving force behind the diffusion of ABC comes first from inside the adopting organizations (efficient choice), then shifts to organizations outside the adopting organizations (efficient choice and fashion-setting organizations), and finally returns to the adopting organizations (efficient-choice and fad).

A study by Brown et al. (2004) examined the impact of a selected range of organizational (top management support, internal champion support, organizational size, and use of consultants) and technological factors (level of overhead, product complexity and diversity, and relative advantage) on movement through the stages of ABC adoption. The findings reveal that the transition from not having considered ABC to initiating interest in ABC is influenced by three factors: higher levels of top management support, internal champion support, and organizational size. Moreover, internal champion support is the only factor that was found to influence the decision to either adopt or reject ABC. They argued that organizational factors may be more important in explaining the adoption of innovation decision, rather than the technological factors, traditionally advocated by many proponents of ABC.

The study by Gosselin (1997) is one of the few empirical studies that provided some explanations for the diffusion of management accounting innovation using business strategy and organisational structure. His study examined the effect of contextual factors like organizational business strategy and organizational structure on the capability of an organization to implement general forms of activity management (AM) approaches in Canadian manufacturing firms. The Miles and Snow (1978,

1994) organizational business strategy typology of prospectors, defenders and analyzers was used alongside three components of organizational structure namely organizational centralization, formalization and differentiation. The results show that business strategy plays an important role in the adoption of ABC. A prospector strategy is found to be associated with the decision to adopt an AM approach. In addition, the findings indicate that organizational structure is found to have a significant impact on the adoption of ABC. A positive relation between organizational level of vertical differentiation and the adoption of ABC was also reported. Also, among organizations that adopted ABC, centralization and formalization were found to be significantly associated with the implementation of ABC.

Clarke et al. (1999) studied the development of MAPs in Ireland by examining the supply and demand for management accountants. The study result indicates that the rate of ABC adoption is lower in Ireland than in the UK, USA, and Canada, and ABC was not well understood by management accountants in Ireland. This questions the idea that MAPs are easier to diffuse between countries that share similar business environment and share common language such as UK, USA, and Canada. Furthermore, they claimed that the barriers to change management accounting in Ireland are many namely: lack of cooperation between the business community and the academia, the lack of necessary continuing professional educational for qualified accountants, executive MBA programs, and the lack of information sharing related to adopted beneficial changes in their accounting systems with competing firms. They further suggested that to overcome these barriers more interaction between academia and the business community is needed in Ireland by creating a management accounting forum, where strengths and weaknesses in the supply of and demand for managerial accountants can be identified and then changes in the training of managerial accounting students, practitioners and educators also could be suggested.

Ax and Bjornenak (2005) also studied the diffusion of the balanced scorecard in Sweden from only a supply side perspective. They argued that administrative innovations, such as the BSC, are often open to multiple interpretations, which may be used opportunistically to increase its popularity and adoption in a new market. Their findings show that the original BSC in Sweden was bundled by being

supplemented with other administrative innovation to make it a more attractive set of elements for potential adopters. In addition, the criticism of the budget system, which was widely accepted, was used to introduce the BSC as solution to the problems. They concluded that interpretative viability of BSC increased the supply side effect on the diffusion process. The supply side or fashion-setters in their study were consultants, early adopters and accounting academics. This evidence finds support to fashion-setters that are specified in Abrahamson (1991) framework.

Firth (1996) and Wu et al. (2007) studied the effect of mimetic/fad pressure in terms of influence of foreign joint venture enterprises on diffusion of MAPs in China. They found that Chinese enterprises that have joint ventures with foreign partners use more detailed and newer Western MAPs to a much greater extent than other China's state-owned enterprises that have no joint venture operations with foreign firms. In addition, Firth (1996) identified a number of factors which influence the adoption of MAPs by the joint venture enterprises such as the domicile of the foreign partner, the degree of competitive pressure facing the state-owned enterprises, and the size of the joint venture. His findings indicate that the mimetic institutional isomorphism and the diffusion of innovation literature, particularly performance gap argument, are suitable to explain the diffusion of accounting innovations in China.

Similar to the work of Firth (1996) and Wu et al. (2007), Chua and Petty (1999) examined the influence of director interlocks on the diffusion of (ISO) quality accreditation within the Australian context. The findings show that firms interlocked with previously accredited firms increase their possibility to achieve accreditation. Their results indicate that the practice of ISO quality accreditation is diffused through interlocking directorates, such as employees sitting on the board of directors of more than one company. This study provides evidence that MAPs could diffuse through mimetic isomorphism and interlocking directorates are one of the possible diffusion mechanisms.

Askarany and Smith (2004) explored the level of importance of a variety of contextual factors (such as organisational culture, institutional pressure, employee awareness of the benefits of an innovation, a recognized need for change, the degree of uncertainty associated with the outcomes of the innovation) on the decisions to

implement (or not) the administrative innovations, and they also examined the association between these contextual factors and the diffusion of six management accounting innovations, namely: ABC, ABM, BSC, Benchmarking, Strategic management accounting, and Target costing. Their findings showed that apart from the influence of institutional pressures, all other contextual factors significantly influence decisions to adopt (or not) administrative innovations. The findings also indicated that five contextual factors, namely awareness of the benefits of innovation, awareness of the availability of innovation, management commitment on implementation of an innovation, management consultants on implementation of an innovation, and confidence in the ability of the new technique are significantly associated with the diffusion of the six administrative innovations.

More recently, Askarany et al. (2007) examined the relationship between attributes of management accounting innovations and the diffusion of Activity-Based Management in organizations in Australia. Their findings indicated that among 14 attributes of innovations studied, only four attributes of ABM were found to have a significant impact on its diffusion. These specified attributes of ABM that significantly influence its diffusion are: the compatibility of the technique with exiting process; the quality of the technique in doing the job; the effectiveness of the technique; and the level of implication of the technique for other processes. They also point out that these findings give support to Chenhall and Langfield-Smith (1998a) in their claim that the attribute of recently developed management accounting innovation may be the main cause of their low adoption and the benefits obtained from the traditional management accounting techniques are still higher than those of recently developed techniques such as ABM.

Another related stream of research has investigated the factors that influence the adoption of management accounting techniques, especially ABC (e.g. Anderson, 1995; Shields, 1995; Krumwiede, 1998). This stream focused only on the demand side of diffusion. For instance, Anderson (1995) developed a framework to identify the important factors in ABC implementation success. He found support for this framework in his case study based on General Motors which classifies these factors into: characteristics of individuals (e.g. sponsors, champions, education), organizational (e.g. centralization, training investment), technological (e.g.

complexity for users, compatibly with existing system), task characteristics (e.g. worker autonomy and worker responsibility) and external environment (e.g. competition, environmental uncertainty). Shields (1995) found that ABC success is associated with behavioural and organizational variables but not with technical variables. He reported that the variables associated with ABC success were top management support, linkage to competitive strategies, particularly quality and JIT/speed, linkage to performance evaluation and compensation, training in implementing ABC, non-accounting ownership, and adequate resources.

To conclude, studies which examined the diffusion of MAPs reported a mixed result with more emphasis on the demand side of diffusion factors such as attribute of adopters and environmental factors. However, studies which investigated the supply side of diffusion and institutional factors have reported their significant impact. In respect of institutional factors, one of the factors that were found to be important in diffusion of MAPs from developed to developing countries is the joint venture between local companies with foreign companies from developed countries.

3.6 Factors Influencing MAPs Diffusion in Less Developed Countries

A lot of attention has been paid to the relevance of MAPs, especially following the criticisms that traditional MAPs are irrelevant to today's advanced manufacturing environments. Moreover, there have been concerns that research regarding management accounting in less developed countries and transition economies is limited compared with research in developed countries (Joshi, 2001; Lin and Yu, 2002; Waweru et al., 2004; Van Triest and Elshahat, 2007). However, the value of studying management accounting in less developed countries could be significant. For instance, Anderson and Lanen (1999) claimed that firms in these countries offer a unique opportunity for researchers to study the evolution of MAPs in a relatively short period of time. Recently there has been a growing interest in management accounting in emerging and transitional economies (e.g. Joshi, 2001; Luther and Longden, 2001; Haldma and Laats, 2002; Szychta, 2002; O'Connor et al., 2004; Waweru et al., 2004; Alawattage et al., 2007; Van Triest and Elshahat, 2007).

Fundamental changes take place during the transition from a planned to a market economy, such as the liberalisation of trade and finance, the privatisation of State-owned enterprises, the restructuring of companies, and the influx of foreign direct investment. These changes affect management control systems in general and MAPs in particular, requiring management accounting systems to adapt to the progressive change taking place to be able to provide adequate information for strategic planning, decision-making, and operational and management control. Moreover, MAPs in these economies should be sophisticated enough to meet not only the information needs of the transition period, but also the concurrent challenges of increased global competition. In this context, Hopper et al. (2004) argued companies in less developed countries do not need different MAPs from those used in Western developed countries. According to Luther and Longden (2001) the management information systems become more valuable for the companies in developed countries (e.g. South Africa), where the conditions are unstable than in countries in which 'tomorrow is more likely to be similar to today'.

However, less developed countries give more priority to the development of financial accounting, while the application of management accounting remains unsatisfactory and it is still in its initial stages of development, due to the relatively under-developed status of economic and business administration in these countries (Haldma and Laats, 2002; Lin and Yu, 2002).

The following is a discussion of most of the studies conducted in developing countries and investigated the factors influencing the diffusion of MAPs.

Some studies compared between MAPs in developed and developing countries. For instance, Luther and Longden (2001) concluded that the benefits derived from management accounting techniques in South Africa did change over the period of investigation and that these benefits do differ from their UK equivalents. They also conclude that some of the factors causing management accounting change in South Africa are different from those at work in the UK. In addition, the outcome confirms some prior findings relating to influencing contingent factors such as the intensity of competition and volatility of environment, and introduces possible new factors, such as changing stakeholder pressures and shortages of qualified accountants. They argued that in a small country with more U.S. influence, such as South Africa,

companies are more affected by supply side and fashion pressures than companies in the U.K. to adopt new management techniques promoted by consultants. For example, the balanced scorecard adoption was highly catalysed by stakeholder requirements and supported from management accounting staff at the University of Cape Town, who recommended it as a relevant tool to South African environment. Luther and Longden (2001, p. 315) noted that

> Despite the influence of widely selling textbooks and other quick diffusion agents, management accounting practices is not universally uniform.

Moreover, they found support for Hopper's (2000) view that management accounting cannot be understood without reference to political, cultural and economic factors important in countries with less homogeneous cultures, weaker capital markets and less effective bureaucracies and regulations. Therefore, they claim that educationalists and professional bodies should exercise caution in prescribing standardized qualifications purporting to be equally applicable around the world.

Another study to understand the processes of management accounting system changes conducted in South Africa was by Waweru et al. (2004) in four retail companies. They indicate considerable change in management accounting systems; including the increase of using contemporary MAPs notably ABC and BSC. Moreover, they suggest that change in the South African environment such as government regulation policy and global competition largely facilitated the management accounting change. The South African companies investigated were satisfied with current cost systems and they considered traditional cost allocation methods superior to advanced techniques. Moreover, because of the low level of overhead cost and the complexity of ABC, they tend to only use ABC as a supplement to the traditional cost allocation methods. Finally, they found that the dominant factors that hindered management accounting change were the lack of resources to fund changes, absence of need for a change attitude among employees and fear of change.

In addition, following the study by Chenhall and Langfield-Smith (1998a) in Australia, Joshi (2000) conducted a cross-national comparison between India and Australia; he examined the MAPs in a sample of 60 large and medium size Indian

manufacturing companies in terms of which traditional and advanced MAPs have been adopted, the benefits received, and the future emphasis on practices. The findings indicate that Indian companies rely heavily on traditional MAPs compared to Australia. In addition, the organisational size was found to be an important factor in the adoption of advanced MAPs. He claims that the reasons behind the low rate and slow adoption of recently developed practices were the conservative attitude of Indian management towards new changes as Indian managers generally avoid risk and are less innovative compared with Australian managers. His study reported other possible factors such as the lack of training, the expertise in the area of new practices, and the high cost of new practices.

In the same context, Anderson and Lanen (1999) conducted a survey of 14 Indian companies using contingency theory. Their study found that changes in management accounting are associated with shifts in the external environment especially the increase of international completion after liberation of the Indian economy in the 1991.

It is noticeable that the number of studies conducted in China regarding MAPs is relatively high compared with other developing countries (see Table 3.2). The following are the most relevant studies.

Firth (1996) examined the diffusion of MAPs in China with special reference to the influence of foreign joint venture enterprises. He found that Chinese enterprises that participated in foreign partnered joint ventures appeared to use the more detailed and the newer Western MAPs to a much greater extent than State-owned enterprises that had no joint venture operations with foreign firms. His findings indicate that the mimetic institutional isomorphism and the diffusion of innovation literature particularly the performance gap argument is suitable for explaining the diffusion of accounting innovations in China. Similar to Firth (1996), Wu et al. (2007) recently compared the adoption of MAPs in Chinese State-owned enterprises and joint venture enterprises. Likewise, they found that ownership type plays a role in shaping management accounting systems in China, as joint ventures with foreign companies seem to use Western MAPs more than Chinese state owned enterprises. Advanced techniques studied such as ABC, ABM, and target costing were neither perceived as highly beneficial or will have priority in the future by both Chinese State-owned

enterprises and joint venture enterprises. However, Chinese State-owned enterprises seem to gain high benefits from target costing (ranked 4) and expect to emphasise it more in the future.

Lin and Yu (2002) conducted a case study at the Han Dan Iron and Steel Company in China. This company adopted a responsibility cost control system which is the integration of responsibility accounting and cost control. The Han Dan case confirms the necessity and feasibility of diffusing innovative management practices under different social and economic systems. Their study results support the new institutional sociology theory in terms of economic and institutional isomorphism pressure. As rapid changes in China's economic and business administration systems (such as the deregulation of governmental control and increase of market pressures) and the operating difficulties encountered in the early 1990s are the necessary stimulus for the company to adopt Western management accounting in developing the responsibility cost control system in order to improve its operating efficiency and effectiveness in production. They also argued that the successful adoption of Western MAPs should be subject to specific conditions and management efforts in individual enterprises, despite the fact that economic shock and performance gap, are necessary conditions for diffusion of innovative management practices into less developed countries, but they are not sufficient. In the Han Dan case, the two important internal factors contributing to the success of the responsibility cost control system are the professional qualifications of management teams and a balance of decentralization and centralization in business administration structure.

O'Connor at el. (2004) used new institutional sociology and agency theory to explore the factors that influence the adoption of western management accounting/controls by China's state-owned enterprises. They suggested that these practices can be influenced by factors at the macro-environment level (such as market competition), the institutional level (such as limited-term employment contract, joint venture experience, stock market listing and government influence), and organizational level (such as size, Chinese management norms, age and training). They concluded from in-depth interviews that management accounting/controls practices have been increased in the companies studied during the period of investigation, and the change was a response to increased competition and institutional factors such as joint

venture experience and stock market listing. Moreover, the interview findings included some barriers to change such as withholding of decision rights, managers' lack of ability, and erosion in job security and the ability to rely on informal business relationships. Additional survey findings indicated that MAPs can be influenced by the use of limited-term employment contracts, joint venture experience, stock exchange listing, and the availability of training. Recently, Liu and Pan (2007) studied the adoption of ABC in a large Chinese manufacturing company. They identified top management support as an important factor in the success of ABC in this company. In addition, the involvement of external consultants in the early stages of adoption was an important contributing factor.

Few studies were conducted in transitional economies in Europe. Haldma and Laats (2002) examined the MAPs of 62 largest Estonian manufacturing companies using contingency theory and found that companies had made improvements in their cost accounting methods. In this case the driving forces behind the emergence of cost and management accounting include environmental, technological and organizational factors. They also found that change in MAPs was associated with shifts in the business environment, technology and organizational aspects. Factors related to transitional economies such as the legal accounting environment and shortage of qualified accountants also play an important role in these companies.

Another study set in a transitional economy context is that by Szychta (2002) who investigated the scope of application of management accounting concepts and methods in 60 Polish enterprises. He reported that the majority of companies used traditional full costing systems based on actual costs (90%), and 40% of the respondents are planning to change their cost accounting system, while only 15% of them are planning to replace the existing system by ABC. In addition, in the respondents' opinion the factors which have initiated the changes carried out in cost accounting systems and contributed to the introduction of new management accounting techniques in their enterprises include the need for improving financial results, recovering lost markets, reducing operating costs, demands by a new owner to implement new methods of management and accounting, the application of integrated computer programmes, and the need for obtaining information relevant to decision-making. She also argued that the appearance of these factors arise from

ownership changes and increased competition that have taken place in Poland since the early 1990s.

Sulaiman et al. (2004) reviewed MAPs in four Asian countries: Singapore, Malaysia, China and India. This study concluded that the consistent use of contemporary management accounting tools was lacking in the four countries, whereas the use of traditional management accounting techniques remains strong, despite the fact that their national cultural values differ. According to Tho et al. (1998) (as cited by Sulaiman et al., 2004) the various reasons as to why traditional MAPs are still widely used in developing countries, are the lack of awareness of new techniques, the lack of expertise and, perhaps, more importantly, the lack of top management support. Additional factors include the high cost of implementation and the fact that there simply was "no reason to change" from the traditional technique to the new tool.

To sum up, these studies in less developed and transition economies indicate that, despite the tremendous social, political and economic changes affecting businesses in these countries, traditional MAPs remain the most common and are perceived more beneficial than advanced ones. In addition, one of the characteristics of the studies in transition economies and less developed countries is the fact that most of the findings are reported either without using any theoretical framework or using contingency theory (see Table 3.2). Research projects on MAPs using the new institutional sociology theory were conducted only by Firth (1996), Lin and Yu (2002), O'Connor et al. (2004). While Firth (1996) and Lin and Yu (2002) studies were informed mainly by the new institutional sociology theory with reference to the diffusion of innovation theory, particularly the performance gap argument, no other study has used the diffusion of innovation theory to explain diffusion of MAPs in these countries.

Moreover, findings from these studies emphasised the importance of the institutional environment in these countries. For instance, Luther and Longden (2001) found support for Hopper (2000) that MAPs are not universally uniform and they cannot be understood without reference to the political, cultural and economic factors important in countries. Thus, the diffusion of Western MAPs to less developed countries might be faced with resistance due to the difference in the social, legal, cultural, and educational systems.

Table 3.2 Summary of Studies of MAPs in Developing Countries

Country	Author/s and year	Innovation/ MAPs	Methods of data collection	Theoretical framework
China	Firth (1996)	MAPs	Questionnaires	Mimetic/fad pressure (New institutional sociology theory) and performance gap (diffusion of innovation theory).
Singapore	Ghosh and Chan (1997)	MAPs	Questionnaires	None
India	Anderson and Lanen (1999)	MAPs	Questionnaires	Contingency theory
South Africa	Luther and Longden (2001)	MAPs	Questionnaires	Contingency theory
India	Joshi (2001)	MAPs	Questionnaires	None
Estonia	Haldma and Laats (2002)	MAPs (cost system)	Questionnaires	Contingency theory
China	Lin and Yu (2002)	Cost system	Field study (interviews and on-site observations and achieved studies)	Mimetic/fad pressure (New institutional sociology theory) and Performance gap (diffusion of innovation theory)
Poland	Szychta (2002)	Cost system	Survey and interviews observations and documentation	None
China	O'Connor et al. (2004)	MAPs	Interviews followed by questionnaires	New Institutional sociology and Agency theories
South Africa	Waweru et al. (2004)	MAPs	Case study (interviews and questionnaire) 4 retail companies	Contingency theory
Singapore, Malaysia, China and India	Sulaiman et al. (2004)	MAPs	Literature review	None
China	Liu and Pan (2007)	ABC	Action research (interviews, observation and documentation)	Various
China	Wu et al. (2007)	MAPs	Questionnaires	None
Egypt	Van Triest and Elshahat (2007)	Cost system	Questionnaires	None

3.7 Limitations of Previous Studies

From the above empirical literature review, the gap in previous studies, which the current research is aimed to bridge, is identified as follows:

- Most of the studies on the adoption of MAPs are conducted in developed countries, while there are limited studies conducted in developing countries.

- Most of the studies in developing countries either use contingency theory or no theoretical framework at all. Exceptions are the studies by Firth (1996), Lin and Yu (2002), and O'Connor et al. (2004). Although these studies used new institutional sociology theory, they focused on only one element of it, namely the effect of joint venture with foreign companies on diffusion of MAPs in developing countries (mimetic pressure). In addition, no study could be identified with using the diffusion of innovation as its main framework to explain diffusion of MAPs in these countries.

- Most of the previous studies in developing countries are descriptive. Their main aim is to provide information about the adoption of MAPs, without further analysis to find out the factors that influence (facilitate or hinder) the change or diffusion of MAPs in these countries. Moreover, most of the studies (e.g. Haldma and Laats, 2002; Szychta, 2002**)** that have investigated the impact of the contextual and environmental factors on MAPs diffusion/adoption have relied on the respondents' point of views regarding the influence of each of these factors.

- Only a few studies investigated the effect of the supply side of diffusion on MAPs (e.g. Clarke et al., 1999; Ax and Jornenak, 2005), while most of the studies focused on the demand side of the diffusion.

- Apart from the studies by Bjornenak (1997) and Malmi (1999), no study has taken into consideration both the supply and demand sides of diffusion in studying the diffusion of management accounting innovation. However, they only studied the diffusion of ABC.

- Apart from the study by Gosselin (1997), no study has examined the impact of organizational business strategy on diffusion of management accounting innovation. Moreover, his study, one of the few, has taken the organizational structure such as centralization and formalization into account in studying diffusion of management accounting innovation.

- Studies that looked at the diffusion of management accounting innovation have focused almost entirely on the factors that influence one technique, especially the adoption of ABC. Only a small number of studies have concentrated on other advanced management accounting techniques such as BSC, target costing, and quality cost reporting. In addition, apart from Askarany and Smith (2004), most of the studies have examined the influence of explanatory variables on only one management accounting technique.

- The innovation in most of the management accounting diffusion empirical studies has been defined as one of the advanced management accounting techniques (e.g. ABC, BSC). However, according to the diffusion of innovation theory (see subsection 2.4), innovation could be an old idea introduced or reintroduced in new settings where this idea is regarded as new, thus the newness is commonly regarded as the most important element of it. This could be applied to both traditional and advanced MAPs. Apart from Firth (1996) and O'Connor et al. (2004) no other study considers the adoption of traditional MAPs in organizations as innovation.

- Most of the studies of MAPs diffusion have used questionnaires to collect the data, while a small number of them have used other methods such as interviews or observation. In addition, only a few studies have gained their data through a triangulation of data methods collection such as of a questionnaire and interviews.

3.8 Summary and Conclusions

Based on the empirical studies reviewed in this chapter, several conclusions can be drawn. The adoption rates of advanced MAPs in general are still low. However, in the case of developing countries, it appears that their adoption rates are not only lower than developed countries but also they are widely unknown. Moreover, traditional MAPs are dominant all around the world, and this seems to continue in the future as well. Only a few studies have investigated the state of MAPs in developing countries. They indicated that to understand MAPs in these countries, institutional environment (e.g. legal, social and educational systems) should be taken into account. In addition, many researchers have studied management accounting diffusion; they reported different factors which influence the adoption of MAPs (e.g. organizational, technical, and environmental). However, the studies that look at the supply side of MAPs diffusion were limited.

The next chapter draws off the literature review in the preceding two chapters to discuss and to build the theoretical framework for this research. The research hypotheses are formulated accordingly.

Chapter Four

The Research Framework and Research Hypotheses

4.1 Introduction

This chapter aims to present a thorough discussion of the theoretical and empirical literature review provided in the previous two chapters (Chapter Two and Three), and then based on that, proceeds to build and justify the theoretical framework of this research to bridge the gaps identified in the existing literature. In addition, the research hypotheses which will be tested later in Chapter Eight are formulated.

4.2 Discussion and the Research Theoretical Framework

As explained earlier, the focus of this research is on studying the diffusion of the administrative innovation in a particular context; more specifically the focus is on the diffusion of management accounting practices (MAPs), in Libyan manufacturing companies. The review of the literature of innovation diffusion has shown that it offers different but sound alternatives for understanding the diffusion of MAPs.

While most diffusion of innovation studies are based on a demand side perspective, which assumes that innovations develop as a result of an organization's demand for them, this literature can be split, as Wolf (1994) suggested, into: diffusion of innovation (DI); organizational innovativeness (OI); and processes theory research (PT). As explained earlier one of the criticisms of classical diffusion theory is the pro-innovation bias, which assumes that the innovation should diffuse all the time among all potential adopters and the adoption of innovation decision is guided only by rational decision- making.

On the other hand, institutional theory and supply side perspectives, questioned the ability of the rational decision-making model, as illustrated by theorist studies such as Brown (1981), DiMaggio and Powel (1983, 1991), Clark (1984), Abrahamson (1991), and Bjornenak (1997). They have a significant impact on the diffusion of innovation as well, as they provide alternative explanations for the relatively low adoption rate of new management accounting innovation (Clarke et at., 1999).

In the vein, Clark (1984) believes that if every potential adopter of innovation does not have equal access to an innovation, supply factors might be considered as important factors influencing the diffusion process of the innovation. Given that this appears convincing in a real context, it is vital not to ignore the supply side of innovation. In addition, it is essential to consider the impact of institutional environment, where the organization is situated, on diffusion of innovation. Scott (1995) points out that diffusion of innovation could be as a result of institutional pressures at a macro-level.

Based on the above discussion, and given that Libya's economy is now in a period of transition, Libyan companies are moving from a planned economy, where institutional and supply side of diffusion may have more influence, to a free market economy, where demand or rational perspective may be more appropriate in explaining MAPs diffusion. Thus, more than one perspective is worth examining and it seems more realistic to look at both sides of diffusion of innovation, demand and supply sides, as by not doing so would result in neglecting a significant body of relevant literature. According to Abrahamson (1991) and Bjornenak (1997) the demand side perspective does not fully explains the difference in the rate of diffusion of certain innovations despite the presumption that it's a positive effect. For instance Bjornenak (1997, p.13) states that

> At best this perspective (demand side) gives a fragmented picture of the diffusion process, at worst it confounds expectation.

He also concluded that

> The rather narrow demand perspective explored did not fully explain the diffusion process. Thus other perspectives are needed to better understand the diffusion process. Taking the supply side into account seems to be promising. (p.15)

Brown (1981), who developed the supply side approach, indicated that this approach does not replace the demand side approach but supplements it with information on the strategies of diffusion agencies and their pattern of information flow. Hence, a supply-side model is proposed to complement the demand-side approach. In the same manner Clark (1984) and Scott (1995) argued that in explaining the diffusion of

innovation, neither a demand nor a supply perspective is adequate by itself, and as such one-sided studies of innovation diffusion must be avoided. The importance of multiple research perspectives to understand diffusion of innovation is also addressed by some researchers such as Abrahamson (1991), Damanpour (1991) and Wolfe (1994). In the context of management accounting, Malmi (1999, p. 667) states that

> In order to fully understand the diffusion of management accounting innovations and change in management accounting systems, a combination of various theories is required.

As discussed earlier, the NIS theory, which provides an alternative explanation to the diffusion of innovation, includes economic, coercive, normative, and mimetic pressures. Although new institutional theorists do not explicitly analyse the relationship between the economic and the institutional perspectives, they implicitly argue for its existence (Meyer, Rowan, 1977; DiMaggio and Powell, 1991; Carruthers, 1995). Malmi (1999) claimed that new institutional sociology theory is one possible theory needed for explaining adoption behaviour in some stages of management accounting diffusion, a view that finds support from the advocates of new institutional sociology theory. For instance, Hage (1999, p. 617), who tried to find out the relationship between organizational innovation and the more general literature on organizational change, states that

> New institutional theory can explain how diffusion occurs within countries and even across them. It provides a different set of explanations for why countries may not respond to competitive pressures.

Similarly, Bjornenak (1997, p. 16) observes that

> A focus on the supply side of the process also seems to be consistent with more recent development in other disciplines (e.g. institutional theory).

Accordingly, the theoretical framework to be used in this study considers the supply side as well as the demand side of the diffusion of MAPs taking into account the institutional environment. In this respect, from the demand side perspective studies that use diffusion theory to identify the factors influencing diffusion of innovation that are related to diffusion of innovation (DI) and organizational innovativeness (OI) streams, will be valuable (e.g. Hage, 1980; Kim, 1980; Kimberly and Eviansko,

1981; Damanpour, 1987, 1991; Rogers, 1995, 2003; Firth, 1996; Gosseline, 1997). On the other hand, the factors that are related to the supply side and the institutional theory could be explained by refereeing to: fad, fashion, and forced pressures. Also the literature on new institutional theory (e.g. DiMaggio and Powell, 1983, 1991; Abrahamson, 1991; Bjornenak, 1997; Malmi, 1999) will be helpful in this research.

Since this study is considering the use of diffusion of the innovation theory (demand side) and the new institutional sociology theory (supply sides and institutional environment), the combination of both theories, which was developed by Abrahamson (1991) seems promising, as illustrated in Figure 2.3. In conjunction with the consistency between the demand side perspectives and institutional factors, Abrahamson's (1991) model is used as a guide to develop theoretical framework for the present study. The efficient choice perspective, which assumes that organizations rationally choose the most efficient innovation that, is useful for attaining their goals and make independent and rational choices guided by goals of technical efficiency. This perspective could represent the demand side of diffusion (or economic pressure according to institutional theory), whereas factors related to the supply side and the institutional environment (mimetic, normative, and coercive) are closely consistent with the three Abrahamson (1991)'s proposed alternatives to the efficient-choice perspective, namely; fad, fashion and forced perspectives (Malmi, 1999). As discussed earlier, forced, fad, and fashion perspectives are based heavily on the new institutional sociology theory developed by DiMaggio and Powell's (1983, 1991). In addition, the supply side perspective which considers the role of diffusion agencies and infrastructure necessary to diffusion is covered by both fad and fashion perspectives developed by Abrahamson (1991) framework. Therefore, fad, fashion and forced perspectives are used in this study to present institutional factors.

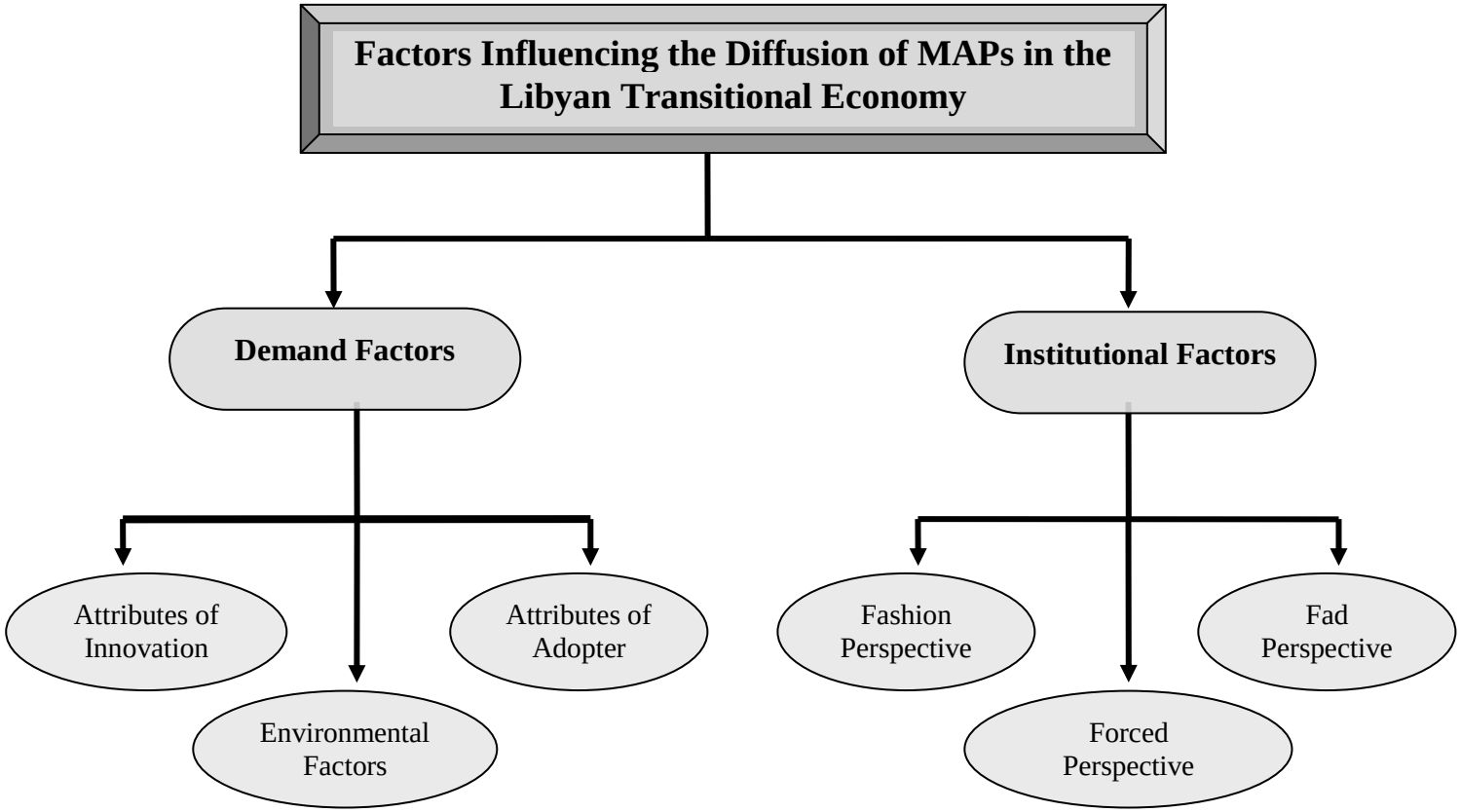
In respect of the demand or the efficient perspective, many attempts have been made to classify the factors which influence the diffusion of innovation through the literature. Rogers (1995, 2003) classified these factors into: attribute of innovations; the type of innovation decision; the nature of communication channels; the nature of social systems; and the extent of change agents' promotion efforts. He further emphasised on the role of attribute of innovation by claiming that 49/% to 87 %of the adoption of innovation variation could be explained by this group, while the rest of

the factors would only be capable of explaining about 13% to 51% of adoption of innovation variation; however, most of the diffusion of innovation studies focused on the effect of the attributes of adaptors, which may explain their failure to explain the diffusion of innovation. He also divided the attributes of innovation into relative advantage, compatibility, complexity, trialability and observability.

Building on Rogers (1995, 2003), Askarany (2003) developed a model that classified the factors influencing diffusion of innovation to: attribute of innovations, attribute of adopters and attribute of social systems, which include all influential factors that could not be either related to the other two groups of factors. He also supports the claim by Rogers (1995, 2003) that the characteristics of innovation are the most important influencing factors on innovation diffusion.

Using the model developed by Kwon and Zmud (1987) regarding the factors that influence IT adoption and implementation stages, Anderson (1995) developed a framework of five major contextual factors that influence the implementation of cost management systems. These factors were proposed to include the characteristics of individuals associated with implementation, the organisational factors and the technological factors or attributes of innovation, and the task to which the technology is applied and environmental factors. Thus, the demand factors that influence MAPs diffusion could be divided into three groups; attribute of innovations and attribute of adopters and the environmental factors, whereas factors related to the institutional environment are presented as fad, fashion and forced perspectives in this study.

Figure 4.1: Research Theoretical Framework



4.3 Research Hypotheses

The hypotheses presented below are numbered in a sequence of 1 to 13, with the null hypothesis designed by the letter N and the alternative hypothesis by the letter A.

4.3.1 The Availability of Resources

Slack resources or providing adequate resources is important in innovation adoption, as they allow an organization to purchase innovation, absorb failure, bear the cost of instituting innovation and explore new ideas in advance of actual need (Rosner, 1968).

Delbecq and Mills (1985) found that innovation failure was a result of the lack of resources, while innovation success was associated with the existence of special innovation funds. Damanpour (1991) in his meta-analysis found a positive association between innovation and slack resources. Similarly, Wan et al. (2005) found that a greater amount of organizational resources set aside for innovation is positively related to greater firm innovation.

In the context of management accounting, Shields and Young (1989) identified adequate resources provided for innovation as an important variable to implement cost management systems. Shields (1995) states that sufficient internal resources are desirable for ABC success, as for other administrative innovations such MAPs, so employees do not believe that the adoption of innovation is pressuring them to do more without adequate support. In his study about ABC, Shields (1995) found that there was an association between innovation success and adequate resources provided. Therefore, it can be hypothesized that

N.H1 The Availability of Appropriate Resources to Adopt New Management Accounting Techniques <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H1 The Availability of Appropriate Resources to Adopt New Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

4.3.2 The Availability of Training

The training related to design, implementation and usage of innovation is believed to play a key role in its adoption. Shields and McEwen (1996) suggested that training helps employees to have knowledge about an innovation, which would help them to understand why it is needed, how it works, how to interpret the outcome information, and how to use it for meeting organizational goals.

Also according to Shields and Young (1989), training in designing, implementing and using cost management systems is one of the most important organizational variables in the implementation of cost management systems. In addition, Shield (1995) points out that training related to ABC, as an administrative innovation, is an important way to join it up among organizational strategy and performance evaluation to provide a mechanism for employees to understand and accept the innovation. He found an association between training related to ABC and ABC success. Moreover, Krumwiede (1998) found a positive relationship between ABC implementation and training provided. O'Connor et al. (2004) state that the availability of training at organizational level has an important influence on MAPs; they found a positive relationship between the availability of training and the level of MAPs use and the management accounting change. Thus, it is can be hypothesized that

N.H2 The Availability of Training Regarding Management Accounting Techniques <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H2 The Availability of Training Regarding Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

4.3.3 The Availability Top Management Support

Top management's favourable attitude toward change leads to an internal climate conductive to innovation (Damanpour, 1991). Top management support gives clear signals about the importance of the innovation to various parts within an organization. Premkumar and Potter (1995) argued that top management support for

the adoption of innovation would reduce the level of risk undertaken, as it facilitates access to resources and resolves any organizational barriers. Organizational innovativeness literature has reported a positive relationship between top management attitude toward change and organizational willingness to experiment with new tools or devices (Damanpour, 1991).

In addition, previous research in management accounting suggests that management accounting innovation is facilitated by the support of top management (e.g. Shields, 1995; Krumwiede, 1998; Brown et al., 2004). Therefore, consistent with the above discussion, it is stated that

N.H3 The Availability of Top Management Support for the Introduction of New Management Accounting Techniques <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H3 The Availability of Top Management Support for the Introduction of New Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

4.3.4 Size

Organization size is widely examined as an influencing factor of adoption of innovation. In general large organizations are more innovative (Becker and Stafford, 1967; Aiken and Alford, 1970; Brown, 1981; Damanpour, 1987, 1996; Roger, 1995, 2003). It has been stated that a large organization has greater total resources, and internal communication that facilitates the diffusion of innovation (Roger, 1995, 2003). In addition, a large organization is more complex and faces more difficult problems, which would result in the adoption of innovation (Kimberly and Eviansko, 1981). Bjornenak (1997) argued that large organizations have large information fields and the necessary infrastructure which would facilitate the adoption of innovation.

Whatever the reasons, most empirical studies have revealed that large organizations adopt more innovations (e.g. Hage and Aiken 1967; Aiken and Hage, 1971; Kimberly and Eviansko, 1981; Zmud, 1984; Damanpour, 1992; Herrmann and

Gordillo, 2001). Similarly, studies related to management accounting innovation, particularly studies of advanced MAPs, such as ABC, point to a positive relationship between size and innovation (e.g. Bjornenak, 1997; Chenhall and Langfield-Smith, 1998a; Krrmwielde, 1998; Clarke et al., 1999). For instance, Chenhall and Langfield-Smith (1998a) state that large organizations are expected to trial more innovative accounting systems, a view not shared by Libby and Waterhouse (1996) and Williams and Seaman (2001) who found no support for the effect of size on MAPs change. The above results in the following hypothesis:

N.H4 Company Size Has No Impact on the Adoption Rate of MAPs.

A.H4 Company Size Has a Positive Impact on the Adoption Rate of MAPs.

4.3.5 Vertical Differentiation

Vertical differentiation refers to the depth of organizational structure and it is represented by the number of levels in organization hierarchy (Damanpour, 1991).

Baldridge and Burnham (1975) argued that differentiation has a positive association with the adoption of innovation; they claimed that differentiation creates a critical mass within organizational subsystems with sufficient power to encourage the innovation adoption. Aiken et al. (1980) reported a positive relationship between vertical differentiation and innovation in non-profit and service organization.

A study by Hull and Hage (1982) found a negative relationship between innovation and vertical differentiation in manufacturing companies. They also argued that the more hierarchical levels in an organization, the more communication channels, which make communication between levels more difficult, resulting in reducing the flow of innovative ideas.

However, Damanpour (1991) hypothesised a negative association between vertical differentiations and innovation, but he did not find a significant association between vertical differentiations and administrative innovations. Only Gosselin (1997) studied

the relationship between vertical differentiations and adoption of MAPs innovation with respect to ABC. He concluded that the adoption of ABC is positively related to organizational differentiation. In the light of the foregoing discussion, it is hypothesised that

N.H5 Vertical Differentiation of the Company <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H5 Vertical Differentiation of the Company <u>Has</u> an Impact on the Adoption Rate of MAPs.

4.3.6 Formalization

Formalization represents the extent to which rules and procedures are followed in conducting organizational activities (Damanpour, 1991). Low formalization permits openness in the system, which is necessary to encourage new ideas (Pierce and Delbecq, 1977). Hage and Aiken (1967) found that formalization was negatively related to innovation. Zaltman et al. (1973) claimed that low formalization is needed for the initiation of innovations and high formalization for their adoption and implementation. In addition, Herrmann and Gordillo (2001) found formalization to be inversely related to the adoption of innovation.

However, Ettlie et al. (1984) argued that clearly specified work rules and a well defined strict purpose are needed in an organization for the adoption of innovation. In addition, Damanpour (1991) in his meta-analysis of organizational determinants of innovation did not find a significant relation between innovation and formalization. He further did not find support for Zaltman et al.'s (1973) suggestions; however, formalization was associated negatively with initiation of innovation.

Gosselin (1997) who studied the effect of organizational structure on management accounting innovation concluded that, while formalization is positively significantly correlated with the implementation of ABC, it was not with the adoption of ABC. The above results in the following hypothesis:

N.H6 Formalization of the Company <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H6 Formalization of the Company <u>Has</u> an Impact on the Adoption Rate of MAPs.

4.3.7 Centralization

Organizational centralization is an organizational structure feature that represents the concentration of power and authority for decision making at higher levels in the organization; it is the inverse of decentralized authority patterns (Williams and Seaman, 2001). Participatory work environments facilitate innovation by increasing organization members' awareness, commitment and involvement. Thus, greater participation in decision-making is related to greater organizational innovation (Damanpour, 1991; Rogers, 1995, 2003). However, Kimberly and Eviansko (1981) and Daft (1978) argued that centralized organization structure is more innovative as powerful members of organization can more easily facilitate the innovation adoption.

In accordance with these conflicting views, empirical results related to centralization are mixed (Hage and Aiken, 1967; David, 2005). For instance, Damanpour (1991) and Wan et al. (2005) found a negative relationship between centralization and innovation. On the other hand, Daft (1978) indicated a positive association between an administrative innovation and centralization.

