

Costing Systems and Management Accounting Practices in Syrian Private Industrial Companies: a Contingency Approach

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Abstract

The genesis for this thesis lies in various calls by management accounting (MA) scholars for there to be a better understanding of the nature of MA practices used in different businesses, especially in less developed countries (LDCs). Therefore, this exploratory study has been conducted in just such a country - Syria. The thesis discovers the complexity level of the costing systems and the extent of implementation of management accounting practices (MAPs) used in Syrian private industrial companies. Additionally, it also identifies the significance of such practices.

In undertaking the study, the researcher has adopted contingency theory (CT) and institutional theory (IT) to identify those contingent and institutional factors having the greatest influence on the costing systems and MAPs used. This research is significant because it is the first empirical study in this context in Syria and has been also conducted after recent reforms within the Syrian business environment. It covers such areas as the gradual liberalisation of markets and the implications of this for businesses and their control environment. To achieve its aims, a questionnaire survey was used as the main method, which was distributed on medium and large size private manufacturing companies in Syria. The outcome was 108 usable questionnaires making 24.4% response rate. The collected data was analysed descriptively using frequencies and statistically using the multivariate analysis.

The data analysis revealed that none of the responding companies used the ABC system or considering its adoption, alternatively they all used what can be regarded as traditional costing systems. The complexity level of the latter was also limited with the respondents using only volume-based or arbitrary cost drivers. The implementation level of MAPs was equally limited again, being confined, to more traditional practices as compared to the more modern MAPs used in advanced economies. The thesis also reveals that 6 out of the 11 independent factors examined, namely, product diversity, company size, top management support, percentage of exports, accounting education, and finally company age, had a significant association with the complexity level of the costing system adopted. Additionally, 5 out of the 7 independent factors studied, namely, company size, percentage of exports, accounting education, organisational culture and, finally, company age were significantly associated with the extent of the implementation of MAPs.

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Author's Declaration

I declare that while registered as a candidate for the University of Glamorgan's research degree, I have not been a registered candidate or enrolled student for another award of the University or other academic or professional institution.

I declare that no material contained in the thesis has been used in any other submission for any academic award.

Signature of candidate: Date:

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List of Acronyms

AC: Absorption Costing

AE: Accounting Environment

ABC: Activity Based Costing

AIS: Accounting Information System

CT: Contingency Theory

EE: External Environment

EFA: Exploratory Factor Analysis

JIT: Just-in-time

LDCs: Less developed countries

MA: Management Accounting

MAS: Management Accounting System

MCS: Management Control System

MAPs: Management Accounting Practices

MIS: Management Information System

NIS: New institutional sociology

OC: Organisational Culture

PEU: Perceived Environmental Uncertainty

PICs: Private industrial companies

PIS: Privately industrial sector

ROI: return on investment

SACA: Syrian Association of Chartered Accountants

SOIS: State-owned industrial sector

TC: Target costing

TMS: Top management support

UAS: Uniform Accounting System

Chapter (1): Introduction

1.1- Introduction and background of research

The world has become a more complex place to do business with various economic, social, and political forces, e.g., liberalisation, political and commercial agreements, and globalisation, having driven and caused wide changes in the structure of business organisations. These changes, in turn, have played a significant role in changing and developing the management accounting systems used by both public service and business entities. This thesis is concerned with the study of such changes as they affect the development of management accounting practices in businesses in Syria.

In the developed world, such factors were broadly started from the beginning of the 1980s when complexities such as, an increase in the intensity of competition (both domestic and global), fast changes in consumers' tastes, decreases in product life cycles, rapid developments in manufacturing technologies and decreases in the cost of information processing, occurred (Drury and Tayles 2005). Companies, in less developed countries (LDCs), have also faced such challenges but later broadly since the start of 1990s when a number of these countries set out to liberalise their economies. Moreover, this was accompanied with many actions such as, privatising of numerous state-owned companies and removing most of the protectionist barriers, and this in turn exposed companies in LDCs to stiff competition and globalisation affects (Waweru et al., 2004). Operating in such a business environment required companies to make their decisions in a timely manner and based on accurate cost information. They, therefore, needed to adopt contemporary MA systems based on financial as well as non-financial information such as, ABC, balanced scorecards, benchmarking and strategic planning; moreover, they needed to update these systems constantly to succeed in this new business environment.