Moreover, in respect of management accounting innovation, Williams and Seaman (2001) found that management accounting changes are positively associated with centralization; however, they indicated that these results may be affected by sectors, where the effect of centralization on change in management accounting systems in industrial and manufacturing organizations is positive, whereas the effect is negative in service organizations. In addition, Libby and Waterhouse (1996) and Gosselin (1997) did not find a significant effect for centralization on management accounting system changes and ABC adoption respectively. Based on the above, it is hypothesised that

N.H7 Centralization of the Company <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H7 Centralization of the Company <u>Has</u> an Impact on the Adoption Rate of MAPs.

4.3.8 Business strategy

Business strategy plays an important factor in organizational innovativeness. Miles and Snow (1978, 1994) identified three organizational types in terms of their business strategy; they are prospector, defender and analyser. Prospectors are described as dynamic in searching for market opportunities, capable of meeting consumers' needs with new product developments and heavy investors in research and development. Defenders have a narrow product range with high production volumes and low diversity of producers; they emphasise efficiency of operation rather than innovation. Analysers combine characteristics of both the other types; defenders and prospectors.

An alternative typology of business strategy has been developed by Porter (1980, 1985), which is based on distinguishing between three kinds of strategies; cost leadership, differentiation, and focus. Cost leadership strategy implies that an organization aims to become the lowest cost producer in its industry, whereas an organization which follows a differentiation strategy focuses on products that are different from its competitors and are highly valued by its customers. Finally, in a focus strategy an organization uses strategies, cost leadership and differentiation, to gain a competitive advantage.

The adoption of innovation would be easier for prospectors than defenders, because they have a structure that facilitates and coordinates numerous changes as they need a much broader range of information to meet their product and market opportunities (Gosselin, 1997). There are several studies that support the link between business strategy and some of MAPs adoption, such as ABC and BSC (e.g. Langfield-Smith, 1997; Chenhall and Langfield-Smith, 1998b, Olson and Slater, 2002). Anderson and

Lanen (1999) provide in their exploratory study evidence that change in MAPs follows economic reforms and is contingent upon organizational business strategy.

Gosselin (1997) found that a prospector's strategy is associated with managers' decision to adopt ABC. He further claimed that prospectors tend to adopt innovation in accounting as they are innovative organisations. Simons (1987, 1988) states that prospectors tend to adapt their cost management systems to a greater extent than defenders. It is deduced from the above that

N.H8a Prospector-Differentiation Strategy <u>Has No</u> impact on the Adoption Rate of MAPs.

A.H8a Prospector-Differentiation Strategy <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

N.H8b Defender-Cost Leadership Strategy <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H8b Defender-Cost Leadership Strategy* <u>Has a Negative</u> *Impact on the Adoption Rate of MAPs.

4.3.9 Environmental Uncertainty

Organizations should predict the conditions that will exist during the coming years and this can be done more accurately under stable environmental conditions than dynamic and changing conditions (Govindarajan, 1984). As an important and external characteristic, environmental uncertainty refers to the situation in which probabilities cannot be attached to particular events occurring and even the elements of the environment may not be predictable (Chenhall, 2003).

Various studies related to management accounting change (e.g. Mohr, 1969; Palumbo, 1969; Baldridge and Burnham, 1975; Gordon and Narayanan, 1984; Chenhall and Morris, 1986; Mia and Chenhall, 1994; Damanpour, 1996; Chenhall, 2003) have established that a high environmental uncertainty increases managers' need for information for decision making and organizations' need to change their structure and information systems in order to adapt to a new situation. They reported

that environmental uncertainty is positively associated with organizational change and innovation. For instance, Damanpour (1996) proposed that the more uncertain the environment the more innovative the organization would become and he found support for this proposition in data analysis. Moreover, Mohr (1969) and Palumbo (1969) note that environment uncertainty provides a stimulus for organization toward diffusion of innovation. Baldridge and Burnham (1975) found that changeable environment is predictive of innovation adoption.

The fundamental changes under way in Libya, such as privatization and changing in government regulation have created an environment full of uncertainties and how this impacts the diffusion of MAPs needs examining to see if:

N.H9 Environmental Uncertainty <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H9 Environmental Uncertainty <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

4.3.10 Market Competition

It has been argued that market competition can play a major role in designing management accounting systems and the adoption of innovation (Libby and Waterhouse, 1996; Bjornenak, 1997; Williams and Seaman, 2001; O'Connor et al., 2004; Al-Omiri and Drury, 2007). The view here is that companies facing intensely competitive market environments are more likely to use more sophisticated management accounting systems. For instance, Libby and Waterhouse (1996) argued that companies operating in a competitive environment are expected to have a high rate of change in their management accounting systems as in such an environment appropriate costing systems and performance measurements are key to survival. They found moderate support for that as more intensely competitive environments would lead to a large number of management accounting systems. The rational explanation is that complex and different types of information are needed before making any crucial decisions in such an environment. This information could be provided by a varied number of techniques and systems.

Bruns and Kaplan (1987) identify competition as one of the important factors that stimulate companies to consider and introduce a new costing system. Williams and Seaman (2001), however, found a significant relationship between management accounting systems change in Singaporean manufacturing companies and the intensity of competition, where the correlation was negative. They reasoned that those companies were in a good position in terms of resources and had no pressure to innovate. They further argued that their findings were opposite to those reported by Libby and Waterhouse (1996) on MAPs in Canadian manufacturing companies. The latter were undergoing a programme of structural change that engendered change to their accounting systems.

Moreover, Firth (1996) found that accounting systems developed under the socialist philosophy were inadequate for high competition due to the open market system that Chinese enterprises faced in the transition period. He found a positive relation between the diffusion of MAPs in China and the percentage of sale by a Chinese joint venture partner from export, which indicated the foreign competition faced. Following Firth, O'Connor et al. (2004) hypothesised that Chinese enterprises that face higher market competition make greater use of Western MAPs. However, they did not find support for this hypothesis.

Considering the transition period in the Libyan economy in recent years, which resulted in important changes, such as the emerging of the private sector, allowing the foreign companies to operate in Libyan market and promoting investors to import and export, during which, these changes are expected to increase the local and foreign competition. Based on the above:

N.H10a Local Competition <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H10a Local Competition <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

N.H10b Foreign Competition <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H10b Foreign Competition <u>Has a Positive</u> Impact the Adoption Rate of MAPs.

4.3.11 Use of Consultants

DiMaggio and Powel (1983, 1991) argued that conditions of uncertainty concerning environment and the pressures from professionlization in terms of formal university education and professional training institutions play a central role in developing organizational management practices. Organizations will tend to copy administrative models promoted by fashion-setting organizations such as consulting firms, business mass media, and business schools (Abrahamson, 1991). These fashion setter organizations are being trusted by other organizations, which gave them the power to facilitate the adoption/diffusion of innovation.

A few studies have tested the relation between these fashion setter organizations and diffusion of innovation. Bjornenak (1997), Booth and Giacobbe (1998b), and Brown et al. (2004), among others, have studied the effect of the use of consultants on diffusion of innovation/ABC. Whereas Bjornenak (1997) and Booth and Giacobbe (1998b) found that firms which adopted ABC or were adopting ABC, used more consultants than firms that had not adopted it, the study findings by Brown et al. (2004) indicated that there is a positive association between the use of the consultants and the ABC interest by the companies surveyed, but there is no statistically significant association between the use of consultants and the adoption of ABC.

N.H11 ***The Extent of Use of Consultants When Adopting New Management Accounting Techniques <u>Has No</u> Impact on the Adoption Rate of MAPs.***

A.H11 ***The Extent of Use of Consultants When Adopting New Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.***

4.3.12 Knowledge Resources

Studies related to organizational innovativeness have generally reported the positive relationship between knowledge resources of an organization and the adoption of innovations, and stated that the more knowledge resources in an organization, the easier innovation can be understood and adopted (Dewar and Dutton 1986; Damanpour, 1991). In the same vein**,** Bjornenak (1997) argued that the infrastructure and market (supply side) play an important role in the diffusion of an accounting

innovation, as media such as books, articles or meetings may be used to inform and convince the potential adopters. Also, such media may include advertisements of an innovation. His research findings indicate that the adopters have more information sources than non adopters, which imply that the source of information affects the adoption rate; however, the relation between the source of information and diffusion of innovation was not tested statistically. It is therefore, hypothesised that

N.H12 The Extent of Knowledge Resources Used Related to Accounting Innovation <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H12 The Extent of Knowledge Resources Used Related to Accounting Innovation <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

4.3.13 Joint Ventures

According to DiMaggio and Powel (1983) and Abrahamson (1991), in a highly uncertain environment and where organizations are unclear about their goals and technologically efficient, organizations tend to copy management practices from successful organizations in their field to gain social legitimacy or/and avoid losing competitive advantage for competitors. In addition, the pressures on organizations to imitate could increase according to the number of adopters of a practice in their field or to the reputation of an organization which the practice is being copied from.

Previous studies conducted in one of the developing countries, namely China, by Firth (1996), O'Connor et al. (2004) and Wu et al. (2007) indicated that a joint venture with a foreign company is one of the important factors in the diffusion of Western MAP to the previous centrally planned socialist economies. They concluded that usage of Western MAPs is associated more with being a joint venture with a foreign partner than the State-owned enterprises that do not have a joint venture partnership with a foreign company. Hence the following hypotheses

N.H13 Being Joined with a Foreign Partner <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H13 Being Joined with a Foreign Partner <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

4.4 Summary

This chapter has drawn on the literature review presented in Chapters Two and Three and has outlined the research framework for this study which is clearly aimed at extending earlier studies in terms of the factors influencing the MAPs diffusion. It has been argued that the demand side perspective, which dominates the literature, alone is not adequate in explaining the diffusion of innovation. Thus, the theoretical framework to be used in this study considers the demand side as well as the supply side and the institutional environment in order to explain the innovation diffusion. Finally, the anticipated relationships between the research variables, demand and institutional factors, and the adoption rate of MAPs were discussed in order to underline the formulation of the hypotheses. The next chapter presents the research methodology.

Chapter Five

Research Methodology

5.1 Introduction

Chapter One has outlined the overall design of this research and chapters Two, Three and Four have provided a related literature review on the Libyan economy in transition, diffusion of management accounting practices (MAPs), and institutional and diffusion theories, and along these lines the theoretical framework of the research was developed. The aims of this chapter are to describe the research philosophy and methodology that have been employed and the methods and procedures that have been undertaken to collect the research data. This chapter is structured as follows: it starts with a reminder of the research objectives, as they play a central role in formulating the research methodology. A justification and discussion of the research philosophy and methodology are provided together with an explanation of the research data collection methods, including the questionnaire and interviews. This is followed by details on questionnaire construction and pre-testing, translation of the questionnaire from English to Arabic, content and sources of the final version of the questionnaire, administration of the questionnaire and interviews, and reliability and validity evaluation. Finally, the chapter ends with a discussion of the statistical methods used in this research.

5.2 Research Objectives

As mentioned in the first chapter, the main aim of this research is to investigate the state of management accounting in economic transition conditions in one of the less - developed countries, namely Libya. To achieve this, the research has the following four objectives:

1. To explore the current use of MAPs in Libyan manufacturing companies during the transition economic period, the extent of benefits these companies gain from using such practices and the level of satisfaction of their current use.

2. To explore the extent of change in using MAPs by Libyan manufacturing companies during the period of investigation and to determine the priorities of MAPs adoption in the future.

3. To identify the factors influencing the diffusion of Western MAPs in Libyan manufacturing companies over the period of transition.

4. To identify the factors impeding the diffusion of advanced MAPs in the course of the transitional economy in Libya.

5.3 The Research Philosophy

Research design is an important choice and has a major role to play on the whole research. Easterby et al. (2002), Collis and Hussey (2003), and Creswell (2003) explain that a researcher must determine the research design at an early stage of the research, as it has a central role to play on research activities and has significant effects on the whole research process. Collis and Hussey (2003) state that before constructing the research design, researchers have to determine their philosophical foundation. In addition, the choice of a paradigm or research philosophy has essential assumptions and implications regarding how research should be conducted, and its methodology and methods for data collection (Creswell, 2003).

Easterby-Smith et al. (2002) mention three main reasons for the importance of understanding the philosophical issues of the research. The first reason concerns the overall clarification of the research design; the second reason is the need to recognise which design is suitable and which one is not by knowing the limitations of each; and the third reason is about identifying, or even creating, designs that may be outside the researcher's experience, and also knowing how to adapt research designs to different contexts.

Easterby-Smith et al. (2002) and Collis and Hussey (2003) indicate that there are two main paradigms or philosophies that the research design can be derived from. These paradigms are positivism and phenomenological, with the former implying the quantitative, objective, scientific, experimentalist, and traditionalist approach; and the latter implying the qualitative, subjectivist, humanistic, interpretivist, and social constructionism approach. However, the most popular terms are quantitative and qualitative (Collis and Hussey, 2003).

According to Easterby-Smith et al. (2002, p. 57), the positivistic (quantitative) paradigm is based on the key idea that "the social world exists externally, and its properties should be measured through objective methods", instead of measuring them by deducing subjectively "through sensation, reflection or intuition". In studying the social phenomena within the positivistic paradigm, the reality is seen as external and objective. Therefore those who adopt this approach are more interested in finding the causes of social phenomena than in the subjective state of individuals. They also perceive laws as a pivotal explanatory element of social phenomena, able to predict their occurrence and, thus, making it possible to control these. Therefore, social and natural worlds are both restricted by certain fixed laws in a sequence of cause and effect (Collis and Hussey, 2003).

The phenomenological paradigm (qualitative) has emerged as a result of criticisms of the positivistic paradigm described above, mainly due to its inability to deal with people in relation to their social contexts. Furthermore, researchers are not objective, as only part of what they observe is; thus research activities will be affected by their own interests and values (Collis and Hussey, 2003). In contrast, in the phenomenological paradigm, reality is associated with people rather than with objectivity and external factors. This implies that the role of the social scientist is not about searching for external factors and measuring patterns and the frequency of their occurrence. Their role is more to do with finding the different constructions and meanings that people place upon their own experience, which means the focus should be on what people think and feel and to the ways they communicate with one another. Researchers, therefore, should concentrate their efforts on trying to understand and explain people's different experiences instead of searching for causal relationships through external factors including fundamental laws (Easterby-Smith et al., 2002)

The distinguishing features between the two paradigms or philosophies are summarised in Table 5.1.

Table 5.1 Implications of Positivism and Social Constructionism (Phenomenological) Paradigms

	Positivism	Social Constructionism
The observer	Must be independent	Is part of what is being observed
Human interest	Should be irrelevant	Are the main drivers of science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progress through	Hypotheses and deductions	Gathering rich data from which ideas are induced
Concepts	Need to be operationalised so that they can be measured	Should incorporate stakeholder perspectives
Units of analysis	Should be reduced to simplest terms	May include the complexity of whole 'situation'
Generalisation through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Adopted from Easterby-Smith et al. (2002, p. 30)

Collis and Hussey (2003) claim that neither of these two paradigms is considered better than the other, and thus, it is useful to think of them as being on a continuum. In this respect, Saunders et al. (2007) point out that researchers should not fall into the trap of thinking that one research approach is better than another, as they are better at doing different things.

In addition to these two paradigms, Creswell (2003) suggested pragmatic as another paradigm. According to this paradigm the researcher is not committed to any one system of philosophy or paradigm, and pragmatists argue that in social science research, researchers should stop asking questions about reality and laws of nature. The concern should be with applications and salutations to problem; so instead of methods being important, the problem is most important. Therefore, researchers should use all approaches to understand the problem, using more than one approach to derive knowledge about it, how to understand it and find solutions for it.

Collis and Hussey (2003) argued that researchers should be fairly clear that their choice of methodology is restricted by their chosen paradigm. Therefore, it is

essential to recognise the paradigm they have selected for their research and how that restricts their choice of methodology.

Amaratunga et al. (2002) provide a useful summary of the strengths and weaknesses of research paradigms, which help a researcher to choose which methodology and methods are most suitable for his/her research situation. These are summarised in Table 5.2 below.

Table 5.2 Strengths and Weaknesses of Positivistic and Phenomenological Paradigms

Paradigm	Strengths	Weaknesses
Positivist (Quantitative)	▪ They can provide wide coverage of the range of situations. ▪ They can be fast and economical. ▪ Where statistics are aggregated from large samples, they may be of considerable relevance to policy decisions.	▪ The methods used tend to be rather inflexible and artificial. ▪ They are not very effective in understanding processes or the significance that people attach to actions. ▪ They are not very helpful in generating theories. ▪ Because they focus on what is, or what has been recently, they make it hard for policy makers to infer what changes and actions should take place in the future.
Phenomenological (Qualitative)	▪ Data-gathering methods are seen as natural rather than artificial. ▪ Ability to look at change processes overt time. ▪ Ability to understand people's meaning. ▪ Ability to adjust to new issues and ideas as they emerge. ▪ Contribute to theory generation.	▪ Data collection can be tedious and require more resources. ▪ Analysis and interpretation of data may be more difficult. ▪ Harder to control the pace, progress and end-points of the research process. ▪ Policy makers may give low credibility to results from qualitative approach.

Adopted from Amaratunga et al. (2002, p. 20)

Saunders et al. (2007) explain that the design of a research is determined by the extent to which the researcher is clear about theory at the beginning of the research, to use either the deductive or inductive approach. The deductive approach involves

developing a theory and hypothesis by designing a research strategy to test the hypothesis. On the other hand, in inductive approach, the researcher would not use any existing theory, but collect data and develop theory as a result of his/her data analysis. In addition, each of these research approaches is linked to the different research philosophies or paradigms, where the deductive approach is related more to positivism and the inductive approach to interpretivism or the phenomenological paradigm.

The choice of which paradigm to follow is determined by the current knowledge of the topic under investigation, the research objectives, the research problem, the personal experience of the researcher and the audience(s) for whom the report will be written (Creswell, 2003).

In agreement with Creswell (2003), Saunders et al. (2007) argued that the most important of those factors is the nature of the research topic. The reason for this is that for a literature-rich topic, the deductive approach would be more appropriate, whereas for a new topic with little or no existing literature, it may be more suitable to use an inductive approach. Other relevant factors include the time available to the researcher and the extent to which a researcher is prepared to indulge in risk; noting that deductive research can be quicker and less risky than inductive approach.

Consequently, for the design of this research it was decided to adopt a pragmatic approach using a mix of positivistic and phenomenological paradigms. The justifications for this are as follows:

- The positivistic approach is the dominant paradigm in business and management research (Collis and Hussey, 2003). They report that the researcher does not have to expend much energy in justifying the methodology adopted if the positivistic paradigm was acceptable in the research discipline and to the research supervision team. In contrast, the researcher may have to spend more time explaining and justifying the methodology if the adopted paradigm was phenomenological, which is becoming more acceptable and more appropriate for many business studies.

- The research topic of this study, which is relatively a literature wealthy topic, and its objectives (see Section 5.2), which seeks to examine the MAPs in Libyan manufacturing companies and to identify the relationship between research variables and diffusion of MAPs using two of the existing theories, institutional and diffusion. Thus, the positivistic paradigm was considered as appropriate for this research.

- In reality there are very few pure quantitative or qualitative research projects, which adopt one single paradigm and use its implications. Most researchers use a combination of both paradigms (Easterby-Smith et al., 2002; Creswell, 2003). The rationale for this combination is that each philosophy or paradigm has strengths and weaknesses; therefore, employing a mixture of paradigms, would maximise the advantages and minimise the disadvantages of each one.

5.4 The Research Methodology

One of the most crucial decisions based on understanding the philosophical issues and adopting a certain research paradigm, is to determine the appropriate research methodology. There are factors that affect the choice of a specific research methodology according to the research objectives and paradigms. As methodologies cannot be said to be true or false, but only more or less useful, there is therefore no wrong or right methodology which can be employed to conduct a research project. Some methodologies are simply more suitable to the aims and objectives of a particular research project (Oppenheim, 1992; Easterby-Smith et al., 2002; Creswell, 2003).

The research methods associated with each paradigm and methodology are also different. According to Creswell (2003) there are three approaches that the research methodology can be derived from. These are: quantitative, qualitative, and mixed methods. He further linked them to paradigms and methods of data collection and analysis to enable the researchers to choose an appropriate approach for their research.

- A quantitative approach is one where the investigator primarily uses a positivistic paradigm, uses methodologies such as experiments and surveys, and collects data on predetermined instruments using closed questions, and uses statistical techniques to analyse the data.

- A qualitative approach is one which is primarily based on a constructivist or phenomenological paradigm. Qualitative research uses methodologies such as case studies, ethnography, or grounded theory studies, and collects its data through open questions and emerging data with the intention of developing themes from it.

- A mixed methods approach, where the research is based on pragmatism. Pragmatists do attempt to integrate methods of quantitative and qualitative paradigms in investigating a single study. It uses both approaches above to collect data. Hence, outcomes include both quantitative data (e.g., from questionnaires) and qualitative data (e.g., from interviews). Therefore, it is beneficial for the researcher to be pragmatic in mixing research approaches and methods in a signal study of social phenomena (Creswell, 2003).

In using a mixed methods approach, the model of the mixture must be determined. Creswell (2003) identified several selection criteria:

- *Implementation*: the researcher may collect the data in phases (sequentially); or collect it at the same time (concurrently).

- *Priority*: this refers to the weight that is given to the qualitative and quantitative approach. As seen earlier in Creswell (1994) two models of priority has been conceptualised. First, the dominant vs. less dominant, in which a research is presented within a signal dominant paradigm, with one small component of the overall study based on the alterative paradigm. Second, the mixed - methodology design approach, where the researcher mixes aspects of the qualitative and quantitative paradigm at all or many methodological steps in the design.

- *Integration*: it refers to mixing or integrating the research data, where integration of two types of data might occur at different stages in the process of research such as data collection, data analysis, or interpretation.

- *Theoretical perspective:* it refers to the theoretical perspective that guides the entire design. Although all the designs have implicit theories, mixed methodologies can make the theory explicit as a guiding framework for the study.

In line with the discussion above, and considering the research paradigm, research questions and objectives, this research adopted a mixed methods approach, the quantitative approach as the dominant approach and the qualitative approach as a less dominant approach concurrently, with integration in the interpretation stage. Consequently a survey method was adopted as the main methodology. In survey research, which contains a cross-sectional design, data are collected predominantly by questionnaires or by interviews on more than one case at a single point of time to gather quantitative or qualitative data in connection with two or more variables, which are then examined to detect patterns of association (Bryman and Bell, 2007). The rationale behind choosing the survey method in this research is fourfold:

- To be consistent with the research paradigm adopted (pragmatic paradigm) and to achieve the research objectives (see Section 5.2) in terms of generalisation, identifying relationships between research variables and conducting the required test analysis techniques such as factor analysis and multiple regressions, the survey approach was regarded as appropriate (Oppenheim, 1992; Collis and Hussey, 2003; De Vaus, 2001; Saunders et al., 2007).

- To achieve the research objectives, a potentially large sample of a targeted population in geographically different locations is required; it was decided to adopt the questionnaire survey.

- It is a popular and common method of primary data collection in business and management research (Collis and Hussey, 2003; Creswell, 2003; Sekaran, 2003; Saunders et al., 2007).

- It has been extensively used in previous research in similar areas of management accounting diffusion (e.g. Firth, 1996; Bjornenak, 1997; Gosselin, 1997; Malmi, 1999; Haldma and Laats, 2002; Askarany and Smith, 2004; O'Connor et al., 2004).

5.5 The Research Type

The choice of a certain research paradigm leads researchers to implement a specific research design, which involves a series of rational decision-making choices, such as issues relating to the purpose of the study, the type of investigation, the study setting, unit of analysis, and time horizon (Sekaran, 2003). However, a number of different classifications of research types exist, with no simple classification system defining all the variations that must be considered (Cooper and Schindle, 2006).

A standard classification based on the research purposes has been widely expressed in the literature, in which the research can be classified based on its purpose as exploratory, descriptive, explanatory or analytical research. Exploratory research looks for patterns, idea or hypotheses, rather than testing or confirming a hypothesis. It is conducted when there are few or no earlier studies. Descriptive research describes the features of a particular problem or issue. Data collected are often quantitative and analysed statistically to summarise the information. As continuation of descriptive research, an analytical or explanatory research goes beyond merely describing characterises, to analyse and explain why or how it is happening (Collis and Hussey, 2003).

Based on its aim and objectives, this research can be classified as descriptive, explanatory and exploratory. In view of the part of the research connected with objectives one and two, which explain the state of MAPs in Libyan manufacturing companies during the transition economic period and determine the future priorities

in the adoption of MAPs, this part of the research can be classified as descriptive. In addition, based on research objectives three and four, which seek to identify the factors that influence diffusion of Western MAPs in Libyan manufacturing companies and the barriers to advanced MAPs diffusion in the course of the transitional economy in Libya, this part can be classified as exploratory and explanatory or analytical research. As the research is aimed at examining factors that influence the diffusion of MAPs, it not only uses factors already mentioned in the relevant literature but it will also try to identify new factors.

In the same context, Sekaran (2003) and Cooper and Schindle (2006) suggest that, in terms of the time dimension, the research can be classified as cross-sectional or longitudinal. Cross-sectional studies are carried out once and they give snapshot at one point in time. In contrast, in longitudinal studies the data are collected at two or more points in time. This study can be classified as cross-sectional as the required data are gathered at one point in time.

Moreover, Sekaran (2003) indicates that studies might be classified according to the type of investigation as correlational or causal. Causal research is aimed at defining the variables causing one or more problems; it deals with cause-and-effect relationships, whereas correlational research is interested in defining the important variables associated with the problem. According to the research objectives, this study can be classified as both correlational and causal.

5.6 Research Methods of Data Collection

Reference was made earlier in this chapter, the pragmatic paradigm was adopted to satisfy the research objectives; and the survey method was chosen as the main vehicle for data collection.

In general, there are two main sources of data that can be used in a research; secondary and primary data. Secondary data are data which already exist, produced or collected by others for some other purposes and can be found in various sources (books, journals, published statistics, annual reports, films, and government surveys).

Primary data are original data collected by the researcher to meet the research objectives, including survey and experimental data (Collis and Hussey, 2003).

There are no methods that are suitable for all types of research but for every research question, paradigm, and methodology driven from it, one or more data collection methods may be suitable. The choice also depends on certain limitations such as time, cost, and the availability of people and facilities (Sekaran, 2003; Van der et al., 2004). In this context, Oppenheim (1992) pointed out that the best approach is a matter of appropriateness.

At the philosophical level the distinction between paradigms may be very clear. However, the distinction may fail when it comes to the choice of specific methods, and to the issues of research design (Easteby-Smith et al., 2002). In the view of Collis and Hussey (2003) a research method is not necessarily positivistic or phenomenological by its label, but how it is used. For instance if a method is used to collect data on the frequency of occurrence of a phenomenon or variable, quantitative data will be obtained, but if the data are collected on the meaning of a phenomenon, qualitative data will be gained. Quantitative data is numerical data whereas qualitative data is nominal data.

Many business researchers argue that mixed methods should be used to some extent as this provides more perspectives to the issues or problems being investigated, data sources can complement each other, where the researcher can check the information and overcome the potential bias of a single-method approach. For instance, in-depth interviews are suggested as a good way of gaining qualitative insights that can complement data obtained from a questionnaire survey (Easterby-Smith et al., 2002; Collis and Hussey, 2003; Ven der et al., 2004). This approach of combining is called methods triangulation, in which the researcher combines qualitative, usually observation and interviews, and quantitative research, usually questionnaire surveys (Ven der et al., 2004). In this context, Easterby-Smith et al. (2002, p. 146) identify four types of triangulation:

- Theoretical triangulation, involves using a theory from discipline to explain phenomenon/situations in another discipline.

- Data triangulation refers to collecting data at different times or from different sources.

- Investigator triangulation, where different people collect data on the same situation and then compare the results.

- Methodologies triangulation is when researchers use both qualitative and quantitative methods of data collection.

The main advantages of conducting multiple methods are that different methods can be used for different objectives and this enables triangulation to take place (Saunders et al., 2007). In addition, as Bryman and Bell (2007) explain, the triangulation approach tends to be commonly used in business and management research as a way of overcoming the limitations of each individual method and be able to cross-check findings.

Based on the recommendations of using a triangulation of methods and consistent with the paradigm and methodology adopted, this research has drawn its design of data collection methods based on triangulation. This research predominantly employs the positivistic (quantitative) paradigm by conducting a self-completion questionnaire survey on Libyan manufacturing companies, and supplemented that with the phenomenological (qualitative) paradigm by conducting a number of interviews with the survey respondents as a second primary data collection method.

5.6.1 Questionnaire

Questionnaires, usually defined as a list of carefully structured questions (Collis and Hussey, 2003), are the most popular method for collecting data (Oppenheim, 1992; Easterby-Smith et al., 2002; Collis and Hussey, 2003; Sekaran, 2003; Saunders, et al., 2007). Moreover, questionnaires are associated with both the positivistic and phenomenological paradigms; positivistic research approach suggests the use of closed-ended questions, whereas a phenomenological approach suggests open-ended

questions when designing a questionnaire (Collis and Hussey, 2003)[1]. In addition, a questionnaire is usually not suitable for exploratory research and can be used for descriptive or explanatory research (Saunders et al., 2007).

The types of questionnaire differ according to the method of its distribution; on-line questionnaire, post/mail questionnaire; telephone questionnaire, and individual distribution/self-administered questionnaire; each has its own advantages and disadvantages. Considering each type of questionnaire, and the nature of the research population, namely Libyan manufacturing companies, a self-administered questionnaire was chosen as it was considered as the most suitable to meet the objectives of this research. According to Oppenheim (1992), in the self-administered questionnaire, the researcher himself or some in an official position usually distribute the questionnaire to the respondents, clearly explaining the research purpose, and the respondents are then left alone to complete the questionnaire.

The main advantages of a self completion questionnaire is that it may ensure the high response rate, give the benefits of a degree of personal contact, targets very precisely the most appropriate sample, and overcome the sample bias problem if any (Oppenheim, 1992; Collis and Hussey, 2003). According to Sekaran (2003) and Saunders et al. (2007), when using the self-administered questionnaire, there is the opportunity to introduce the research topic, to motivate the respondents to give their answer honestly, to clarify any ambiguous questions and to collect completed questionnaires in a short period of time.

In addition to the advantages of a self-administered questionnaire mentioned above, compared with other types, this type was also chosen because of the following reasons:

- The unreliable Libyan post services, which could cause a low response rate and be time consuming, making it unadvisable to use a postal questionnaire

[1] See Section 5.9.2 for more details about types of questions used in this research

- The difficulties to find correct personal details (e.g. email, telephone number) for the targeted respondents in Libyan manufacturing companies, make it too impossible to use email or telephone questionnaires.

- The research questionnaire is comprehensive and quite long, therefore, if it was posted or emailed to the respondents, it would have been neglected and the response rate would be minimised.

Collis and Hussey (2003) summarises the main decisions involved when using a questionnaire, which include sample size, type of questions, question wording, questionnaire design, wording of accompanying letter, method of questionnaire distribution, test of validity and reliability and methods of data analysis. They further point out that these decisions are essential to positivistic study and some of them will be less important in phenomenal research. All of these issues will be discussed later in this chapter.

5.6.2 Interviews

Data may be collected only by using a questionnaire; however it is advisable to combine the questionnaire with other methods of data collection. For example, a questionnaire can be complemented by in-depth interviews to explore and understand the research issues (Saunders et al., 2007). Moreover, after conducting a questionnaire survey, interviews could be useful in terms for validating the questionnaire (Bryman and Bell, 2007).

In an interview, participants are asked questions to find out what they do, think or feel. An interview can be structured, semi- structured or unstructured and it could be associated with both the main paradigms, positivistic and phenomenological. The positivistic approach is associated with structured interviews and closed-ended questions, while unstructured interviews or open-ended questions are used in phenomenal paradigm (Collis and Hussey, 2003). In this context, Saunders et al. (2007) linked each type of interview and the purpose of the research, suggesting that in an exploratory study, in-depth/unstructured and semi-structured interviews can be

very helpful; structured interviews only are useful in a descriptive study; and semi-structured and structured interviews may be used in an explanatory study. Furthermore, Easterby-Smith et al. (2002) see interviews as a useful tool for understanding the construct that the interviewee uses in relation to their opinions and beliefs about the issues under consideration.

Consequently, it was decided to use unstructured interviews as a supplement to the main primary data collection method which is the questionnaire. These interviews were conducted with some of the survey respondents, to obtain and explore more in-depth information about the research issues, with specific emphasis on the factors influencing the adoption of new Western MAPs and barriers to adopting advanced MAPs in the Libyan context. Thus, data collected from interviews are used to help in meeting the third and fourth objectives of this research (see Section 5.2).

5.7 Research Population

The population of this research is defined as all medium and large manufacturing companies in Libya. The justifications for selecting these companies are as follows:

- This research restricts the population to medium and large companies, and small companies are excluded. The rationale for this is that medium and large companies are expected to have a well designed accounting system in general and management accounting system in particular. While small companies, i e those with less than 50 employees, are expected to rely on informal systems and not have sophisticated management accounting systems (Malmi, 1999; Szychta, 2002).

- This research restricts the population to manufacturing companies only, as manufacturing companies may design their management accounting systems differently from non-manufacturing companies (Fisher, 1995; Drury, 2004). Thus, it is difficult to either design a questionnaire that is suitable for both manufacturing and non-manufacturing companies or to design two questionnaires, one for manufacturing and the other for non-manufacturing

companies. It is also believed that even designing a signal questionnaire for all types of non-manufacturing companies is difficult because of their distinctive features.

5.8 Research Sample and Respondents

A sample is a subgroup or subset of the population (Sekaran, 2003). According to Easterby-Smith et al. (2002) when the population is small (less than 500) it is customary to use 100 percent sample, which is called a census sample, in which the questionnaire is sent to all the members of the research population. Because the population of this research was relatively small, the target sample was the entire population. Therefore, the entire population, which consists of 154 Libyan manufacturing companies, was targeted as the sample for this research. The main reason for choosing the entire population is to ensure that the sample is representative and not biased. For the interviews, there was a question in the questionnaire (question C16) asking the respondents if they would like to participate in the interviews. Based on the answers to this question, the number of interviewees was selected.

The senior financial staff, such as financial directors, financial managers, the senior management accountant, was targeted as respondents for this research. The rationale for choosing these respondents is that they are in a good position to complete the questionnaire and should have the necessary knowledge to provide accurate and useful data regarding the MAPs in their companies.

5.9 Questionnaire Construction and Pre-testing

It is very important to ensure that the questionnaire is carefully designed to collect the precise data required, since it is usually difficult to collect additional data using another questionnaire later. The construction of a questionnaire involves thinking about the research problem and what the concepts mean and how they should be operationalised; thus every question should be linked to the conceptual framework of

the research (Oppenheim, 1992; De Vaus, 2001; Malhotra and Birks, 2007). In addition, the most critical point in developing and designing a questionnaire is visiting and revisiting the research objectives where a good research questionnaire is one that achieves the information needs of those objectives (Sekaran, 2003). For the present study, a theoretical framework was built according to the stated research objectives, and every entry in the questionnaire was linked to this conceptual framework.

According to Saunders et al. (2007) the response rate, the reliability and the validity could be maximised through careful design of each question, good questionnaire layout, clear explanation of the aims of the questionnaire, pre-testing, and carefully planned administration. These issues are discussed in the following sections.

5.9.1 Question Design, Wording and Layout

Considerable time and effort were devoted towards the construction and pre-testing of the questionnaire and several drafts and a thorough evaluation and pre-testing were carried out prior to determining the final version of the questionnaire. Recommendations by several researchers (e.g. Dillman, 1978; Oppenheim, 1992; Aaker et al. 2001; Easterby-Smith et al., 2002; Collis and Hussey 2003; Sekaran, 2003; De Vaus, 2001; Saunders el at., 2007) on designing a questionnaire survey were adopted wherever possible. The following are examples of different procedures of the questionnaire construction that were adopted in this research in terms of the general rules of designing questions, choice of wording, and layout:

- The purpose of the questionnaire was explained to all participants.

- Insensitive, double-barrelled, leading, loading, double negative questions were avoided.

- Simple, direct and familiar language was used to make the questionnaire applicable to all the respondents.

- The length of each question was kept as short as possible in a way that did not affect its content and meaning.

- Consistency in style and clear instructions about each section for answering each question were provided.

- Questions that are similar in content were grouped in the same sections; for instance, all questions related to general information grouped under section A, whereas questions related to MAPs grouped under section B, questions on the factors affecting the diffusion of MAPs in Section C.

- The respondent was led from general to more specific questions when answering the questionnaire, moving through questions in a logical sequence, without making major shifts or gaps for the respondents.

- Perfect appearance of the questionnaire, it consisted of ten A4 pages, printed on both sides of the page in three A3 sheets of paper and folded in the middle to take the form of a booklet, which requires less paper and make the questionnaire appear short and very professional.

5.9.2 Question Type and Format

Other important issues that should be taken into consideration when designing a questionnaire are question types and format. Easterby-Smith et al. (2002) indicate that the main decisions to be made in questionnaire design are related to the types of question to be used and the overall format of the questionnaire.

There are two types of questions to be used in constructing a questionnaire; closed-ended and open-ended questions. A closed or closed-ended question offers the respondents a choice of alternative replies to choose from, whereas the open question or open-ended question is not followed by any kind of choice, and the answers have to be recorded in full (Oppenheim, 1992). According to Van der et al. (2004), the choice of open or closed questions is related to the aim of the research. In

exploratory research, researchers generally use open questions as they give as much information as possible. On the other hand, in analytical or explanatory research, closed questions are often used. In addition, the type of questions used is associated with the paradigm adopted in the research, with closed questions used in a positivistic research approach and open questions used in a phenomenological approach (Collis and Hussey, 2003).

Choosing the type of question depends very much on the content of the question, the administration method, the type of respondent and their motivation to participate (De Vaus, 2001). Furthermore, it is recommended to use closed questions in long and comprehensive questionnaires, as they are quicker and easier to be answered and then coded (Mangion, 1995; De Vaus, 2001; Hair et al., 2003; Cooper and Schindler, 2006). Due to the comprehensive nature of the questionnaire and its length, to be consistent with the type of this research, and paradigm adopted, the main type of questions used in constructing this research questionnaire was the closed type. In addition, few open questions were used in questions A1, A6 where short answers were required about the job title and company name; also an open question was used in the form of "other (please specify)" in questions; A5, A11, B1, C9, C14, and C15 where it was difficult to list all possible answers. This is also consistent with Mangion's (1995) recommendation to use open question in situations where questions required short and specific answers, or a list of possible answers is too large that it is impractical to put a check box response for each one. According to Saunders et al. (2007) there are six types of closed questions:

1. List question: this offers the respondent a list of responses to choose from.

2. Category question: this is designed in a way where each respondent's answer fits only one category.

3. Ranking question: this asks the respondent to place things in rank order to find out their relative importance to the respondent.

4. Rating question: this is often used to collect opinions; they most frequently use Likert-style rating, usually on four, five, six, or seven-point rating scale.

5. Quantity question: in which the respondent is asked to provide a number, giving the amount of characteristics on behaviour or attribute.

6. Grid question: this enables the respondent to record two or more similar questions at the same time.

To achieve the research objectives, four types of closed questions were used. First, the main question type used was the rating question in the form of Likert-scale, which is the most commonly used type, as it is quicker to answer, does not require much space, is easy to understand, and enables a variety of statistical techniques to use (Oppenheim, 1992; Easterby-Smith et at., 2002; Sekaran 2003; Saunders et al., 2007).

The Likert-scale usually has five possibilities (Oppenheim, 1992; De Vaus, 2001). In this context, Keruin (1999) suggests that the length of the scale should be seven or eight points or shorter as that takes much effort from the respondents to answer (quoted in Saunders et al., 2007, p. 372). In addition, Elmore and Beggs (1975) indicated that a five-point scale is just as good as any, and that an increase from five to seven or nine points on a rating scale does not improve the reliability of the ratings (quoted in Sekaran, 2003, p. 199). Therefore, a five point Likert scale was used though the questionnaire to measure some the main research variables in questions B1, B2, C1, C6, C7, C8, C9, C10, C11, C12, C13, C14, and C15. Second, the category question type was used in questions A5, A7, A11, A12, A15, A17, B3, C2, C3, C4, and C5. Third, quantity questions were used in A2, A3, A4, A8, A9, A10, A13, A14, and A16. Fourth, a list question was used only in A18.

5.9.3 Questionnaire Pre-testing

Although the questionnaire was built in stages and underwent numerous revisions before a final draft was produced, it was nonetheless felt important to first pre-test the final draft to establish whether further improvements were needed before its full distribution. It is always advisable to pilot the questionnaire on a small number of people before using it for real; this enables the researcher to check that items are

easily understood and that there are no noticeable problems to do with length, sequencing of questions and sensitive items (Easterby-Smith et al., 2002). Moreover, the questionnaire pre-test by asking an expert or group of experts about comments on the questionnaire will establish content validity and likely the reliability of the data (Saunders et al., 2007)[1]. In this context, pre-testing may involve friends, colleagues, and people of different opinions, to obtain different insights and ideas, and it may include small group as similar as possible to the research sample (Oppenheim, 1992; De Vaus, 2001; Collis and Hussey, 2003; Sekaran, 2003; Saunders et al., 2007). Therefore, when the final draft of the questionnaire was produced, it was pre-tested by a number of the following procedures:

- Handing the draft questionnaire to five Ph.D. students, who are undertaking their doctoral projects in different subjects related to business at the Huddersfield Business School and obtaining their feedback resulted in some helpful suggestions regarding the wording of questions, clarity, presentation, and formatting of the questionnaire.

- An earlier draft of the questionnaire was sent to two academics; the first one, who holds a Ph.D. from a British university, works as a lecturer in the accounting department at the Academy of Graduate Studies, which one of the biggest institute for postgraduate studies in Libya, and interested in management accounting. The second academic holds an MSc in accounting with over ten years experience as the head of budget department for one of the biggest manufacturing companies in Libya. Valuable comments in terms of the design, wording, and contents were received and accommodated in redrafting the questionnaire.

- Once redrafted and finalised, the questionnaire was piloted in ten Libyan manufacturing companies on 1st Jan 2007. The questionnaire was handed out by the researcher himself, who explained the aims of the research and all relevant issues. Later when a completed questionnaire was collected, there was a discussion with each respondent to obtain feedback about unclear

[1] See Section 5.13 about the reliability and validity of this research

instructions, ambiguous wording, confusing questions and the ability of the respondents to answer the questions and its length. Six completed questionnaires were returned, giving a response rate of 60%. Useful feedback was gained from the respondents, who commented that the questionnaire was clear, understandable and easy to complete. In addition they indicated that the length of the questionnaire was suitable and not onerous.

After, considering all the suggestions received as a result of these procedures, a few modifications were made to produce the final draft of the questionnaire.

5.10 The Translation of the Questionnaire

The questionnaire was originally produced in English, which is not an official language in Libya and is not widely spoken in the business sectors. Therefore, it was decided to translate the questionnaire into Arabic, the official language in Libya, to make it very clear for the respondents.

Malhotra and Birks (2007) identify three types of techniques for translating a research questionnaire. First, direct translation, in which the questionnaire is translated directly from the original to the target language by a bilingual translator. According to Usuier (1998), direct translation can lead to many discrepancies, including those relating to the meaning between the two languages (quoted in Suanders, et al, 2007, p. 378). Second, the parallel translation, by a committee of translators, each of whom is fluent in languages, the original and the target language; these translators try to improve the translation by discussing different versions and modify the questionnaire according to their suggestions and comments until they reach the final version, where all the translators are satisfied with the translation. Third, back translation refers to translating the questionnaire from its original language first by a bilingual speaker who is a native of the target language. This translated version is then translated back into the original language by a bilingualist who is a native of the original language. These processes may be repeated several times in order to correct any errors and misinterpretation. This technique has some disadvantages, namely it is a very time- consuming process and cumbersome.

Considering practical issues such as time, cost, and questionnaire length, and comparing the advantages with disadvantages for each of these techniques, the parallel translation was chosen as the most suitable technique for translating the research questionnaire. The processes that were followed for the translation of the research questionnaire were:

- The original English version of the questionnaire was initially translated into Arabic, and then the original version (English) and target language (Arabic) versions were sent to a committee of translators, who are fluent in both languages, to check the translation of the questionnaire. This committee consisted of: two Academics, Ph.D. holders working in different Universities in Libya who were interested in management accounting, two managers working in different Libyan manufacturing companies, and a Linguistics Ph.D. student at Sheffield Hallam University, who has many years experience working as a translator.

- After receiving the questionnaire back from all the groups mentioned above, all their suggestions and comments were examined, followed by contacts when necessary, to clarify and discuss any modifications.

- As a result of that, the final Arabic version of the questionnaire was produced, after making the necessary modifications. This final version was sent back to the committee in order to check it out for the translation and to ensure their satisfaction of the final version, where no more suggestions were made.

- The final Arabic version of the questionnaire was sent to an Arabic language expert who checked out the Arabic language grammar and wording in order to make sure that the Arabic version was clear (see Appendix D).

5.11 Content and Sources of the Final Version of the Questionnaire

The feedback and recommendations received from the pilot study were used to produce the final version of the questionnaire (see Appendix B). The final version

consisted of 10 A4 pages, including the front covering letter page, and the last page left blank for the respondents to make any additional comments. The questionnaire was split into three sections. Details of each section are described below:

- **Section A: General Information**

This section was designed to collect general information about the respondents, such as job title, experience, education, and about their companies, such as company name, number of employees, industrial sector, and ownership type. Question A18 is aimed at determining which production methods were used in the respondents' companies; this question was adopted from Askarany and Smith (2003) and Wu (2003).

- **Section B: Current Use of Management Accounting Techniques**

This section collects information about current MAPs in Libyan manufacturing companies. It was divided into three questions.

Question B1 was designed to indicate whether each MAP is used or not, and if it was currently used, then the respondents were asked to indicate the extent of the benefits gained from it over the last 5 years, based on a 5-point scale rating from 1 (none) to 5 (very high), and also they were asked to indicate if it was introduced in the last 5 years. On the other hand, if the MAP was not currently used, respondents were asked to indicate the likelihood of introducing it in the next 5 years on a 5-point scale rating from 1 (not likely) to 5 (very likely). The list of 25 MAPs used in this question was developed based on many prior similar studies such as Drury and Dugdale (1992), Drury et al. (1993), Chenhall and Langfied-Smith, (1998a), Joshi (2001), and Luther and Longden (2001),

Question B2 has sought to determine the level of satisfaction with the MAPs currently used in the company, and statements were provided about different levels of satisfaction (adopted from Askarany, 2000) to be chosen from.

Question B3 was aimed at collecting information about the companies' position regarding a list of advanced MAPs, which was developed based on the literature review, using a combination of books such as Drury (2004) and some items adopted

from previous studies such as Adler et al. (2000) Joshi (2001) and Askarany and Smith (2003). In order to choose the best descriptor of a company's position regarding these advanced MAPs, the respondent was given five statements adapted from Krumwiede (1998) and Brown et al. (2004). These statements are: never heard of it, not considered, under consideration, considered then rejected and currently used.

- **Section C: Factors Influencing MAPs**

This section is concerned with the respondents' opinions in determining the factors that may affect the diffusion of MAPs. It consists of 15 questions. Details about each question are given below:

Question C1 sought to ascertain the extent of environmental uncertainty, by asking the respondents to indicate the predictability of a number of aspects in the company's operations, on a 5-point scale rating from 1 (very unpredictable) to 5 (very predictable). The instrument in this question was developed by Miles and Snow (1978), and also used by Govindarajan (1984).

Question C2 was designed to indicate the company's corporate business strategy; this question was developed by Snow and Hrebiniak (1980), and also used by Gosselin (1997).

Question C3 and **Question C4,** which were adopted from Bjornenak (1997), were designed to measure the competition; in question C3, the aim was to indicate the number of local competitors for the company's main products, and C34 sought to indicate the percentage of company production that is exports, based on an assumption that competition is higher in the foreign market.

Question C5 was adopted from Robbins (1983), and was designed to measure functional differentiation. The respondents were asked to indicate the number of hierarchical levels in their companies; this type of measurement has been used in various studies in the organizational literature (e.g. Aiken et al., 1980; Hull and Hage, 1982; Damanpour, 1991).

Question C6 was designed to measure the centralisation of decision making. It was developed based on the instrument that was developed by Hage and Dewar (1973) and Gordon and Narayanan (1984) also used by, among others, Chenhall and Morris (1986). First, respondents were given an explanation for different decision categories; strategic decisions, investment decisions, marketing decisions, decisions regarding internal processes, human resources decisions, and adoption of new management accounting techniques, and then asked to indicate to what extent the authority has been delegated by central management in their companies regarding these decision categories on a scale from 1 (Not delegated) to 5 (Completely delegated).

Question C7 was designed to measure the degree of formalisation; this instrument was developed based on previous studies which looked at the same variable, such as Robbins (1983), Damanpour (1991), and Gosselin (1997). The respondents were required to determine the availability of employees' freedom to organize their work and the rules on routine procedures and operations in their companies.

Question C8 asked the respondents, on a scale from 1 (Not computerised at all) to 5 (Fully Computerised), to indicate the degree to which the accounting system is computerised in their companies. It was adopted from Abulghasim (2006) and Alkizza (2006).

Question C9 was adopted from Bjornenak (1997) and aimed at collecting data about the use of the list of sources to keep up to date with innovation in accounting techniques by the respondents, rating from 1 (Never used) to 5 (Always used).

Question C10 was designed to collect information on the impact of supply-side factors. Respondents were asked to indicate the extent to which their companies use consultants in the process of adopting new management accounting techniques on a scale from 1 (Never used) to 5 (Always used). This question was adopted from Malmi (1999).

Question C11 was developed by the researcher based on the instruments from Krumwiede (1998) and O'Connor et al. (2004). It focused on training availability

regarding MAPs. On a scale from 1 (Not available at all) to 5 (Considerably available), respondents were asked to determine the level of availability of training in their companies.

Question C12 which was developed by the researcher**,** focused on the appropriate resources to adopt new MAPs. Two items, about the amount of investment and the appropriate skills required to be adopted, were provided to the respondents to indicate the level of their availability using a scale from 1 (Not available at all) to 5 (Considerably available).

Question C13 was used to determine the level of availability of top management support for the introduction of new MAPs, based on a scale 1 (Not available at all) to 5 (Considerably available). The first item of this question was adopted from Grover (1993), the second item was adopted from Premkumar and Potter (1995), and the third was adopted from Krumwiede (1998).

In Question C14 a list of 20 items influencing the adoption of new MAPs was provided, relating to demand (the attribute of innovations, the attribute of adopters, environmental) and the institutional factors (fad, fashion, and forced)[1]. The respondents were asked to indicate the degree of importance of each item in the decision to adopt new management accounting techniques in their companies rating from 1 (Not important) to 5 (Considerably important); some of these items were adopted from prior studies that considered the same issue such as Malmi (1999), Askarany (2000), Haldma and Laats (2002), Askarany and Smith (2004), O'Connor et al. (2004), and Alkizza (2006), In addition, other items were self developed and they are as follows:

1. The new technique's trialability before full implementation;
2. The compatibility of the new techniques with the existing system;
3. The new techniques being easy to understand and use;
4. Observability to see results from the new techniques;
5. Foreign parent pressure;
6. To be seen as having different techniques;

[1] See the research theoretical framework in Chapter Four

7. Knowledge about the new techniques from textbooks and academic journals;
8. Learning about the new techniques in academic institutions;
9. Foreign partner has adopted these techniques;
10. These techniques have been adopted by other Libyan companies;
11. The lead company in the industry has adopted these techniques;

Items 1 to 4 were developed to examine the importance of the attributes of innovation, while items 5 to 11 were developed to examine the importance of the institutional factors.

Question C15 considered the factors which impede the adoption of advanced MAPs that are listed in question B3. On a scale from 1 (Do not impede at all) to 5 (Considerably impede), respondents were asked to indicate the extent to which a list of items impede the decision to adopt advanced MAPs in their companies. This list of items was adopted from several previous studies such as Adler et al. (2000), Askarany (2000), O'Connor et al. (2004), Waweru et al. (2004), Waldron (2005) and Abulghasim (2006).

At the end of the questionnaire the respondents were asked to use the last page and, if need be add a separate sheet, for any additional comments or suggestions relevant to the issues covered in the questionnaire. Finally, they were thanked for completing the questionnaire and invited to provide contact details if they were willing to be interviewed later.

5.12 Administration of the Questionnaires and the Interviews

Many authors, such as Dillman, 1978; Oppenheim, 1992; Aaker et al., 2001; De Vaus, 2001; Malhotra and Birks, 2007; Suanders et al., 2007) have suggested a number of procedures that should be followed in order to maximise the response rate of the research questionnaire. Based on their recommendations, the following efforts were made in this research to increase the response rate:

- Pre-testing the research questionnaire (see Section 5.9.3).

- Distributing the questionnaire personally (see Section 5.6.1).

- Accompanying the questionnaire is a covering letter (see Appendix A), many authors; such as Dillman (1978), De Vaus (2001), and Saunders et al. (2007) recommended some features of the covering letter to be sufficient. The following are the main features of the covering letter used in this research.

    1. Huddersfield University official logo was used in the top of the letter.
    2. Information about the research title, aims and its importance in this period of transition in Libya.
    3. Insurance of the complete security and confidentiality of the information provided by the respondent.
    4. A well designed, layout and the appearance of the questionnaire (see Section 5.9.1).

- Sponsorships achieved were: first, the supporting letters from two universities, University of Huddersfield, UK, where this research project was developed and the Elmergib University, Libya, which gave the researcher a scholarship to do this research. Second, the power of supporting letters from different associations in Libya, such as The General People's Committee for industry and metal, The Libyan Foreign investment Board, The General Board of Ownership, Transfer Of Public Companies and Economical units (GBOT). These letters promoted the participation of all the companies (see Appendix C).

Once the final draft of the questionnaire was produced, it was personally distributed on 15th January 2007. Each manufacturing company was delivered a package, which consisted of a covering letter, the questionnaire and the supporting letters. When the questionnaires were handed out, the objectives, the framework and the relevant issues to the research were explained, giving the respondents an outline of the research, and then asking them to read all the questions in the questionnaire, in order to clarify any unclear questions. Finally before they were left to complete the questionnaire, they were asked to give a certain time for collecting the completed questionnaires. In addition, they were encouraged to contact the researcher at any time while they complete the questionnaire, if they had any question, by using the

researcher's contact details shown on the covering letter. Using telephone calls, the participant was reminded about completing the questionnaire before coming to collect it and if it was not completed yet, they were given a chance to fix another time to hand over the questionnaire.

The main survey consisted of 154 identical questionnaires, distributed by hand and collected during the period January-March 2007. A total of 42 questionnaires were not returned, with the main reasons given for non-completion being lack of time, work pressure and company policy. A total of 87 questionnaires were returned, 6 of which were not usable, thus leaving a usable response rate of **62.79%.** (see Table 5.3 below).

Table 5.3 Analysis of the Questionnaire Response Rate

Population size (Medium and large manufacturing companies)	154
Ineligible, company not operating[1]	-25
Refusals/company policy/staff busy	-42
Total questionnaire returned	87
Unusable questionnaire/ partially completed	-6
Usable questionnaires	**81**

The usable response rate is calculated as follows:

$$\text{Response rate} = \frac{\text{number of completed and returned questionnaires}}{\text{Number of respondents in sample} - (\text{non-eligible and non-reachable respondents})}$$

$$\text{Response rate} = 81/ (154 - 25) = \mathbf{62.79\%}$$

According to Saunders et al. (2007) the likely response rate for business surveys is between 30-50 per cent for self-administered questionnaires. Thus, this response rate obtained from this study is considered to be very satisfactory.

[1] Due to Government policy on companies' evaluation as part of the privatization process, some of the target companies for this survey were temporarily not operating.

As mentioned earlier (see Subsection 5.6.2), unstructured interviews were conducted to supplement the questionnaire survey. The main aim of conducting the interviews was to investigate some issues that were included in the questionnaire, and to give the respondents a chance to express their opinion about any relevant issues to the research.

Interviews were held with ten interviewees. Eight of the interviewees were from the companies surveyed. These interviewees were chosen according to two criteria. First, the respondents were asked in the questionnaire if they were willing to be interviewed. Second, judgement was used to select a variety of respondents in terms of size, sector, and ownership, to ensure that interviews cover all types of respondents. Two academics were interviewed as well, one from the Academy of Graduate Studies and the other from the 7thOctober University in Libya. These two academics were selected based on their interest in the research area and their willingness to participate in the interviews.

The process of conducting the interviews, which has been recommended by a number of researchers (e.g. Oppenheim, 1992; Sekaran, 2003, Malhotra and Birks, 2007), and adopted in this case is described below:

- Each selected interviewee was contacted by telephone to arrange a meeting at the time and place convenient to him/her for conducting the interview.

- The questions used in the interviews were open-ended *why/how/when* type questions to elicit as much information as possible about *the factors that influence the diffusion of Western MAPs in Libya.* When needed, the survey questionnaire was referred to to enrich the discussion.

- At the beginning of each interview, the interviewee was thanked for providing the opportunity and assured about the total confidentiality of the proceedings.

- Each interviewee was asked if he/she would give permission to record the interview. Only one of the interviewees gave permission to record the

interview. For those who did not give permission to record, notes were taken during the interview.

- Every interview was started by asking the interviewee a general question on the research topic in order to guide him/her to the more specific questions for which the interview was intended. Every effort was made to get interviewees to express their own ideas spontaneously in their own words.

- During the interview, the interviewees were probed to obtain meaningful responses and asked for elaboration and clarification on some questions whenever this was deemed necessary. This took the form of comments like: *why do you do that? can you elaborate please? what form did that take?* and so on.

- The interviewees were asked at the end of the interview to indicate whether they want to add anything or have any question to ask related to research issues. Every interview was finished by thanking the interviewee and appreciation was expressed for his time, effort and co-operation.

- Immediately after finishing the interview and leaving the building where it took place, the interview was written up to make sure that the fresh information gathered in the notes and verbally was not lost and to avoid the possibility of misinterpreting the information at a later date.

5.13 Reliability and Validity

It is a crucial part of any good research to assess the goodness of the measures of the instrument developed in it. It would need to be reasonably sure that the instruments that are used in the research do indeed measure accurately the variables they are supposed to measure. This is especially necessary when a positivistic paradigm is employed in the research. Assessing the goodness of the measures is concerned with assessing the validity and reliability of the instrument.

Validity is concerned with how we can be reasonably certain that we are measuring the intended concept and not something else, while reliability indicates the extent to which a measure is free from bias (error free); hence the measurement should be consistent across time and across the various items in the instrument. In other words, if a measurement is repeated on the same object, the same result should be obtained (Sekaran, 2003).

It is important to note that a research instrument can be reliable without necessarily being valid, as the research measure could be very reliable but it could actually measure something totally different from what it is originally designed to measure. In addition, the degree of reliability sets limits to the degree of validity: validity cannot rise above a certain point if the measure is unreliable. On the other hand, if a measure is found to have excellent validity, then it must also be reliable. Therefore, reliability is a pre-condition for validity (Oppenheim, 1992; Sekaran, 2003; Van der et al., 2004).

5.13.1 Reliability

The reliability of a measure is an indication of the stability and consistency of a measure with which the instrument measures the concept and helps to assess the "goodness" of a measure (Sekaran, 2003). *Stability* is concerned with whether or not a measure is stable over time; in other words if an instrument is administered to the same person at two different times, it is not certain whether it will produce the same results (Bryman and Bell, 2007). There are a number of ways to determine stability. Tests of stability of measures can be assessed by conducting test-retest reliability and parallel-form reliability. In the test-retest method the measurement is repeated with the same instrument at a later time. The parallel test method is used when there are two instruments that measure the same concept of the same test; therefore they are expected to have the same accurate score. The correlation between both tests then provides an indication of the stability and therefore the reliability. (Van der et al., 2004).

Since this study is a cross-sectional study with data collected at one point in time (see Section 5.5), the test-retest reliability could not be used. Instead, the parallel test method was used between two questions about the measurement of the same concept. The current use of advanced MAPs was asked two times in the questionnaire, in questions B1 and B3, using different words. The parallel between the results of the two questions was high (see Chapter Six, Section 6.9), which indicated that the stability of the measures used in this research was established.

The other type of indication of reliability is *consistency*, which is concerned with whether or not the items that make up the scale measure a concept are consistent, in other words, whether or not the respondent's score on any one item tends to be related to the scores on the other items (Bryman and Bell, 2007). The most popular test of internal consistency or homogeneity among the items is Cronbach's coefficient alpha (Sekaran, 2003; Bryman and Bell, 2007; Saunders et al., 2007). A high score indicates that there is similarity (or homogeneity) among the items. The recommended minimum acceptable level of reliability for Cronbach alpha is .60 according to Hair et al.'s (1998) criterion, and greater than .50 if we use Nunnally's (1978) criterion. In this study, the Cronbach alpha value for the variable *environmental uncertainty* (question C1) was as low as .419, which is not acceptable. Using the option "scale if item deleted" in the software used shows that if the second item is deleted, the variable coefficient alpha will be .552, which is still low but acceptable. Thus this item was deleted since the coefficient alpha was improved.

Table 5.4 Reliability Test Results

Variable	Question	No. of items	Alpha
The adoption rate of MAPs	B1	24	.801
Environmental uncertainty	C1	5 (one excluded)	.552
Centralisation	C6	6	.730
Knowledge Resources	C9	6	.688
Availability of Training	C11	3	.733
Availability of Top Management Support	C13	3	.875
Factors influencing the adoption of new MAPs	C14	20	.837
Factors impeding the adoption of advanced MAPs	C15	22	.830

Table 5.4 shows that the Cronbach alpha results of all the variables (questions) that were measured by multiple-items (more than two) have passed the test and the achieved values exceed the minimum recommended value for this test.

In respect of the issue of reliability of interview findings, Maylor and Blackmon (2005), Punch (2005), and Saunders et al. (2007) argued that the findings of non-standardised research methods such as unstructured interviews reflect reality at the time they were collected, in a situation that is subject to change. Thus, the repeatability of these findings of such methods is difficult to attain exactly. Also, the significance of using unstructured interviews is gained from their flexibility that may be used to explore the complexity of the topic.

5.13.2 Validity

Once the reliability of the research is confirmed, it is then important to assess validity. Two types of validity are mentioned in the research literature, the *external* and *internal* validity. External validity refers to the extent of generalizability of the research results across persons, setting, and time (Cooper and Schindler, 2006). Therefore, the sample must be valid to achieve external validity; in other words, the sample must be representative of the population to be able to generalize the research results. According to Cooper and Schindler (2006) validity of a sample depends on two considerations: accuracy and precision; accuracy is the degree to which bias is absent from the sample, whereas precision is a measure of how closely the sample represents the population. Precision is measured by the standard error of estimate, a type of standard deviation measurement; the smaller the standard error of estimate, the higher is the precision of the sample. The ideal sample design produces a small standard error of estimate (Cooper and Schindler, 2006).

As explained earlier in Section 5.8, the entire population was targeted as the sample for this research. The high survey response rate achieved is a good indication that the sample is representative of the population, thus establishing external validity. Moreover, most the variables in the research model have a standard error of estimate

of less than one. It can therefore be concluded from the above that it is possible to generalise the findings of this study to the entire population.

A related issue that may affect results generalisation is non-response bias. To generalize the findings of surveys it is important to identify whether data obtained from the respondents were truly representative of the target sample population. Non-response bias exists when companies with certain characteristics are more likely to be non-respondents and it can be determined that there is a significant difference between respondents and non-respondents.

Carrying out tests for non-response bias often requires collecting additional data from a sample of non-respondents. Given that this research survey was personally distributed and all the population was targeted as the sample, it was possible first to identify non-respondent companies and then use published data by the Government and other sources to collect additional data regarding their characteristics such as size, ownership and industrial sector.

To test the non-response bias, the characteristics of the respondent and the non-respondent companies -in terms of size, ownership and industrial sector were compared using the Chi-square and Mann-Whitney U tests. Tables 5.5-5.7 present the result of these tests. As can be seen from the results, non-response does not exist as there are no significant differences between the characteristics of respondent and non-respondent companies, indicating that the characteristics of the respondent companies are most probably similar to those of the non respondents. Therefore the findings of this survey can be generalized to the whole population, which is the total number of manufacturing companies in Libya.

Table 5.5 Chi-Square Test Comparing Ownership of Respondents and Non-Respondents

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.727[a]	2	.695
Likelihood Ratio	.745	2	.689
Linear-by-Linear Association	.051	1	.821
N of Valid Cases	123		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.51.

Table 5.6 Chi-Square Test Comparing the Industrial Sector of Respondents and Non-Respondents

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.232[a]	6	.115
Likelihood Ratio	13.298	6	.039
Linear-by-Linear Association	.024	1	.878
N of Valid Cases	123		

a. 5 cells (35.7%) have expected count less than 5. The minimum expected count is 1.71.

Table 5.7 Mann-Whitney U test Comparing Size of Respondents and Non-Respondents

Ranks

	Respose	N	Mean Rank	Sum of Ranks
Nemplyes	Not	42	54.56	2291.50
	Respose	81	65.86	5334.50
	Total	123		

Test Statistics[a]

	Nemplyes
Mann-Whitney U	1388.500
Wilcoxon W	2291.500
Z	-1.667
Asymp. Sig. (2-tailed)	.096

a. Grouping Variable: Respose

Internal validity refers to the ability of a research instrument to measure what it is designed to measure (Cooper and Schindler, 2006, p. 318). Thus, the research instruments were assessed through two types, *content and construct validity*, which are the most common types of validity that are frequently mentioned in the literature. *Content validity* seeks to ensure that the measure includes adequate and representative items that tap the concept. The more the scale items represent the field of the concept being measured, the greater the content validity (Sekaran, 2003). Therefore, content validity assessment can be difficult as it is a matter of judgement and may be assessed through, first, a careful definition of the topic, the items, and the scales to be used, which are often different and unique for each research. The second way is the use of a panel of persons to judge how well the instrument meets the standards (Oppenheim, 1992; Sekaran, 2003, Cooper and Schindler, 2006).

To meet the content validity requirements in this research, an extensive literature review was undertaken to define the topic and clarify items and the scales used in this research. Many items and scales used in the research questionnaire were adopted from relevant previous studies (see Section 5.11). In addition, the overall questionnaire items were pre-tested with the assistance of several doctoral students, a panel of academic experts, and a number of managers (see Section 5.9.3). As a result of this it was concluded that the content validity of this research was established.

Construct validity aims to testify to what extent the results obtained from the use of the measure fit the theories around which the test is designed (Sekaran, 2003). This type of validity can be assessed through pre-testing the questionnaire in order to get a feedback. As mentioned earlier, this research used a number of pre-testing stages to meet construct validity.

The validity of the non-standardised interviews is likely to be high, when they are conducted carefully (Saunders et al., 2007). It refers to the extent to which the research obtains full access to the knowledge and meaning of information. This can be met from the flexible and responsive interactions which are possible between interviews and respondents, allowing the meaning to be probed, the topic to be covered from a variety of angles and the question made clear to respondents.

The interviewees were encouraged to provide relevant data by leaving the participants to talk in the manner they wanted and were asked the permission to record the interviews, the good trust with the interviewees through personal visits to their offices at their convenient time, the participants' interest in the research topic, and emphasising total confidentiality to the interview participant. In addition, efforts were made to avoid the interviewer bias resulting from the comments, tone or non-verbal behaviour to create bias to the way that interviewees respond to the questions being asked.

5.14 Methods Used in Data Analysis

To meet the research objectives, quantitative and qualitative data were collected. The following sub-sections provide a brief discussion of the methods which were adopted in analysing these data.

5.14.1 Quantitative Data Analysis

One of the controversial issues in data analysis is choosing between the two main groups of inferential statistics tests, parametric and non-parametric tests. The most critical element in deciding whether to use parametric and non-parametric tests is based on the type of data. Parametric tests can be used to analyse metric data, which can be measured by using interval and ratio scales. The non-parametric methods can be used to analyse non-metric data, which are measured by using nominal and ordinal data scales.

However, many writers have argued that it is common in business research to treat the ordinal scales as interval (e.g. Hair et al., 2003; Sekaran, 2003; Bryman and Cramer, 2004; Malhotra and Birks, 2007). Moreover, many studies in business and management accounting research have used parametric tests (e.g. regression) to analyse ordinal data. Examples include Gosselin (1997), Williams and Seaman (2001), Askarany and Smith (2004), Brown et al. (2004), O'Connor et al. (2004), and

Al-Omiri and Drury (2007). In this research most of the variables were measured through ordinal Likert scaling.

Another fundamental assumption that should be met in order to use parametric tests is normality of the data distribution. This assumption was met (see Chapter Eight). There are also considerable advantages that occur from using techniques such as regression and factor analysis which do not have non-parametric counterparts and are important to meet the research objectives. Consequently, it was decided to use parametric techniques. Given below are the clarifications and justifications for each statistical technique used in analysing the data.

5.14.1.1 Descriptive Statistics

Descriptive statistics such as frequency and means were mainly utilised to achieve descriptive objectives, one and two (see Chapter Six). In addition, the means were used to rank a set of items and factors according to the relative importance of each one of them in the decision to adopt new MAPs and the barriers as well to adopt advanced MAPs (see Chapter Seven). Descriptive statistics such as frequency, means, graphs, and percentage were used to determine the sample characteristics in terms of the respondents and responding companies. They were also used to give insights into the shape of the sample distribution and research variables that are formulated in the hypothesis to be tested (see Chapter Eight).

5.14.1.2 Correlation and Regression

Correlation analysis is used to indicate if a relationship exists between two variables, as well as the overall strength of the relationship. Despite this analysis being a very useful research tool, it does not determine which of the variables is the independent and which is the dependent. In contrast to correlation analysis, regression analysis is used to identify the impact of independent variables on the dependent variable. While in simple regression analysis a single independent variable is used to predict a single dependent variable, multiple regression analysis uses several independent variables

to predict a single dependent variable. It also identifies how much of the variance in the dependent variable is explained by theorising simultaneously the influence of several independent variables. It is regarded as the most widely applied data analysis technique for assessing the relationship between two or more variables (Hair et al., 1998).

Since all the variables in this research are measured with ordinal and interval data and the dependent variable is metric, correlation and regression are applied. Correlation analysis is to test the relationship between the respondents' satisfaction and the future adoption of MAPs, as well as between the adoption of advanced MAPs and the adoption of advanced manufacturing techniques. Simple regression analysis is used to test the research hypotheses (see Chapter Eight). Multiple regression is used to explain the variance in the dependent variable (the adoption rate of MAPs) by a set of independent variables (the factors influencing adoption of MAPs).

5.14.1.3 Factor Analysis

Factor analysis explores the underlying correlations among a large number of variables (e.g. questionnaire responses) in order to combine them into a smaller set of dimensions that have a common relationship, known as factors. There are two factor models. They are referred to as principal component analysis and common factor analysis. The latter is also known as exploratory factor analysis.

The principal component analysis is typically appropriate when the aim is to reduce the original set of variables into smaller sets of combined variables, whereas common factor analysis is typically used when the primary concern is about identifying the underlying common dimensions in the original variables (Hair et al., 1998; Hair et al., 2003).

Although there has been a considerable debate over which factor model is the more appropriate, empirical research usually brings similar results and solutions (Hair et al., 1998; Field, 2006). In this context, Field (2006) argued that the differences

between a principal component analysis and common factor analysis arise largely from the calculation and may be difficult to conceptualize to non-statisticians. In addition, principal component analysis tends to be more stable and by far the most commonly used model in business research (Hair et al., 2003). Thus, principal component analysis (hereafter referred as factor analysis) was chosen for the purposes of in this research. It was used to define the dimensions of the factors influencing the adoption of new MAPs and the barriers of adoption of advanced MAPs according to the respondents' views (see Chapter Seven).

5.14.2 Qualitative Data Analysis

Unlike quantitative data analysis, qualitative data analysis does not have a standardised approach for analysing the data (Collis and Hussey, 2003; Punch, 2005; Saunders et al., 2007). One approach to analyse qualitative data is to quantify it, in other words, turn the qualitative data into numerical data. That can be done informally, when the aim is to count the frequency of certain events or of particular reasons that have been given by interviewees (Collis and Hussey, 2003; Saunders et al., 2007). Punch (2005) states that quantifying qualitative data provides the researcher with the capacity to display a large amount of data and it is a very useful supplement to the most important means of analysing qualitative data. Thus, it was decided in this research to quantify qualitative data obtained from interviews as much as possible in order to present them better. In addition, by using this approach, it was possible to compare the answers derived from interviews with those derived from questionnaires

The qualitative data collected from the interviews were analysed, according to the processes recommended by Saunders et al. (2007), in the following way:

- **Categorization:** The data were initially categorised into meaningful themes according to the framework and the objectives of the research. These themes were: *the factors that influence the adoption of new MAPs and factors that impede the adoption of advanced MAPs*

- **Unitising data:** The data were then unitised, which means attaching relevant units of data to the appropriate themes that were already devised. A unit of data could be a number of words, a sentence, a number of sentences, or a paragraph.

- **Recognising relationships and developing categories**: This activity involves generating themes and reorganising the data according to them. This was continued and repeated in seeking new themes in the data gathered and placing the units of the data within suitable themes. This had led to subdivide the initial themes. While factors that influence the adoption of new MAPs were divided into *factors that facilitate the adoption of new MAPs and barriers of adoption of new MAPs***,** factors that impede the adoption of advanced MAPs were classified as *factors that impede the adoption of advanced MAPs and suggestions to overcome the diffusion barriers of advanced MAPs.*

The data were displayed through tables indicating themes' frequency of appearance or containing texts from the interviews in relation to some themes (e.g. factors that facilitate the adoption of new MAPs and barriers of adoption of new MAPs).

The analysis method adopted by this research was of a deductive nature in the sense that concepts underlined in the analysis were analysed according to the research framework. Also new themes or concepts that were highlighted in the interviews were handled in a flexible way and considered in relation to the research framework.

Conclusions drawn from this method are shown in Chapter Seven and then compared with quantitative findings in Chapter Eight. In addition, certain paragraphs from the interviews are used to enhance the discussion in Chapter Eight.

Despite the limited number of interviews, the qualitative analysis has been very useful in supplementing the quantitative findings and underlining certain new concepts and themes worthy of further consideration and examination as explained later in Chapter Nine.

5.15 Summary

To achieve the research objectives a mixture of paradigms (pragmatic paradigm) and a mixed methods approach (triangulation of methods) were adopted. Quantitative data from a relatively large number of manufacturing companies in Libya were collected using a questionnaire survey, yielding a high survey response rate. To supplement the quantitative data and to allow new ideas and concepts to surface and develop, a number of interviews were conducted. Relevant tests were applied to establish validity and reliability, including checking for non-response bias. Finally, the type of statistical tests chosen for the research were presented and explained.

The next chapter presents a descriptive analysis of the results that relate to the first and the second objectives of this research regarding MAPs in terms of current use, the extent of benefits gained from them and user satisfaction levels, future emphasis and the state of advanced MAPs.

Chapter Six

Descriptive Analysis of Current Management Accounting Practices (MAPs) in Manufacturing Companies in Libya

6.1 Introduction

In this chapter, the data collected from usable questionnaires are presented and discussed. This chapter presents the descriptive statistics about general information related to the respondents, responding companies, and the state of MAPs, traditional and advanced ones. The descriptive statistics presented in this chapter relates to the following research objectives (see Chapter One):

- To explore the current use of MAPs in Libyan manufacturing companies during the economic transition period, the extent of benefits these companies gain from using such practices and the level of satisfaction with their current use.

- To explore the extent of change in the use of MAPs by Libyan manufacturing companies during the period of investigation and to determine the priorities regarding MAPs adoption in the future.

This chapter is structured as follows: Sections 6.2 and 6.3 provide general information about the respondents and the responding companies. This is followed by Sections 6.4-6.9 which focus on the state of MAPs in Libyan manufacturing companies. The respondents' satisfaction with current MAPs used in their companies is presented in Section 6.10. Finally, in Section 6.11 the chapter summary is presented.

6.2 General Information about the Respondents

The first section in the questionnaire (Section A) was intended to gather general information. In questions A1 to A5, the respondents were asked to provide information related to their companies. Tables 6.1 to 6.5 summarise the main characteristics of the respondents regarding job title, years in current position, and working experience with the company and in the finance and accounting area in general.

As Table 6.1 shows, most of the respondents work in the accounting and finance area, as 83.9 % occupy senior positions in their company, and 74 % occupy senior positions concerned with accounting or finance. On average, the respondents have been in their current positions over 8 years, and about 81.4 % of them have been in their current position over 5 years as shown in Table 6.2. Moreover, Table 6.3 shows that 80.2% of the respondents have total working experience in their companies of over 10 years with a mean of over 15 years, while, Table 6.4 shows that 87.7% of respondents have experience in accounting and finance in general over 10 years with a mean of over 18 years.

Table 6.1 Respondents' Job Title

Job Title	Frequency	Percentage	Cumulative Percentage
Financial director	35	43.2	43.2
Financial and managing director	10	12.3	55.5
Cost accounting manager	10	12.3	67.8
Accounts manager	5	6.2	74
A head of management committee	3	3.7	77.7
Information office manager, planning and controller manager, executive manager	5	6.2	83.9
Financial account and cost accountant	9	11.1	95
Budget controller and financial information analyst, financial controller, internal auditor	4	5.0	100
Total	**81**	100	

Table 6.2 Respondents' Experience in Current Position

Experience in Current Position	Frequency	Percentage	Cumulative Percentage
15 years and more	8	9.9	9.9
11 years - less than 15 years	26	32	41.9
5 years - less than10 years	32	39.5	81.4
Less than 5 years	15	18.5	100
Total	**81**	100.0	

Table 6.3 Respondents' Experience with their Companies

Experience with this Company	Frequency	Percentage	Cumulative Percentage
30 years and more	3	3.7	33.3
20 – less than 30 years	24	29.6	29.6
15 – less than 20 years	15	18.5	51.8
10 – less than 15 years	23	28.4	80.2
Less than 10 years	16	19.8	100
Total	**81**	100.0	

Table 6.4 Respondents' Experience in Finance and Accounting

Experience in Finance and Accounting	Frequency	Percentage	Cumulative Percentage
30 years and more	7	8.6	8.6
20 – less than 30 years	32	39.5	48.1
15 – less than 20 years	16	19.8	67.9
10 – less than 15 years	16	19.8	87.7
Less than 10 years	10	12.3	100
Total	**81**	100.0	

Table 6.5 Respondents Qualification

Qualification	Frequency	Percentage	Cumulative Percentage
Postgraduate (e.g. MSc, MBA, PhD...)	14	17.3	17.3
Bachelor degree	47	58.0	75.3
High school level	17	21.0	96.3
Less than high school level	3	3.7	100
Total	**81**	100.0	

Table 6.5 shows that the majority of respondents have only at least a bachelor degree, as about 58% of them have a bachelor and 17.3% have a postgraduate qualification (e.g. MSc, MBA, Ph.D.), while only 3.7% have less than high school level.

According to the respondents' characteristics that are shown in Section 6.2, the respondents are highly experienced in terms of how long they have been in their current position and company as well as in accounting and finance in general. Moreover, the positions they occupy are relevant to the questionnaire content. Thus, the respondents to this research questionnaire are knowledgeable and highly experienced to provide relevant information about their management accounting systems.

6.3 General Information about the Responding Companies

In questions A6 to A18 the respondents were asked to provide information about their companies' characteristics. Tables 6.6 to 6.15 and Figure 6.1 summarise the main characteristics in terms of company age, industry type, number of employees and ownership.

Table 6.6 Ages of Companies

Company Age	Frequency	Percentage	Cumulative Percentage
More than 20 years	52	64.2	64.2
11-20years	7	8.6	72.8
5-10 years	14	17.3	90.1
Less than 5 years	8	9.9	100
Total	**81**	100.0	

Table 6.7 Number of Employees

Number of Employees	Frequency	Percentage	Cumulative Percentage
More than 2000	9	11.1	11.1
1001- 2000	9	11.1	22.2
501-1000	8	9.9	32.1
50-500	55	67.9	100
Total	**81**	100.0	

Table 6.6 shows that 90.1 % of the companies have been operating over 5 years and 64.2% of the companies have been operating for more than 20 years. In addition, the mean number of employees is 801, and 67.9% of the respondent companies employ 50- 500 employees as Table 6.7 shows. Table 6.8 shows that the responding firms represent a wide range of manufacturing types, and no one industry exceeds 30% of the sample.

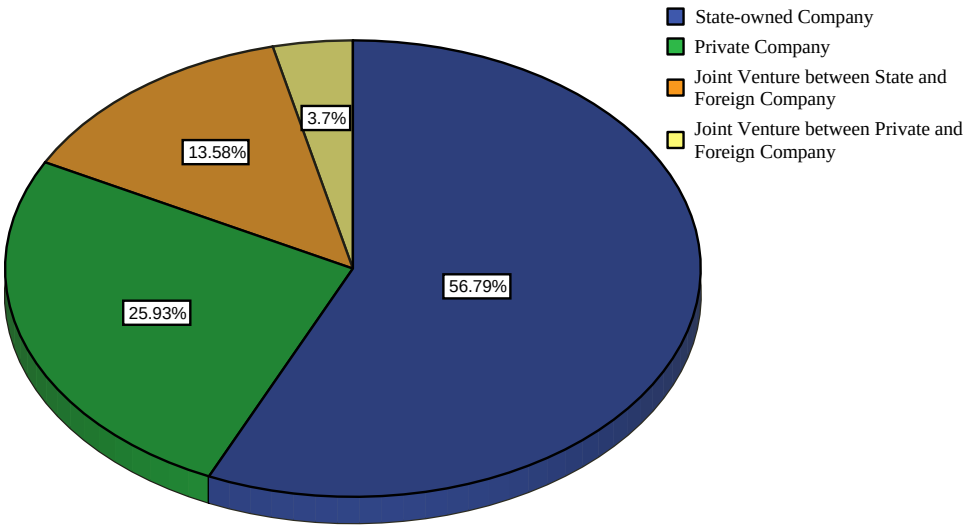
Table 6.8 Companies' Industry Type[1]

Industry Type	Frequency	Percentage
Food	21	25.9
Engineering and electric	13	16.0
Chemical	13	16.0
Cement and building materials	3	3.7
Metal	3	3.7
Textiles and furniture and paper	18	22.2
Oil and gas	10	12.3
Total	**81**	100.0

The ownership type is presented in Figure 6.1, showing that 56.79% of the responding companies are State-owned, 25.93% of them are private companies, as the country moving from social economy to free economy (see Chapter Two for more information about the Libyan business environment), 13.58 % of them are joint venture between state company and foreign company, and 3.7 % of them are joint venture between private company and foreign company. Therefore, these responding companies are suitable and represent a good sample to achieve the objectives of this study in terms of their age and size as well as presenting a variety of manufacturing sectors and types of ownership.

[1] Formal industry classification in Libya according to Central of Industrial Information and Documentation

Figure 6.1 Company's Ownership Type



To collect more details about joint venture companies, the respondents were asked in question A13 to indicate in which year the joint venture was formed. Table 6.9 shows that 8 companies (57%) became joint venture between 1959 and 1985. This type of joint venture was between the State and a foreign company as the private business was not allowed in that time. Then there was a gap between 1985 and 1994, a period when there was no company involved in a joint venture. This period features with State domination of the business activities in Libya and the economic sanctions from the US and UN. After that in the period of 1994-2006 there were 6 joint ventures established (46.9%). This may be due to the Libyan government regulation changes towards engorgement of private sector to emerge, develop and join with foreign companies (For more information about Libyan business environment, please see Chapter Two).

Moreover, in question A14 the respondents were asked to indicate the percentage that their foreign partner has in the joint venture. Table 6.10 shows that in 5 joint venture companies (35.7% of the respondents), the foreign partner has 25% or less, in majority of joint venture companies (85.7% of the respondents) the foreign partner has 50% or less, in 2 companies (14.3% of the respondents) the foreign partner has 50 %, and in another 2 companies the foreign partner has 60%.

Table 6.9 Years Joint Venture Companies Were Formed

Year	Frequency	Percentage
1959-1985	8	57.1
1994-2006	6	46.9
Total	**14**	100

Table 6.10 Percentage that Foreign Partner has in Joint Venture Companies

Percentage Owned by Foreign Partner	Frequency	Percentage	Cumulative Percentage
13%	1	7.1	7.1
25%	4	28.6	35.7
40%	1	7.1	42.9
48%	1	7.1	50
49%	3	21.4	71.4
50%	2	14.3	85.7
60%	2	14.3	100
Total	**14**	100	

To gather information about the companies that went through the process of privatization, the companies that are private or joint venture (shared ownership between private and a foreign partner) were asked in questions A15 and A16 to indicate whether the company has been privatized and if so in which year. Tables 6.11 and 6.12 below summarise this information. Table 6.11 shows that 17 companies (70.8%) have been privatized while only 7 companies (29.2%) have not been through the process of privatization. Table 6.12 shows that 4 companies were privatized in 1988 and then there was a gap of ten years until only one company was privatized in 1998. From the year of 2003 to 2005 there was an increase in the number of companies that were privatized. While 2 companies were privatized in 2003, 3 companies were privatized in 2004, and 7 companies were privatized in 2005, which shows that about 40% of companies have been privatized during the above period. This could be due to government policies on the privatization of the State-owned companies, and the establishment of General Board of Ownership of Public Companies and Economic units (GBOT) in 2000 (see Chapter Two for more information about the Libyan business environment).

Table 6.11 Privatized Companies

Position	Frequency	Percentage
Companies not privatized	7	29.2
Companies privatized	17	70.8
Total	**24**	100.0

Table 6.12 Year in which Companies were Privatized

Year of Privatization	Frequency	Percentage
1988	4	23.5
1998	1	5.9
2003	2	11.8
2004	3	17.6
2005	7	41.2
Total	**17**	100.0

Table 6.13 Level of Manufacturing Process Automation

The Level of Automation	Frequency	Percentage	Cumulative Percentage
100% automated	20	24.7	24.7
More than 50% automated	52	64.2	88.9
Less than 50% automated	5	6.2	95.1
100% manual	4	4.9	100.0
Total	**81**	100.0	

Table 6.13 shows the level of automation in the companies surveyed based on the data gathered from question A17 in the questionnaire. It can be seen that, overall, the level of automation in Libyan manufacturing companies is relatively high; as 88.9 % of them are more than 50% automated or fully automated, while only 11.1% of them are completely manual or less than 50% automated.