Where traditional MA practices, such as absorption costing (AC), standard costing, and budgeting systems, were in use for planning, controlling costs and performance measurement in companies, the changes revealed an inadequacy of these systems in meeting the new needs of companies' managers. In fact, many MA researchers by the 1980s warned and claimed an

irrelevance of the then used MA systems to the new business environment and called for the release of MA from the straight jacket of financial accounting systems on which they were based as necessary to develop more effective MA practices (MAPs) (Eiler et al., 1982; Kaplan 1983, 1984; Johnson and Kaplan 1987; and Roslender, 1995).

Indeed, as Kaplan (1994) stated, the period from 1984 to 1994 experienced revolution and dramatic changes in MA theory and practices. This was through developing new techniques and conducting wide ranging research into the field of MAPs. Moreover, the time taken for the dissemination, acceptance and implementation of these innovations in both practice and education domains was relatively short (Kaplan, 1994). At least five research and professional practice based journals have been launched since the mid of 1980s to critically analyse existing (traditional) MAPs and to advance MA theory and practices (Lapsley and Mitchell, 1994), and this illustrates the growth in importance/interest in this area of research.

Implementation of the new MAPs by organisations encouraged MA academics and researchers, in developed countries, to conduct more research for identifying the state of then used MAPs and implementation extent of new MAPs. In LDCs, such MA studies were limited and have only started relatively recently influenced by different changes, namely, reforms and changes being conducted in some LDCs. For example, China, India, and Eastern European countries that started opening up their economies and/or a transition towards free market economies during the 1990s in order to achieve economic growth. The implications of such reforms are that MA researchers in LDCs have started to explore fully the state of used MAPs.

In addition to surveying the state of cost and MA systems, MA researchers have aimed to recognise and identify contingent factors influencing the development and implementation of these systems. Therefore, contingency theory (CT), which has been adopted since the middle of the 1970s, emerged as one of the most used theories by MA researchers for explaining variations in the design/implementation of MA systems. These contingent factors are classified generally into two groups: external and internal factors, the basic factors were both the external environment (EE) and company' features such as its size and adopted technology. Early researchers started by surveying the influence of these basic factors on the MA systems adopted (Gordon and Narayanan, 1984; Chenhall and Morris, 1986; and Puxty and Lyall, 1989), and then they have extended the body of contingency-based MA research

by adding a range of new factors (Alebaishi, 1998; Anderson and Lanen, 1999; Drury and Tayles, 2000, 2005; Haldma and Laats, 2002; and Abdel Kader and Luther 2008), such as, company age, accounting education, and organisational culture (OC). CT in MA has, however, achieved a high level of importance in all countries, and this was through a large number of studies that have used it as a research framework to date.

The researcher reviewed the relevant literature and found a number of additional insights. Firstly, regarding costing systems research, a significant amount of the literature has emphasised studying the ABC system, its implementation extent and success factors (this is consistent with Drury and Tayles, 2005). Examples of these studies include, Anderson (1995) and Anderson and Young (1999) in US; Innes and Mitchell (1999) and Innes et al. (2000) in UK; Clarke et al. (1999) in Ireland; Booth and Giacobbe (1999) and Baird et al. (2004) in Australia; Gosselin (1997) in Canada; Malmi (1999) in Finland; Cotton et al., (2003) in New Zealand and Liu and Pan (2007) in China. However, although most of the MA academics claimed the essential role of ABC system in decreasing the distortion in cost information reported compared with using traditional costing systems, many of the ABC empirical studies had no success in presenting conclusive evidence about such a function. Additionally, the research reported a limitation of the ABC system implementation where many other cost accounting studies revealed that traditional costing systems are still very prevalent and in use in both developed and LDCs (Drury and Tayles, 1994; Cinquini et al., 1999; Lamminmaki and Drury, 2001; Pavlatos and Paggios, 2007; and Triest and Elshahat, 2007). Another stream of this research related to surveying the state (e.g., complexity or sophistication level) of costing systems in use. Examples of such costing systems research include Drury and Tayles (1994, 2000, and 2005) in UK ; Alnestig and Segerstedt (1996) in Sweden; Lukka and Granlund (1996) in Finland; Cinquini et al., (1999) in Italy; and Pavlatos and Paggios (2007) in Greece.

Secondly, regarding the MAPs literature, attention was given to surveying the state of MAPs used in order to measure the gap between the theory and practice of MAPs, especially after the extreme criticisms mentioned earlier. Such studies, were conducted mainly using the questionnaire survey method. Examples of these studies are by Puxty and Lyall (1989), Drury et al. (1993), and Abdel Kader and Luther (2007) in UK; Booth and Giacobbe (1999) in Australia; Cotton et al. (2003) in New Zealand; Hutaibat (2005) in Jordan; and Ibrahim

(2007) in Syria. It is noteworthy that some of these studies examined only one or two MAPs while others addressed a wide range of MAPs.