In this respect, in question A18 the respondents were asked to indicate whether they use some of the advanced production methods listed. Tables 6.14 and 6.15 present the use of these methods by Libyan manufacturing companies. Table 6.14 shows the number of methods used by each company. The majority of the companies (about

65%) use only one method, a small percentage use 2, 3 or 4 methods, while 14 companies (17.3%) do not use any of these methods. Table 6.15 gives more detail about the methods used. The most adopted methods are just-in-time (JIT) production, used by 35.8% of the companies, while other methods such as flexible manufacturing system (FMS), total quality management (TQM), and computer-aided manufacturing (CAM) were used by a smaller percentage of companies. The least adopted methods are computer-integrated manufacturing (CIM), computer-aided design (CAD) and computer numerical controlled (CNC) machines.

Table 6.14 Number of Advanced Production Methods Adopted

Number of Methods	Frequency	Percentage
00	14	17.3
1.00	53	65.4
2.00	8	9.9
3.00	5	6.2
4.00	1	1.2
Total	**81**	100.0

6.15 The Adoption of Advanced Production Methods

The Production Method	Frequency	Percentage
Just-in-time (JIT) production	29	35.8
Flexible manufacturing system (FMS)	18	22.2
Total quality management (TQM)	15	18.5
Computer-aided manufacturing (CAM)	12	14.8
Computer numerical controlled (CNC) machines	8	9.9
Computer-aided design (CAD)	5	6.2
Computer-integrated manufacturing (CIM)	1	1.2

Overall Libyan manufacturing companies have a relatively high level of automation and adoption rate of advanced production methods; however most of the companies seem to adopt only one of these advanced methods.

6.4 Current MAPs Used

To find out the current adoption rate, the extent of perceived benefits, the past and future adoption priorities of MAPs by Libyan manufacturing companies, the respondents were asked in question B1 to indicate for each item of MAP listed, the extent of the benefits which their companies gained from using a technique, over the last 5 years, and they also were asked to indicate if a technique was introduced in the last 5 years (only for the techniques that are currently used). But if a technique is not currently used, the respondents were asked to indicate the likelihood of introducing it in the next 5 years (see Appendix B).

If the respondent answered only parts of the question B1 regarding the extent of the benefits and whether the technique was introduced in the last 5 years, then the technique is considered to be currently used. Table 6.16 present the number and percentage of companies using each MAP, and the ranking of all MAPs according to their adoption rate.

As Table 6.16 shows, all the MAPs listed are adopted by these manufacturing companies, except activity-based costing, activity-based management and balanced scorecard. Six practices are adopted by at least 70% of the sample, 12 practices are adopted by at least 35% of the companies and 4 practices are used only by less than 15% of the responding companies, most of them advanced MAPs.

These findings indicate that Libyan manufacturing companies have a relatively lower adoption rate of MAPs compared with previous studies which have looked at the same area. For instance, in India companies with an adoption rate of 70% or less were classified in low adoption group and 14 MAPs were adopted by at least 80% of the companies surveyed (Joshi, 2001). In Australia, 80% or less adoption was classified as a low adoption rate, 15 MAPs were adopted by at least 90% and a further 16 practices were adopted by at least 80% of the companies (Chenhall and Langfield-Smith, 1998a). More recently in Finland, 20 MAPs were adopted by at least 90% of the companies and 82% or less was classified as low category of adoption rate (Hyvonen, 2005).

Table 6.16 MAPs Currently Used

MAPs	Rank	Adoption rate %	Number
Full (absorption) costing	1	96.3	78
Budgeting systems for planning financial position and cash flows	2	91.4	74
Product profitability analysis	3	88.9	72
Budgeting systems for day-to-day operations	4	74.1	60
Cost-volume-profit/break-even analysis	5	72.8	59
Variable costing	6	71.6	58
Budgeting systems for co-ordinating activities across the business units	7	59.3	48
Cash flow return on investment	8	39.5	32
Controllable profit	9	37.5	30
Return on investment (ROI)	9	37.5	30
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR),Payback)	10	37.0	30
Divisional profit	11	35.8	29
Standard costs and variance analysis	12	32.1	26
Long range forecasting	13	30.0	24
Customer satisfaction surveys	14	23.5	19
Customer profitability analysis	15	18.5	15
Product life-cycle analysis	15	18.5	15
Residual income/ Economic value added (e.g. interest adjusted profit)	16	14.8	12
Target costing	17	13.6	11
Quality cost reporting	18	12.3	10
Life-cycle costing	19	3.7	3
Activity-based costing (ABC)	20	0	0
Activity-based management (ABM)	20	0	0
Balanced scorecard (BSC)	20	0	0

Moreover, the most popular MAPs in Libyan manufacturing companies, as table 6.16 shows, are: full costing (96.3%), budgeting systems for planning financial position and cash flows (91.4%), product profitability analysis (88.9%), budgeting systems for day-to-day operations (74.1%), cost-volume-profit/break-even analysis (72.8%), and variable costing (71.6%). In general these findings confirm those of previous

studies (e.g. such as Joshi, 2001; Chenhall and Langfield-Smith, 1998a and Hyvonen, 2005 respectively in India, Australia and Finland) in terms of the popularity of these MAPs. However, the adoption rates of those countries were higher than in Libya even though they precede this study by a few years. For instance product profitability analysis is ranked 3 in this study with an adoption rate of 88%, a similar result was found in Australia (Chenhall and Langfield-Smith, 1998a) where the adoption rate for the same practice was 89%, but it was ranked 10.

One of the most interesting findings is the popularity of traditional product cost systems practices. Full costing is adopted by 96.3% of companies and ranked as the most popular practice and variable costing with an adoption rate of 71.6% is ranked 6 in popularity. Similar results for these two MAPs were reported in Finland (full costing ranking 8 and used in 86% of the companies; variable costing ranking 4 and used in 94% of the companies). Different findings can be gleaned from studies in other countries, such as in India, with ranks of 16 and 15 and adoption rates of 50% and 52% for full costing and variable costing respectively (Joshi, 2001). However, in Australia full costing was ranked 16, the same as Indian study rank, but was adopted by 80%, and variable costing was ranked 19 with an adoption rate of 76 % (Chenhall and Langfield-Smith, 1998a).

On the other hand, the less popular MAPs (the adoption rate of 18.5% or less) are: customer profitability analysis (ranked 15), product life-cycle analysis (ranked 15), residual income/ economic value added (ranked 16), target costing (ranked 17), quality cost reporting(ranked 18), life-cycle costing (ranked 19), ABM (ranked 20), ABC (ranked 20), and BSC (ranked 20) with 0% adoption. It is noted that the six least popular MAPs are advanced MAPs. These findings confirm the unpopularity of advanced MAPs, as reported in many previous studies. Advanced MAPs will be discussed later in this chapter (see Section 6.9).

Although the adoption rate of customer profitability analysis was very high in Finland, 94% with a rank of 4 in Hyvonen's study (2005), this practice was not included in Australian and Indian studies. Moreover, product life-cycle analysis and residual income/ economic value added, although they were classified in the low adoption group in Australian, Indian and Finland studies, the adoption rates in these

countries were higher than in Libya. For instance, product life-cycle analysis, which ranked 17 and was adopted by 18.5% of the sample in Libya, was ranked 17 with an adoption rate of 45% in India and ranked 20 with an adoption rate of 70% in Australia.

To sum up, the adoption rates of MAPs in Libyan manufacturing companies seem to be relatively lower than those reported in other countries, both developed and less developed.

The classification of MAPs used in the questionnaire in question B (i.e. product cost systems, decision support systems, planning, and control and performance evaluation) will now be discussed in detail below.

6.4.1 Product Cost Systems

Table 6.17 presents the rank, the adoption rate and the number of companies for each MAP related to product cost system, as well as the mean of the adoption rates of this group of practices. Although the mean score of 32.9 of the overall adoption rate for this group is low, it is noticeable that there is a relatively high adoption rate for two of the traditional cost practices (full costing and variable costing). In contrast, there are low adoption rates and ranks for advanced MAPs relating to product cost systems. The adoption rate of life-cycle costing is very low as it is adopted by only 3 companies, whereas ABC is not adopted by any company at all. However, target costing and quality cost reporting, adopted by 11 and 10 companies, have relatively higher adoption rates (13.6% and 12.3 % respectively) compared with other advanced MAPs.

Table 6.17 Current Use of MAPs Relating to Product Cost Systems

MAPs	Rank	Number	Adoption rate %
Full (absorption) costing	1	78	96.3
Variable costing	6	58	71.6
Target costing	17	11	13.6
Quality cost reporting	18	10	12.3
Life-cycle costing	19	3	3.7
Activity-based costing (ABC)	20	0	0
Mean of group			**32.9**

Concerning the full costing and variable costing techniques, these results are very similar to the results obtained from studies conduced in other countries, such as in Poland (Szychta, 2002), where 90% of the companies apply the full costing system and 53.6% apply variable costs, and in Australia (Chenhall and Langfield-Smith, 1998a), where it was indicated that full costing was adopted by 80% and variable costing adopted by 76% of the companies surveyed. These results are also supported by Abulghasim (2006) who pointed out that all Libyan state-owned manufacturing companies used full costing, although, none of them used variable costing. He further pointed out that tax law in Libya oblige companies to use the absorption costing method for preparing financial statements, whereas other use of cost accounting information such as decision-making do not have priority in the companies. Lower adoption rates of full costing and variable costing techniques were also reported from Libyan manufacturing companies by Alkizza (2006). He indicated that a full costing system was used by 65.5% and a variable costing system was used by 34.5%, citing a possible legal reason for State-owned companies to use full costing. Thus, full costing seems to be diffused within Libyan context due to forced pressures from the government law (e.g. tax law).

However, these results differ from some previous studies which reported a relatively low adoption rate of these two traditional product cost practices. Haldma and Laats (2002), indicate that 54.8 % of the Estonian companies follow the principles of full costing while 38.7 % of those follow variable costing, also Joshi (2001) indicates that full costing were applied by 50%, and variable costing applied by 52% of Indian

companies. The advanced practices of target costing, quality cost reporting, life-cycle costing and ABC will be discussed later in this chapter (see Section 6.9).

6.4.2 Decision Support Systems

As can be seen from Table 6.18, apart from ABM, all the MAPs related to decision support systems are adopted by the companies surveyed, with a mean of 39.7. However, the adoption rates of these practices vary.

Table 6.18 Current Use of MAPs Relating to Decision Support Systems

MAPs	Rank	Number	Adoption rate %
Product profitability analysis	3	72	88.9
Cost-volume-profit/break-even analysis	5	59	72.8
Customer profitability analysis	15	15	18.5
Product life-cycle analysis	15	15	18.5
Activity-based management (ABM)	20	0	0
Mean of the group			**39.7**

Two of the above MAPs (product profitability analysis and cost-volume-profit/break-even analysis) have the highest adoption rate among them and they have a relatively high adoption rate among all the MAPs as they are adopted by 88.9% and 72.8 % of the sample. Prior studies reported similar findings; product profitability analysis with an adoption rate of 89% in Australia (Chenhall and Langfield-Smith, 1998a), 82% in India (Joshi, 2001) and 96% in Finland (Hyvonen, 2005). Cost-volume-profit/break-even analysis was adopted by 65% in India, 66% in Singapore (Ghosh and Chan, 1997), and 71% in Finland (Hyvonen, 2005), but it was more popular in Australia as it was adopted by 88% of the companies (Chenhall and Langfield-Smith, 1998a), and it had less popularity in Poland with an adoption rate of 47% (Szychta, 2002). In the Libyan context, similar results were found by Alkizza (2006) who indicated that 72.4% of Libyan manufacturing companies used a cost-volume-profit/break-even analysis.

The other two techniques, customer profitability analysis and product life-cycle analysis, are adopted only by 15 companies or 18.5% adoption rate. However, previous studies reported varied adoption rates for product life-cycle analysis. For example, in India the adoption rate was 45% and in Australia 70%, but similar to the Libyan result, it was ranked low at 17 and 20 respectively (Chenhall and Langfield-Smith, 1998a; Joshi, 2001).

Finally, ABM, as one of the advanced MAPs, is not adopted by any of the responding companies in Libya and was ranked 20 among all MAPs. This technique will be discussed with other advanced MAPs later in this chapter (see 6.9 Section).

6.4.3 Planning

The data presented in Table 6.19 indicate that all the five traditional planning techniques are relatively highly adopted by the responding companies than other MAPs with an overall mean of adoption rate 58.3. The highest adopted practices related to this group are budgeting systems for planning financial position and cash flows, and budgeting systems for day-to-day operations, which are adopted by 91.4 % and 74.1 % of the sample, with respective rankings of 2 and 4.

Table 6.19 Current Use of MAPs Relating to Planning

MAPs	Rank	Number	Adoption rate %
Budgeting systems for planning financial position and cash flows	2	74	91.4
Budgeting systems for day-to-day operations	4	60	74.1
Budgeting systems for co-ordinating activities across the business units	7	48	59.3
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR), Payback)	10	30	37.0
Long range forecasting	13	24	30.0
Mean of the group			**58.3**

Other surveys conducted revealed similar results about the high use of budgets in general. Sulaiman et al. (2004) who reviewed the literature of MAPs in selected Asian countries concluded that the use of budgets in India, Malaysia and Singapore remains high. Similarly in Libya, Alkizza (2006) indicated the popularity of budgeting, as 96.6% of manufacturing companies used budgeting.

For more details about the type of budgets used, previous studies are also consistent with this study's findings as to the high use of budgeting systems for planning financial position and cash flows and budgeting systems for day-to-day operations. However, they indicated a higher adoption rate than that reported in this study. For example, in India, all respondents indicated that they used budgeting systems for day-to-day operations, 95% of them used budgeting systems for cash flows, and 91% reported that they used budgeting systems for planning financial position (Joshi, 2001). Chenhall and Langfield-Smith (1998a) reported that 100% of the companies they surveyed in Australia used budgeting systems for planning financial position, 99% of them used budgeting systems for cash flows and budgeting systems for day-to-day operations. In Singapore, there was a lower, but still relatively high, use of cash budgeting, as 76% of the companies used it (Ghosh and Chan, 1997).

In contrast to prior studies, the present study reports that budgeting systems for co-ordinating activities across the business units was adopted by 59.3% only, ranking 7 among all MAPs surveyed. However, this technique is very popular in other countries, as it is used by 95% of Indian companies (Joshi, 2001), 94% of Australian companies (Chenhall and Langfield-Smith, 1998a) and 90% of Finnish companies (Hyvonen, 2005). Similarly capital budgeting techniques, which ranked 10 and are adopted by 37% of the responding companies in Libya; are actually widely used in other countries; the adoption rate is in Singapore is 83%, 85% in India, and 99% in Australia and 96% in Finland according to the authors already mentioned here.

Finally, long range forecasting, which ranked 13 and is adopted by 30% of the respondents, has the lowest adoption rate among the planning techniques. Prior studies (see above) reported higher but varied adoption rates, 58% in India, 75% in Singapore, 90% in Australia and 92% in Finland.

6.4.4 Control and Performance Evaluation

In general, MAPs relating to control and performance evaluation are not particularly popular relatively in Libyan manufacturing companies. As can be seen from the table 6.20 none of them exceeds an adoption rate of 40% and the mean score here only is 27.5. Six of these MAPs, cash flow return on investment, controllable profit, return on investment (ROI), divisional profit, standard costs and variance analysis, and customer satisfaction surveys are adopted by between about 40% and 20% of the companies surveyed.

Table 6.20 Current Use of MAPs Relating to Control and Performance Evaluation

MAPs	Rank	Number	Adoption rate %
Cash flow return on investment	8	32	39.5
Controllable profit	9	30	37.5
Return on investment (ROI)	9	30	37.5
Divisional profit	11	29	35.8
Standard costs and variance analysis	12	26	32.1
Customer satisfaction surveys	14	19	23.5
Residual income/ Economic value added (e.g. interest adjusted profit)	16	12	14.8
Balanced scorecard (BSC)	20	0	0
Mean of the group			**27.5**

These findings are inconsistent with those of previous studies, such as in India, Australia and Finland, where adoption rates of these MAPs were between 68 % and 100% (see Chenhall and Langfield-Simth, 1998a; Joshi, 2001; Hyvonen, 2005). Moreover, in Singapore adoption rates of return on investment (ROI), standard costs were relatively lower but still higher than that reported in this present study, as it was adopted by 56% of the surveyed companies (Ghosh and Chan, 1997).

In the Libyan context, a study by Alkizza (2006) indicated similar findings to the above, where return on investment (ROI) was used by 62.1% and standard costs were used by 79.3% of Libyan manufacturing companies.

Residual income (economic value added) had a low adoption rate reported in prior studies, in India 43% (Joshi, 2001) and Australia 60% (Chenhall and Langfield-Simth, 1998a); it even has a lower adoption in Libya as it was adopted only by 14.8% of the companies and ranked 16. The BSC, which is one of the advanced MAPs, was not adopted by any of the companies surveyed, although it was widely adopted in few countries; 88% of Australia companies (Chenhall and Langfield-Simth, 1998a) 73% of Finish companies (Hyvonen, 2005), and 40% of Indian companies (Joshi, 2001). This technique will be discussed later in this chapter (see Section 6.9). Thus, as far as the Libyan experience is concerned, MAPs related to this group have lower adoption rates than other groups.

It could be concluded from the above findings that the most adopted MAPs in Libyan manufacturing companies are related to product cost system, planning techniques and decision support systems; while practices related to control and performance evaluation are less prevalent.

6.5 The Extent of Benefits Received from MAPs

Table 6.21 presents the extent of benefits derived from using existing MAPs by Libyan manufacturing companies. These companies were asked in question B1 to indicate the extent of benefits they gained from using each MAP listed in the questionnaire over the last 5 years, on a five point scale (from 1 not beneficial to 5 very beneficial). Means were computed and MAPs were ranked in the order of higher mean values.

As Table 6.21 shows, 19 practices out of 21, have a mean score of 3 or above. In addition, the highest level of benefits are derived from budgeting systems for planning financial position and cash flows (ranked 1), budgeting systems for co-ordinating activities across the business units (ranked 2), variable costing (ranked 3), full (absorption) costing (ranked 4), product life-cycle analysis (ranked 5), and product profitability analysis (ranked 6), all of which are traditional MAPs. On the other hand, the less beneficial practices are controllable profit (ranked 17), customer profitability analysis (ranked 18), divisional profit (ranked 19), and life-cycle costing

(ranked 20). It is notable that the advanced MAPs were considered to provide a low benefits by the respondents, as they were ranked 13, 15, and 20.

Table 6.21 The Extent of Benefits Received from MAPs

MAPs	Rank	Mean
Budgeting systems for planning financial position and cash flows	1	4.21
Budgeting systems for co-ordinating activities across the business units	2	4.18
Variable costing	3	4.13
Full (absorption) costing	4	4.01
Product life-cycle analysis	5	4.00
Product profitability analysis	6	3.98
Standard costs and variance analysis	7	3.96
Cost-volume-profit/break-even analysis	8	3.91
Budgeting systems for day-to-day operations	9	3.73
Return on investment (ROI)	10	3.70
Customer satisfaction surveys	11	3.68
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR), Payback)	12	3.66
Quality cost reporting	13	3.61
Cash flow return on investment	14	3.43
Target costing	15	3.40
Residual income/Economic value added (e.g. interest adjusted profit)	16	3.33
Long range forecasting	16	3.33
Controllable profit	17	3.30
Customer profitability analysis	18	3.00
Divisional profit	19	2.86
Life-cycle costing	20	2.33

Details of the benefits gained from MAPs related to different groups (product cost systems, decision support systems, planning, and control and performance evaluation) are discussed below.

6.5.1 Product Cost Systems

It can be seen from Table 6.22, that the most beneficial product cost practices are full costing and variable costing, which are traditional cost practices, with means above 4 and ranking of 4 and 3 respectively. In comparison, all advanced practices are ranked 13 or more irrespective of their mean score. Moreover, life-cycle costing has a mean of 2.33, and ranked 20 as least beneficial MAPs not only within cost practices but also among all MAPs surveyed.

Table 6.22 The Extent of Benefits Received from MAPs Relating to Product Cost Systems

MAPs	Rank	Mean
Variable costing	3	4.13
Full (absorption) costing	4	4.01
Quality cost reporting	13	3.61
Target costing	15	3.40
Life-cycle costing	20	2.33
Mean of the group		**3.49**

6.5.2 Decision Support Systems

All MAPs relating to a decision support system seem to provide a high level of benefits as their scored mean rang between 3 and 4, with a mean of group 3.7. However, none of them was ranked in the most four beneficial practices as it is shown in Table 6.23; they were ranked between 5 and 18. Product life-cycle analysis, product profitability analysis and cost-volume-profit/break-even analysis are the most beneficial practices among this group. Moreover, customer profitability analysis, which ranked 18, was regarded as the least beneficial practice within this group.

Table 6.23 The Extent of Benefits Received from MAPs Relating to Decision Support Systems

MAPs	Rank	Mean
Product life-cycle analysis	5	4.00
Product profitability analysis	6	3.98
Cost-volume-profit/break-even analysis	8	3.91
Customer profitability analysis	18	3.00
Mean of the group		**3.72**

6.5.3 Planning

As can be seen from the Table 6.24, the practices in this group are perceived to be highly beneficial with a mean of 3.8. Budgeting systems for planning financial position and cash flows and budgeting systems for co-ordinating activities across the business units are ranked the first and the second respectively, as the two highest beneficial practices among all practices surveyed. The other practices related to this group (budgeting systems for day-to-day operations, capital budgeting techniques, and long range forecasting) were ranked 9 or more among the practices surveyed, although they have a mean of 3.33 or more.

Table 6.24 The Extent of Benefits Received from MAPs Relating to Planning

MAPs	Rank	Mean
Budgeting systems for planning financial position and cash flows	1	4.21
Budgeting systems for co-ordinating activities across the business units	2	4.18
Budgeting systems for day-to-day operations	9	3.73
Capital budgeting techniques [e.g. Net present value (NPV) Internal rate of return (IRR), Payback]	12	3.66
Long range forecasting	16	3.33
Mean of the group		**3.81**

6.5.4 Control and Performance Evaluation

Table 6.25 shows that the MAPs related to control and performance evaluation are relatively less beneficial than the practices related to other groups (mean of group 3.4). The most beneficial practices in this group, standard costs and variance analysis is ranked 7 among all the practices and the rest of this group were ranked 10 or more, whereas the less beneficial practices among this group are controllable profit and divisional profit ranked 17, 19 respectively.

Table 6.25 The Extent of Benefits Received from MAPs Relating to Control and Performance Evaluation

MAPs	Rank	Mean
Standard costs and variance analysis	7	3.96
Return on investment (ROI)	10	3.70
Customer satisfaction surveys	11	3.68
Cash flow return on investment	14	3.43
Residual income/ Economic value added (e.g. interest adjusted profit)	16	3.33
Controllable profit	17	3.30
Divisional profit	19	2.86
Mean of the group		**3.46**

To conclude, Libyan manufacturing companies claim relatively high levels of benefits from most of the MAPs they use, as the majority of these have a mean of 3 or above and the mean of groups ranges between 3.8 and 3.4. The most beneficial MAPs are related to planning, then decision support systems practices, as the means of the extent of benefits they provide are 3.8 and 3.7 respectively, while the practices related to product cost systems and control and performance evaluation are perceived to provide lower benefits with a mean of group 3.4. It is interesting that these findings are different from previous studies, such as the study conducted in Finland, where practices related to control and performance evaluation were considered to be the most beneficial practices, as some practices related to this group were ranked 1, 4, 5, and 7 among all practices (Hyvonen, 2005). Likewise in Australia; practices related to control and performance evaluation practices were ranked as high as 2, 3, 4, and 8 (Chenhall and Langfield-Simth, 1998a). That may be due to the fact that

most of the sample companies are State-owned or have just been privatized. These companies are controlled or have been controlled for a long time by the State and monopolised business activities. Moreover, based on the socialist economy principles, these companies aim to provide goods rather than make profits.

In addition, traditional MAPs are considered to be highly beneficial in contrast to advanced ones, which provided a low extent of benefits as the respondents indicated. These findings confirm the previous study in Australia and India (Chenhall and Langfield-Smith, 1998a; Joshi, 2001). However, some of the recently developed MAPs were ranked higher in Finland (Hyvonen, 2005).

6.6 The Adoption of New MAPs in the Past

In question B1, regarding the MAPs that are currently used by the companies, the respondents were asked to indicate, for each one of them, whether it was introduced in the last 5 years. As can be seen from Table 6.26 below 35% of the companies surveyed did not introduce any new MAPs during the last 5 years, and 64.2% of the companies did start using at least one new MAP. In addition, about 54% (29.6+ 24.7) of the companies introduced one or two new MAPs, and 9.8% (3.7+4.9+1.2) of them introduced more than 2 practices. Only one company introduced 6 practices in the last five years.

Table 6.26 Number of MAPs Introduced in the Last Five Years

Number of MAPs	Frequency	Percentage
00	29	35.8
1.00	24	29.6
2.00	20	24.7
4.00	3	3.7
5.00	4	4.9
6.00	1	1.2
Total	81	100.0

Table 6.27 MAPs Adoption in the Past

MAPs	Number Who Adopted it	Number Who Adopted it in the Last 5 Years	Percentage Who Adopted it in the Last 5 Years
Product cost systems:			
Variable costing	58	6	10.3
Full (absorption) costing	78	3	3.8
Target costing	11	5	45.4
Life-cycle costing	3	2	66.7
Quality cost reporting	10	6	60
Decision support systems:			
Cost-volume-profit/break-even analysis	59	10	16.9
Product life-cycle analysis	15	2	13.3
Product profitability analysis	72	6	8.3
Customer profitability analysis	15	3	20.0
Planning:			
Budgeting systems for co-ordinating activities across the business units	48	2	4.1
Budgeting systems for day-to-day operations	60	0	0
Budgeting systems for planning financial position and cash flows	74	7	9.4
Long range forecasting	24	2	8.0
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR), Payback)	30	3	10.0
Control and performance evaluation:			
Controllable profit	30	4	13.3
Divisional profit	29	6	20.6
Return on investment (ROI)	30	3	10.0
Cash flow return on investment	32	4	12.5
Customer satisfaction surveys	19	7	36.8
Residual income/ Economic value added (e.g. interest adjusted profit)	12	3	25
Standard costs and variance analysis	26	5	19.2

The data in Table 6.27 present the MAPs that were introduced in the last five years by Libyan manufacturing companies. The data in Table 6.27 show that cost-volume-profit/break-even analysis is the most adopted MAP in the last 5 years. In contrast, no company introduced budgeting systems for day-to-day operations in the last five years. The following are details about the adoption of MAPs in the last 5 years for each group.

Building on the discussions in the previous sections, these practices are grouped as product cost systems, decision support systems, planning, and control and performance evaluation and discussed accordingly.

6.6.1 Product Cost Systems

The data presented in the Table 6.28 show that the most popular practices in the last five years related to product cost systems practices are variable costing, target costing, and quality cost reporting. They were adopted by 6, 5, and 10 companies respectively in the last five years. However, life-cycle costing was adopted by 3 companies, 2 of which were adopted in the last 5 years. In contrast, although the full costing was highly adopted by the companies, they were not highly adopted in the last 5 years, only 3 out of 78 adopted it.

Table 6.28 Past Adoption of MAPs Related to Product Cost Systems

MAPs	Number Who Adopted it	Number Who Adopted it in the Last 5 Years	Percentage
Variable costing	58	6	10.3
Full (absorption) costing	78	3	3.8
Target costing	11	5	45.4
Life-cycle costing	3	2	66.7
Quality cost reporting	60	10	60.0

6.6.2 Decision Support Systems

The data in Table 6.29 show that the most popular MAPs relating to decision support systems during the last five years is cost-volume-profit/break-even analysis, which is adopted by 10 companies in the last five years from 59 of the companies using it. Product profitability analysis also was adopted by 6 companies out of 72 companies adopting it. Product life-cycle analysis and customer profitability analysis both were adopted by 15 companies, but in the last 5 years they have been adopted by 2 and 3 companies respectively.

Table 6.29 Past Adoption of MAPs Related to Decision Support Systems

MAPs	Number Who Adopted it	Number Who Adopted it the Last 5 Years	Percentage
Cost-volume-profit/break-even analysis	59	10	16.9
Product life-cycle analysis	15	2	13.3
Product profitability analysis	72	6	8.3
Customer profitability analysis	15	3	20.0

6.6.3 Planning

Table 7.30 shows that there was no emphasis from the companies surveyed on the MAPs related to planning in the last five years, expect some emphasis on budgeting systems for planning financial position and cash flows, which were adopted by 7 companies in the last five years out of 74 using it. Budgeting system for day-to-day operations was not adopted by any companies in the last five years although it was used by 60 companies. Despite the popularity of most of the MAPs related to this group, they did not seem to have priorities in the last five years. That highlights that these practices were widely adopted even before the start of the transition period in Libya.

Table 6.30 Past Adoption of MAPs Related to Planning

MAPs	Number Who Adopted it	Number Who Adopted it the Last 5 Years	Percentage
Budgeting systems for co-ordinating activities across the business units	48	2	4.1
Budgeting systems for day-to-day operations	60	0	0
Budgeting systems for planning financial position and cash flows	74	7	9.6
Long range forecasting	24	2	8.0
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR), Payback)	30	3	10.0

6.6.4 Control and Performance Evaluation

As can be seen from Table 6.31, customer satisfaction surveys is the highest adopted in this group of MAPs in the last five years, followed by divisional profit and standard costing and variance analysis. In addition, controllable profits, return on investment (ROI), cash flow return on investment, and residual income/economic value added have attracted some attention in the last five years.

Table 6.31 Past Adoption of MAPs Related Control and Performance Evaluation

MAPs	Number Who Adopted it	Number Who Adopted it the Last 5 Years	Percentage
Controllable profit	30	4	13.3
Divisional profit	29	6	20.6
Return on investment (ROI)	30	3	10.0
Cash flow return on investment	32	4	12.5
Customer satisfaction surveys	19	7	36.8
Residual income/ Economic value added (e.g. interest adjusted profit)	12	3	25.0
Standard costs and variance analysis	26	5	19.2

From the above it seems that Libyan manufacturing companies have realized the importance of introducing new MAPs in the last 5 years. This may be as a response to the changes in the business environments during the transition period. In addition, there was some emphasis on MAPs related to control and performance evaluation such as customer satisfaction surveys and divisional profit, and on introducing some of the advanced MAPs, such as target costing and quality cost reporting in the last five years. However, the companies surveyed appear not to be interested in introducing many new practices in a short period of time.

6.7 The Likelihood of MAPs Adoption in the Future

In addition to exploring the past and present of MAPs in Libyan companies, respondents were also asked to indicate if their companies intended to have any of MAPs listed in the next 5 years on a scale of five point from 1 (not likely at all) to 5 (very likely). Table 6.32 presents the mean score and ranking of each MAP, and shows rather low expectations for MAPs adoption in the next years. Only three practices have a mean score of 3 or above for the likelihood to exist in the future.

The respondents perceived budgeting systems for planning financial position and cash flows (ranked1), product profitability analysis (ranked 2), cost-volume-profit/break-even analysis (ranked 3), variable costing (ranked 4), and budgeting systems for day-to-day operations (ranked 5), to be the most likely MAPs they will have in the future. Interestingly, the prospect for advanced MAPs, which currently are almost absent in Libyan companies, does not seem promising. ABM (ranked 21), ABC (ranked 22), life-cycle costing (ranked 23), and BSC (ranked 24) are expected to receive the less adoption priority in the next 5 years among all the techniques. Moreover, the nine most expected MAPs surveyed to be adopted in the future, are noticeably traditional MAPs (have a mean score of 2 or more).

Table 6.32 The Likelihood of MAPs Adoption in the Next 5 Years

MAPs	Rank	Mean
Budgeting systems for planning financial position and cash flows	1	3.50
Product profitability analysis	2	3.30
Cost-volume-profit/break-even analysis	3	3.04
Variable costing	4	2.73
Budgeting systems for day-to-day operations	5	2.52
Customer satisfaction surveys	6	2.28
Standard costs and variance analysis	7	2.16
Cash flow return on investment	8	2.14
Return on investment (ROI)	9	2.08
Full (absorption) costing	10	2.00
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR), Payback)	11	1.98
Customer profitability analysis	12	1.82
Quality cost reporting	13	1.81
Long range forecasting	14	1.77
Residual income/ Economic value added (e.g. interest adjusted profit)	15	1.64
Budgeting systems for co-ordinating activities across the business units	16	1.60
Product life-cycle analysis	17	1.55
Target costing	18	1.54
Controllable profit	19	1.48
Divisional profit	20	1.36
Activity-based management (ABM)	21	1.24
Activity-based costing (ABC)	22	1.21
Life-cycle costing	23	1.20
Balanced scorecard (BSC)	24	1.18

To paint a clear picture of the future of MAPs in Libyan manufacturing companies, each group of MAPs surveyed is now discussed separately.

6.7.1 Product Cost Systems

From Table 6.33, it is clear that the only MAPs relating to product cost systems that have a relatively high expectation to be introduced in the future is the variable costing (ranked 4), followed by full costing (ranked 10). Other practices in this group, which are advanced MAPs, have lower expectations to be introduced in the next 5 years. While quality cost reporting and target costing are ranked 13 and 18 respectively, ABC and life-cycle costing have the lowest score in this group.

Table 6.33 Future Adoption of MAPs Relating to Product Cost Systems

MAPs	Rank	Mean
Variable costing	4	2.73
Full (absorption) costing	10	2.00
Quality cost reporting	13	1.81
Target costing	18	1.54
Activity-based costing (ABC)	22	1.21
Life-cycle costing	23	1.20
Mean of the group		**1.74**

6.7.2 Decision Support Systems

Two MAPs relating to decision support systems; product profitability analysis (ranked 2) and product profitability analysis (ranked 3), are expected to receive a high adoption emphasis in the future (see Table 6.34). The other practices of customer profitability analysis, product life-cycle analysis and ABM are expected to be less important in the future as they ranked 12, 17 and 21 respectively.

Table 6.34 Future Adoption of MAPs Relating to Decision Support Systems

MAPs	Rank	Mean
Product profitability analysis	2	3.30
Cost-volume-profit/break-even analysis	3	3.04
Customer profitability analysis	12	1.82
Product life-cycle analysis	17	1.55
Activity-based management (ABM)	21	1.24
Mean of the group		**2.19**

6.7.3 Planning

The data in Table 6.35 show that the budgeting systems for planning financial position and cash flows is ranked the highest for future adoption among all the MAPs surveyed. This is followed by budgeting systems for day-to-day operations with a rank of 5. All the other practices in this group (i.e. capital budgeting techniques, long range forecasting, and budgeting systems for co-ordinating activities across the business units) have lower rankings for future adoption expectations.

Table 6.35 Future Adoption of MAPs Relating to Planning

MAPs	Rank	Mean
Budgeting systems for planning financial position and cash flows	1	3.50
Budgeting systems for day-to-day operations	5	2.52
Capital budgeting techniques	11	1.98
Long range forecasting	14	1.77
Budgeting systems for co-ordinating activities across the business units	16	1.60
Mean of the group		**2.27**

6.7.4 Control and Performance Evaluation

As is shown in Table 6.36, none of the MAPs relating to control and performance evaluation is ranked in the first five most important practices in the future. Slight exceptions are customer satisfaction surveys, standard costs and variance analysis, cash flow return on investment, and return on investment (ROI) with a rank of 6 to 9 but even these have relatively low adoption expectation in the future as their mean score do not exceed 2.2. On the other hand, residual income/ Economic value added (ranked 15); controllable profit (ranked 19) and divisional profit (ranked 20) practices have lower adoption emphasis in the future. BSC (ranked 24) has the least rank among this group and among all the MAPs surveyed to be introduced in the future.

Table 6.36 Future Adoption of MAPs Relating to Control and Performance Evaluation

MAPs	Rank	Mean
Customer satisfaction surveys	6	2.28
Standard costs and variance analysis	7	2.16
Cash flow return on investment	8	2.14
Return on investment (ROI)	9	2.08
Residual income/Economic value added (e.g. interest adjusted profit)	15	1.64
Controllable profit	19	1.48
Divisional profit	20	1.36
Balanced scorecard (BSC)	24	1.18
Mean of the group		**1.79**

In summary, the future adoption of MAPs is not generally expected to be high. In addition, emphasis is likely to be on five MAPs: one related to product cost systems (variable costing), two to decision support systems (product profitability analysis and product profitability analysis), and two to planning (budgeting systems for planning financial position and cash flows and budgeting systems for day-to-day operations). It is interesting to note that the companies surveyed do not intend to focus on the control and performance practices in the future, as none of the practice related to this group is expected to be adopted in the next years. Furthermore, adoption expectations are lower for advanced MAPs than for traditional MAPs.

6.8 Discussion of the State of MAPs

This section integrates the results and discussion from the preceding four sections about current MAPs used, the adoption of new MAPs in the past, their perceived benefits and future expectation in manufacturing companies in Libya.

6.8.1 Product Cost Systems

As can be seen from table 6.37, full costing, which is adopted by 96.3% of the companies surveyed, has the highest adoption rate among all the practices in this

group and it is one of the most important MAPs, considered also to provide a high extent of benefits (ranked 4). Moreover, variable costing was adopted by 71% of the respondent companies (ranked 6), about 10 % of which adopted it in the last 5 years, and it is considered to be beneficial by the companies (ranked 3). It seems that Libyan companies realized its importance; and it will maintain that importance in the future as well (ranked 4).

The rest of the cost practices, which are advanced MAPs have lower adoption rates, extent of benefits received, and future adoption expectations than full costing and variable costing, which are traditional MAPs. Target costing and quality cost reporting have the highest adoption rates among the advanced MAPs, although their adoption are still as low as 13.6 % and 12.3 % respectively; however, most of them were adopted in the last 5 years. They were perceived to provide a relatively moderate extent of benefits, and it may be why they are expected to have some emphasis in the future.

Table 6.37 Current Use, Benefits, and Future Adoption of MAPs Related to Product Cost Systems

MAPs	Current Use		Benefits		Future Adoption	
	Rank	Adoption rate %	Rank	Mean	Rank	Mean
Full costing	1	96.3	4	4.01	10	2.00
Variable costing	6	71.6	3	4.13	4	2.7
Target costing	17	13.6	15	3.40	18	1.54
Quality cost reporting	18	12.3	13	3.61	13	1.81
Life-cycle costing	19	3.7	20	2.33	23	1.21
Activity-based costing (ABC)	20	0	0	0	22	1.20

Life-cycle costing and ABC have low adoption rates, extent of benefits received, and future adoption expectations. The interesting point here is that the traditional MAPs related to this group are more beneficial than the advanced practices, which may explain their high adoption rates and future adoption expectations.

6.8.2 Decision Support Systems

From the Table 6.38, in addition to that, product profitability analysis and cost-volume-profit/break-even analysis have a relatively high adoption rate within this group, they will be focused on the future as well; they ranked the second and the third respectively among all MAPs. That might be because they were perceived to provide a relatively high extent of benefits.

Table 6.38 Current Use, Benefits, and Future Adoption MAPs Related to Decision Support Systems

MAPs	Current Use		Benefits		Future Adoption	
	Rank	Adoption Rate %	Rank	Mean	Rank	Mean
Product profitability analysis	3	88.9	6	3.98	2	3.30
Cost-volume-profit/break-even analysis	5	72.8	8	3.91	3	3.04
Customer profitability analysis	15	18.5	18	3.00	12	1.82
Product life-cycle analysis	15	18.5	5	4.00	17	1.55
Activity-based management (ABM)	20	0	0	0	21	1.24

Although product life-cycle analysis provides high benefits (ranked 5), it has a low current adoption rate (ranked 15), a low adoption rate in the last five years, and a low future adoption expectation (ranked 17). Customer profitability analysis is regarded as the least beneficial practice among this group; it is adopted by a small number of companies giving an adoption rate of 18.5%. ABM is not adopted by any of the companies surveyed. Both these latter practices have not had a priority in the last 5 years, and they are not expected to have adoption priority in the future as well.

6.8.3 Planning

It is notable from the data presented in Table 6.39 that although all planning practices provide somehow a high or moderate level of benefits, only two of them; budgeting systems for planning financial position and cash flows and budgeting systems for

day-to-day operations, are highly adopted by the companies surveyed. Budgeting systems for planning financial position and cash flows, is adopted by about 91% of the companies; it is the second most popular practice among all MAPs, and is seen as a very beneficial practice (ranked 1). It has been the highest adopted practice in the last five years among this group, and it will be important in the future as well as it is ranked the first MAPs in the future adoption. Budgeting systems for day-to-day operations have an adoption rate of 74% and will be one of the most five important practices in the future; however it is not considered to provide a high level of benefits.

Table 6.39 Current Use, Benefits, and Future Adoption of MAPs Related to Planning

MAPs	Current Use		Benefits		Future Adoption	
	Rank	Adoption rate %	Rank	Mean	Rank	Mean
Budgeting systems for planning financial position and cash flows	2	91.4	1	4.21	1	3.50
Budgeting systems for day-to-day operations	4	74.1	9	3.73	5	2.52
Budgeting systems for co-ordinating activities across the business units	7	59.3	2	4.18	16	1.60
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR), Payback)	10	37.0	12	3.66	11	1.98
Long range forecasting	13	30.0	16	3.30	14	1.77

It is surprising that budgeting systems for co-ordinating activities across the business units was regarded as very beneficial (ranked 2), but it was only adopted by 59% of the respondents, and it had a low priority in the past five years, as well as it is expected to have a low priority adoption in the future (ranked 16). This leads to the question of what the factors that impede its adoption are, despite the fact that it was very beneficial according to the companies surveyed. Capital budgeting techniques and long range forecasting practices have low adoption rates, past, present and future. They are not regarded as very beneficial practices by the companies surveyed.

6.8.4 Control and Performance Evaluation

Although data presented in Table 6.40 report mixed results relating to control and performance evaluation practices, they have low adoption rates, none of which exceeded the adoption rate of 40%, and in the future it is not expected to have significant improvements.

Table 6.40 Current Use, Benefits, and Future Adoption of MAPs Related to Control and Performance Evaluation

MAPs	Current Use		Benefits		Future Adoption	
	Rank	Adoption rate %	Rank	Mean	Rank	Mean
Cash flow return on investment	8	39.5	14	3.43	8	2.14
Controllable profit	9	37.5	17	3.30	19	1.48
Return on investment (ROI)	9	37.5	10	3.70	9	2.08
Divisional profit	11	35.8	19	2.86	20	1.36
Standard costs and variance analysis	12	32.1	7	3.96	7	2.16
Customer satisfaction surveys	14	23.5	11	3.68	6	2.28
Residual income/ Economic value added (e.g. interest adjusted profit)	16	14.8	16	3.33	15	1.64
Balanced scorecard (BSC)	20	0	-	-	24	1.18

Cash flow return on investment has the highest rate, 39.5%, and is expected to maintain its importance among this group in the future as well. Customer satisfaction survey was highly adopted in the past five years and expected to be one of the important practices in the future (ranked 6), albeit was not considered very beneficial in the past. Controllable profit and divisional profit are not regarded as highly beneficial practices in the past and they will be unpopular in the future as well.

Residual income/Economic value added is adopted by only 14.8% of the companies, 21.4% of them adopted in the last five years, and its adoption rate is expected to

improve in the future. Return on investment (ROI) and standard costs and variance analysis are expected to have some emphasis in the future as they ranked 9 and 7 respectively, providing a moderate level of benefits. Finally, BSC, which is not adopted by any of the companies surveyed, has the lowest expectation to be introduced in the future as well (ranked 24).

One interesting conclusion from the above discussion is that, despite the fact that some MAPs are considered to be very beneficial by the respondent companies (e.g. budgeting systems for co-ordinating activities across the business units and product life-cycle analysis), they are not highly adopted or not expected to be adopted in the future. In contrast, other MAPs that are currently highly adopted, will have high priority in the future, as budgeting systems for day to day operations, are not considered to provide high benefits. Thus, it seems that it is not just the benefits that companies gain from MAPs which control their decision to adopt (or not) such practices in Libyan companies.

6.9 Discussion the State of Advanced MAPs

Table 6.41 presents the current adoption, benefits driven, and the adoption expected in the future for the advance MAPs. Dates in the Table 6.41 indicate that adoption rates of advanced MAPs by Libyan companies are very low, none of them exceeded 14% of the adoption rate; also they are not expected to be widely introduced in the future as well. Only two of them, target costing and quality cost reporting, having an adoption rate of more than 10%, ranked 17 and 18 respectively, and they have the highest rank among the advanced MAPs regarding the last 5 years adoption, the future adoption and the extent of benefits received.

However, target costing has the highest adoption rate among all advanced MAPs; it seems that it will not continue at the same level in the future as it was ranked 18 in the future adoption with a mean of 1.5. Quality cost reporting is regarded to provide the highest extent of benefits among advanced MAPs, and in the future it is expected to have the highest adoption rate among advanced MAPs (ranked 13).

Table 6.41 The Adoption, Extent of Benefits, and Future Adoption of Advanced MAPs

Advanced MAPs	Current Use		Benefits		Future Adoption	
	Rank	Adoption rate %	Rank	Mean	Rank	Mean
Target costing	17	13.6	15	3.3	18	1.5
Quality cost reporting	18	12.3	13	3.5	13	1.8
Life-cycle costing	19	3.7	20	2.3	23	1.2
Activity-based management (ABM)	20	0	-	-	21	1.2
Activity-based costing (ABC)	21	0	-	-	22	1.2
Balanced scorecard (BSC)	22	0	-	-	24	1.1

The interesting point here is the gap in the adoption rate between these two practices and the other four advanced MAPs; life-cycle costing, ABM, ABC and BSC. While, life-cycle costing is adopted by 3 companies, no company is reported to use BSC, ABM or ABC. The features of latter MAPs are their very low adoption priority in the future; they ranked 23, 24, 21 and 20 respectively, as the less four MAPs expected to be introduced in the future.

In order to gather more details about advanced MAPs, the respondents were asked in question B3 to indicate which of the provided statements best describes their company's position with respect to the listed advanced MAPs. Their answers are summarised in Table 6.42.

The data in Table 6.42 shows that at least half the respondents are unfamiliar with ABC, ABM, and BSC, while a high percentage (at least 35%) are familiar with them, but they were never considered before for adoption. Thus, it is logical that no company has adopted ABC, ABM, or BSC. Moreover, these three techniques are being considered by a small number of companies for adoption (not more than 4 companies), and there was no company rejecting any of them after a consideration.

Table 6.42 Companies' Position Regarding Advanced MAPs

Advanced MAPs	Never Heard of it %/N	Not Considered %/N	Under Consideration %/N	Considered then Rejected %/N	Currently Used %/N
Activity-based costing (ABC)	50.6/41	45.7/37	3.7/3	0/0	0/0
Activity-based management (ABM)	54.3/44	42/34	3.7/3	0/0	0/0
Balanced scorecard (BSC)	59.3/48	35.9/29	4.9/4	0/0	0/0
Quality cost reporting	19.8/16	43.2/35	22.2/18	2.5/2	12.3/10
Target costing	32.1/26	33.3/27	17.3/14	3.7/3	13.6/11
Life-cycle costing	45.7/37	44.4/36	4.9/4	1.2/1	3.7/3

Moreover, a high percentage (45.7%) of the respondents is unfamiliar with life-cycle costing and 44.4 % of them are familiar but never considered introducing it. Only a few companies indicate that they are using it (3 companies) or considering its adoption (4 companies), while one company reported rejecting it after consideration.

As mentioned in the previous sections, target costing and quality cost reporting are the most adopted practices among advanced MAPs surveyed; in addition to that, they are also the most familiar advanced MAPs among the respondents, with 79% of the respondents being familiar with quality cost reporting and 68 % being familiar with target costing. In addition, at least about 17 % of the companies are considering each of them for implementation. However, 2 and 3 companies indicated that they reject quality costing and target costing, respectively, after consideration.

Although studies in developed and developing countries reported different adoption rates for ABC, most of the prior studies reported a low adoption rate. But they are still higher than what were reported by this study. The findings of this study confirm the studies that reported that there was no interest on such techniques such as in Italy (Barbato et al., 1996), in Spain (Saez-Torrecilla et al., 1996), and Poland (Szychta, 2002).

Studies on the adoption rates of BSC in developed and developing countries reported a relatively high adoption rate. For instance, the adoption rate was in the case of India 40% (Joshi, 2001), and in Australia 89% (Chenhall and Langfield-Smith, 1998a). This study reported different results, where no company adopts or will be interested in adopting BSC in the future.

Although only a small number of studies surveyed the usage of quality cost reporting, target costing and life cycle costing in developed countries, no study has reported the adoption rates of quality cost reporting and life cycle costing in developing countries. The relatively high adoption of target costing and quality cost reporting among Libyan companies compared with other advanced practices, were also indicated by pervious studies in developed and devolving countries, such as the adoption rate of target costing in India was 35% (Joshi, 2001) and in Finland was 78% (Hyvonen, 2005), and the adoption rate of quality cost reporting was 45% in Britain (Abdel-Kader and Luther, 2006) and was 19.4% in New Zealand (Adler et al., 2000).

Life cycle costing was unpopular in Libya as this research reported, which is consistently found in other countries. For instance, in Australia only 5% of the respondents use life cycle costing, whereas 13% of them use in Japan (Wijewardena and De Zoysa, 1999) and only 3% use it in New Zealand (Adler et al., 2000).

Moreover, this study' findings are similar to those of recent previous studies concerned with advanced MAPs in Libya. For example, Abulghasim (2006) and Alkizza (2006) reported that none of the companies surveyed use techniques such ABC or BSC, or even considered adopting them in the future. In addition, this study confirms findings of Abulghasim (2006) study about the unfamiliarity of Libyan manufacturing companies with advanced MAPs. The study by Alkizza (2006) reported that companies are interested in adopting target costing and life cycle costing in the future, the study reported that more that 30% of manufacturing companies were planning to adopt target costing and life cycle costing. However, the adoption rates for both these practices were as low as 10.3 % for target costing and 3.8 % for life cycle costing in that study.

To sum up, the adoption rates and the expectation of future adoption of advanced MAPs in Libyan manufacturing companies are very low. The relative popularity of target costing and quality cost reporting are supported by the fact that they are also the most known advanced MAPs among the respondents and the extent of benefits they provide as indicated by the respondents. Therefore, knowledge regarding the advanced MAPs seems to play an important role in their diffusion.

As mentioned in the literature review (see Chapter two), traditional MAPs have been criticised for not being able to provide detailed and timely information to the users; as a result of that management accounting systems lag so far behind the change in the manufacturing practices and traditional MAPs are no longer adequate to advanced manufacturing techniques. Thus, it is interesting to find out whether (or not) the advanced MAPs are associated with the adoption of advanced manufacturing methods in Libyan manufacturing companies.

Table 6.43 Correlation between the Adoption of advanced MAPs and the Adoption of Advanced Manufacturing Techniques

Pearson Correlation	.196
Sig. (2-tailed)	.080
N	81

* Correlation is significant at the 0.05 level (2-tailed).

Table 6.43 shows that there is no statistically significant relationship between the adoption of advanced MAPs and the adoption of advanced manufacturing methods. In addition, as mentioned earlier in this chapter, there were "a low level of adoption of advanced MAPs" and "a relatively high level of automation and adoption rate of advanced production methods" among Libyan manufacturing companies. These findings are inconsistent with the claims usually found in the literature regarding the inappropriateness of traditional MAPs to advanced manufacturing environments and the association between the advanced manufacturing methods and the diffusion of advanced MAPs.

6.10 The Respondents' Satisfaction with MAPs Used

To seek respondent's satisfaction regarding the MAPs they currently use, they were asked in question B2 to express the extent of their satisfaction about the current MAPs used. Table 6.44 summarises the findings of this question.

The data presented in the Table 6.44 shows that about 40% of the respondents indicate that they are to some extent not satisfied with the current use of MAPs; 17.3% of the respondents indicate that they are very dissatisfied and the system requires major improvements while 23.5 % of them are slightly dissatisfied and think that the MAPs system is still usable, although it needs a lot of improvement.

On the other hand, surprisingly, in the opinion of 59.3% of the respondents, the current use MAPs are to a different extent satisfactory; 28.4 % of the respondents, who are moderately satisfied, believe that the MAPs system need some improvement, and in the 30.9% of the respondents' opinion the system is good, although some improvement may be useful and they are reasonably satisfied with the current use of MAPs. Noticeably, none of the respondents are very satisfied with MAPs and think that system dose not require any improvement. Moreover, the overall mean of respondents' satisfaction is 2.72. Therefore, the Libyan manufacturing companies are to some extent satisfied with their current MAPs.

Table 6.44 The Respondents' Satisfaction with MAPs

	Frequency	**Percentage**	**Cumulative Percentage**
Very dissatisfied	14	17.3	17.3
Slightly dissatisfied	19	23.5	40.7
Moderately satisfied	23	28.4	69.1
Reasonably satisfied	25	30.9	69.1
Very satisfied	0	0	100
Total	81	100	
Mean			**2.72**

In addition, the correlation between the respondents' satisfaction regarding the current MAPs and the likelihood of MAPs adoption in the future was tested using the correlation test. As shown in Table 6.45 there was a negative significant relation between them, which indicate that the more satisfied the companies are the less likely to adopt new MAPs in the future. This may explain the low adoption expectations among Libyan companies of MAPs as they seem to be satisfied with their current system.

Table 6.45 Correlation between Respondents' Satisfactions and the Future Adoption of MAPs

Pearson Correlation	-.246(*)
Sig. (2-tailed)	.027
N	81

* Correlation is significant at the 0.05 level (2-tailed).

6.11 Summary and Conclusions

The data reported in this chapter focus on the current use and the relative benefits obtained from both traditional and advanced MAPs in the Libyan manufacturing companies. It has also described the adoption of MAPs in the last five years and the expectation in their next five years.

Although most of the MAPs surveyed are currently used, the adoption rates of most of these practices were lower than the adoption rates that are reported in other countries, such as Australia, India and Finland. Moreover, they are not likely to be widely adopted in the future.

In addition, Libyan manufacturing companies claim high levels of benefits from most of the MAPs they use, although higher benefits are derived from traditional practices than from advanced practices. Thus, the current popularity among companies surveyed is for traditional MAPs and their intention as well is to place greater emphasis on these MAPs in the future.

Advanced MAPs are adopted only by a small number of companies, and the situation is not expected to change in the future, given the low benefits these advanced practices seem to provide. However, some advanced MAPs, such as target costing and quality cost reporting which have a relatively high adoption rate now, are expected to have some priority in the future. The relatively low adoption rates of MAPs, especially the advanced ones, in the Libyan context lend support to the argument that a gap exists between theory and practice in management accounting (see Chapter Two).

All the MAPs that have a higher adoption rate are related to planning, decision support systems, and product cost system groups where most of these practices will keep their priority in the future as well. Moreover, the most beneficial MAPs are related to these groups. MAPs related to control and performance evaluation has low current adoption rates and their popularity is not expected to improve in the future.

It is noticeable that some of the MAPs that are not considered to provide high benefits are highly adopted and have a high adoption expectation in the future as well; for example the budgeting systems for day to day operations, while some other MAPs are neither highly adopted nor expected to be highly adopted in the future, although, they are regarded to be very beneficial by the responding companies (e.g. budgeting systems for co-ordinating activities across the business units and product life-cycle analysis). In addition, practices such as full costing seem to be widely adopted due to the pressure from the tax law. Also, in the Libyan case as one of the developing countries, knowledge of advanced MAPs also seems to have a crucial part in their diffusion. This questions the factors that influence the adoption of MAPs; it seems that not only the rational factors regard the extent of perceived benefit influence the adoption of MAPs in Libyan companies.

Moreover, both the satisfaction of the respondents with current MAPs and the low level of MAPs adoption in general, especially advanced ones (currently and in the future), raise the question why some MAPs have been diffused while others have not been within Libyan companies and why advanced MAPs are less popular.

Consistent with previous studies in (e.g. Australia, India, and Finland) the findings of this study suggest that the benefits obtained from traditional MAPs are still higher than those of advanced ones. This questions the exaggeration about the gap between theory and practice and the criticism of traditional MAPs for their low benefits and shortcomings as reported in the literature (e.g. Kaplan, 1986; Johnson and Kaplan, 1987). Moreover, this study supports the question raised by Chenhall and Langfield-Smith (1998a) regarding the weakness of advanced MAPs (i.e. attributes of innovation), which might make them less appealing to companies than the traditional ones.

Recalling the theoretical framework of this research (see Chapter Four), factors influencing the diffusion of MAPs are classified into demand and institutional factors. Demand factors are based on the assumption that the adoption decision is guided only by rational decision-making. In other words, MAPs should be adopted simply because they appear to offer superior benefits to adopters. Demand factors were classified as attributes of innovation and attributes of adopters and environmental factors. On the other hand, institutional factors do not assume a rational decision-making model and are divided into fad, fashion and forced factors. This study, therefore, will seek to investigate the factors that influence the adoption/diffusion of MAPs in the following chapters.

Chapter Seven

Exploratory Data Analysis

7.1 Introduction

This chapter and the next are aimed at meeting the third and fourth research objectives (see Chapter One), which are:

- To identify the factors influencing the diffusion of Western MAPs in Libyan manufacturing companies over the period of transition.

- To identify the factors impeding the diffusion of advanced MAPs in the course of the transitional economy in Libya.

To meet these objectives both qualitative and quantitative data were used. Quantitative data, collected using a questionnaire survey, are analysed through frequencies and means, as well as factor analysis, whereas a descriptive analysis using frequencies and percentages is used to present the findings from the qualitative data collected from interviews.

The data analysis is presented in five stages, divided between this and the next chapter. The first stage is focused on investigating the importance of factors influencing MAPs diffusion as well as the barriers to advanced MAPs diffusion according to the respondents' point of view. Moreover, these factors are tested to find out whether they confirm the research theoretical model. The second stage is concerned with the analysis of data collected from interviews. These two stages are presented in this chapter. In the third and fourth stages, simple and multiple regression tests are conducted to investigate the relationship between organisational and environmental factors and the diffusion of MAPs according to the research theoretical model. The final stage examines institutional factors using simple regression.

The next section in this chapter presents the factors influencing the decision to adopt the new MAPs and the barriers to advanced MAPs diffusion, according to the respondents' perception obtained from the completed questionnaires. The third and final section shows the interviewees' points of view regarding the same issues.

7.2 The Respondents' Perception of the Factors Influencing the Decision to Adopt Management Accounting Practices (MAPs)

The questionnaire respondents were asked to indicate their views regarding the diffusion of MAPs in terms of the factors that influence the adoption of new MAPs and the factors that impede the diffusion of advanced MAPs in Libyan manufacturing companies. The following subsections present their views regarding these issues. In Chapter two, these factors were grouped according to the research framework as *demand factors* (attributes of adopters, attributes of innovations and environmental) and *institutional factors* (forced, fashion and fad).

7.2.1 Factors Influencing the Decision to Adopt New MAPs

The respondents were asked in question C14 to indicate the degree of importance of each item in the decision to adopt new management accounting techniques, on a five point scale (from 1= not important to 5 = considerably important).

As was explained in Chapter Five, these items were set to represent the factors included in this study theoretical framework. The demand/efficiency perspective is represented in the questionnaire by items A to I. Item A represents environmental factors; items B, C and D represent attributes of adopters, and items E, F, G, H and I represent attributes of innovations. In the J to T institutional factors set, items J, K and L represent the forced perspective, items M, P and Q represent the fashion perspective, and items N, O, R, S and T represent the fad perspective (see Table 7.1, theoretical typology).

Table 7.1 shows that the eight most important motivations for introducing new MAPs based on the respondents' points of view are related to the demand/efficient choice perspective; some of them are related to attributes of adopters and environmental factors such as advances in information technology (ranked 1), change of production technology (ranked 5), increased market competition and existing system being no longer reliable and needing updating (both ranked 6). Others are related to the attributes of innovation factors such as the new techniques being easy to understand and use (ranked 2), observability to see results from the new

techniques (ranked 3), the compatibility of the new techniques with existing system (ranked 4), the new technique's trialability before full implementation (ranked 7), and the relative advantage of the new techniques over the current practices (ranked 8).

Although the other factors (institutional factors) are not within the eight most important factors, they are perceived as important as well, as can be seen from Table 7.1, where their mean score is between 3.37 and 2.66.

Items related to the forced perspective are: foreign parent pressure (ranked 10), headquarters' regulations/recommendations (ranked 13), and pressure from government or other regulatory authorities (ranked 18).

Items related to the fashion perspective are: auditor/consultant advice (ranked 9), learning about the new techniques in academic institutions (ranked 11), and knowledge about the new techniques from textbooks and academic journals (ranked 16). Finally, motivations related to the fad perspective are: the lead company in the industry has adopted these techniques (ranked 9), wish to try new techniques (ranked 12), these techniques have been adopted by other Libyan companies (ranked 14), foreign partner has adopted these techniques (ranked 15), and to be seen as having different techniques (ranked 17).

Table 7.2 shows the relative importance for each factor/group of items, in the decision for adopting new MAPs. As is seen from this table, attributes of adopters are the most important factor, followed by attributes of innovation and environmental factors, which all are related to demand/efficient choice perspective, while institutional factors are less important. However, fashion is perceived to be the most important among institutional factors.

It could be concluded that, while most of the factors are perceived important, the dominant motivations influencing the adoption of new MAPs are related to the demand/efficient choice perspective, followed by institutional factors based on the respondent perceptions.

Table 7.1 The Importance of Motivations Influencing the Decision to Adopt New MAPs

Rank	Reason	Mean	Theoretical Typology
1	B) Advances in information technology	3.90	Adopter
2	H) The new techniques being easy to understand and use	3.82	Innovation
3	I) Observability to see results from the new techniques	3.74	Innovation
4	G) The compatibility of the new techniques with existing system	3.71	Innovation
5	C) Change of production technology	3.61	Adopter
6	A) Increased market competition	3.59	Environmental
6	D) Existing system is no longer reliable and needs updating	3.59	Adopter
7	F) The new technique's trialability before full implementation	3.58	Innovation
8	E) Relative advantage of the new techniques over the current practices	3.45	Innovation
9	M) Auditor/consultant advice	3.37	Fashion
9	T) The lead company in the industry has adopted these techniques	3.37	Fad
10	J) Foreign parent pressure	3.21	Forced
11	Q) Learning about the new techniques in academic institutions	3.18	Fashion
12	O) Wish to try new techniques	3.02	Fad
13	L) Headquarters' regulations/recommendations	2.98	Forced
14	S) These techniques have been adopted by other Libyan companies	2.87	Fad
15	R) Foreign partner has adopted these techniques	2.85	Fad
16	P) Knowledge about the new techniques from textbooks and academic journals	2.75	Fashion
17	N) To be seen as having different techniques	2.74	Fad
18	K) Pressure from government or other regulatory authorities	2.66	Forced

Table 7.2 The Importance of Each Factor in the Decision to Adopt New MAPs

Rank	Factor	N of items	Mean
1	Attributes of adopter	3	3.70
2	Attributes of innovation	5	3.66
3	Environmental	1	3.59
4	Fashion perspective	3	3.10
5	Fad perspective	5	2.97
6	Forced perspective	3	2.95

The above results are consistent with Malmi's (1999) study findings, who found that the lack of reliability and usefulness of the existing system, which can be classified as attribute of adopters within the research model, were the most important motivations for adopting ABC. Furthermore, he found that the efficient perspective is the main motivation for the diffusion of management accounting innovation during its different stages. Moreover, a support for the effect of the fad and fashion perspectives in explaining the diffusion of ABC in different stages was found as well.

Askarany and Smith (2004) found that the most important factors influencing the diffusion of management accounting innovation were related to the efficient choice perspective such as the cost of implementation and maintenance of the innovation, a recognised need for change and dissatisfaction with the current system. However, they found support for institutional factors related to the fad perspective such as employee awareness of the benefits of an innovation and their awareness of the availability of an innovation; they did not find "Institutional pressure for innovation" having any significant impact on the decision to adopt the management accounting innovation. This item is ambiguous and too broad to be asked directly to the respondents, which may have led to a non significant result in the case of Askarany and Smith (2004) study. In this study, institutional factors or pressures comprise three broad factors: mimetic, coercive and normative (see Chapter Four). As it was mentioned earlier in this section, each one of them was represented by multi-items in the questionnaire.

In the context of Libya, Alkizza (2006) reported similar results, as in his study the most important factors for the decision to adopt new management accounting innovation are cost and benefit and the degree of sophistication of the new system, which can be classified as the attributes of innovation according to this research framework. In addition, he indicated that the external advisor recommendation (fashion perspective) is perceived to be important by the respondents as well. While the use of the techniques by other companies in the market (fad perspective) is the least important factor among manufacturing firms, it is more important than in the other types of firm. His study only used a small number of items (4 items) to identify the motivations of adopting the new MAPs, whereas 20 items were used in this study (see Appendix B, question C14).

To find out whether these items which were used in question C14 lead to any patterns of factors for the adoption of new MAPs, and whether they confirm the factors specified in the research framework as the demand/efficiency factors (attribute of innovations, attribute of innovation and environmental factors) and the institutional factors (forced, fad, and fashion), the factor analysis was used.

As explained earlier (see Chapter Five), the factor analysis was used to analysis quantitative data in this research. To perform the factor analysis, the following common assumptions were followed (Aaker et al., 2001; Hair et al., 2003; Bryman and Cramer, 2004; Field, 2006).

- The first assumption is to check whether factor analysis is appropriate for the data; the Kaiser-Meyer-Olkin (KMO) statistics should be greater than .5 (values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb). In addition, Bartlett's test of sphericity should be significant (the value of Sig. should be less than .05).

- The second assumption is to decide which factors to be included; the known Kaiser's criterion is used. It indicates that selected factors should have an eigenvalue greater than one. Another criterion used in deciding how many factors to be retained is the percentage of the variance in the original data that is

explained by all factors considered together and the ability to logically name the resulting factors. For example, Hair et al (2003, p. 365) state that

> The ultimate goal is to derive a set of factors that are theoretically meaningful, relatively easy to interpret, and account for as much of the original variance as possible.

However, the number of factors that should be selected is very subjective, the most suitable rule is to stop factoring when the factors stop making sense and become meaningless (Aaker et al., 2001).

- The third assumption is that factor loadings with absolute values greater than .4 only will be considered as important and thus, to make it easier to interpret the factors, loadings less than .4 will not be displayed.

Since the number of factors were identified, they should be interpreted based on the factor loading, which is the correlation between each of the original items and the newly extracted. Factor loading is a measure of the relative importance of each item in representing that factor. Thus, the more the absolute size of an item loading, the more important it is in interpreting and naming the factor. The results of running a factor analysis are shown below.

Table 7.3 KMO and Bartlett's Test

Kaiser-Meyer- Olkin Measure of Sampling Adequacy.		.734
Bartlett's Test of Sphericity	Approx. Chi-Square	571.698
	Df	153
	Sig.	.000

The KMO value here is .734, which is not only above the minimum requirement but also is regarded as good value according to Field (2006). Moreover, Bartlett's Test of Sphericity is highly significant (Sig. = .000). Thus, factor analysis is appropriate for this study's data.

Table 7.4 Total Variance Explained by Each Factor

Component (factor)	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	**5.410**	**30.054**	**30.054**
2	**1.959**	**10.883**	**40.936**
3	**1.667**	**9.262**	**50.198**
4	**1.484**	**8.247**	**58.445**
5	1.207	6.704	65.149
6	1.019	5.662	70.811
7	.863	4.794	75.605
8	.681	3.782	79.387
9	.638	3.545	82.932
10	.569	3.158	86.090
11	.484	2.690	88.780
12	.390	2.169	90.949
13	.382	2.119	93.069
14	.318	1.765	94.833
15	.282	1.567	96.400
16	.255	1.417	97.817
17	.250	1.391	99.208
18	.143	.792	100.000

Table 7.4 provides the total variance that is explained by each factor (component), and as seen from this table, six factors have Eigenvalues of more than one, explaining about 70% of that variance and it is noticeable that the first factor explains about 30% of total variance. Considering the naming of the factors extracted and the total variance explained by all factors and by each factor, the last two factors explained only a small percentage of the variance, about 6% and 5% respectively of total variance. Thus the first four factors were chosen (highlighted in Table 7.3), as they explain about 58.5% of the total variance and are able to be logically named.

As Table 7.5 shows, the items which load most strongly on the first factor are listed first and ordered in terms of the size of their correlations with the factor, and then the same happens in order with the second, third and the fourth factor.

As mentioned earlier in this section, in terms of which item represented which perspective or factor in the questionnaire, Table 7.5 shows that the first factor contains all the items related to the characteristics of new techniques, such as the compatibility of the new techniques with the existing system, the new techniques being easy to understand and use, and the new technique's trialability before full implementation; Thus this dimension is easily labelled as an attributes of innovation.

The second factor is comprised of items related to the fad and fashion perspectives according to the research framework such as "these techniques have been adopted by other Libyan companies and learning about the new techniques in academic institutions". Therefore, this dimension is labelled as fad and fashion motivations.

In view of the items "change of production technology", "increased market competition", "advances in information technology", and "existing system is no longer reliable and needs updating", these items are loaded highly on the third factor; whereas item "wish to try new techniques" is less loaded on the same factor[1]. While the formers are related to organizational and environmental perspective, the latter is related to fad perspective. However, it may have the respondents regard trying a new technique as an efficient behaviour in order to discover which technique is suitable for the company. Therefore, this dimension is labelled as attributes of adopter and environmental factors.

The fourth factor is correlated most highly with two items; "Headquarters' regulations/ recommendations" and "pressure from government or other regulatory authorities", which are related to the forced perspective, while it is correlated less to the item "auditor/consultant advice", which is related to the fashion perspective.

[1] The item "To be seen as having different techniques" was not loading to any of the factors, so an attempt was made to reduce the factor loading slightly less than .4 to see if this item would load to any factor. As a result this item found correlated to third factor by .391.

Table 7.5 Rotated Component Matrix[1]

	Items	Component			
		1	2	3	4
G	The compatibility of the new techniques with existing system	.81			
H	The new techniques being easy to understand and use	.80			
F	The new technique's trialability before full implementation	.75			
I	Observability to see results from the new techniques	.65			
E	Relative advantage of the new techniques over the current practices	.64			
S	These techniques have been adopted by other Libyan companies		.78		
T	The lead company in the industry has adopted these techniques		.75		
Q	Learning about the new techniques in academic institutions		.70		
P	Knowledge about the new techniques from textbooks and academic journals		.70		
N	To be seen as having different techniques		.39		
C	Change of production technology			.75	
A	Increased market competition			.67	
B	Advances in information technology			.62	
D	Existing system is no longer reliable and needs updating			.62	
O	Wish to try new techniques			.55	
L	Headquarters' regulations/recommendations				.85
K	Pressure from government or other regulatory authorities				.78
M	Auditor/consultant advice		.43		.53

As can be seen from Table 7.5, the former item is loading on to two factors; the second factor, which is already labelled fad and fashion motivations and the fourth factor, however, is loaded more on the fourth factor. This item seems to contain two perspectives, one related to auditor advice which may have been considered by the respondents as forced motivations, and the other is related to consultant advice which may have been regarded by the respondents as fashion perspective. Thus, this dimension is named forced motivation.

[1] It should be noted that items J (Foreign parent pressure) and R (Foreign partner has adopted these techniques) in question C14 are excluded from the factor analysis test as they related only to companies in a joint venture with a foreign partner.

To summarise, the factors that emerge from running the factor analysis are attributes of innovation, fad and fashion, attributes of adopter and environmental and forced motivations. Thus, it is clear that these factors to a large extent are consistent with the theoretical framework that was developed earlier for this study (see Chapter Four).

7.2.2 Factors Impeding the Adoption of Advanced MAPs

To find out the barriers to diffusion of advanced MAPs, the respondents were asked in question C15 (see Appendix B), to indicate the extent to which a list of items impede the adoption of advanced MAPs on a scale from 1 (Do not impede at all) to 5 (Considerably impede).

As was explained earlier (see Chapter Five), these items were set to represent the factors included in this study theoretical framework. Thus, institutional factors are represented as follows: items A, B, C, D, and E represent fashion perspective; items F and G represent fad perspective; and items H and I represent forced perspective. Demand factors are represented as; items J, K, L, M, N and V are related to the attributes of adopter, items O, P, Q, R, S, T, and U are related to the attributes of innovation (see Table 7.6, theoretical typology).

Table 7.6 shows the mean ranking of these barriers (from the higher to the less) to indicate which are the most impeding factors. As Table 7.6 shows, it is clear that the first six items that impede the adoption of MAPs are related to institutional factors, which are: lack of an active professional management accounting society (ranked 1), lack of local training programmes about advanced techniques (ranked 2), lack of relevant courses on such advanced techniques in academic institutions (ranked 3), lack of software packages relevant to advanced techniques (ranked 4), lack of up-to-date publications about advanced techniques (ranked 5) and absence of Libyan companies that have adopted advanced techniques (ranked 6).

Table 7.6 The Barriers to the Adoption of Advanced MAPs

Rank	Items	Mean	Theoretical Typology
1	D) Lack of an active professional management accounting society	4.12	Fashion
2	C) Lack of local training programmes about advanced techniques	4.08	Fashion
3	A) Lack of relevant courses on such advanced techniques in academic institutions	3.91	Fashion
4	E) Lack of software packages relevant to advanced techniques	3.72	Fashion
5	B) Lack of up-to-date publications about advanced techniques	3.71	Fashion
6	G) Absence of Libyan companies that have adopted advanced techniques	3.60	Fad
7	K) Lack of relevant employee skills because of insufficient training provided by the company	3.38	Adopter
8	J) Lack of financial resources	3.32	Adopter
9	F) Absence of foreign companies operating in the manufacturing sector	3.09	Fad
10	I) Headquarters and government regulations	2.97	Forced
11	M) Lack of decision making autonomy at lower levels	2.93	Adopter
12	N) Company ownership type	2.92	Adopter
13	L) Insufficient support from top management	2.91	Adopter
14	O) No significant problems with current system	2.82	Innovation
14	P) Lack of confidence in the value of advanced techniques	2.82	Innovation
15	U) Lack of compatibility of the advanced techniques with existing system	2.76	Innovation
16	T) High cost to implement these advanced techniques	2.72	Innovation
17	H) Lack of autonomy from foreign parent company	2.71	Forced
18	Q) These advanced techniques are too complex	2.53	Innovation
19	S) Benefits from advanced techniques are difficult to observe	2.51	Innovation
20	V) Company's business strategy	2.43	Adopter
21	R) No significant benefits perceived from adopting advanced techniques	2.41	Innovation

The second in the ranking is a group of items related to the attributes of adopter namely; the lack of relevant employee skills because of insufficient training provided by the company (ranked 7), lack of financial resources (ranked 8), lack of decision making autonomy at lower levels (ranked 11), company ownership type (ranked 12), and insufficient support from top management (ranked 13).

Finally, most of the items that are regarded as the least barriers are related to the attributes of advanced MAPs, starting with no significant problems with the current system (ranked 14), lack of confidence in the value of advanced techniques (ranked 14), lack of compatibility of the advanced techniques with the existing system (ranked 15), high cost to implement these advanced techniques (ranked 16), these advanced techniques are too complex (ranked 18), benefits from advanced techniques are difficult to observe (ranked 19), and no significant benefits perceived from adopting advanced techniques (ranked 21).

Table 7.7 The Importance of Each Factor in Impeding the Adoption of Advanced MAPs

Rank	Factor	N of items	Mean
1	Fashion perspective	5	3.90
2	Fad perspective	2	3.34
3	Attributes of adopter	6	2.98
4	Forced perspective	2	2.84
5	Attributes of innovation	7	2.65

Table 7.7 shows the relative importance of each factor/ group of items as barriers to advanced MAPs adoption. It indicates that fashion and fads, which are related to institutional factors, are the most impeding factors to advanced MAPs diffusion. These are followed by forced perspective and the attributes of adopter, while attributes of innovation are the least important factors.

To sum up, institutional factors were the most important barriers to adopt advanced MAPs, especially fashion and fad perspectives, whereas the demand/efficient choice perspective is considered to be less impeding from the respondents point of views.

These findings are partly inconsistent with those reported by Askarany (2000), in emphasising the significant role of the attribute of innovations/MAPs on their adoption (see Table 7.8). He found that most of the factors that influence diffusion of advanced MAPs are related to the attribute of innovations. However, he reported a similar finding in terms of the importance of institutional factors. As in his study, the most important item "lack of suitable software program" as well as "lack of information on available costing techniques", which ranked fourth, are related to the fashion perspective. In addition, consistent with this study's findings, other items are less important in relation to the attributes of adopter such as "management policies and priorities", "lack of appropriate cost accounting skills" and "employee resistance", as well as in relation to the forced perspective such as "external financial or cost accounting standards or practices".

Table 7.8 Factors Influencing the Diffusion of Management Accounting Innovation According to Askarany's study (2000)

Askarany's study findings		Theoretical Categories [1] [1] in this study
Rank	**Items**	
1	Lack of suitable software program.	Fashion
2	Cost of system set up and its implementation.	Attributes of Innovation
3	Cost of maintaining and collecting cost information.	Attributes of Innovation
4	Lack of information on available costing techniques.	Fashion
5	Management policies and priorities.	Attributes of Adopter
6	Lack of appropriate cost accounting skills.	Attributes of Adopter
7	Low benefit arising from change compared with higher required expenditure.	Attributes of Innovation
8	Lack of confidence in the ability of new accounting techniques.	Attributes of Innovation
9	Adequacy of current system.	Attributes of Adopter
10	Employee resistance.	Attributes of Adopter
11	Inadequacy of current system not being important enough to require change in the costing system.	Attributes of Innovation
12	External financial or cost accounting standards or practices.	Forced

[1] An attempt was made to classify the items included in Askarany's study (2000) according to this research framework.

Moreover, inconsistent with this study's results, previous studies by Bright et al. (1992) and Adler et al. (2000) found that the cost of change (attributes of innovation) are the most important barriers to adopt advanced MAPs. However, these studies reported similar findings to those of this study. For instance, factors such as the quality of the current system and the lack of relevant skills (attribute of adaptor) as well as the lack of software and insufficient information on such techniques (fashion perspective) are found among the most important barriers to adopting advanced MAPs.

The inconsistency between the findings of this study and those of previous studies regarding the importance of the attribute of advanced MAPs on their diffusion, may be due to the fact that advanced MAPs (innovation) are widely unknown in the Libyan context (see Chapter Six), the case may be different in the developed countries, where those studies were conducted.

Similarly, Abulghasim (2006) pointed out that the most important factors that hindered the diffusion of management accounting systems in Libyan state-owned manufacturing companies are: management accounting education, lack of up-to-date publications in management accounting, lack of active management accounting training programmes, the inadequacy of operations managers' understanding of the role and benefits of management accounting, social, political and cultural obstacles, lack of an active professional management accounting society, the absence of foreign companies, and the lack of financial resources. It is noticeable that all of these factors are related to institutional factors, both fad and fashion, according to this research framework. Other factors such as the lack of top management support, lack of management accounting research, other high priorities, and unfamiliarity with English language are found to be less important in hindering the adoption of management accounting innovation.

To determine if the items examined were theoretically meaningful, factor analysis was used to see whether the original items combine in any patterns to make new factors, and if any, to check their consistency with the factors included in the research theoretical framework. In order to use factor analysis, its assumptions were checked.

Table 7.9 The KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.715
Bartlett's Test of Sphericity	Approx. Chi-Square	656.602
	Df	210
	Sig.	.000

Table 7.10 The Total Variance Explained by the Factors

Component (Factor)	**Initial Eigenvalues**		
	Total	**% of Variance**	**Cumulative %**
1	**5.171**	**24.623**	**24.623**
2	**3.097**	**14.747**	**39.370**
3	**1.800**	**8.570**	**47.941**
4	**1.443**	**6.873**	**54.814**
5	1.137	5.414	60.228
6	1.073	5.111	65.338
7	.922	4.389	69.728
8	.896	4.268	73.996
9	.786	3.744	77.740
10	.674	3.209	80.948
11	.646	3.077	84.025
12	.571	2.721	86.746
13	.483	2.299	89.045
14	.428	2.037	91.082
15	.406	1.935	93.017
16	.341	1.625	94.642
17	.296	1.410	96.052
18	.276	1.315	97.368
19	.242	1.151	98.519
20	.166	.791	99.309
21	.145	.691	100.000

The KMO value here is above the minimum requirement of .5, and therefore, is regarded as good value. Moreover, the Bartlett's Test of Sphericity assumption is met as well; it is highly significant (Sig. = .000). Thus, factor analysis is appropriate for this data.

Table 7.10 shows the factors' explanation of the total variance with the first six factors having Eigenvalues of more than one, and explaining about 65% of the total variance. To decide the number of factors that should be chosen, the assumptions mentioned earlier were followed. Taking into account the total variance explained by each factor, Eigenvalues must exceed the value of one, and the ability to name the extracted factors logically, four factors were chosen (highlighted in Table 7.10). The selected factors explain about 55% of the variance, all of which have Eigenvalues of more than one, and, as such, they are logically and theoretically meaningful[1].

Table 7.11 indicates that the first factor is made up of seven items, all of which are related to features of advanced MAPs, namely: no significant benefits perceived from adopting advanced techniques, these advanced techniques are too complex, and the high cost to implement these advanced techniques. Thus this factor is named the attributes of innovation. Five items are loaded on to the second factor; these items are related to institutional factors, especially to the fashion perspective. For example, the lack of local training programmes about advanced techniques, lack of software packages relevant to advanced techniques and lack of an active professional management accounting society. Accordingly, this factor is labelled the fashion perspective.

[1] Although adding one or two extra factors will enhance the variance explained to 60% and 65% respectively, they are not theoretically meaningful and difficult to logically to be named.

Table 7.11 The Rotated Component (Factor) Matrix [1]

	Items	Component			
		1	2	3	4
R	No significant benefits perceived from adopting advanced techniques	.74			
Q	These advanced techniques are too complex	.73			
T	High cost to implement these advanced techniques	.70			
S	Benefits from advanced techniques are difficult to observe	.69			
U	Lack of compatibility of the advanced techniques with existing system	.69			
P	Lack of confidence in the value of advanced techniques	.68			
O	No significant problems with current system	.54			
C	Lack of local training programmes about advanced techniques		.77		
E	Lack of software packages relevant to advanced techniques		.70		
D	Lack of an active professional management accounting society		.67		
A	Lack of relevant courses on such advanced techniques in academic institutions		.66		
B	Lack of up-to-date publications about advanced techniques		.66		
L	Insufficient support from top management			.79	
J	Lack of financial resources			.77	
K	Lack of relevant employee skills because of insufficient training provided by the company			.74	
M	Lack of decision making autonomy at lower levels			.55	
N	Company ownership type			.52	.43
F	Absence of foreign companies operating in the manufacturing sector				.72
G	Absence of Libyan companies that have adopted advanced techniques				.66
I	Headquarters and government regulations				.54
V	Company's business strategy				.52

[1] The item "Lack of autonomy from foreign parent company" was excluded from factor analysis as it is appropriate only for companies that have a joint venture with a foreign partner.

The other five items related to the characteristics of companies such as insufficient support from top management and lack of financial resources, are combined to define the third factor, which is labelled the attributes of adopters. The fourth factor is correlated most highly with the items "absence of foreign companies that operating in the manufacturing sector" and "absence of Libyan companies that have adopted advanced techniques", which are related to fad perspective. In addition, the item "headquarters and government regulations", which are related to the forced perspective, is loaded on to this factor as well; however the correlation is not as high as with the other two items. The items with the lowest loading on the fourth factor are "company's business strategy" and "company ownership type" which represent the attributes of adopter. To summarise, the three items most correlated with the fourth factor are related to the fad and forced perspective, while the other two items that are related to the attributes of adopter, are less correlated to this factor with one of them being loaded on the third factor as well. Therefore, the fourth factor could be labelled as the fad and forced motivations.

Accordingly, it could be concluded that the factors identified from using factor analysis regarding the importance of the barriers of diffusion of advanced MAPs are attributes of innovation, fashion, attributes of adopter, fad and forced motivations. Therefore, it is apparent that the factors emerging from factor analysis are consistent with the research theoretical framework.

7.3 Interview Data Analysis

As explained in Chapter Five, ten interviews have been conducted; eight with managers and two with academics. The purpose of these interviews was to examine mainly the factors that influence the adoption of MAPs by giving the interviewees the chance to express their views, which may set light on wider dimensions to explain the diffusion of MAPs. Also the data collected from the interviews were used to supplement the quantitative data gained from the questionnaires. Some important statements from the interviewees were quoted where appropriate to enhance the research findings as well.

In analysing interview data, factors were classified as factors that influence the adoption of new MAPs and factors that impede the diffusion of advanced MAPs (see Chapter Five). The following section shows and discusses the results of the interviews. As mentioned earlier in this chapter, interview data is analysed quantitatively using frequencies and percentages.

7.3.1 Factors that Influence the Adoption of New MAPs

The data collected from interviewees regarding the factors influencing the adoption of new MAPs were categorized as facilitators and barriers. Table 7.12 shows that the most important item that has facilitated the adoption of new MAPs is headquarters' regulations, which represent the forced perspective. It was noted that all of the interviewees who mentioned this item linked it with the adoption of different types of budgeting. According to them, they have been forced by their companies' regulations that are set by the industry headquarters (ministry of industry and materials). In addition, they believe that in the past (before the economic transition started), they were forced to use these techniques, despite the fact that they were not highly beneficial. However, most of them indicate that they currently continue to use the budgeting techniques due to their belief that they have become more beneficial in this period of transitional economic, with an open market policy and increased competition. Thus, the motivations for introducing budgeting by Libyan companies seem to be because of forced pressure (institutional factors) and later due to budgeting benefits (efficient perspective). These findings are consistent with those reported by Malmi (1999) who concluded that there were different motivations for management accounting diffusion over the course of the diffusion process in Finnish firms.

Moreover, the second most important item was the increase in market competition recently which, according to the interviewees, stimulates the adoption of new MAPs, due to the realisation that different types of information are needed during the transition period than during the period of socialist economy. The importance of the technique and its benefits, which is related to the attributes of innovation, was also

regarded as important by the interviewees. It should be noted that the latter two items are related to the efficient perspective.

Table 7.12 Factors that Facilitate the Adoption of New MAPs

The items Mentioned and Discussed During the Interviews	Number of Times Item was Mentioned	Percentage
Headquarters regulations	7	70%
Increased competition	6	60%
The importance of the technique and its benefits	5	50%
Pressure from foreign partner	3	30%
The availability of training courses	2	20%
Wish to try new technique to other companies	2	20%
Adopted by other Libyan lead companies	1	10%
Change of production technology	1	10%
Use of consultants	1	10%
Environmental uncertainty	1	10%

Most of the other items mentioned by the interviewees are related to institutional factors, namely the pressure from the foreign partner; wish to try new technique to other companies, the availability of training courses, adopted by other leader of Libyan manufacturing companies and use of consultants. The least mentioned items include, change of production technology and environmental uncertainty.