As a final insight in this section, by the early of 1990s, there was a change in MA researchers' concerns from comparing the MA theory and practices to understanding the nature of MA practice. This was driven by the desire to move from theoretical concepts to studying these techniques in actual practice (Scapens, 1994).

'Researchers should not become unduly concerned about comparisons of management accounting practice against theoretical 'ideals'. Rather, they should focus more closely on the study of management accounting practices per se' (Scapens, 1994, p301).

For identifying the factors influencing the diversity of MAPs' implementation among companies, MA researchers extended the theoretical domain from economics into social and organisational theory. They started using many theoretical approaches, e.g., contingency theory (CT), economic theory, institutional theory, political economy, and so on (Scapens, 2006). The O'Connor et al. (2004) study, for example, adopted both institutional and agency theory for determining the factors influencing the adoption of western MAPs by stated-owned companies in China. Abdel Kader and Luther's (2007) study adopted contingency theory (CT) to explain how manufacturing companies in the UK implemented different MAPs. Ibrahim's study (2007) adopted new institutional sociology theory (NIS) in Syria for surveying the extent to which state-owned manufacturing companies apply standard costing systems and the factors influencing their implementation. However, due to the wide use of CT, it was adopted in this research for identifying the contingent factors having the greatest influence on the implementation of cost and MA practices.

In Syria, which is considered one of the LDCs, two incentives encouraged the researcher to conduct this type of research. Firstly the Syrian government, prior to the troubles of recent times, had started a transition from a centrally planned economy to an open economy or as they called it the 'economy of socialist market' since 2005. In this context, the importance of this research is emphasised in that it surveys the MA systems being used in Syrian industrial companies after a relatively recent liberalisation of Syrian market. As well as this, there are no previous studies that have examined either the implementation extent or the state of cost and MA systems in Syrian private industrial sector (PIS) while such research has been

extensively conducted in many developed and LDCs. Two MA studies into Syria were discovered - one by Al-Taweel (2001) and another more recently by Ibrahim (2007). Al-Tawel examined the impacts of both organisational and contextual variables on the adoption of accounting technology and found that legal requirements were the most influential factor on Syrian accounting systems and practices. Ibrahim as stated earlier adopted the NIS theory and surveyed the extent of the standard costing systems used in state-owned industrial companies in Syria. Moreover, the research studied the influences of institutional factors particularly governmental coercive pressures and other capacity contingent factors on this use.

Similar to many MA researchers in different developed and LDCs, and based on the above background, this study aims to explore the complexity level of costing systems and the implementation extent of MAPs being used in Syrian PICs. As will be discussed later, the researcher has adopted contingency theory (CT) for identifying the contingent factors influencing the complexity and implementation extent of cost and MA systems respectively. This provided an opportunity to make a significant and original contribution to knowledge especially that the researcher discovered and developed new contingent factors directly related to the context of Syrian businesses and the development of MA practices and processes in that context.

1.2- Research problems

Through a comprehensive review of the MA literature, it can be noted obviously that extensive research has already been conducted in developed countries, particularly the UK and US, since the start of 1980s for providing an empirical evidence about the state of cost and MA practices being used practically. Moreover, MA researchers used contingency theory (CT) for understanding local differences (between companies) as well as the national differences (between countries) in terms of the design and implementation extent of different MA practices. It is noteworthy that a large volume of the MA literature has been dedicated to studying modern MA systems, especially ABC systems, for identifying their implementation extent, associated success and failure factors, and usefulness to the adopting companies.

In LDCs (transitioning/emerging and developing countries), MA research, particularly contingency-based MA studies, it can be said that is still not mature. On one hand, MA research in emerging countries needs to be expanded (to include new MA practices and new

potential contingent factors), duplicated in respect of time horizons (longitudinal rather than cross sectional research), and repeated in terms of research methodologies/strategies adopted (case study rather than survey). On the other hand, the MA research in developing countries, which have just started their transformation towards a more market based economy, such as Syria, is very limited and needs to be developed through providing MA researchers with the theoretical and empirical background needed for encouraging them to advance such accounting research. In accordance with the success of contingency-based MA research that has been conducted thus far and in attempt for addressing its problem in the developing countries, the current study was conducted in one of the LDCs i.e. Syria.

In Syria, most of the accounting research (as limited as the number of studies has been) was concerned with studying financial accounting practices, particularly the Syrian Uniform Accounting System (UAS), being used in the state-owned economic units while very limited studies were available about the used MA systems in those units (e.g., Ibrahim, 2007 and Al-Taweel, 2001). In respect of the private sector, companies were ignored by accounting researchers for a long time due to the governmental policies focusing on the state sector (for more detail see the next chapter). Similar to the MA studies undertaken in LDCs and contrary to the work done by Syrian accounting researchers, this research has emphasised the importance of studying the cost and MA practices being used in Syrian privately owned industrial companies. The researcher has addressed the following issues and problems:

- 1- an absence of recorded evidence concerning the state of cost and MA practices being used in private industrial companies located in Syria;
- 2- a lack of research to identify those contingent factors which influenced the design and the extent of implementation of cost and MA practices in Syrian private industrial companies (PICs);
- 3- the non-existence of any knowledge about the extent of any application of ABC systems in Syrian private industrial companies, especially after over five years of financial and economic reforms.

1.3- Aims and objectives of research

The main aim of this research is to discover the state of costing system and MA practices being used in medium and large size Syrian PICs and their significance level. Moreover, it aims at identifying the contingent and institutional factors significantly influencing (or that have influenced) these practices. In detail, the objectives of the research are to:

- 1- Discover the complexity level of costing systems.
- 2- Explore the implementation extent of MAPs, especially whether Syrian PICs are using modern MA techniques or still using more traditional and basic methods.
- 3- Surveying the significance level of both costing and MA practices.
- 4- Identify the contingent and institutional factors (internal and external) which have influenced the design of these systems and the extent of their implementation in Syrian PICs.
- 5- Explore whether any type of the ABC systems are being used or under consideration in Syrian PICs.

1.4- Scope and area of research

The subject of this study is contingency-based MA research. Its scope is CT as a basis for exploring and observing the state of costing systems in detail and the MAPs generally used in Syrian medium and large PICs. This will be achieved by studying those contingent factors developed in the MA literature and by seeking to add to these in the Syrian context. The focus is on costing systems and, in addition, a broad set of MAPs namely, planning and control, performance measurement (financial and nonfinancial techniques) and other modern practices such as TQM and JIT. Finally, this research will examine whether any type of ABC systems are currently in use or under consideration in the surveyed companies.

1-5- Significance of research

The current research is considered valuable for the following reasons:

- 1- It responds to calls made by MA scholars (e.g., Tillema, 2005 and Gerdin, 2005) for more contingency-based MA studies especially in LDCs. This research, therefore, contributes in minimising the MA literature gap in LDCs, such as Syria. Moreover, this research provides MA researchers in Syria and elsewhere with an exploratory study that can be used as theoretical and empirical background for further research in this context;
- 2- expanding the institutional-based MA literature, especially those of LDCs through examining a new contingent factor, namely, accounting environment (AE), and the contingency-based MA literature through adapting two existing contingent factors, namely, organisation culture (OC) and top management support (TMS); and,
- 3- finally, by observing the implementation extent of several MA practices and the complexity level of costing systems simultaneously, by this manner the research can be seen as comprehensiveness.

1-6- Organisation of the research

After presenting the introduction chapter, this section shows the organisation of the rest of thesis as follows. Chapter 2 gives the reader concise information about the context of research i.e. Syria, including details about demography, history, economy, MA practices used, and finally the current situation in Syria. The literature review in this thesis extends over two chapters. Chapter 3 presents details about the MA history, MA practices used in LDCs, the development of MA research. Moreover, it reviews the main studies about the cost and MA practices used in developed and LDCs. Chapter 4 in turn focuses on the contingency-based MA studies. It starts with displaying information about contingency theory (CT) in the context of MA, its different forms of fit, and the early contingency-based MA studies. This is followed with the research framework which shows the all contingent factors studied in this research in terms of the implementation of cost and MA practices (dependent factors). Finally, chapter 4 discusses the main MA studies conducted in terms of every contingent factor and ends with presenting the research hypotheses.

Chapter 5 reveals detailed information about the methods and methodology used for achieving the research objectives including the research philosophy, approach, and data collection methods. Chapter 6 later presents the results of analysing the collected data descriptively, which are mainly about the state of cost and MA practices used in Syrian PICs. Chapter 7 analyses the collected data statistically mainly for purpose of identifying the contingent factors having the greatest influence on the research dependent factors.

Chapter 8 is very useful to the reader as it discusses and compares the whole research findings (chapter 6 & 7) with the content of literature review (chapter 3 & 4). Finally, the thesis is ended up with chapter 9 that mentions useful information about the research contribution, reflections, and limitations which are considered very important for conducting further MA studies.