As Table 7.13 shows, the main impediment to the adoption of new MAPs as identified by the interviewees is that companies do not have a need for them, thus emphasising the role of the demand side perspective in MAPs diffusion. They also argued that the State-ownership type has played an important role in not developing management accounting systems. This may be because the majority of responding companies are State-owned in a socialist economy (see Chapter Six), i.e. they are controlled by the Government, and making profits is not among their priorities.

Table 7.13 Barriers of Adoption of New MAPs

The Items Mentioned and Discussed During the Interviews	Number of Times Item was Mentioned	Percentage
There is no need to adopt new technique	8	80%
Lack of management knowledge about the importance of such technique	5	50%
Lack of link between academic institutions and companies	4	40%
Insufficient role of academic institutions and weaknesses of its syllables	4	40%
Insufficient conferences and seminars	3	30%
Lack of sufficient training courses	3	30%
Lack of autonomy from headquarters	3	30%
Environmental uncertainly	3	30%
Lack of skills	2	20%
Lack of academic journals	2	20%
Lack of management support for adopting new techniques	2	20%
Formalization	1	10%
Centralization	1	10%
Lack of encouragement and support for companies to adopt new techniques	1	10%
There is no institute responsible for developing management accounting and costing systems	1	10%
Organizational culture	1	10%

It is interesting to note that most of the barrier items mentioned by interviewees are related to institutional factors; especially the fashion perspective. These factors as Table 7.13 shows are: lack of management knowledge about the importance of such technique, lack of link between academic institutions and companies, the insufficient role of academic institutions and weaknesses of its syllabus, insufficient conferences and seminars, lack of sufficient training courses and lack of academic journals.

Moreover, lack of autonomy from headquarters, which in the case of Libya make important decisions regarding pricing and strategies on behalf of companies especially in state owned ones, is regarded as one of the most important barriers to adopting new MAPs. In addition, environmental uncertainty in terms of the unstable

administrative systems of the government and the conflict between different laws are considered to be important. Other items related to the attributes of adopter are perceived to be less important such as lack of skills, lack of management support regarding the adoption of new MAPs, formalization and centralization. The least important items according to the interviewees are organizational culture, the lack of encouragement and support for companies to adopt new techniques; and the absence of an institute responsible for developing management accounting systems.

To conclude, the most important factors that, according to the interviewees, influence the adoption of new MAPs are demand/efficient factors, followed by institutional factors, especially the fashion perspective.

These findings corroborate those obtained from the response to the survey questionnaire discussed earlier in this chapter (see Section 7.2), except for the emphasis made by interviewees on the headquarters' regulations, especially to force them to introduce budgeting.

7.3.2 Factors that Impede the Adoption of Advanced MAPs

Similar to the analysis above about the adoption of new MAPs, the items mentioned by the interviewees in relation to *advanced* MAPs were classified as factors impeding diffusion and suggestions to overcome the barriers to the diffusion of these advanced MAPs.

Table 7.14 shows that the six most important items impeding the adoption of advanced MAPs are related to institutional factors, particularly the fashion perspective. As can be seen from Table 7.14, the lack of knowledge about such advanced techniques is perceived to be the predominant barriers to adopting advanced techniques. These findings confirm the unpopularity of advanced MAPs among the questionnaire respondents (see Chapter Six, Subsection 6.9). In addition, other items that represent the fashion perspective include the lack of relevant training courses, conferences and seminars and academic journals.

Table 7.14 Factors that Impede the Adoption of Advanced MAPs

The Items Mentioned and Discussed During the Interviews	Number of Times Item was Mentioned	Percentage
Lack of knowledge about such advanced techniques	6	60%
Lack of training courses	5	50%
Lack of conferences and seminars	5	50%
Lack of management knowledge about the importance of such technique	5	50%
Weak of academic institutions and its syllables	4	40%
Lack of academic journals	3	30%
Lack of resources (skills and finance)	3	30%
There is no need for such techniques	3	30%
Lack of regulation to force to adopt these techniques	2	20%
The inconsistency of theses techniques in terms of data required with traditional ones	2	20%
Unstable of administrative condition (e.g. privatization)	1	10%
Centralization	1	10%
Computer not used widely in accounting	1	10%
Cost of these techniques	1	10%
Relative benefits of these techniques	1	10%
Difficulties to see their benefit	1	10%
Organizational culture	1	10%
Top management support to adopt new technique	1	10%
Lack of foreign companies working in Libya	1	10%

Other items were less important, such as the lack of resources in terms of skills and finance and there is no need for such techniques, which are related to demand/efficient perspective. They believe that in a state-owned company, where making profit is not a high priority, and in relatively smaller size companies, these techniques are not necessary, especially without a wide diffusion of even traditional MAPs. Some interviewees also argued that the lack of regulation to force the adoption of advanced MAPs, which represent the forced perspective, is one of the barriers. This may be due to the absence of regulations to force companies to adopt MAPs.

The inconsistency of these advanced techniques compared with the traditional ones in terms of the data required was considered a barrier, as well as the relative benefits of these techniques, the difficulty to see the benefits, and their cost. These items are related to the attributes of innovation.

To summarise, based on the interview data, institutional factors, especially fashion and fad are perceived the most impeding factors to the diffusion of advanced MAPs, and demand factors are considered to be less impeding. These findings are consistent with the results from the respondents' perception obtained from the questionnaire responses discussed earlier in this Chapter (see Section 7.2).

Table 7.15 Suggestions to Overcome the Diffusion Barriers of Advanced MAPs

The Items Mentioned and Discussed During the Interviews	Number of Times Item was Mentioned	Percentage
Provide training courses (local and abroad)	3	30%
Provide top management support	1	10%
Establish of research centres in universities and academic institutions	1	10%
Encourage the academic journals	1	10%
Improve textbooks to include these techniques	1	10%
Stability of companies' administrative conditions	1	10%
Support from government to improve the accounting and management accounting systems	1	10%
Encourage private sector	1	10%
Encourage joint venture with foreign companies	1	10%

Some of the interviewees suggested ideas to overcome the barriers that are discussed above. Table 7.15 indicates that only a few suggestions were made by the interviewees. The provision of training courses locally and overseas are the most mentioned; however they were suggested by only three interviewees. Some of the suggestions require action from the academic institutions; such as training courses in Libya and abroad, establishing research centres, encouraging the academic journals, and improving textbooks to include these techniques. Other suggestions are related to government policies and strategies. These include stabilising companies' administrative conditions, support from government to improve management

accounting systems, encourage the private sector, and encourage joint ventures with foreign companies. Only one suggestion was related to the organizations to take action, which requires top management support for adopting such advanced techniques.

7.4 Summary

This chapter has presented the findings and the discussions emerging from the first and second stages of the data analysis of this research. The first stage of the analysis was focused on investigating the importance of factors influencing MAPs diffusion as well as the barriers to advanced MAPs diffusion according to respondent's point of view. Moreover, these factors were tested to find out whether they confirm the research theoretical model. The second stage was concerned with the analysis of data collected from interviews.

According to the questionnaire respondents' point of view and the interviewees' perception, the most important factors in the decision of adopting new MAPs are related to the demand/efficient choice perspective, followed by institutional factors. On the other hand, institutional factors are the most impeding factors to advanced MAPs diffusion, especially fashion and fad perspectives, whereas demand/efficient choice perspective is considered to be less impeding. In addition, the factors emerging from running the factor analysis regarding the factors influencing the diffusion of MAPs and the barriers of diffusion of advanced MAPs, based on the questionnaires respondents' point of view, are consistent with the framework of this research.

The next chapter presents the third, fourth and fifth stages of data analysis, where the factors (demand and institutional) that influence the diffusion of MAPs are investigated.

Chapter Eight

Hypotheses Testing and Related Statistical Data Analysis

8.1 Introduction

This chapter presents the third, fourth and fifth stages of the data analysis. Simple and multiple regression tests were conducted in order to test the research hypotheses. Simple regression is used to test the individual impact of several independent variables on the dependent variable, whereas multiple regression is used to identify how much of the variance in the dependent variable is explained by these independent variables when they simultaneously influence it. In addition, results from testing the research hypotheses are integrated with the results from interviews and the respondents' perception regarding the factors influencing the diffusion of MAPs.

In the next two sections, measurement and descriptive statistics for the research variables are shown. The fourth section presents the findings from simple regression tests regarding the potential effect of the attributes of adopter and environmental factors (demand factors) on the diffusion of MAPs. The fifth section provides the overall fit of the multiple regression test model. Finally, simple regression results regarding institutional factors hypotheses are provided in the last section.

8.2 Measuring the Research Variables

Two types of measurement were used in this research to ascertain the variables (independent variables) that influence MAPs diffusion. Size, ownership, and business strategy variables were measured by factual measures. For measuring the size of the companies, the respondents were asked to indicate the approximate balance sheet value of their company's total assets (in question A8), the approximate sales turnover of their company for the last financial year (in question A9), and the approximate number of employees of their company (in question A10). However, total assets and sales turnover were excluded, due to missing data[1]. Size has been measured in organizational innovation literature as the natural logarithm of the number of employees working for an organization (e.g. Aiken et al., 1980; Zmud,

[1] The missing data could be because of processes of privatisation and the importance of such data (total assets and sales turnover) in these processes, in terms of the revaluation and restructuring of State-owned companies.

1982; Damanpour 1991; Libby and Waterhouse, 1996; Gosselin, 1997); thus, size is measured in this way in this research. Ownership was measured by asking the respondents to tick one box in question A12 to indicate the ownership type of their companies. The respondents were also asked in question C2 to tick one box to indicate which one of the statements best describes their company business strategy. For the vertical differentiation variable, the respondents were asked in question C5 to specify the number of managerial levels in their companies. Five point Likert scales were used to measure the rest of the independent variables namely: centralization (question C6), availability of training (question C11), availability of resources (question C12), availability of top management support (question C13), formalization (question C7), foreign competition (question C4), local competition (question C3), environmental uncertainty (question C1), knowledge resources (question C9) and use of consultants (C10). Questions C3 and C4 were asked to measure the market competition variable (see Chapter Five); these two questions were treated as separate variables; local competition and foreign competition respectively.

In order to measure the diffusion of MAPs (dependent variable), organizational innovation has been defined as the adoption of an idea or behaviour that is perceived as new by the organization. The innovation can be a new product, a new service, a new technology, or a new administrative practice and it could be using a new idea or even the adoption of an old idea in a new context, where this idea is regarded as new. Organizational innovation or innovativeness is typically measured by the rate of adoption of the innovation in the literature, and most studies have defined the rate of adoption as the number of innovations adopted within a given period (see Chapter Two).

According to the definition of innovation above and how innovativeness has been measured, two items in question B1 can be used to measure the dependent variable in this research namely: the current use of MAPs and the MAPs adopted in the last five years. To use both of them to calculate the dependent variable, the validity criterion has to be met for this new variable. A high positive correlation between the construct measure and the other measures of the variable indicates the presence of validity (Oppenheim, 1992; Hair et al., 2003). The correlation test between the current use of

MAPs and the MAPs introduced in the last five years shows that they are highly negatively correlated. As a result, this instrument to measure the dependent variable cannot be assumed to be valid, and therefore, the two scores cannot be used together to measure it; however, they could be used separately.

Since the number of innovations adopted within a given period has been widely used as a measure of organizational innovativeness in previous studies, the adoption of MAPs in the last five years was regarded as appropriate to measure the diffusion of MAPs in Libya in the last five years or the innovativeness of Libyan manufacturing companies. The simple and multiple regression models were applied to examine the statistical relation between the dependent variable and the independent variables. The output of the simple regression indicates that there was no relation between any of the independent variables and the dependent variable. Also the multiple regression model gives insignificant chi-square result ($P > 0.05$), indicating that the model is not significantly different from the observed data. This may be because the fairly recent transition period in Libya has not yet affected the companies' management accounting systems. In addition, it was recognised that the adoption of MAPs in the last five years may be misleading as a measure of MAPs diffusion in general, as most of MAPs could have been adopted by some companies earlier than five years, while others adopted a few but only in the last five years. This measure would perceive the latter as more innovative; however in aggregate they adopted fewer MAPs than the former. Therefore, it was inappropriate to measure MAPs diffusion as MAPs adopted in the last five years.

According to the above discussion, the adoption rate of MAPs is appropriate for measuring the dependent variable (diffusion of MAPs) in this research. Moreover, the measure of diffusion of innovation as the adoption of innovation has been commonly used in similar previous management accounting studies (e.g. Firth, 1996; Bjornenak, 1997; Gosselin, 1997; Clarke et al., 1999; Brown et al., 2004; O'Connor et al., 2004).

In addition, it was pointed out in Chapter Five that simple and multiple regression tests were utilised in this research to investigate the factors that may affect the

diffusion of MAPs. Thus, the current measure of the dependent variable as the adoption of MAPs is appropriate for using these tests because of its metric nature.

Details of the number of questions used and the Cronbach Alphas for the appropriate variables were presented and explained in Chapter Five (see Chapter Five, Table 5.4). The following section presents the descriptive statistics for these variables and test assumptions of regression analysis that are used to test the research hypotheses.

8.3 Descriptive Statistics for the Research Variables

Table 8.1 presents the maximum, minimum, mean, and standard deviation for the variables related to the research hypotheses. The variable named business strategy is categorical, and it is only for the purpose of descriptive statistics. it is shown here as one variable, but when testing hypotheses, this variable will be dealt with as two variables, defender and prospector, according to the dummy variables created (see Subsection 8.4.1.8).

In order to generalise the findings from regression analysis, some assumptions have to be met. One of the initial assumptions is the variable type. All variables must be metric or categorical with two categories. As can be seen from Table 8.1, all the variables are metric, except for business strategy and joint venture which are categorical.

The most fundamental assumption in multivariate analysis is the normality[1] distribution (Hair et al., 1998; Field et al., 2006). According to Field et al. (2006) normality should only be checked for the dependent variable; they further argued that not all predictors need to be normally distributed, as some of them could be categorical (as is the case in this research with business strategy and joint venture), where normality of the distribution cannot be measured.

[1] Normality is the degree to which the distribution of the sample data corresponds to a normal distribution (Hair et al., 1998, p. 38)

Table 8.1 Descriptive Statistics for the Research Variables

Research variables	Minimum	Maximum	Mean	Std. Dev
The adoption of MAPs (AMAPs)	3.00	19.00	9.0741	4.12849
Centralization (CENTRA)	6.00	27.00	16.9877	5.45549
Availability of training (TRAINIG)	3.00	15.00	6.5556	3.03315
Availability of resources (RESOURC)	2.00	10.00	4.9753	2.12706
Availability of top management support (TOPSPORT)	3.00	15.00	8.5926	3.52767
Formalization (FORMALIS)	2.00	10.00	5.1728	1.75919
Vertical differentiation (DIFFERENT)	1.00	5.00	2.4938	.89615
Size (LOGEMPL)	3.93	8.85	5.7025	1.33766
Foreign competition (FCOMPITION	1.00	4.00	3.4321	1.10610
Local competition (LCOMPITION)	1.00	4.00	2.0000	1.17260
Environmental Uncertainty (UNCERTAIN)	6.00	22.00	14.6296	3.86473
Business strategy (CBSTATEGY)	1.00	3.00	2.2469	.71643
Use of consultants (CONSUL)	1.00	5.00	2.2469	1.19928
Knowledge Resources (SOURCES)	6.00	25.00	12.2963	4.43409
Joint Venture (OWNERSHIP1)	0.00	1.00	.1728	.38046

One way to test the distribution's normality is to draw a histogram to see whether it looks like a normal distribution (a bell-shaped curve). Figure 8.1 shows that the distribution of the dependent variable is not convincing as normal. Thus, Normality will be checked through a normal probability plot (P-P Plot), which shows deviations from normality. If the data are normally distributed, the observed values, which represent the observed residuals, should be falling along the straight line. The normal probability plot in Figure 8.2 shows that most points follow the line, although some of them deviate slightly from the line. Thus, it could be concluded from the P-P Plot that the normality condition of the variable is met.

Figure 8.1 The Histogram of the Dependent Variable

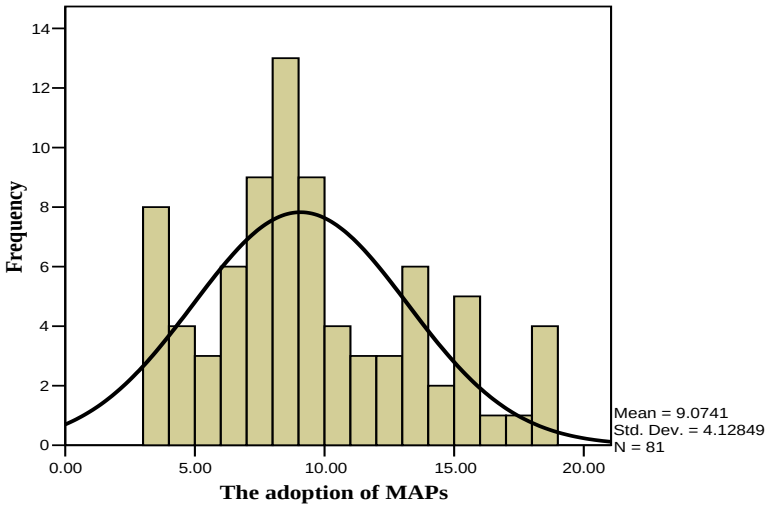
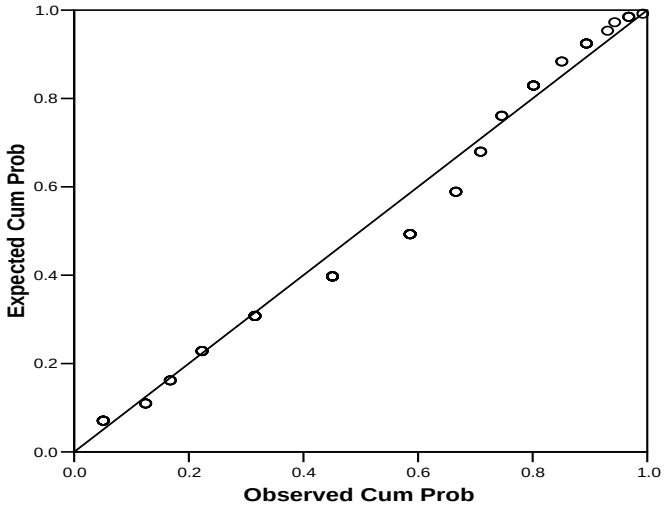


Figure 8.2 Normal P-P Plot of the Dependent Variable



In addition, normality can be examined and checked statistically using the Kurtosis[1] and Skewness[2] value tests. According to Hair et al. (1998, 2003), Skewness values within the range of –1 to +1 and Kurtosis values within the range of –3 to +3 indicate an acceptable range. The Skewness and Kurtosis tests for the dependent variable were .527 and -.374 respectively. Thus, the Skewness and Kurtosis values for the dependent variable fall within an acceptable range, which confirms its normality distribution.

Another important issue that needs paying attention to when using multiple regression is multicollinearity, which refers to the correlation among the independent variables. This exists when there is a strong correlation between two or more predictors in a regression model. One simple way of identifying multicollinearity is to scan a correlation matrix of all the independent variables in order to find out if there is any very high correlation among them (e.g. > .90) (Hair et al., 1998; Field, 2006). There are two common tests to assess the existence of the multicollinearity; they are the Variance Inflation Factor (VIF) and its inverse; the Tolerance value. It has been recommended that the acceptable value of VIF should not exceed 10 and the Tolerance value should not fall below 0.1 (Hair et al., 1998; Field, 2006). As Table 8.2 shows, there is no high correlation between any of the independent variables and also from Table 8.4 (in Section 8.5) it can be seen that the values of VIF do not exceed the acceptable level of 10, with no values of tolerance below the recommended level of 0.1. Accordingly, there is no evidence to be found for the existence of multicollinearity.

[1] Kurtosis is a measure of the peakedness or flatness of a distribution when compared with a normal distribution. A positive value indicates a relatively peaked distribution, and a negative value indicates a relatively flat distribution (Hair et al., 1998, p. 37).

[2] Skewness is a measure of symmetry of a distribution. A positively skewed distribution has relatively few large values and tails off to the right, and a negatively skewed distribution has relatively few small values and tails off to the left (Hair et al., 1998, p. 38).

Table 8.2 Correlation between the Independent Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1) CENTRA	1.000											
2) UNCERTAIN	.130	1.000										
3) DEFEND	.069	.099	1.000									
4) FORMALIS	.248	-.189	-.105	1.000								
5) LCOMPITION	.068	-.096	.012	.135	1.000							
6) DIFFERENT	-.158	-.031	-.184	-.055	.059	1.000						
7) PROSP	-.041	-.186	.312	.105	-.104	-.028	1.000					
8) TOPSPORT	-.227	.053	.016	-.120	.017	.117	.033	1.000				
9) FCOMPITION	-.036	.082	.006	.010	-.042	.109	-.044	.034	1.000			
10) RESOURC	-.052	-.374	-.197	.128	.043	-.068	.003	-.387	.005	1.000		
11) TRAINIG	.033	-.069	.004	-.089	-.050	-.061	-.087	-.487	.112	-.054	1.000	
12) LOGEMPL	.081	.138	-.066	.164	-.279	-.138	.137	.046	.406	-.206	-.238	1.000

8.4 Data Analysis Related to the Demand Side of Management Accounting Practices (MAPs) Diffusion

This section is aimed at investigating the relationship between the attributes of adopters and environmental factors (the independent variables) and the diffusion of MAPs (dependent variable). The research hypotheses related to these variables have been developed according to the research theoretical framework (see Chapter Four).

Before examining the research hypotheses, it is worthwhile to introduce some important issues related to the statistical test used. According to Hair et al. (2003), in order to elevate the results from simple or multiple regression, the following should be taken in account:

a) Assess the statistical significance of the overall regression model using the F statistics, where the F-ratio is the result of comparing the amount of explained variance to unexplained variance. The larger the F-ratio, the more variance in the dependent variable is explained by the independent variable in simple regression and by the overall independent variables in multiple regression. A good model should have a high F-ratio value, greater than one at least (Hair et al., 2003; Field, 2006).

b) Evaluate R^2 to find out whether it is large enough. It should be noted that the R value represents the simple correlation between the dependent and independent variables in simple regression; it is a measure of the multiple correlation between the dependent and the independent variables in multiple regression. While R^2 shows the amount of variation in the dependent variable associated with one independent variable in simple regression or with all of the independent variables considered together in multiple regression, it is also referred to as a measure of the goodness of fit of the model. R^2 ranges from 0 to +1 and, the larger the R^2, the more the dependent variable is associated with the independent variable/s that is being used to predict it.

c) Examine each of the regression coefficients and their t statistics to identify which independent variables have statically significant coefficients and to determine the

relative influence of each of the independent variables. If the t-statistic is significant for the independent variable, it could be concluded that the independent variable makes a significant contribution to the model in predicting the dependent variable based on the level of significance. On the other hand, if it is not statically significant for the particular independent variable, that variable is not a good predictor of the dependent variable. In this research, the traditional level of significance ($\alpha = .05$) was chosen.

In this respect, it is worth to distinguish between the unstandardized coefficient (b), and the standardized regression coefficient (beta). The value of b represents the measure of the strength of the relationship between an independent variable and the dependent variable. In other words, it represents the change in the dependent variable resulting from a unit change in the independent variable, and when several independent variables are used, the scale of measuring different variables may be different. Beta is a method of adjustment for different units of measure across variables. Thus, using beta values makes it easy to compare between the independent variables to determine which has the most influence on the dependent variable. Beta coefficients range from -1 to +1. The larger the absolute value of the standardized beta coefficient is, the more relative importance it has in predicting the dependent variable. The positive value of a coefficient indicates a positive relationship between the dependent and the independent variable, whereas a negative coefficient indicates the opposite.

Another important issue that relates to the generalisability of the results of the regression model is the ratio of the respondents to independent variables. According to Hair et al. (1998), the minimum acceptable ratio is four respondents to one independent variable and the desired level is between 10 and 20 respondents for each independent variable. In this research the ratio is about 7 to 1, which is acceptable.

Table 8.3 shows a summary of the results of conducting a simple regression to test the effect of a number of independent variables (demand factors) on a dependent variable (diffusion of MAPs). From Table 8.2, it can be seen that only four factors were found to have an effect on the diffusion of MAPs, namely availability of resources, availability of training, top management support and size. It is noticeable

that all of them are related to the attributes of adopters (organizational factors). None of the environmental factors was found to have an effect.

Table 8.3 Simple Regression Results Regarding Demand Factors

Variable	H	R^2	F	Beta	t	Sig.
Availability of resources (RESOURC)	H1	.060	5.047	.245	2.246	.027
Availability of training (TRAINIG)	H2	.247	25.884	.497	5.088	.000
Top management support (TOPSPORT)	H3	.118	10.522	.343	3.244	.002
Size (LOGEMPL)	H4	.076	6.502	.276	2.550	.013
Vertical differentiation (DIFFERENT)	H5	.024	1.959	.156	1.400	.166
Formalization (FORMALIS)	H6	.002	.184	-.048	-.429	.669
Centralization (CENTRA)	H7	.000	.007	.009	.084	.933
Prospector (PROSP)	H8a	.022	1.766	.148	1.329	.188
Defender (DEFEND)	H8b	.001	.091	-.034	-.302	.763
Environmental uncertainty (UNCERTAIN)	H9	.020	1.625	.142	1.275	.206
Local competition (LCOMPITION)	H10a	.031	2.513	.176	1.585	.117
Foreign competition (FCOMPITION)	H10b	.003	.252	-.056	-.502	.617

What follows in the next sections are discussions of the results of testing the hypotheses related to demand factors (attribute of adopters and environmental factors).

8.4.1 Attributes of Adopters (Organizational Factors)

8.4.1.1 The availability of Appropriate Resources

N.H1 The Availability of Appropriate Resources to Adopt New Management Accounting Techniques <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H1 The Availability of Appropriate Resources to Adopt New Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

The results related to hypothesis H1 (see Table 8.3) reveal that the availability of appropriate resources to adopt new management accounting techniques has a statistically significant impact on the diffusion of MAPs. As can be seen, the F value

is 5.047, which is significant at 0.05 (Sig = 0.027). This variable is positively predicting the dependent variable with a beta value of .245 (t-value = 2.246). In addition, R^2 is 0.060, which indicates that only 6% of the variance of the MAPs is explained by the availability of appropriate resources to adopt new management accounting techniques.

The results indicate a positive impact on the availability of appropriate resources to adopt new management accounting techniques on the diffusion of MAPs. Therefore, the alternative hypothesis (AH1) is fully accepted and the null hypothesis (NH1) is rejected.

This result is consistent with Askarany and Smith's (2000) findings, that the cost of the system set up and its implementation as well as the lack of appropriate cost accounting skills are among the most important factors influencing the diffusion of cost and management accounting innovations. In addition, they are similar to Shields' (1995) study findings of the positive relationship between the success of adoption of innovations and provision of adequate resources related to the innovations.

8.4.1.2 The Availability of Training

N.H2 The Availability of Training Regarding Management Accounting Techniques <u>Has no</u> Impact on the Adoption Rate of MAPs.

A.H2 The Availability of Training Regarding Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

Table 8.3 shows the statistical results relating to hypothesis H2. These results reveal that the availability of training regarding management accounting techniques has an impact on the diffusion of MAPs, with F value of 25.884, which is highly significant at the 0.05 level (Sig = 0.00). Moreover, R^2 is 0.247, which reveals that the availability of training regarding management accounting techniques accounts for 24.7% of the variation of diffusion of MAPs. The results also indicate that the availability of training regarding management accounting techniques has a positive relation with the diffusion of MAPs with a beta value of .497 (t- value = 5.088).

The results above reveal that the availability of training regarding management accounting techniques has a positive impact on the diffusion of MAPs. Thus, the null hypothesis (NH2) is rejected and the alternative hypothesis (AH2) is fully accepted.

Interview data also indicate that training courses are important for the adoption of MAPs, as 20% of the interviewees have stated they have facilitated the decision of adopting new MAPs; whereas, 30% of them argued that a lack of sufficient training courses impedes the MAPs adoption.

These results are consistent with those of previous studies in the West, such as Shields (1995) and Krumwiede (1998), as to the positive relation between the training provided by the organizations related to innovation and its adoption. Similar studies in developing countries also exist. For instance, O'Connor et al. (2004) concluded that the availability of training at organizational level has an important influence on MAPs change and MAPs adoption in Chinese companies.

8.4.1.3 The Availability of Top Management Support

N.H3 The Availability of Top Management Support for the Introduction of New Management Accounting Techniques <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H3 The Availability of Top Management Support for the Introduction of New Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

From the statistical results in Table 8.3 related to hypothesis H3, the F value is 10.522, which is highly significant (Sig = .002). This indicates that the availability of top management support for the introduction of new management accounting techniques is an acceptable predictor of the diffusion of MAPs. In addition, 11.8% of variation of MAPs diffusion is explained by the availability of top management support for the introduction of new management accounting techniques, as $R^2 = .118$. The beta value of .343 also implies that the availability of top management support for the introduction of new management accounting techniques has a positive relation with the diffusion of MAPs.

Based on the above findings, it could be concluded that the availability of top management support for the introduction of new management accounting techniques has a positive impact on the diffusion of MAPs. Thus, the null hypothesis (NH3) is rejected and the alterative hypothesis (AH3) is accepted.

These results support the finding reported in the literature regarding the positive impact of top management support on the adoption of management accounting innovations (e.g. Shields, 1995; Krumwiede, 1998; Askarany and Smith, 2004). For instance, Askarany and Smith (2004) suggest that the diffusion of administrative innovation/management accounting innovation is significantly associated with management commitment on the implementation of an innovation.

In addition, 20% of the interviewees in the present study believe that a lack of management support is a barrier to adopting new MAPs in Libyan companies. One of them also emphasised that providing top management support will help overcome the barriers of advanced MAPs adoption.

8.4.1.4 Size

N.H4 Company Size <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H4 Company Size <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

The results related to hypothesis H4 indicate that the size of the company has a statistically significant impact on the diffusion of MAPs (see Table 8.3, F value= 6.502, Sig = .013). The results show that R^2 for this variable is .076, which means that the size of the company accounts for 7.6% of the MAPs diffusion variation. Moreover, the beta value is .276, which indicates a positive impact of company size on the diffusion of MAPs. Therefore, the null hypothesis (NH4) is rejected and the alternative (AH4) is accepted.

The above results also confirm the results of those studies that provide strong evidence suggesting a significant relationship exists between business size and the

diffusion of management accounting innovation (e.g. Bjornenak, 1997; Chenhall and Smith, 1998a; Krrmwielde, 1998; Clarke et al., 1999; Askarany and Smith, 2003). However, this does not exclude the fact that other studies seem to have found weak or no effect of the organization size on management accounting systems change (e.g. Libby and Waterhouse, 1996; Williams and Seaman, 2001).

8.4.1.5 Vertical Differentiation

N.H5 Vertical Differentiation of the Company <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H5 Vertical Differentiation of the Company <u>Has</u> an Impact on the Adoption Rate of MAPs.

The statistical results related to H5 in Table 8.3 show that an F value of 1.959 is not significant at the level of .05 (Sig = .166). So the vertical differentiation of the company has no significant impact on the diffusion of MAPs. In addition, only 2.4% of MAPs diffusion is explained by the vertical differentiation, as R^2 is .024. However, the relation between vertical differentiation and the diffusion of MAPs is positive with a beta value of .156.

It can be concluded from the above results related to the testing hypothesis H5 that vertical differentiation has no impact on the diffusion of MAPs. Thus, the null hypothesis (NH5) is accepted while the alternative (AH5) is rejected.

This study, therefore, did not find support for the findings reported by previous studies about either a negative or a positive significant relation between vertical differentiations and adoption of innovation (e.g. Aiken et al., 1980; Damanpour, 1991) and the diffusion of management accounting innovation (e.g. Gosselin, 1997). However, in terms of the direction of the relation, they are similar to prior studies that indicate a positive relation between vertical differentiation and the diffusion of innovation (e.g. Dammanpour, 1991). Thus, this study results find slight support for the argument of Baldridge and Burnham (1975) that innovation adoption would be encouraged by a critical mass within the organizational subsystems with sufficient power that is created by differentiation.

8.4.1.6 Formalization

N.H6 Formalization of the Company <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H6 Formalization of the Company <u>Has</u> an Impact on the Adoption Rate of MAPs.

Results related to the testing of hypothesis H6 shown in Table 8.3 indicate that the formalization of the company does not affect the diffusion of MAPs; the F value is .184, which is not significant (Sig = .669). Moreover, the value of R^2 is .002, which indicates that the formalization of the company accounts for only .2% of the variation of MAPs diffusion. The formalization of the company and diffusion of MAPs have a negative relation, as the value of beta shows (beta = -.048).

The results from the regression test indicate that the null hypothesis (NH6) that the formalization of the company has no impact on the diffusion of MAPs, is supported, and therefore, the alternative hypothesis (AH6) is rejected.

Although this result seems to disagree with those reported by Ettlie et al. (1984) and Herrmann and Gordillo (2001), it is consistent with Gosselin (1997), who found no significant relation between the formalization and the adoption of management accounting innovation. However, the relation between formalization and diffusion of innovations was not significant; it was negative, which supports the argument that low formalization is needed for the adoption of innovation, as it permits openness in the system, which is necessary to encourage adoption of new techniques, management accounting innovations (Pierce and Delbecq, 1977).

8.4.1.7 Centralization

N.H7 Centralization of the Company <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H7 Centralization of the Company <u>Has</u> an Impact on the Adoption Rate of MAPs.

As shown in Table 8.3, the statistical results from the regression tests related to hypothesis H7 gives an F value of .007, which is not significant at .05 (Sig = .933). Thus, centralization of the company has no impact on the diffusion of MAPs. Also it does not explain any percentage of variance of the MAPs diffusion, as it can be seen from the value of R^2, which is .000. Moreover, the value of beta is .009, which indicates that the relation between centralization and diffusion of MAPs is positive.

Therefore, the null hypothesis (NH7) which predicts that the centralization of the company has no impact on the diffusion of MAPs, is accepted and the alternative hypothesis (AH7) is rejected.

These results of no significant relation between centralization of organizations and the adoption of MAPs are similar to Libby and Waterhouse's (1996) result of no relation between centralization and the change in management accounting systems. In addition, this study finds support for the results of Gosselin's (1997) study, which reported no association between the adoption of management accounting innovation and centralization. However, the study does not support the findings by Williams and Seaman (2001), which indicated a positive relation between changes in management accounting systems and centralization.

With regard to the direction of the relation between centralization and the adoption of innovation, this study found small support for the argument of Daft (1978) and Kimberery and Eranisko (1981) that the more centralized the organization is, the more innovative it is. They emphasised the importance of the role of powerful members in a centralized organization structure in facilitating the adoption of innovation

The interview data presented earlier in section 8.3 indicate that only one interviewee regards centralization as a barrier to adopting new MAPs and only one believes it impedes the adoption of advanced MAPs. This supports the statistical findings of no importance role for centralisation in MAPs adoption. However, they are inconsistent in terms of the direction of the relation between centralization and adoption of innovation.

8.4.1.8 Business Strategy

It was mentioned earlier in this Chapter (see Section 8.3) that one of the regression assumptions that should be met, is that variables should be metric or categorical with only two categories. When the categorical variable consists of only two categories (e.g. male and female) a single variable can be created using 1 and 0 coding. But in the case of the business strategy variable, it is categorical with three categories (prospector, defender and analyst). Therefore, dummy coding should be used to test this variable by regressions tests. Dummy coding is a way of representing groups of people using only 1 and 0, and by creating new variables each representing one of the original variable categories. One of these variables should be chosen as a control group based on the research hypotheses and not entered to the analysis. In this research, three dummy variables are created representing the three categories of business strategy (i.e. prospector, defender and analyst). However, based on the research hypotheses only two of them entered the analysis; i.e. prospector and defender (see H8a and H8b). The following is the data analysis of these two variables.

N.H8a Prospector-Differentiation Strategy <u>Has No</u> impact on the Adoption Rate of MAPs.

A.H8a Prospector-Differentiation Strategy <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

Table 8.3 shows that the statistics results related to hypothesis H8a indicate that the defender strategy does not impact the diffusion of MAPs, with the value of F being .091, which is not significant at .05 (Sig =.763). In addition, the defender strategy explains only 0.1% of the variance of MAPs diffusion, and the relation between them is negative with a beta vale of -.034.

According to the results from the regression test above, which indicate that there is no impact of the defender strategy on the diffusion of MAPs, the null hypothesis (NH8a) is accepted and the alternative hypothesis (AH8a) is rejected.

N.H8b Defender-Cost Leadership Strategy <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H8b Defender-Cost Leadership Strategy <u>Has a Negative</u> Impact on the Adoption Rate of MAPs.

As shown in Table 8.3, the statistics results related to hypothesis H8b indicate that F value of 1.766, is not significant at the level of .05 (Sig = .188). Thus, prospector strategy has no impact on the diffusion of MAPs. Also R^2 is .022, which means that it explains only 2.2% of variance of the MAPs diffusion. Moreover, the value of beta is .148, which indicates that the relation between centralization and diffusion of MAPs is positive.

From the results related to testing hypothesis H8b, the null hypothesis (NH8b) which predicts that the prospector strategy has no impact on the diffusion of MAPs, is accepted and the alternative hypothesis (AH8b) is rejected.

Therefore, neither a prospector nor a defender strategy has an impact on the diffusion of MAPs. These findings are not consistent with those of previous studies which considered business strategy as one of the factors influencing the adoption of management accounting innovation. For instance Gosselin (1997) found that prospective competitive strategy influences the adoption of management accounting innovation. It is noticeable that the direction of the relation between the adoption of MAPs and the prospector strategy is positive while with the defender strategy it is negative as it was expected (see Miles and Snow, 1978, 1994 and Porter, 1980, 1985).

One explanation for having no relation between strategy and adoption of MAPs is that Libyan manufacturing companies were (some of them still are) under the full control of the government, which specifies the business strategies that should by implied by these companies. This may affect the association between business strategy and management accounting systems change and adoption.

8.4.2 Environmental Factors

8.4.2.1 Environmental Uncertainty

N.H9 Environmental Uncertainty <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H9 Environmental Uncertainty <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

The statistical results related to hypothesis H9 (see Table 8.3) indicate that environmental uncertainty does not impact the diffusion of MAPs, due to the value of F being 1.625, which is not significant at .05 (Sig =.206). In addition, environmental uncertainty explains only 2% of the diffusion of MAPs variance, although the relation between them is positive with a beta vale of .142.

Based on the results from the regression test above, which indicate that there is no impact of environmental uncertainty on the diffusion of MAPs, the null hypothesis, (NH9) is accepted whereas the alternative hypothesis (AH9) is rejected.

The study results regarding environmental uncertainty do not support the findings from the literature. For instance Anderson (1995) and Damanpour (1996) found a significant relation between environmental uncertainty and the adoption of innovation and adoption of management accounting innovation respectively. However, the relation between them in terms of the direction is positive as expected according to the literature review (see Chapter Four). A possible explanation for this is that the changes in the Libyan business environment in this period are still under control for the manufacturing companies, as the transition from a socialist economy to a market economy has only started, which may not yet affect their accounting and management accounting systems yet.[1]

[1] See Chapter Two about the Libyan business environment.

8.4.2.2 Market Competition

As explained earlier in this chapter (see Section 8.2), market competition was examined using two variables: local and foreign competition. The test statistics are presented below

N.H10a Local Competition <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H10a Local Competition <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

The results of testing hypothesis H10a, shown in Table 8.3, indicate that the F value is not significant at the .05 level (Sig = .117), with a value of 2.513. These findings reveal that there is no impact from local competition on the diffusion of MAPs, and this variable (local competition) explains only 3.1% of the variance of MAPs diffusion (R^2 = .031). Furthermore, the relation between local competition and diffusion of MAPs is positive with a beta value of .176.

Hence, the findings above support the null hypothesis (NH10a) that local competition has no impact on the diffusion of MAPs. Therefore, the alternative hypothesis (AH10a) is rejected.

N.H10b Foreign Competition <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H10b Foreign Competition <u>Has a Positive</u> Impact the Adoption Rate of MAPs.

The statistics results related to hypothesis H10b shown in Table 8.3 indicate that foreign competition does not affect the diffusion of MAPs, as the F value is not significant at the .05 level (Sig = .617) with a value of .252. Also, as can be seen from the results only .3 % of diffusion of MAPs is accounted by the foreign competition (R^2 = .003). In addition, the beta value is -.056, which indicates the negative relation between the two variables; the foreign competition and the diffusion of MAPs.

Consequently, the null hypothesis (NH10b) which predicts that foreign competition has no impact on the diffusion of MAPs, is accepted, while the alternative hypothesis (AH10b) is rejected.

This result is consistent with O'Connor et al.'s (2004) finding that no relation existed between competition and the adoption of Western MAPs. On the other hand, the result is not consistent with that reported by Libby and Waterhouse (1996) that market competition significantly influenced management accounting change.

While the present study on Libyan companies shares the economic transition characteristic with other studies, it does not however share some of their results. For example, the study by Firth (1996) on companies in China reported a positive relation between the diffusion of MAPs and foreign competition, measured as the percentage of sale from exports. No such result could be found on companies in Libya, although the same measure of competition was used.

Moreover, this study did not find support for the negative significant relation between management accounting systems change and the intensity of competition reported by Williams and Seaman (2001). However, it indicated the same direction of relation regarding the foreign competition. They also argued that the reason might be that those manufacturing companies were in a good position in terms of resources and have no pressure to innovate and they further argued that these findings are opposite to those reported by Libby and Waterhouse (1996), where Canadian manufacturing companies were restructured including a change in their accounting systems. It seems that although Libyan manufacturing companies are going through a period of transition, where they have been restructured, they are not yet under the real pressure to change their accounting and management accounting systems as they are still partly supported by the government. In addition, that may also be due to the fact that they have been operating for a long time under the philosophy of meeting the needs of the local market, and the exports, where facing foreign competition, was uncommon.[1]

[1] See Chapter Two about the Libyan business environment.

It should be noted here that 6 of the 10 interviewees believe that increased market competition in recent years has played a role in facilitating the diffusion of MAPs. This is not necessarily a representative view of all 81 companies in this study given that interviews were conducted with only few of the questionnaire respondents.

8.5 The Overall Fit of the Regression Model

In the previous section, simple regression was used to test the effect of each independent variable (demand factors) on the dependent variable (the diffusion of MAPs). This section is aimed at predicting the dependent variable using the same independent variables considered together, using multiple regression. In other words, while the previous section examined the effect of independent variables individually on the dependent variable, this section aims to study their effect simultaneously.

The first step in examining the overall regression model is to assess the statistical significance of the overall regression model, which could be done using the model F ratio for the regression model. As Table 8.4 shows, in this case the F-ratio is 2.97, which is significant at the .05 level (Sig = .002). This means that the model has significantly improved our ability to predict the dependent variable. Thus, the regression model overall predicts the diffusion of MAPs significantly well.

Table 8.4 shows that the R value (multiple correlation between the dependent variable and all the independent variables combined together) for this model is .587, which indicates that there is a good correlation between the dependent and all the independent variables.

The table also shows that the value of R^2 is 0.334, which indicates that all the independent variables that are included in the multiple regression model account for 33.4% of the variance in the diffusion of MAPs. This means that our model, which includes demand factors only (attribute of adopters and environmental factors), can explain only 33.4% of the variance in the diffusion of MAPs. Therefore, 66.6% of the variation in the diffusion of MAPs cannot be explained by the demand side

factors alone and there must be other variables that have an influence also and will be able to explain part of variation.

Table 8.4 Multiple Regression for the Independent Variable Influencing MAPs Diffusion

Independent variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
	b	Std. Error	beta				
(Constant)	-2.138	4.484	-	-.477	.635	-	-
CENTRA	-.067	.082	-.089	-.823	.413	.823	1.215
TRAINIG	.635	.197	.466	3.221	.002	.460	2.173
RESOURC	-.082	.279	-.042	-.295	.769	.465	2.148
TOPSPORT	.133	.172	.113	.770	.444	.445	2.247
PROSP	1.341	1.243	.120	1.079	.284	.780	1.281
DEFEND	-.782	.951	-.094	-.822	.414	.731	1.368
FORMALIS	-.155	.257	-.066	-.605	.547	.805	1.243
LCOMPITION	.151	.378	.043	.399	.691	.835	1.197
FCOMPITION	1.003	.466	.269	2.152	.035	.618	1.618
DIFFERENT	.556	.501	.121	1.110	.271	.817	1.225
UNCERTAIN	.016	.124	.015	.130	.897	.720	1.389
LOGEMPL	.531	.447	.172	1.186	.240	.459	2.180
R = 0.587							
R^2 = 0.344							
F = 2.973							
Sig. 0.02							

At this stage it is worthwhile to look at and compare the result of testing the overall fit of the model of this research with similar previous studies that test the overall model developed. For instance, Bjornenak (1997) claimed that demand side factors do not fully explain why some companies adopt ABC and others do not, although the best function of the variables examined in his study (e.g. cost structure, product diversity and competition) accounted for 67.3% of the observations. He concluded that the focus on the supply side of the diffusion, which is consistent with a more recent development of institutional theory, as well as, the demand side, is needed for seeing the whole picture of the diffusion of management accounting innovation.

Brown et al. (2004) examined the impact of a selected range of technological factors (level of overhead, product complexity and diversity and relative advantage) and organizational factors (top management support, internal champion support, organization size and use of consultants) on the adoption stages of ABC. They found that organizational factors such as top management support and internal champion support and large organizational size, are the main drivers needed to encourage the adoption of ABC rather than the technological factors as claimed by ABC advocators. Organizational and technological factors have been found to account for only 27.21% of the variance of the companies' interest in ABC initiatives and 57.63% of the variance of their adoption of ABC. Brown et al. (2004) concluded that other frameworks than innovation theory, for example institutional theory, management fads and fashion perspectives may be applicable to explain the rest of the variations of diffusion of management accounting innovation. Accordingly, the other factors related to institutional theory and supply side of MAPs diffusion in the present study will be discussed in the following sections.

8.6 Data Analysis Regarding Institutional Factors

As illustrated in the previous section, the attributes of adopters and environmental factors seem to explain some parts of the diffusion of MAPs. This raises the question as to what the role institutional factors have in the diffusion of MAPs. This section presents results on institutional factors, namely fashion, fad and forced factors. The simple regression test (see Table 8.5) is used to examine the relationship between the independent variables (institutional factors) and dependent variable (diffusion of MAPs).

Table 8.5 Summary of the Findings of Simple Regression Regarding Institutional Factors

Variable	H	R^2	F	Beta	t	Sig.
Use of consultants (CONSUL)	H11	.135	12.326	.367	3.511	.001
Knowledge Resources (SOURCES)	H12	.129	11.712	.359	3.422	.001
Joint Venture (OWNERSHIP1)	H13	.112	9.916	.334	3.149	.002

Based on the fact that institutional factors are difficult to measure quantitatively (Bjornenak, 1997), hence, in the data analysis, support for testing the hypotheses has been gained more from interview findings in addition to the questionnaire respondents' perception regarding these factors. The simple regression results indicate that all three institutional factors examined seem to have a high significant impact on the diffusion of MAPs. A discussion of each set of factors follows below in relation to the research hypotheses.

8.6.1 Fashion Factors

8.6.1.1 Use of Consultants

N.H11 The Extent of Use of Consultants When Adopting New Management Accounting Techniques <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H11 The Extent of Use of Consultants When Adopting New Management Accounting Techniques <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

The F value of 12.326 (Sig = 0.001) in Table 8.5 related to hypothesis H11 signifies that the use of consultants when adopting new management accounting techniques has a statistically significant impact on the diffusion of MAPs. The beta value of .367 (t-value = 3.511) also indicates a positive relation between the extent of use of consultants when adopting new management accounting techniques and the diffusion of MAPs. Moreover, 13.5 % of the variance of the MAPs is explained by this variable as the value of is R^2 is .135.

Therefore, the alternative hypothesis (AH11) which proposes that there is a positive impact of the extent of use of consultants when adopting new management accounting techniques on the diffusion of MAPs, is retained and the null hypothesis (NH11) is rejected.

The results shown above are partly consistent with previous studies which investigated the same variable. For instance, Bjornenak (1997) pointed out that all firms that had already adopted or were adopting ABC used consultants; however, he

did not test this statistically. Similarly, Booth and Giacobbe (1998b) found consultants to be used more in firms adopting ABC than the firms which rejected it, but they indicated that there was no statistically significant relation between using the consultant and the adoption of innovation. In Brown et al.'s (2004) study, the use of consultants was positively associated with the companies' interest in ABC, while there was no significant association between the adoption of ABC and the use of consultants.

As was mentioned in the previous chapter (see Table 7.1), and as shown in Table 8.6 below, the items related to fashion pressure are all important for the decision to adopt management accounting innovation and have a mean score of at least 2.75. It is noticeable that auditor or/and consultant advice was regarded the most important in this group, which supports the significant relation between the diffusion of innovation and using consultants. However, fashion factors are not considered to be the most important factors among the factors influencing MAPs diffusion (see Table 7.2 in the previous chapter).

Table 8.6 The Importance of Fashion Factors on Diffusion of MAPs

Rank	Reason	Mean
9	Auditor/consultant advice	3.37
11	Learning about the new techniques in academic institutions	3.18
16	Knowledge about the new techniques from textbooks and academic journals	2.75
Mean		**3.10**

8.6.1.2 Knowledge Resources

N.H12 The Extent of Knowledge Resources Used Related to Accounting Innovation <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H12 The Extent of Knowledge Resources Used Related to Accounting Innovation <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

The results relating to this hypothesis (see Table 8.5) imply that a statistically significant impact exists between the use of knowledge resources related to

accounting innovation and the diffusion of MAPs (the F value is 11.712, and highly significant: Sig = .001). In addition, 12.9% of variation of MAPs diffusion is explained by this variable, as R^2= .129. The results related to this variable also reveal that the use of knowledge resources related to accounting innovation has a positive relation with the diffusion of MAPs (beta = .359).

Based on the above, the use of knowledge resources related to accounting innovation has a positive impact on the diffusion of MAPs. Thus, the null hypothesis (NH12) is rejected and the alterative hypothesis (AH12) is accepted.

These results support the findings of Bjornenak's (1997) study, which reported that the source of information affects the adoption rate of innovation, due to the fact that adopters of innovation do use more information sources than non-adopters.

Table 8.7 shows that the overall usage of information sources to keep up-to-date with innovation in accounting techniques is low, as their mean scores are between 1.43 and 2.59. Training courses and seminars/conferences have the highest mean score among the sources used. However, it was indicated by 30% of the interviewees that insufficient training courses and seminars/conferences are one of the barriers to adopting new MAPs (see Table 7.13 in the previous chapter). In this context, one interviewee stated that

> Regarding training courses, they are available to some extent, but the sufficiency and benefits of theses training courses still need more improvement. The availability of the internet now may help companies choose training courses suitable for their needs.

Another interviewee also said

> However, training courses, seminars and conferences on management accounting techniques are available, but they do not reach the desirable level.

Surprisingly the internet is the second important source of information, noting that it has only recently become available in Libya. Magazines and academic journals are the least information sources used by the respondents. This was explained by 20% of interviewees (see Table 7.13) who indicated that the shortage of sources of

information, especially academic publications related to accounting in general and management accounting in particular, is one of the barriers to MAPs diffusion.

Table 8.7 The Use of Information Sources Related to Accounting Innovation

Rank	Information sources	Mean
1	Training courses	2.59
2	Internet	2.29
3	Seminars/conferences	2.17
4	Textbooks	2.11
5	Academic journals	1.56
6	Magazines	1.43

Moreover, they stated that there are no special academic publications for accounting or management accounting, but are mainly about business in general and may include some accounting or management accounting articles. In this context, one of the interviewees said

> Academic publications in accounting are scarce here, especially in the field of management accounting and advanced technique. However, the company is trying to provide some facilities to those who are trying to publish academic papers locally or abroad, but the situation is not encouraging.

Textbooks were the third important source of information used by the respondents, although 40% of the interviewees believe in the insufficient role of academic institutions and the weaknesses of their accounting programmes (see Table 7.13).

To summarise, although there is some indication that the use of consultants and knowledge resources have an impact on the diffusion of MAPs, there is a low use of information sources regarding accounting innovation such as magazines, academic journals, seminars and conferences. In addition, these fashion factors are not considered as being the most important factors to adopt MAPs innovation according to the respondents' views when they were asked to indicate their importance. Interview findings also indicate similar results of the low importance of the fashion factors as facilitators to adopt new MAPs (see Table 7.12). However, the interviewees emphasised fashion factors as barriers of MAPs diffusion such as lack

of management knowledge about the importance of such techniques, and the insufficient role of academic institutions (see Table 7.13).

For advanced MAPs, based on questionnaires respondents' point of view (see Table 7.6), it is worth mentioning again here that the first five barriers to diffusion of advanced MAPs are related to fashion factors such as lack of an active professional management accounting society (ranked 1), lack of local training programmes about advanced techniques (ranked 2), lack of relevant courses on such advanced techniques in academic institutions (ranked 3), lack of software packages relevant to advanced techniques (ranked 4), lack of up-to-date publications about advanced techniques (ranked 5). Moreover, evidence from interviews supports these findings, with interviewees stating that the six most important factors that impede the adoption of advanced MAPs are related to the fad perspective such as the lack of knowledge about such advanced techniques, lack of training courses, conferences and seminars and academic journals regarding these techniques (see Table 7.14).

In conclusion, fashion factors seem to offer some explanation to the diffusion of MAPs. However, they appear to play a more important role as barriers to diffusion of MAPs, especially advanced ones.

8.6.2 Fad Factors

8.6.2.1 Joint Venture with Foreign Partner

N.H13 Being Joined with a Foreign Partner <u>Has No</u> Impact on the Adoption Rate of MAPs.

A.H13 Being Joined with a Foreign Partner <u>Has a Positive</u> Impact on the Adoption Rate of MAPs.

The F value of 9.916 (Sig = .002) related to this hypothesis (see Table 8.5) implies that a joint venture with a foreign partner has a statistically significant impact on the diffusion of MAPs. Also this variable explains 11.2% of the variance of the MAPs diffusion (R^2 = .112). Moreover, the beta value is .334, which indicates that the

relation between a joint venture with a foreign partner and the diffusion of MAPs is positive.

From the above results, the alternative hypothesis (AH13), which predicts that being in a joint venture with a foreign partner has a positive impact on the diffusion of MAPs, is accepted and the null hypothesis (NH13) is rejected.

This result showing the significant impact of ownership type (with or without foreign joint venture) on MAPs adoption is consistent with the findings of previous studies conducted especially in China such as Firth (1996), O' Connor et al. (2004) and Wu et al. (2007), where they found that Western MAPs were used to a greater extent in firms that have a joint venture with a foreign partner than the state-owned enterprises that do not have a joint venture partnership. They indicated that a joint venture with a foreign company is one of the important factors in the diffusion of Western MAPs to previously centrally planned socialist economies.

This is also supported by the respondents' views (see Table 8.8). They perceived the item '*Foreign partner has adopted these techniques*' as important (ranked 15) when they were asked to indicate the extent of importance of several factors on the decision to adopt new MAPs. In is worth adding here that '*Foreign partner pressure*', which is related to forced factors, is also perceived important (ranked 10 in Table 8.9). Therefore, it may be concluded that the effect of the foreign partner in the joint venture may take the form of a mimetic or coercive factor or a mix of the two.

Table 8.8 The Importance of Fad Factors on Diffusion of MAPs

Rank	Reason	Mean
9	U) The lead company in the industry has adopted these techniques	3.37
12	O) Wish to try new techniques	3.02
14	S) These techniques have been adopted by other Libyan companies	2.87
15	R) Foreign partner has adopted these techniques	2.85
17	N) To be seen as having different techniques	2.74
Mean		**2.97**

Moreover, as explained in the previous chapter (see Table 7.1), all items related to fad factors are important for the decision to adopt new MAPs according to the respondents' point of view. However, they are not considered to be the most important factors, as it can be seen from Table 8.8, where all the items are ranked between 9 and 17 in importance (out of 18) and have a mean score of 2.97.

Similarly, findings from interviews conducted reveal that some factors related to fad pressure such as "wish to try new technique to other companies" and "adopted by other Libyan lead companies" were perceived to be among the factors that influence MAPs diffusion (see Table 7.12). In this context, one of the interviewees mentioned that

> The company desires to adopt new MAPs in the future, because it wishes to try new techniques, especially the ones which are beneficial and we do not mind to be this new technique among the MAPs that are implemented by lead companies, which gives the company competitive advantage the same as these lead companies have.

Another interviewee also said

> The company is trying always to be a leader in implementing some new management accounting techniques, which may be perceived as advanced to some other companies.

Regarding the barriers to advanced MAPs diffusion, fad factors seem to play a more important role in impeding the diffusion of advanced MAPs, based on respondents' views. An item such as 'Absence of Libyan companies that have adopted advanced techniques' is ranked 6 in the importance as a barrier to adopt advanced MAPs, whereas 'Absence of foreign companies operating in the manufacturing sector' is ranked 9 (see Table 7.6), and the latter is also mentioned as well by one interviewee (see Table 7.14).

8.6.3 Forced Factors

As explained in the previous chapter (see Table 7.1), all factors related to the forced perspective were considered important to some extent by the respondents for the

decision to adopt new MAPs. However, they are not considered to be among the most important factors affecting the decision to adopt new MAPs. As can be noted from Table 8.9, none of them was ranked among the nine most important factors and their overall mean is only 2.95. Pressure from the foreign partner (only for companies having a joint venture with a foreign partner) is the most important factor in this group, as it is ranked 10 among all the factors. This supports the significant relation between being a joint venture with a foreign company and the adoption of MAPs discussed in Subsection 8.6.2. In this context, one interviewee said that

> The company has been forced to use a new management accounting technique since 2004, which is standard costing, due to the joint partnership with a foreign partner.

In addition, the regulations and/or recommendations from a company's headquarters are regarded as more important than the pressure from government and other regulation authorities; they are ranked 13 and 18 respectively.

Table 8.9 The Importance of Forced Factors on the Diffusion of MAPs

Rank	Reason	Mean
10	J) Foreign parent pressure	3.21
13	L) Headquarters' regulations/recommendations	2.98
18	K) Pressure from government or other regulatory authorities	2.66
Mean		**2.95**

Evidence from interviews supports this view as well (see Table 7.12), regarding the interviewees' perceptions, with headquarters' regulations as the most mentioned factor (70%). It is interesting that all the interviewees who mentioned this factor, also linked it with the adoption of all different types of budgeting, and claimed it being the result of regulations introduced by the Government forcing companies to adopt all different types of budgeting. Nevertheless budgeting does not seem to be used as should be. One interviewee stated that

> Implementing budgeting by the companies is accordance with forces from The General People's Committee for Industry and Materials, which forces all companies to do budgeting before the start of the financial year and then to be approved be each company's general committee before it is considered as a guide and plan for the financial year. However, it has not been used as it should be, especially in terms of variance analysis in control and performance evaluation.

In respect of the diffusion of advanced MAPs, headquarters instructions and government regulations were also regarded as relevant factors based on respondents' views (ranked 10 in Table 7.6). However, 20% of the interviewees believe that the lack of regulation to force the adoption of these advanced techniques is one of the barriers to their diffusion (see Table 7.14). It may, therefore, be concluded that the coercive pressure appears to play an important role in the diffusion of MAPs.

8.7 Summary and Conclusions

This chapter has presented the statistical procedures used, and the findings from the third, fourth, and fifth stages of the data analysis of this research. In the third stage, the focus was on investigating the relationship between the attributes of adopter and environmental factors (demand factors) and the diffusion of MAPs according to the research theoretical model explained in Chapter Four. The fourth stage was concerned with examining the variance in the diffusion of MAPs explained by the attributes of adopters and environmental factors (demand factors). In the fifth stage the emphasis was on examining the impact of institutional factors (fashion, fad and forced) on MAPs diffusion.

Four factors related to the attributes of adopters (availability of resources, availability of training, top management support and size) were found to have an impact on the diffusion of MAPs, but environmental factors (market competition and environmental uncertainly) were found not to have any effect. Moreover, the model, which includes demand factors only (attributes of adopters and environmental factors), was found to explain about 33% of the variance in the diffusion of MAPs. In addition, all three institutional factors examined (use of consultants, sources of information, and ownership) were found to have an impact on the diffusion of MAPs.

Based on the relevant literature, a discussion of each finding was presented for the results that emerged from the aforementioned stages. A summary and further discussion of the research findings that have emerged from all stages of analysis and their implications for theory and practice will be presented in the next chapter.

Chapter Nine

Conclusions

9.1 Introduction

The main aim of this research was to provide a better understanding of the diffusion of Western MAPs, in terms of the current and future state of MAPs in Libyan manufacturing companies and the factors influencing their diffusion. Thus, this study set these four specific objectives:

1. To explore the current use of MAPs in Libyan manufacturing companies during the transitional economic period, the extent of benefits these companies gain from using such practices and the level of satisfaction of their current use.

2. To explore the extent of change in using MAPs by Libyan manufacturing companies during the period of investigation and to determine the priorities of MAPs adoption in the future.

3. To identify the factors influencing the diffusion of western MAPs in Libyan manufacturing companies over the period of transition.

4. To identify the factors impeding the diffusion of advanced MAPs in the course of the transitional economy in Libya.

In an attempt to meet the above objectives, an extensive review of the relevant theoretical and empirical literature was undertaken (see Chapters Two and Three). The diffusion of innovation and institutional theories have been utilised to build a theoretical framework to help identify the factors that influence (facilitate and hinder) the diffusion of MAPs. As part of design of the research framework, factors have been divided into demand (attributes of adopters, attributes of innovations and organizational) and institutional (fad, fashion, and forced) factors (see Chapter Four). A questionnaire survey was developed and administered to collect the main data for achieving the research objectives. To supplement the quantitative data, interviews were conducted to gain a more understanding about the research issues (see Chapter Five). The study utilised descriptive (e.g. means) and advanced multivariate statistical techniques (e.g. factor analysis and regression) to analyse the data collected (see Chapters Six, Seven, and Eight).

A summary and discussion of the major findings emerging from the descriptive statistics and advanced multivariate analysis is presented in the next section. This is followed by the major implications of this research for both academic knowledge and accounting practices. The final section outlines the limitations of this research, followed by suggested future research directions.

9.2 Summary and Discussion of the Research Findings

This section presents an overview of the main research findings that are presented in Chapters Six, Seven and Eight, with a thorough discussion of how they are related to the research objectives.

9.2.1 The Findings of the Descriptive Statistics

In line with the **first research objective** (to explore the current use of MAPs in Libyan manufacturing companies during the transitional economic period, the extent of benefits these companies gain form using such practices and the level of satisfaction of their current use), the research has yielded the following results:

- Libyan manufacturing companies use most of the MAPs surveyed; however, they have a relatively lower adoption rate compared with other countries (both developed and less developed) as reported in previous studies. In addition, all MAPs with a high adoption rate are the traditional type.

- The most adopted MAPs in Libyan manufacturing companies relate to product cost, planning and decision support systems, while practices related to control and performance evaluation are less adopted.

- Libyan manufacturing companies gain a relatively high level of benefits from most of the MAPs they use. Moreover, traditional MAPs are perceived to provide a higher level of benefits, while only low benefits are perceived with advanced ones.

- The most beneficial MAPs to Libyan companies are related to planning, followed by decision support systems practices, while the practices related to product cost systems and control and performance evaluation are perceived to provide lower benefits.

- Satisfaction with current MAPs in Libyan manufacturing exists to some extent with overall mean of 2.72 (out of 5), but it varies between respondents as follows

    - About 40% of the respondents indicate that they are not particularly satisfied with their current MAPs; with 17.3% of these very dissatisfied and wanting major improvements, while 23.5% slightly dissatisfied and thinking that their MAPs are still usable although improvements are needed.

    - The satisfaction with current MAPs, as expressed by about 60% of the respondents, is of a variable nature; with 28.4% of these respondents reporting a moderate satisfaction level and believe that their MAPs need some improvement. The remaining 30.9% of these respondents feel that their MAPs are good and they are reasonably satisfied with them, although some improvements may be useful. Noticeably, none of the respondents are very satisfied with MAPs and think that they do not require any improvement.

For the purposes of the **second research objective** (to explore the extent of change in using MAPs by Libyan manufacturing companies during the period of investigation and to determine the priorities of MAPs adoption in the future), the results show that:

- Libyan manufacturing companies introduced new MAPs in the last five years; it may be a response to the changes in business environments in the economic transition period.

- The companies surveyed place some emphasis on MAPs that are related to control and performance evaluation such as customer satisfaction surveys and divisional profit, and on introducing some of the advanced MAPs, such as target costing and quality cost reporting in the last five years.

- The adoption of MAPs in the future is expected to be low among the companies surveyed, as the majority of MAPs have a low mean of likelihood to be adopted in the next five years.

- Libyan manufacturing companies will continue to focus on traditional MAPs, as the nine most expected MAPs surveyed to be adopted in the future are traditional MAPs, while advanced MAPs have a low adoption expectation in the future.

- Four of the advanced MAPs (ABM, ABC, life-cycle costing, and BSC) have the lowest adoption expectation in the future among all the techniques surveyed.

- Libyan companies are likely to emphasise five traditional MAPs in the future; one of them related to product cost systems (variable costing), two to decision support systems (product profitability analysis and product profitability analysis), and two for planning (budgeting systems for planning financial position and cash flows and budgeting systems for day-to-day operations). The companies surveyed do not intend to focus on the control and performance practices in the future, as none of the practices related to this group is expected to be adopted in the next few years.

In addition to the aforementioned results, the following indicators give a strong insight into the state of advanced MAPs in Libyan companies

- The adoption rates of advanced MAPs by Libyan manufacturing companies are very low as none exceeded 14%, nor are they expected to be widely introduced in the future.

- Only two of them, target costing and quality cost reporting, have an adoption rate of more than 10%, and they have the highest rank among advanced MAPs during the last 5 years of adoption, the future adoption and the extent of benefits received.

- The interesting point here is the gap in the adoption rate between these two practices and the other four advanced MAPs (life-cycle costing, ABM, ABC, BSC). While life-cycle costing is adopted by three companies, no company has reported using BSC, ABM or ABC. The features of the latter MAPs are their very low adoption priority in the future; they are ranked as the least expected MAPs to be introduced in the future.

- Target costing and quality cost reporting are the most adopted practices among advanced MAPs surveyed; in addition to that, they are also the most familiar advanced MAPs among the respondents. About 79% of the respondents are familiar with quality cost reporting and 68% are familiar with target costing. In addition, at least about 17% of the companies are considering the implementation of each of them. However, two and three companies indicated that they reject quality costing and target costing, respectively, after some consideration.

- At least half of the respondents are unfamiliar with ABC, ABM and BSC, with a high percentage (at least 35%) being familiar with them but they have never considered them for adoption. Moreover, these three techniques are being considered by only a small number of companies for adoption (not more than four companies), and there was no company that rejected any of them after a consideration.

- A high percentage (45.7%) of the respondents is unfamiliar with life-cycle costing while 44.4% of them are familiar but never considered introducing it. Only three companies indicate that they use it or are considering its adoption (four companies), while one company reported rejecting it after consideration.

- There is no statistically significant relationship between the adoption of advanced MAPs and the adoption of advanced manufacturing methods.

- There was a statistically significant negative relation between the respondents' satisfaction regarding the current MAPs and the likelihood of MAPs' adoption in the future, which indicates that the more satisfied the companies are the less likely they are to adopt the new MAPs in the future.

Therefore, the low adoption of MAPs, particularly the advanced ones, seems to indicate that there is a gap between theory and practice within the Libyan manufacturing companies. One explanation for this is that most of the responding companies are State-owned or have been recently privatized after a long time of operating under the supervision of the State. It might be that the socialist economy that has been adapted in Libya from the 1980s to the late 1990s, affected the accounting system in general and the management accounting systems in particular, where most Western MAPs were not the companies' priority (see Chapter Two). Another explanation may be that the relevance of Western MAPs in the Libyan context is rather questionable, especially before the country started to shift from a centrally controlled economy towards a liberalized economy, in the late 1990s. Economic activities were monopolised by the State, which was the main user of accounting information and the maker of most of the decisions for companies, whereas the main aim of these companies was to enhance the country's self-sufficiency and self reliance more than making profits, based on socialist ideology. However, these Libyan companies were applying the Western MAPs to some extent, as there was no law or regulation to ban them. Thus, the possible irrelevance of Western MAPs in the Libyan context may explain their low adoption in general.

The findings also indicate that Libyan manufacturing companies in recent years (last five years) have started slightly focusing on introducing new MAPs; possibly as a response to the changes in management accounting information needed by managers after the economic transition period in Libya in the late 1990s. However, it seems the change in business environment has not resulted in a significant change in the adoption of MAPs. The low adoption expectations of MAPs in the future indicate that in the future this gap will continue to exist among Libyan companies, one possible explanation for this being that these companies seem to be to some extent satisfied with their current systems and, therefore, are unlikely to introduce new MAPs in the future.

Although the socialist philosophy dominated the economy since the 1980s, Western traditional MAPs have been known and practised for a long time because the accounting profession and the education system have largely been influenced by UK and US accounting systems since the country regained independence in the late

1950s (see Chapter Two). With respect to the state of advanced MAPs in Libya, these are not widely known (see Chapter Six), which may explain their very low adoption compared to traditional ones.

Moreover, the low level of MAPs adoption and the high level of satisfaction with the current MAPs adopted, question the importance of the claimed gap between theory and practice in management accounting. In addition, this supports the argument that attention should be paid more to studying existing practices than emphasising the existence of such a gap (see Chapter Two). Also, this indicates that more attention should be directed to the cause of such a gap (if it exists) by identifying the factors which influence (hinder or enhance) the diffusion of MAPs.

The findings also reveal the low level of advanced MAPs adopted and the relatively high level of automation and use of advanced production methods by Libyan manufacturing companies. These findings on the one hand support the argument of the lag between advanced manufacturing methods and the advanced MAPs (see Chapter Two), but on the other hand, they are inconsistent with the claims that are usually found in the literature regarding the inappropriateness of traditional MAPs to advanced manufacturing environments and the assumed association between the advanced manufacturing methods and the adoption of advanced MAPs, especially with the respondents' satisfaction with the current MAPs used.

In addition, there is an indication that it is not only the benefits that companies gain from MAPs that control their decision to adopt (or not) such practices in Libyan companies, which supports the argument that the demand side perspective, which dominates the literature and assumes that the adoption decision is guided only by rational decision-making, alone is not adequate in explaining the diffusion of MAPs. Thus, in order to explain the MAPs diffusion, the theoretical framework used in this study considers the supply side as well as the demand side and institutional environment, which do not assume a rational decision-making model. Factors influencing the diffusion of MAPs are classified into demand and institutional factors. Demand factors are grouped as attributes of innovation and attributes of adopters and environmental factors. On the other hand, institutional factors are divided into fad, fashion and forced factors (see Chapter Four).

9.2.2 Findings Related to the Factors Influencing the Diffusion of Western MAPs

The previous section has shown that the extent of the level of use of MAPs in Libyan manufacturing companies is relatively low. Based on an extensive literature review, a theoretical framework was developed in this research to classify the factors that potentially can influence the diffusion of MAPs. These factors, which included demand and institutional factors, were formulated as hypotheses. Simple regression was utilised to test these hypotheses. A summary of the results of the tests was presented in Table 9.1. In addition, a number of interviews were conducted in order to gain a better understanding of the factors that influence the diffusion of MAPs. This part of the data analysis was aimed at achieving the **third objective of this research** (to identify the factors influencing the diffusion of Western MAPs in Libyan manufacturing companies over the period of transition).

The results of the data analysis presented in Table 9.1 suggest that these independent variables related to demand and institutional factors have different effects on the diffusion of MAPs. Four factors- namely the availability of resources, the availability of training, top management support and company size- have a positive impact on the diffusion of MAPs. Each of these factors seems to account for between 6% and 24% of the variance in the diffusion of MAPs (see R^2 in Table 9.1). It is also noticeable that all of them are related to the attributes of the adopter (organizational factors), while none of the environmental factors was found to have an effect. Moreover, all three institutional factors seem to have a positive impact on the diffusion of MAPs. Two of them are related to the fashion perspective (use of consultants, knowledge resources) while one is related to the fad perspective (being in a joint venture with a foreign partner). It also appears that at least 11% of the variation of MAPs diffusion could be explained by each of these institutional factors (see R^2 in Table 9.1).

Table 9.1 Summary of Research Hypotheses Relating to Factors Influencing the Diffusion of MAPs

Hypotheses	R^2	Sig.	Comment
Demand factors: **1) Attributes of adopter**			
H1. The Availability of Appropriate Resources to Adopt New Management Accounting Techniques Has a Positive Impact on the Adoption Rate of MAPs.	.060	.027	Accepted
H2. The Availability of Training Regarding Management Accounting Techniques Has a Positive Impact on the Adoption Rate of MAPs.	.247	.000	Accepted
H3 The Availability of Top Management Support for the Introduction of New Management Accounting Techniques Has a Positive Impact on the Adoption Rate of MAPs.	.118	.002	Accepted
H4. Size of the Company Has a Positive Impact on the Adoption Rate of MAPs.	.076	.013	Accepted
H5. Vertical Differentiation of the Company Has an Impact on the Adoption Rate of MAPs.	.024	.166	Rejected
H6. Formalization of the Company Has an Impact on the Adoption Rate of MAPs.	.002	.669	Rejected
H7. *Centralization of the Company Has an Impact on the Adoption Rate of MAPs.*	.000	.933	Rejected
H8a. Prospector-Differentiation Strategy Has a Positive Impact on the Adoption Rate of MAPs.	.022	.188	Rejected
H8b. Defender-Cost Leadership Strategy Has a Negative Impact on the Adoption Rate of MAPs.	.001	.763	Rejected
2) Environmental			
H9. Environmental Uncertainty Has a Positive Impact on the Adoption Rate of MAPs.	.020	.206	Rejected
H10a. Local Competition Has a Positive Impact on the Adoption Rate of MAPs.	.031	.117	Rejected
H10b. Foreign Competition Has a Positive Impact the Adoption Rate of MAPs.	.003	.617	Rejected
Institutional factors: **1) Fashion**			
H11. The Extent of Use of Consultants When Adopting New Management Accounting Techniques Has a Positive Impact on the Adoption Rate of MAPs.	.135	.001	Accepted
H12. The Extent of Knowledge Resources Used Related to Accounting Innovation Has a Positive Impact on the Adoption Rate of MAPs.	.129	.001	Accepted
2) Fad			
H13. Being Joined with Foreign Partner Has a Positive Impact on the Adoption Rate of MAPs.	.112	.002	Accepted

No statistically significant relation could be found between company structure- as represented in vertical differentiation, formalization and centralisation- and the diffusion of MAPs. Also, neither the prospector nor the defender strategy, which represented business strategy, has influence on MAPs diffusion. That may be due, as explained in Chapter Eight, to the fact that Libyan manufacturing companies were (some of them still are) under the full control and supervision of the government, where company managers in these circumstances may not be allowed to take some decisions relating to the structure of the company and business strategies without the full headquarters' permission.

The findings summarised in Table 9.1 also indicate that none of the environmental factors examined in this study, namely uncertainty and market competition (local and foreign) has an important impact on MAPs diffusion. A possible explanation for this is that the changes in the Libyan business environment as a result of the transition from a socialist to a market economy is too recent to have an impact on the management accounting systems of manufacturing companies, and that these companies are also still partly supported by the government (see Chapter Two). Another explanation may be that these companies have been operating for a long time under the philosophy of only meeting the needs of the local market; thus they did not have to be concerned with competition force (local and foreign).

In addition, it was explained in Chapter Four that demand side factors alone may not be adequate enough to explain the diffusion of MAPs. The findings discussed in Chapter Eight, showed that only about 33% of the variation in the diffusion of MAPs can be explained by demand factors (attribute of adopters and environmental factors), which leaves about 67% of the variation unexplained. This has led to other variables such as institutional factors to be taken into account when trying to understand the diffusion of MAPs.

Additional evidence from the responses to the questionnaires and what was learnt during the interviews emphasised the point that demand and institutional factors appear to play a significant role in the diffusion of MAPs (see Chapter Seven). These findings are summarised as follows:

- According to the questionnaire respondents' points of view regarding the importance of the different factors influencing the adoption of new MAPs, the attributes of adopters are the most important factor, followed by attributes of innovation and environmental factors, all of which are related to demand/efficient choice perspective, while institutional factors are less important. However, the fashion factor is perceived to be the most important among the set of institutional factors.

- The dominant motivations influencing the adoption of new MAPs are related to the demand/efficient choice perspective, while institutional factors were less important according to the questionnaire respondents' perceptions.

- The factor analysis test adds support to the theoretical framework of this research, as the factors that emerged from it are consistent to a large extent with the research theoretical framework (see Chapter Four and Chapter Seven).

- According to the interviewees, the factors that influence the adoption of new MAPs are demand/efficient factors, followed by institutional factors, especially the fashion perspective.

These findings support the argument (see Chapter Four) that the demand side of diffusion does not fully explain the diffusion of innovation, and therefore, the focus on multiple research perspectives to understand the diffusion of innovation is needed for seeing the whole picture of the diffusion of innovation. They further support the claims of institutional theory (fashion, fad, forced perspectives) and the supply side of diffusion's applicability in explaining the diffusion of innovation (see Chapter Four).

In addition, it was argued in Chapter Four that both perspectives (demand and institutional) are worth examining, especially in a case like Libya where the economy is in a period of transition, moving from a planned economy where institutional and supply factors may have more influence, to a free market economy where demand or the rational perspective may be more appropriate in explaining the diffusion of

innovation. The findings above support this view as both perspectives seem to offer an explanation of the diffusion of MAPs in Libyan manufacturing companies.

9.2.3 Findings Relating to the Factors Impeding the Diffusion of Advanced MAPs

As explained in Chapter Seven, the data collected from questionnaire respondents and interviews were analysed to achieve the **fourth objective of this research** (to identify the factors impeding the diffusion of advanced MAPs in the course of the transitional economy in Libya). A summary of the results of this analysis is presented below:

- The fashion perspective (represented by items such as an active professional management accounting society, lack of local training programmes about advanced techniques, the lack of relevant courses on such advanced techniques in academic institutions, lack of software packages relevant to advanced techniques, lack of up-to-date publications about advanced techniques) and the fad perspective (represented by items such as the absence of Libyan companies that have adopted advanced techniques and the absence of foreign companies operating in the manufacturing sector), which are related to institutional factors, are the most impeding factors to advanced MAPs diffusion, while the attributes of adopters and attributes of innovation are the least important factors according to the questionnaire respondents' perception.

- Based on the interviewees' perception, institutional factors, especially fashion (such as the lack of knowledge about such advanced techniques, lack of training courses, conferences and seminars and academic journals regarding these techniques, and fad (such as the absence of foreign companies operating in the manufacturing sector) are perceived as the most impeding factors to the diffusion of advanced MAPs, while demand factors are considered to be least impeding.

- The results of factor analysis applied to the importance of the barriers of diffusion of advanced MAPs are consistent with the theoretical framework of this research. This gives it more support (see Chapter Four and Chapter Seven).

Based on the above findings it appears that institutional factors were the most important barriers to the adoption of advanced MAPs, especially fashion and fad perspectives, whereas demand/efficient choice perspective is considered to be less impeding. Therefore, the fashion and fad factors seem to enhance our understanding of the diffusion of MAPs. However, they appear to play a more important role as barriers to the diffusion of advanced MAPs.

9.3 Contribution to Knowledge

This research has several contributions to the knowledge related to the diffusion of innovation in general and to the diffusion of MAPs in particular as well as implications for researches and practitioners. These are summarised as follows:

- Most of the studies on the adoption of MAPs have been conducted in developed countries; while studies considering MAPs in emerging and transitional economies are still scarce (see Chapter Three). Moreover, previous studies of MAPs in developing countries presented their findings without the help of an appropriate theoretical framework and in very few cases through a contingency theory approach. Although some studies used new institutional theory, they focused only on one aspect, namely the effect of a joint venture with foreign company on the diffusion of MAPs (see Chapter Three). Therefore, this research contributes to knowledge by having been able to combine the diffusion of innovation theory and institutional theory and study in-depth, for the first time, a multitude of factors that affect the adoption of MAPs in one of the less developed countries, currently in a period of transition to a market economy.

- Most of the previous studies in developing countries are descriptive, reporting the adoption rates of MAPs, without any further analysis to find out the factors

that influence (facilitate or hinder) the change or the diffusion of MAPs in these countries, or simply relying on the respondents' point of views regarding the influence of each of these factors. The analysis in this study of both individual and simultaneous impact of demand and institutional factors on the adoption rate of MAPs, utilising descriptive analysis as well as advanced multivariate statistical techniques (e.g. factors analysis and simple and multiple regression), is thought to have made a major contribution to the understanding of the diffusion of MAPs in Libya and possibly other developing countries.

- Unlike other studies, which are dominated by the demand perspective and the near total focus on studying the factors that influence one technique only, usually ABC, this research has not only taken into consideration both the demand and supply sides of diffusion as well as the institutional factors in its framework for studying the diffusion of MAPs in Libya, but also investigated using a survey questionnaire and interviews the factors that influence the diffusion of *all* known MAPs (traditional and advanced) innovation. This is thought to have made a major contribution to studying the diffusion of innovation in general and the diffusion of MAPs in particular through providing significant empirical evidence showing that the supply side of diffusion and the institutional factors are important in explaining the diffusion of MAPs.

- As discussed in Chapters Two and Four, this study's framework extends the one developed by Abrahamson (1991) which proposes different perspectives in explaining the diffusion of innovation, namely efficient choice perspective, fad, fashion and forced perspectives. Efficient choice perspective could represent the demand side of diffusion (or economic pressure according to institutional theory), whereas fad, fashion and forced perspectives are based heavily on new institutional theory (mimetic, normative, and coercive). Thus, this study extends the efficient choice perspective by classifying the factors related to it by the attributes of adopter, attributes of innovation, and environmental factors. In addition, this research answers many calls in the literature (e.g. Bjornenak, 1997; Malmi, 1999) about using more than one perspective or theory in order to see the whole picture of the innovation diffusion. Thus, the research framework

brings together the diffusion of innovation and the new institutional theories. In this respect, this framework has extended the effort of previous work that tried to identify and classify factors influencing the diffusion of innovation (e.g. Kwon and Zmud, 1987; Anderson, 1995; Rogers, 1995, 2003; Askarany, 2003). In short, the framework developed for this research is believed to be one of the main contributions of this study.

- One of the major contributions of this research is the way it applied the diffusion of innovation theory in empirical settings. As explained earlier (see Chapters Three and Four), the innovation in most of the management accounting diffusion empirical studies has been defined as one of the advanced management accounting techniques (e.g. ABC, BSC). However, according to the diffusion of innovation theory (see Chapter Two, Subsection 2.4), innovation could be an old idea introduced or reintroduced in new settings where this idea is regarded as new; thus the newness is commonly regarded as the most important element of it. This research is to the author's knowledge the first to argue that the above definition could be applied to both traditional and advanced MAPs, and therefore, to also consider the adoption of traditional MAPs in organizations as innovation.

- Given the dearth of empirical research on MAPs in Libya (except the studies conducted recently by Abulghasim, 2006 and Alkizza, 2006), it is hoped that the findings of this study will not only make a theoretical contribution but also make researchers and managers aware of the current state and development of MAPs in Libyan manufacturing companies and thus contribute to a better understanding of these techniques in the emerging and transitional countries and reduce the lag in the diffusion of MAPs among countries. Moreover, by investigating the factors that influence (facilitate and hinder) the diffusion of MAPs, using a framework that covers a broad range of factors (demand and institutional) from different perspectives, this research enhances the understanding of managers in medium and large Libyan manufacturing companies and other similar companies in developing countries of the key factors that must be considered for adopting new MAPs. It also provides

significant insights into the role of institutions (e.g. academic institutions) and foreign companies, in the diffusion of Western MAPs in developing countries.

9.4 Limitations and Future Research

This research has achieved its aim and objectives; however, as any other study of this kind of research, it is subject to a number of limitations. These limitations and consequently the research opportunities therein, are presented below

As mentioned in Chapters Five and Six, the sample of the study is representative of the population and the findings of the questionnaire can be generalised to the entire population. However, the sample was limited only to medium and large Libyan manufacturing companies; thus the findings could not be generalised to small manufacturing companies or other organisations in other industries such as services or to companies in another country. Therefore, the replication of this study in other industries in Libya or other countries (developed or developing countries) not only would increase the possibility of generalising the findings, but also would enhance and develop the understanding of the research issues.

The research depended on a questionnaire as the main data collection and the quantitative data collected were analysed statistically; therefore, the disadvantages of using this method of data collection and the statistical techniques used add to the limitations of this research. In addition, the number of interviews conducted was limited to those respondents who provided their contact details and who were willing to participate in the research. Further, the availability of interviewees only at a desirable time is thought to be an additional limitation. Therefore, more research is required to investigate the diffusion of MAPs using in-depth case studies or a larger number of interviews.

Although the research variables (demand and intuitional factors) included were based on a thorough review of theoretical and empirical relevant literature, there is a possibility that significant variables were missed. Thus, there is an opportunity for future research to identify and examine the impact of any missing variables. For

example, internal communication and professionalism could be potential variables affecting the diffusion of MAPs.

In addition to the above, a number of questions have arisen as a result of the findings and discussions of this research, which would need much empirical work to be done. The following are suggested areas for future research:

- As indicated by this research, being in joint venture with foreign companies has a significant impact on the diffusion of innovation. In addition, a joint venture with foreign partner offers an avenue to copy the foreign partners' techniques (fad factor) or to work under a foreign partner pressure (forced factor) or a mixture of these factors. Thus, the area that seems to be promising for feature research is the examination in detail of the nature of the role of foreign companies on the diffusion of Western MAPs in developing countries.

- Interviewees have pointed out that they were forced by headquarters' regulations to adopt different types of budgeting, although some of them argued that they were not particularly useful for their companies. More research is required to investigate the role of forced factors in adopting new MAPs, especially budgeting.

- The research framework has classified the potential factors influencing the MAPs diffusion as factors related to demand perspective (attributes of adopter, attributes of innovation, organisational factors) and institutional factors (fad, fashion, forced factors). It is worth investigating the effect of factors included in this framework in a different context in order to provide additional support to test the validity of this framework in explaining the diffusion of innovation and to increase the possibility of generalising the findings. Also it would be an appropriate area of research to investigate the impact of these factors on the adoption of each MAP, especially advanced ones (e.g. ABC, BSC), as there may be different motivations associated with adopting different new techniques.

- In this research, traditional MAPs are found to be the most used by Libyan manufacturing companies (indicated by previous studies in other countries as well) and Libyan companies are found to be satisfied with their management accounting systems. A possible area of research may be to focus on what the benefits of such techniques are and why these companies are satisfied with them. Another proposal would be to conduct a comparative study between the attributes of traditional and advanced MAPs in order to answer the question why the traditional MAPs are still dominating despite the criticisms that have been levelled at them since the 1980s.

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Appendices

Appendix A: Questionnaire Covering Letter

University of
HUDDERSFIELD

Questionnaire Survey

Date

Dear

I am a doctoral student at the University of Huddersfield, UK, preparing a thesis on the "**Diffusion of Management Accounting Practices in Transition Economies: The case of Libya"**

The transition from a planned economy to a market economy in Libya has resulted in fundamental changes such as the restructuring of state-owed enterprises, a noticeable growth in foreign direct investment, and an emerging private sector. This research aims to investigate management accounting practices in Libyan manufacturing companies in this new environment.

The research aims can only be achieved by your and other respondents' co-operation in completing the enclosed questionnaire. The questions in the questionnaire are designed to collect data relating to the state of management accounting practice and the factors influencing the diffusion of management accounting practices in the course of the transition economy. Your response will be treated as **strictly confidential** and only used for the research's purposes. It will not be disclosed to third parties under any circumstances.

Please attempt to answer all the questions and make any comments you may think relevant to the issues mentioned in the questionnaire using the space provided or additional sheets if necessary. Should you need further clarification of any questionnaire item, please do not hesitate to contact me at the address below. If you think someone else should answer the questions, please pass the questionnaire to the appropriate colleague within your company.

Thank you for your co-operation in completing this questionnaire, in return you will receive a copy of the research findings.

Yours sincerely

Abdulghani Leftesi
Ph.D Candidate
Tel. 092 721 6957 (Mobile)
E-mail B0423641@hud.ac.uk
Po. Box 151
Zliten
Libya

Appendix B: Research Questionnaire

Section A: General information

A1. What is your current job title? ……

A2. How long have you been in this position? …… years

A3. How long have you worked for this company? …… years

A4. How many years work experience do you have of accounting/finance? …… years

A5. What is the highest qualification you have?

Less than high school level	[ ]	High school level	[ ]
Bachelor	[ ]	Post graduate (e.g. MSc, MBA, PhD...)	[ ]

Professional qualification (please specify)……..……

A6. What is the name of your company? (Optional)……..…

A7. How many years has your company been operating?

Less than 5 years	[ ]	5-10 years	[ ]
11-20 years	[ ]	More than 20 years	[ ]

A8. Please indicate the approximate balance sheet value of your company's total assets ……. Libyan dinar

A9. Please indicate the approximate sales turnover (revenue) of your company for The last financial year ……. Libyan dinar

A10. Please indicate the approximate number of employees of your company ……. employees

A11. Please tick one box to indicate your company's main industrial sector:

Food	[ ]	Engineering and electric	[ ]
Chemical	[ ]	Cement and building materials	[ ]
Metal	[ ]	Textiles, furniture and paper	[ ]
Oil and gas	[ ]	Other (please specify)……	

A12. Please tick one box to indicate your company's ownership type:

State-owned company (100% owned by the state)	[ ]
Private company (100% owned by the private sector)	[ ]
Joint venture (shared ownership between the state and a foreign partner)	[ ]
Joint venture (shared ownership between the private sector and the a foreign partner)	[ ]

If your company is a joint venture, please answer questions A13 and A14	
A13. In which year was the joint venture formed?	……..years
A14. What percentage does the foreign partner own in your company	…….. %

if your company is private or joint venture (shared ownership between private and a foreign partner), please answer questions A15 and A16	
A15. Please tick if your company has been privatized (the ownership has been moved from owned by the state to private sector)	[ ]
A16. If you ticked, please indicate in which year	……..

A17. Please indicate the level of manufacturing process automation in your company:

100% manual	[ ]	Less than 50% automated	[ ]
More than 50% automated	[ ]	100% automated	[ ]

A18. Please indicate which of the following production methods are used in your company:

Just-in-time (JIT) production	[ ]
Flexible manufacturing system (FMS)	[ ]
Total quality management (TQM)	[ ]
Computer numerical controlled (CNC) machines	[ ]
Computer-aided design (CAD)	[ ]
Computer-aided manufacturing (CAM)	[ ]
Computer-integrated manufacturing (CIM)	[ ]

Section B: Current use of management accounting techniques

B1. For each of the following management accounting techniques, **if a technique is currently used,** please indicate the extent of the benefits which your company gained from it over the last 5 years. Please also indicate if it was introduced it the last 5 years.

If a technique is not currently used, please indicate the likelihood of introducing it in the next 5 years.

Techniques	**Currently used**						**Not currently used**				
	Benefits received in last 5 years					Introduced in last 5 years? (please tick)	Likely to introduce it in next 5 years				
	None		Moderate		Very high		Not likely		Moderately likely		Very likely
	1	2	3	4	5		1	2	3	4	5
Product cost systems:											
Variable costing	1	2	3	4	5		1	2	3	4	5
Full (absorption) costing	1	2	3	4	5		1	2	3	4	5
Activity-based costing (ABC)	1	2	3	4	5		1	2	3	4	5
Target costing	1	2	3	4	5		1	2	3	4	5
Life-cycle costing	1	2	3	4	5		1	2	3	4	5
Quality cost reporting	1	2	3	4	5		1	2	3	4	5
Other (please specify) ……	1	2	3	4	5		1	2	3	4	5

Techniques	Currently used						Not currently used				
	Benefits received in last 5 years					Introduced in last 5 years? (please tick)	Likely to introduce it in next 5 years				
	None		Moderate		Very high		Not likely		Moderately likely		Very likely
	1	2	3	4	5		1	2	3	4	5
Decision support systems:											
Cost-volume-profit/break-even analysis	1	2	3	4	5		1	2	3	4	5
Product life-cycle analysis	1	2	3	4	5		1	2	3	4	5
Activity-based management (ABM)	1	2	3	4	5		1	2	3	4	5
Product profitability analysis	1	2	3	4	5		1	2	3	4	5
Customer profitability analysis	1	2	3	4	5		1	2	3	4	5
Other (please specify) ……	1	2	3	4	5		1	2	3	4	5
Planning:											
Budgeting systems for co-ordinating activities across the business units	1	2	3	4	5		1	2	3	4	5
Budgeting systems for day-to-day operations	1	2	3	4	5		1	2	3	4	5
Budgeting systems for planning financial position and cash flows	1	2	3	4	5		1	2	3	4	5
Long range forecasting	1	2	3	4	5		1	2	3	4	5
Capital budgeting techniques (e.g. Net present value (NPV) Internal rate of return (IRR), Payback)	1	2	3	4	5		1	2	3	4	5
Other (please specify) ……	1	2	3	4	5		1	2	3	4	5
Control and performance evaluation:											
Controllable profit	1	2	3	4	5		1	2	3	4	5
Divisional profit	1	2	3	4	5		1	2	3	4	5
Return on investment (ROI)	1	2	3	4	5		1	2	3	4	5
Cash flow return on investment	1	2	3	4	5		1	2	3	4	5
Balanced scorecard (BSC)	1	2	3	4	5		1	2	3	4	5
Customer satisfaction surveys	1	2	3	4	5		1	2	3	4	5
Residual income/ Economic value added (e.g. interest adjusted profit)	1	2	3	4	5		1	2	3	4	5
Standard costs and variance analysis	1	2	3	4	5		1	2	3	4	5
Other (please specify) ……	1	2	3	4	5		1	2	3	4	5

B2. Please tick to indicate **your overall satisfaction with the management accounting practices of your company:**

Very dissatisfied, system requires major improvement [ ]

Slightly dissatisfied, system needs a lots of improvement, but still usable [ ]

Moderately satisfied, system needs some improvement [ ]

Reasonably satisfied, system is good, although some improvement may be useful [ ]

Very satisfied, system dose not require any improvement [ ]

B3. Please indicate which of the following statements best describes your company's position with respect to the **advanced management accounting techniques** listed in the table below:

- **Never heard of it:** We are not familiar with this technique
- **Not considered:** We are familiar with this technique, but it has not been seriously considered
- **Under consideration:** Technique is being evaluated and implementation is possible, but implementation has not yet been approved
- **Considered then rejected:** Technique has been evaluated and later rejected
- **Currently used:** Approval has been granted to implement the technique

Techniques	Never heard of it	Not considered	Under consideration	Considered then rejected	Currently used
Activity-based costing (ABC)					
Activity-based management (ABM)					
Balanced scorecard (BSC)					
Quality cost reporting					
Target costing					
Life-cycle costing					

Section C: Factors influencing management accounting practices

C1. On the scale below, please circle for each row the appropriate number to indicate how **predictable each item is in your company's operations**

Very Unpredictable	Slightly unpredictable	Neutral	Slightly predictable	Very predictable
1	2	3	4	5

Customers' behaviour/demands	1	2	3	4	5
Suppliers' attitudes/behaviour	1	2	3	4	5
Financial market developments	1	2	3	4	5
Competitors' strategies/behaviour	1	2	3	4	5
Union/employees' behaviour	1	2	3	4	5
Government/regulation agencies' behaviour	1	2	3	4	5

C2. Please indicate which one of the following statements best describes your **company's corporate business strategy:**

My company is dynamic in seeking market opportunities and able to meet consumer needs by developing and producing new products; it competes by making its products different from competitors' production. [ ]

My company focuses on high production volume and low product diversity; it competes on price, quality, and customer's service. [ ]

My company shares characteristics of the above two. [ ]

C3. How many **competitors** does your company have for its main product(s) in the **Libyan market**?

None	[ ]	1-3 competitors	[ ]
4 -10 competitors	[ ]	More than 10 competitors	[ ]

C4. Please indicate the approximate percentage of its production that your company **exports:**

0%	[ ]	1-25%	[ ]
26-50%	[ ]	More than 50%	[ ]

C5. Please indicate the number **of managerial levels** in your company:

1-2	[ ]	3-5	[ ]
6-8	[ ]	9-12	[ ]
More than 12	[ ]		

C6. Please consider each of the following decision categories and then indicate to what extent **authority has been delegated by central management:**

- **Strategic decisions** (e.g. development of new products; entering, developing or exiting new markets; your company's strategy)
- **Investment decisions** (e.g. acquiring new assets and financing investment projects; expansion of existing capacity).
- **Marketing decisions** (e.g. marketing or advertising campaigns; pricing decisions; changes in inventory levels)
- **Decisions regarding internal processes** (e.g. setting production/sales priorities; inputs used and/or processes employed to fill orders; contracting input suppliers and/or consultants)
- **Human resources decisions** (e.g. hiring; compensation and setting career paths for the personnel employed within your company; determining the bonus or promotion steps of employees)
- **Adoption of new management accounting techniques** (e.g. those mentioned in question B1)

Using the scale below, please circle all relevant answers

Not Delegated	Slightly delegated	Moderately delegated	Significantly delegated	Completely delegated
1	2	3	4	5

Strategic decisions	1	2	3	4	5	
Investment decisions	1	2	3	4	5	
Marketing decisions	1	2	3	4	5	
Decisions regarding internal processes	1	2	3	4	5	
Human resources decisions	1	2	3	4	5	
Adoption of new management accounting techniques	1	2	3	4	5	

C7. Using the scale below, please circle for each row the appropriate number to indicate the extent to which the **following items exist i**n your company

Not at all	To a slight extent	To a moderate extent	To a significant extent	To a considerable extent
1	2	3	4	5

Rules on routine procedures and operations	1	2	3	4	5	
Employees' freedom to organize the work as they desire	1	2	3	4	5	

C8. On the scale below, please circle the appropriate number that indicates the degree to which the **accounting system is computerised** in your company

Not computerised at all	Slightly computerised	Moderately computerised	Significantly computerised	Fully Computerised
1	2	3	4	5

C9. Using the scale below, please circle for each row the appropriate number to indicate how often your company **uses the following sources to keep up to date with innovation in accounting techniques**

Never Used	Rarely used	Sometimes used	Often used	Always used
1	2	3	4	5

Magazines	1	2	3	4	5
Academic journals	1	2	3	4	5
Training courses	1	2	3	4	5
Seminars/conferences	1	2	3	4	5
Textbooks	1	2	3	4	5
Internet	1	2	3	4	5
Other (please specify)……	1	2	3	4	5
……	1	2	3	4	5

C10. On the scale below, please circle the appropriate number to indicate the extent to which your company **uses consultants** in the process of adopting new management accounting techniques

Never Used	Rarely used	Sometimes used	Often used	Always used
1	2	3	4	5

C11. Using the scale below, please circle for each row the appropriate number to indicate the extent of the **availability of training** regarding management accounting techniques in your company

Not available at all	Slightly available	Moderately available	Significantly available	Considerably available
1	2	3	4	5

Training in local academic institutions	1	2	3	4	5
Training by sending employees overseas	1	2	3	4	5
Training inside your company	1	2	3	4	5

C12. Using the scale below, please indicate the extent of the **availability of appropriate resources** to adopt new management accounting techniques in your company

Not available at all	Slightly available	Moderately available	Significantly available	Considerably available
1	2	3	4	5

The amount of investment required to adopt new techniques	1	2	3	4	5
The appropriate skills to adopt new techniques	1	2	3	4	5

C13. Using the scale below, please indicate the extent of the **availability of top management support** for the introduction of new management accounting techniques in your company

Not available at all	Slightly available	Moderately available	Significantly available	Considerably available
1	2	3	4	5

Top management's interest in introducing new techniques	1	2	3	4	5
Top management's desire to make the company a leader in the use of new techniques	1	2	3	4	5
Adequate resources provided by top management to adopt new techniques	1	2	3	4	5

C14. Using the scale below, please indicate the degree of **importance of each factor in the decision to adopt new management accounting techniques** in your company

Not Important	Slightly important	Moderately important	Significantly important	Considerably important
1	2	3	4	5

Increased market competition	1	2	3	4	5
Advances in information technology	1	2	3	4	5
Change of production technology	1	2	3	4	5
Existing system is no longer reliable and needs updating	1	2	3	4	5
Relative advantage of the new techniques over the current practices	1	2	3	4	5
The new technique's trialability before full implementation	1	2	3	4	5
The compatibility of the new techniques with existing system	1	2	3	4	5
The new techniques being easy to understand and use	1	2	3	4	5
Observability to see results from the new techniques	1	2	3	4	5
Foreign parent pressure	1	2	3	4	5
Pressure from government or other regulatory authorities	1	2	3	4	5
Headquarters' regulations/recommendations	1	2	3	4	5
Auditor/consultant advice	1	2	3	4	5
To be seen as having different techniques	1	2	3	4	5
Wish to try new techniques	1	2	3	4	5
Knowledge about the new techniques from textbooks and academic journals	1	2	3	4	5
Learning about the new techniques in academic institutions	1	2	3	4	5
Foreign partner has adopted these techniques	1	2	3	4	5
These techniques have been adopted by other Libyan companies	1	2	3	4	5
The lead company in the industry has adopted these techniques	1	2	3	4	5
Other (please specify) ……	1	2	3	4	5
……	1	2	3	4	5
……	1	2	3	4	5

C15. Using the scale below, please indicate the extent to which the following factors impede **the adoption of advanced management accounting techniques** (please refer to question B3 which listed the advanced management accounting techniques)

Do not impede at all	Slightly impede	Moderately impede	Significantly impede	Considerably impede
1	2	3	4	5

Lack of relevant courses on such advanced techniques in academic institutions	1	2	3	4	5
Lack of up-to-date publications about advanced techniques	1	2	3	4	5
Lack of local training programmes about advanced techniques	1	2	3	4	5
Lack of an active professional management accounting society	1	2	3	4	5
Lack of software packages relevant to advanced techniques	1	2	3	4	5
Absence of foreign companies operating in the manufacturing sector	1	2	3	4	5
Absence of Libyan companies that have adopted advanced techniques	1	2	3	4	5
Lack of autonomy from foreign parent company	1	2	3	4	5
Headquarters and government regulations	1	2	3	4	5
Lack of financial resources	1	2	3	4	5
Lack of relevant employee skills because of insufficient training provided by the company	1	2	3	4	5
Insufficient support from top management	1	2	3	4	5
Lack of decision making autonomy at lower levels	1	2	3	4	5
Company ownership type	1	2	3	4	5
No significant problems with current system	1	2	3	4	5
Lack of confidence in the value of advanced techniques	1	2	3	4	5
These advanced techniques are too complex	1	2	3	4	5
No significant benefits perceived from adopting advanced techniques	1	2	3	4	5
Benefits from advanced techniques are difficult to observe	1	2	3	4	5
High cost to implement these advanced techniques	1	2	3	4	5
Lack of compatibility of the advanced techniques with existing system	1	2	3	4	5
Company's business strategy	1	2	3	4	5
Other (please specify) ……	1	2	3	4	5
……	1	2	3	4	5

Please tick the box if you wish to receive a copy of the aggregated results of this study [ ]

In order to achieve the objectives of this research, and to improve the quality of the data, I hope to **interview some of the respondents** to this questionnaire, probably in …….. . Your help would be greatly appreciated. **If you are willing to be interviewed, please fill in the section below:**

Company's name: …….....

Your name: …….....

Your telephone no: …….....

Your email : …….....

Please refer to the next page for any additional comments

Thank you very much for your assistance in completing this questionnaire. We would appreciate any comments or suggestions you may care to make about any issue mentioned in the questionnaire. You may use the space below, or use a separate sheet and return it with the completed questionnaire or separately.

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Appendix C: Questionnaire Supporting Letter

11 December 2006

To Whom It May Concern

Abdulghani Leftesi, Ph.D. candidate

This is to confirm that Mr Abdulghani Leftesi (d.o.b. 31-7-1970) is currently a full time doctoral student at this University. His research is on the

> **Diffusion and Institutionalisation of Management Accounting Practices in Transition Economies: the case of Libya.**

He has made a lot of progress in developing the research project and now needs to collect and analyse sufficient data from companies on the current state of management accounting practice. A survey questionnaire has been carefully designed for this purpose and your participation in completing this questionnaire will be greatly appreciated.

All respondents are guaranteed total confidentiality and will receive a summary report of the research findings.

Thank you in anticipation for all the help you can provide to make this important research study a success.

Should you need further information, please do not hesitate to contact me at the address below.

Yours sincerely

Dr Messaoud Mehafdi
Director of Studies

Contact address:
Department of Accountancy, Huddersfield University Business School
The University of Huddersfield, Huddersfield, West Yorkshire UK, HD1 3DH
Tel: 00-44-01484-473071 (direct line)
email: m.mehafdi@hud.ac.uk

Appendix D: Arabic Translation of the Research Questionnaire

University of
HUDDERSFIELD

جامعة هدرسفيلد

استبيان

التاريخ

الأخ:

أنا طالب دكتوراه في جامعة هدرسفيلد, المملكة المتحدة, أعد حاليا بحثا عن **" انتشار أدوات المحاسبة الإدارية في اقتصاديات التحول: ليبيا دراسة حالة".**

التحول من الاقتصاد المخطط إلى اقتصاد السوق في ليبيا نتج عنه تغيرات جوهرية مثل إعادة تشكيل المؤسسات المملوكة للدولة و النمو الملحوظ في الاستثمارات الأجنبية المباشرة و ظهور القطاع الخاص. هذا البحث يهدف إلى فحص أدوات المحاسبة الإدارية في الشركات الصناعية الليبية في هذه البيئة الجديدة.

أهداف البحث يمكن تحقيقها فقط بواسطة تعاونك وتعاون المجيبين الآخرين في ملء الاستبيان المرفق. الأسئلة في هذا الاستبيان صممت لجمع بيانات متعلقة بوضع أدوات المحاسبة الإدارية في فترة التحول الاقتصادي. إجابتك سوف تعامل **بسرية تامة** وسوف تستخدم فقط لأغراض البحث و لن يفصح عنها لأي أطراف ثالثة تحت أي ظروف.

الرجاء حاول الإجابة عن جميع الأسئلة ووضع أي ملاحظات ترى أنها متعلقة بالقضايا التي ذكرت في الاستبيان, بأستخدام المكان المعد لذلك أو في صفحات إضافية إذا لزم الأمر. و إذا احتجت إلى أي توضيحات إضافية لأي من بنود الاستبيان, الرجاء لا تتردد في الاتصال بي على العنوان في الأسفل. إذا كنت تعتقد أن أي شخص آخر يجب أن يجيب عن الأسئلة, الرجاء أعط الاستبيان إلى الزميل المناسب في الشركة.

شكرا على تعاونك في ملء هذا الاستبيان.

مع خالص تحياتي

عبد الغنى أحمد الفطيسى
المرشح للدكتوراه
هاتف: 0927216958 (نقال)
بريد اكترونى B0423641@hud.ac.uk
صندوق بريد 151
زليتن
ليبيا

الجزء أ: معلومات عامة

أ1. ما هو مركزك الوظيفي الحالي؟ .....

أ2. كم عدد السنوات التي قضيتها في هذا المركز؟ .....سنة

أ3. كم عدد السنوات التي عملتها في الشركة؟ .....سنة

أ4. كم عدد سنوات الخبرة العملية التي لديك في المحاسبة / المالية؟ .....سنة

أ5. ما هو أعلى مؤهل علمي حصلت عليه ؟

اقل من ثانوي أو معهد متوسط	[ ]	ثانوي أو معهد متوسط	[ ]
معهد عالي أو بكالوريوس	[ ]	دراسات عليا (ماجستير, دكتوراه, MBA)	[ ]

شهادات مهنية (الرجاء حدد).....

أ6. ما هو أسم الشركة التي تعمل فيها (اختياري).....

أ7. كم عدد السنوات التي مضت على مزاولة الشركة نشاطها ؟

أقل من خمس سنوات	[ ]	5- 10 سنوات	[ ]
11-20 سنة	[ ]	أكثر من 20 سنة	[ ]

أ8. الرجاء حدد تقريبا قيمة اجمالي أصول الشركة الظاهر في الميزانية العمومية .....دينار ليبي

أ9. الرجاء حدد تقريبا حجم المبيعات(الإيراد) للشركة لآخر سنة مالية .....دينار ليبي

أ10. الرجاء حدد تقريبا عدد العاملين في الشركة .....عامل

أ11. الرجاء ضع علامة (صح) لتحدد القطاع الصناعي الأساسي للشركة

غذائية	[ ]	هندسية و كهربائية	[ ]
كيميائية	[ ]	اسمنت و مواد بناء	[ ]
معدنية	[ ]	منسوجات وأثاث وورق	[ ]
نفط وغاز	[ ]	أخرى (الرجاء حدد).....	

أ12. الرجاء ضع علامة (صح) لتحدد نوعية ملكية الشركة

شركة مملوكة للدولة (100% مملوكة للدولة)	[ ]
شركة خاصة (100% مملوكة للقطاع الخاص)	[ ]
شركة مشاركة (مشاركة الملكية بين الدولة و شريك أجنبى)	[ ]
شركة مشاركة (مشاركة الملكية بين القطاع الخاص و شريك أجنبي)	[ ]

إذا كانت الشركة شركة مشاركة , الرجاء اجب عن السؤالين 13أ و 14أ
13أ. في أي سنة تكونت/ تأسست المشاركة .....سنة
14أ. ما هي النسبة التي يملكها الشريك الأجنبي في الشركة ..... %

إذا كانت الشركة خاصة أو شركة مشاركة (مشاركة الملكية بين القطاع الخاص و شريك أجنبي) الرجاء اجب عن السؤالين 15أ و 16أ
15أ. الرجاء ضع علامة (صح) إذا تم تخصيص الشركة (غيرت الملكية من مملوك للدولة إلى القطاع الخاص) [ ]
16أ. إذا وضعت علامة (صح), الرجاء حدد في أي سنة .....

17أ. الرجاء حدد مستوى ميكنة عمليات التصنيع في الشركة			
100% يدوي	[ ]	أقل من 50% مميكن	[ ]
اكثر من 50% مميكن	[ ]	100% مميكن	[ ]

18أ. الرجاء حدد أيا من الطرق الإنتاجية التالية مستخدما في الشركة	
نظام الإنتاج الآني (JIT)	[ ]
نظام التصنيع المرن (FMS)	[ ]
ادارة الجودة الشاملة (TQM)	[ ]
آلية التحكم الرقمي بالكمبيوتر (CNC)	[ ]
التصميم بمساعدة الكمبيوتر (CAD)	[ ]
التصنيع بمساعدة الكمبيوتر (CAM)	[ ]
التصنيع المتكامل بالكمبيوتر (CIM)	[ ]

الجزء ب:الاستخدام الحالي لأدوات المحاسبة الإدارية

ب1. لكل من أدوات المحاسبة الإدارية التالية, **إذا كانت الأداة مستخدمة حاليا**,الرجاء حدد درجة الاستفادة التي حصلت عليها الشركة من هده الأداة خلال الخمس السنوات الأخيرة. الرجاء أيضا ضع علامة (صح) لتحدد أيا من هذه الأدوات بدأ استخدامه خلال الخمس السنوات الأخيرة

إذا كانت الأداة غير مستخدمة حاليا, الرجاء حدد احتمالية أن يبدأ استخدامها في الخمس السنوات القادمة

الأدوات	مستخدمة حاليا						ليست مستخدمة حاليا				
	الاستفادة في 5 السنوات الأخيرة					بدأ استخدامها في 5 السنوات الأخيرة	احتمال تطبيقها في 5 السنوات القادمة				
	غير مفيدة		متوسط		مفيدة جدا		غير محتمل		متوسط		محتمل جدا
	1	2	3	4	5		1	2	3	4	5
أنظمة تكلفة الإنتاج											
تكلفة متغيرة	1	2	3	4	5		1	2	3	4	5
تكلفة كلية	1	2	3	4	5		1	2	3	4	5
تكلفة محاسبة النشاط	1	2	3	4	5		1	2	3	4	5
التكلفة المستهدفة	1	2	3	4	5		1	2	3	4	5
تكاليف دورة الحياة	1	2	3	4	5		1	2	3	4	5
تقارير تكلفة الجودة	1	2	3	4	5		1	2	3	4	5
أخري(الرجاء حدد)	1	2	3	4	5		1	2	3	4	5

ب2. الرجاء ضع علامة (صح) لتحدد **رضاك العام عن ممارسات المحاسبة الإدارية للشركة**

غير راض جدا(النظام يحتاج تطويرا جوهريا) [ ]

غير راض بعض الشيء(النظام يحتاج الى الكثيرمن التطوير ولكن يظل يمكن الاستفادة منه) [ ]

راض إلى درجة متوسطة (النظام يحتاج بعض التطوير) [ ]

راض الى حد معقول (النطام جيد وان كان بعض التطوير قد يفيد) [ ]

راض جدا(النظام لا يستلزم أي تطوير) [ ]

ب3. حدد أيا من العبارات الاتية تعتبر**افضل وصف لوضع الشركة فيما يتعلق بأدوات المحاسبة الإدارية** الموجودة في الجدول التالي:

لم أسمع بها أبدا(نحن لسنا على اطلاع على هذه الأداة)

لم تدرس (نحن على اطلاع على هذه الأداة ولكنها لم توضع تحت الدراسة الجدية بعد)

تحت الدراسة (الاداة حاليا تقيم والتطبيق محتمل , ولكن التطبيق لم يعتمد بعد)

درست ثم رفضت (الأداة قيمت وبعد ذلك رفضت)

مستخدمة حاليا (اعتمدت الموافقة على تطبيق الأداة)

الأدوات	لم أسمع بها أبد	لم تدرس	تحت الدراسة	درست ثم رفضت	مستخدمة حاليا
تكلفة محاسبة النشاط (ABC)					
ادارة تكلفة النشاط (ABM)					
بطاقة الأهداف المتوازنة (BSC)					
تقارير تكلفة الجودة					
التكلفة المستهدفة					
تكاليف دورة الحياة					

الجزء ج: العوامل المؤثرة على أدوات المحاسبة الإدارية

ج1. على المقياس ادناه, الرجاء ضع دائرة فى كل صف على الرقم المناسب لتحدد الى أى مدى يمكن **التنبؤ بكل عنصر فى عمليات الشركة**

لايمكن تنبؤه أبدا	لايمكن تنبؤه بعض الشئ	محايد	يمكن تنبؤه بعض الشئ		يمكن تنبؤه بقوة	
1	2	3	4		5	
سلوك وطلبات الزبائن		1	2	3	4	5
وجهات نظر وسلوك الموردين		1	2	3	4	5
تطورات السوق المالى		1	2	3	4	5
سلوك واستراتجيات المنافسين		1	2	3	4	5
سلوك العمال / نقابات العمال		1	2	3	4	5
سلوك الدولة والمؤسسات الحكومية		1	2	3	4	5

ج2. الرجاء حدد ايا من العبارات التالية تعتبرأفضل شرحا **لإستراتيجية الشركة التجارية**

الشركة متغيرة ومرنة في البحث عن فرص فى السوق وقادرة على ان تحقق حاجات الزبون بواسطة تطوير وانتاج منتجات جديدة , انها تنافس بواسطة جعل منتجاتها تختلف عن منتجات منافسيها [ ]

الشركة تركز على حجم الانتاج المرتفع وانخفاض تنوع الانتاج , انها تنافس على السعر والجودة وخدمات الزبائن [ ]

الشركة تتقاسم صفات من الاثنين أعلاه [ ]

الأدوات	مستخدمة حاليا					بدأ استخدامها في 5 السنوات الأخيرة	ليست مستخدمة حاليا				
	الاستفادة في 5 السنوات الأخيرة						احتمال تطبيقها في 5 السنوات القادمة				
	غير مفيدة		متوسط		مفيدة جدا		غير محتمل		متوسط		محتمل جدا
	1	2	3	4	5		1	2	3	4	5
أنظمة دعم القرارات											
تحليل التكلفة- الحجم- الربح/ نقطة التعادل	1	2	3	4	5		1	2	3	4	5
تحليل دورة حياة المنتج	1	2	3	4	5		1	2	3	4	5
إدارة تكلفة النشاط	1	2	3	4	5		1	2	3	4	5
تحليل ربحية المنتج	1	2	3	4	5		1	2	3	4	5
تحليل ربحية الزبون	1	2	3	4	5		1	2	3	4	5
أخرى(الرجاء حدد)	1	2	3	4	5		1	2	3	4	5
التخطيط											
أنظمة الميزانيات التقديرية من أجل تنسيق الأنشطة بين الوحدات الاقتصادية	1	2	3	4	5		1	2	3	4	5
أنظمة الميزانيات التقديرية من أجل العمليات اليومية	1	2	3	4	5		1	2	3	4	5
أنظمة الميزانيات التقديرية من أجل تخطيط الوضع المالي والتدفقات المالية	1	2	3	4	5		1	2	3	4	5
التنبوء طويل الأجل	1	2	3	4	5		1	2	3	4	5
أدوات الميزانيات الرأسمالية (مثال صافى القيمة الحالية , معدل العائد الداخلي, فترة الاسترداد)	1	2	3	4	5		1	2	3	4	5
أخري(الرجاء حدد)	1	2	3	4	5		1	2	3	4	5
الرقابة وتقييم الأداء											
الربح المتحكم فيه	1	2	3	4	5		1	2	3	4	5
الربح لكل قسم	1	2	3	4	5		1	2	3	4	5
العائد على الاستثمار	1	2	3	4	5		1	2	3	4	5
التدفق المالي العائد على الاستثمار	1	2	3	4	5		1	2	3	4	5
بطاقة الأهداف المتوازنة	1	2	3	4	5		1	2	3	4	5
استبيانات رضاء الزبائن	1	2	3	4	5		1	2	3	4	5
القيمة الاقتصادية المضافة / الدخل المتبقي (الربح المعدل بالفائدة)	1	2	3	4	5		1	2	3	4	5
التكاليف المعيارية و تحليل الانحرافات	1	2	3	4	5		1	2	3	4	5
أخرى(الرجاء حدد)	1	2	3	4	5		1	2	3	4	5

ج3. كم عدد **منافسي** الشركة في إنتاجها الرئيسي في **السوق الليبي؟**

لاشى	[ ]	1- 3 منافسين	[ ]
4- 10 منافسين	[ ]	أكثر من 10 منافسين	[ ]

ج4. الرجاء حدد تقريبيا نسبة انتاج الشركة الذي **يصدر**

% 0	[ ]	% 25-1	[ ]
% 50-26	[ ]	اكثر من 50 %	[ ]

ج5. الرجاء حدد تقريبيا عدد **المستويات الإدارية** في الشركة

2-1	[ ]	5-3	[ ]
8-6	[ ]	12-9	[ ]
اكثر من12	[ ]		

ج6. الرجاء خد بعين الاعتبار أنواع القرارات التالية ثم حدد الى اى مدى **تفوض السلطة بواسطة الادارة المركزية**

قرارات استراتيجية (مثال: تطوير منتج جديد , دخول أو تطوير أو الخروج من أسواق جديدة , استراتيجية الشركة)

قرارات استثمارية (مثال: توفير أصول جديدة و تمويل الخطط الاستثمارية , توسيع القدرة الحالية)

قرارات التسويق (مثال: حملات تسويق واعلان , قرارات التسعير , التغير فى مستويات المخزون)

قرارات متعلقة بالإجراءات الداخلية (مثال: وضع أولويات الإنتاج والبيع , المواد الأولية المستخدمة والإجراءات المطبقة لتعبئة الطلبات)

قرارات الموارد البشرية (مثال: توظيف و ووضع المسارات الوظيفية للأشخاص العاملين بالشركة , تحديد درجات العلاوات والحوافز للعاملين)

تبنى أداة جديدة من أدوات المحاسبة الادارية (مثال: تبنى اى أداة من أدوات المحاسبة الادارية التى ذكرت فى السؤل ب 3)

باستخدام المقياس أدناه, الرجاء ضع دائرة على كل الاجابات المناسبة

غير مفوض	مفوض قليلا	مفوض إلي درجة متوسطة	مفوض الى درجة كبيرة	مفوض بالكامل
1	2	3	4	5
قرارات استراتجية	1	2	3	4	5
قرارات استثمارية	1	2	3	4	5
قرارات التسويق	1	2	3	4	5
قرارات متعلقة بالاجراءت الداخلية	1	2	3	4	5
قرارات الموارد البشرية	1	2	3	4	5
تبنى اداة جديدة من ادوات المحاسبة الادارية	1	2	3	4	5

ج7. باستخدام المقياس ادناه, الرجاء ضع دائرة فى كل صف لتحدد الى اى مدى **العناصر التالية موجودة** فى الشركة

غير موجودة	موجودة الى مدى قليل	موجودة الى مدى متوسط	موجودة الى مدى ملحوظ	موجودة إلى مدى كبير
1	2	3	4	5
قواعد واساليب الإجراءات الروتينية والأعمال	1	2	3	4	5
حرية العاملين ان ينظموا العمل كما يرغبوا	1	2	3	4	5

ج8. على المقياس ادناه, الرجاء ضع دائرة على الرقم المناسب لتحدد **مستوى استخدام الحاسوب في نظام المحاسبة** بالشركة

غير محوسب	محوسب قليلا	متوسط الحوسبة	محوسب إلى درجة كبيرة	محوسب بالكامل
1	2	3	4	5

ج9. باستخدام المقياس أدناه, الرجاء ضع دائرة لتحدد **كم تستخدم المصادر التالية عادة لتواكب الابتكار والتجديد فى الادوات المحاسبية** فى الشركة

لا تستخدم ابدا	نادرا ماتستخدم	تستخدم أحيانا	تستخدم غالبا	تستخدم دائما
1	2	3	4	5
مجلات	1	2	3	4 5
مجلات علمية	1	2	3	4 5
دورات تدريبية	1	2	3	4 5
مؤتمرات وندوات	1	2	3	4 5
كتب دراسية	1	2	3	4 5
أنترنت	1	2	3	4 5
آخرى (الرجاء حدد).....	1	2	3	4 5
.....	1	2	3	4 5

ج10. على المقياس أدناه, الرجاء ضع دائرة على الرقم المناسب لتحدد إلى أي مدى **تستخدم الشركة خبراء في عمليات تبنى أداة محاسبة إدارية جديدة**

لا تستخدم ابدا	نادرا ماتستخدم	احيانا تستخدم	تستخدم غالبا	تستخدم دائما
1	2	3	4	5

ج11. باستخدام المقياس أدناه, الرجاء ضع دائرة لتحدد **مدى توفر التدريب المتعلق بأدوات المحاسبة الادارية** فى الشركة

غير متوفر	متوفر بعض الشيء	متوسط التوفر	متوفر بشكل ملحوظ	متوفر إلى حد كبير
1	2	3	4	5
تدريب في المؤسسات المحلية	1	2	3	4 5
تدريب عن طريق إرسال العاملين إلى الخارج	1	2	3	4 5
تدريب داخل الشركة	1	2	3	4 5

ج12. باستخدام المقياس أدناه, الرجاء ضع دائرة لتحدد **مدى توفر الموارد الملائمة لتبنى أداة جديدة من أدوات المحاسبة الادارية** فى الشركة

غير متوفرة	متوفرة بعض الشيء	متوسطة التوفر	متوفرة بشكل ملحوظ	متوفرة إلى حد كبير
1	2	3	4	5
اجمالى الاستثمارات المطلوبة لتبنى أداة جديدة	1	2	3	4 5
الكفاءات او المهارات المناسبة لتبنى أداة جديدة	1	2	3	4 5

ج13. باستخدام المقياس أدناه, الرجاء حدد مدى توفر **دعم الادارة العليا لاستخدام أداة محاسبة ادارية جديدة** فى الشركة					
غير متوفر	متوفر بعض الشيء	متوسط التوفر	متوفر بشكل ملحوظ	متوفر إلى حد كبير	
1	2	3	4	5	
اهتمام الادارة العليا فى البدأ فى أستخدام أداة جديدة	1	2	3	4	5
رغبة الادارة العليا فى جعل الشركة رائدة فى استخدام أدوات جديدة	1	2	3	4	5
الموارد المناسبة الموفرة من قبل الإدارة العليا لتبنى الأدوات الجديدة	1	2	3	4	5

ج14. باستخدام المقياس أدناه, الرجاء حدد **درجة الأهمية لكل عامل فى قرار تبنى أداة محاسبة ادارية جديدة** فى الشركة					
ليس مهما	مهم بعض الشيء	متوسط الأهمية	مهم بشكل ملحوظ	مهم إلى حد كبير	
1	2	3	4	5	
ارتفاع المنافسة فى السوق	1	2	3	4	5
تقدم تقنية المعلومات	1	2	3	4	5
تغير تقنية الانتاج	1	2	3	4	5
كفاءة النظام الموجود والحاجة الى التحديث	1	2	3	4	5
الميزات النسبية للأدوات الجديدة على الأدوات المطبقة حاليا	1	2	3	4	5
قابلية الآداة الجديدة للتطبيق التجريبى قبل التطبيق الكامل	1	2	3	4	5
مدى توافق الأدوات الجديدة مع النظام الموجود	1	2	3	4	5
كون الأدوات الجديدة سهلة الفهم و الاستخدام	1	2	3	4	5
امكانية ملاحظة النتائج من الأدوات الجديدة	1	2	3	4	5
ضغط من الشريك الاجنبي	1	2	3	4	5
ضغط من الحكومة او السلطات التشريعية	1	2	3	4	5
توصيات او لوائح الادارة المركزية	1	2	3	4	5
نصيحة الخبير او المراجع	1	2	3	4	5
لكي تظهرالشركة بأن لديها أدوات مختلفة	1	2	3	4	5
الرغبة فى تجربة أدوات جديدة	1	2	3	4	5
معرفة هذه الأدوات الجديدة من الكتب و المجلات العلمية	1	2	3	4	5
دراسة هذه الأدوات الجديدة في المؤسسات التعليمية	1	2	3	4	5
تطبيق هذه الأدوات الجديدة من قبل الشريك الآجنبي	1	2	3	4	5
تطبيق هذه الأدوات الجديدة من قبل شركات ليبية أخرى	1	2	3	4	5
تطبيق هذه الأدوات الجديدة من قبل شركة رائدة فى الصناعة	1	2	3	4	5
أخرى (الرجاء حدد).....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

ج15. باستخدام المقياس في الاسفل, الرجاء حدد الي اى مدى **تعرقل العوامل التالية تبنى أدوات المحاسبة الإدارية المتقدمة** (الرجاء الرجوع الى السؤال ب3, الذى يحتوى قائمة لأدوات المحاسبة الادارية المتقدمة)

لا تعرقل ابدا	تعرقل بعض الشئ	تعرقل الى حد متوسط	تعرقل الى حد ملحوظ	تعرقل الى حد كبير
1	2	3	4	5

قلة المناهج الدراسية ذات الصلة بمثل هذه الأدوات المتقدمة فى المؤسسات التعليمية	1	2	3	4	5
قلة المنشورات الحديثة حول الأدوات المتقدمة	1	2	3	4	5
قلة برامج التدريب المحلية حول الأدوات المتقدمة	1	2	3	4	5
قلة نشاط المجتمع المهني المتعلق بالمحاسبة الإدارية	1	2	3	4	5
قلة برامج الكمبيوتر ذات الصلة بالأدوات المتقدمة		2	3	4	5
غياب الشركات الاجنبية العاملة فى القطاع الصناعي	1	2	3	4	5
غياب الشركات الليبية التى تتبنى الأدوات المتقدمة	1	2	3	4	5
التدريب الموفر من قبل الشركة	1	2	3	4	5
لوائح الادارة المركزية و الحكومة	1	2	3	4	5
توفر الموارد المالية	1	2	3	4	5
توفر العاملين ذوي المهارات المناسبة	1	2	3	4	5
توفر دعم الادارة العليا	1	2	3	4	5
أستقلالية أتخاد القرار فى المستويات الدنيا	1	2	3	4	5
نوع ملكية الشركة	1	2	3	4	5
الرضا عن النظام الحالي	1	2	3	4	5
قلة الثقة فى فائدة الأدوات المتقدمة	1	2	3	4	5
هذه الأدوات معقدة جدا	1	2	3	4	5
لا فوائد هامة متحصل عليها من تبنى الأدوات المتقدمة	1	2	3	4	5
صعوبة ملاحظة الفوائد من تطبيق الأدوات المتقدمة	1	2	3	4	5
ارتفاع تكلفة تطبيق هذه الأدوات المتقدمة	1	2	3	4	5
قلة توافق الأدوات المتقدمة مع النظام الموجود	1	2	3	4	5
استراتيجية الشركة التجارية	1	2	3	4	5
آخرى (الرجاء حدد).....	1	2	3	4	5
.....	1	2	3	4	5
.....	1	2	3	4	5

الرجاء ضع علامة (صح) اذا كنت ترغب في الحصول على نسخة من النتائج الاجمالية لهذه الدراسة [ ]

من أجل تحقيق أهداف هذه الدراسة وتحسين جودة البيانات , آمل **القيام بمقابلات شخصية مع بعض المجيبين على** هذا الاستبيان , ربما فى شهر **2007/2 ف.** مساعدتك سوف تكون محل تقدير. **اذا كنت ترغب فى أن أجرى معك مقابلة شخصية , الرجاء املاء القسمية فى الاسفل**

اسم الشركة: .....

اسمك: .....

رقم تليفونك: .....

بريدك الأكتروني: .....

الرجاء الانتباه للصفحة التالية لاي ملاحظات اضافية

شكرا على مساعدتك فى تعبئة هذا الاستبيان. نحن نقدر اي ملاحظات او اقتراحات ترغب فى اثارتها حول اي قضية ذكرت فى هذا الاستبيان . يمكن أن تستخدم الجزء المخصص أدناه, أو استخدم صفحة اضافية وارجعها مع الاستبيان المعبئ او بمفردها.

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