Chapter (2): The Business and Economic Environment in Syria

2-1- Introduction

As the current research was conducted in Syria, it is considered useful for providing a thorough understanding of the content and findings of this research to give the reader an overview of that research context. This short chapter firstly, therefore, outlines the geographic, political and demographic characteristics of Syria. Then it presents a historical summary about the evolution of the Syrian economy, starting from the date of independence (from the French occupation) to the present day by providing a synthesis of the main transitions that were experienced by Syrian economy during that period. This chapter gives also a brief background about the current features of Syrian economy, i.e. size of companies, type of economic activities run by Syrian privately and state owned sectors with special attention being paid to the manufacturing industry in Syria. Finally, this chapter dedicates a section for discussing the accounting profession in Syria and its regulation.

2.2 - Syrian Arab Republic

Syria has one of the most continuous histories of any country in the world beginning some 10,000 BC. It was one of centres of Neolithic culture where agriculture and cattle breeding appeared for the first time in the world (Wikipedia, 2010). Given that the majority of the Syrian population are Arab citizens in addition to a few minorities such as Kurds, Circassians, Assyrians and Armenians, Syria is considered one of the Arab countries located in the heart of the Middle East. Syria's characterises include an important geographical location at the confluence of the three continents i.e. Asia, Europe and Africa. Syria lies on the east coast of the Mediterranean Sea and is bordered by Turkey to the north, Iraq to the east, Palestine, Jordan and Israel to the South and Lebanon and the Mediterranean Sea to the West (Aleppo Chamber of Industry, 2012).

Figure 1: Maps of Syrian Arab Republic



* Source: Google Maps

The total area of Syria is 185,180 square kilometres, of which about 60,000 kilometres is agricultural land and the rest is mountains and desert. The population of Syria is about 22.5m people (according to 2011 census) with 75% of the population under the age of 35 and more than 40% under the age of 15. Syria's population has one of the highest literacy rates in the Middle East area reaching 90.8% for Syrian aged 15 and older (US Department of State, 2009).

Politically, Syria acquired its independence in 1946 after 21 years of the French mandate and since that time, Syria can be described formally as a parliamentary republic with its official name as the ‘Syrian Arab Republic’. The Syrian Constitution was adopted on 13 March 1973, which defined Syria as a secular socialist state with Islam as the predominant religion.

2.3- Syrian economy: facts and numbers

The Syrian economy can be classified as a multi-resource economy, which is based on agriculture, trade, industry, services, and tourism. Additionally, there is the oil sector which has radically developed in terms of oil and gas extraction (accounted for 23% of government revenues, 20% of exports, and 22% of GDP in 2008). Syria’s economic system can be characterised as a mixed economy where the public sector supervises the main strategic sectors (cotton mills, bottled water, and land telecommunications) with partnerships between the state and private sectors contributing to most economic fields and, finally, there is an emerging private sector (Central-Bureau-of-Statistics, 2001). However, the Syrian economy is facing recently critical challenges and obstacles hindering its growth, mainly, having a large public sector performing poorly, decreasing amounts of oil production, increasing rates of unemployment linked to a high growth rate in the population, and corruption. In particular, the macroeconomic report (2005) revealed that there was a gradual depression in the contribution of the state manufacturing sector, which is considered the essence of industry, towards economic growth. A comparison of the average annual growth rate of the manufacturing sector between two periods 1990-1996, 1997-2003 showed the decrease of this rate from a positive of 0.16% to a negative growth rate at -0.59% respectively. This indicates in turn a fragility of economic growth in Syria due to its essential dependence on sectors such as extractive industries and agriculture. These facts in turn caused it to have low rates of investment. The Syrian economy, however, can be described as a middle-income developing economy with the following economic indicators: GDP \$59.4 billion, real growth rate 5.0%, and \$2,664 per capita GDP (2010 projected), (US Department of State, 2009).

In recent years, the Syrian government has started a transition towards a more market-oriented economy (for more details see the next section) through implementing modest economic reforms in most economic fields. In fact, several actions have been conducted thus far to help achieve this transition, such as, opening private banks, establishing the Damascus

Securities Exchange (DSE), remove subsidisation from some products, liberalising most Syrian markets, and gradually allowing the private sector to access business fields that had been previously exclusively for the public sector, e.g., port operations, power generation, and air transport. Moreover, the government also loosened restrictions that were imposed on using foreign currencies through, for example, allowing investors to accept loans (and other credit instruments) from foreign banks and to repay them using domestic banks. This allowed Syrian citizens to withdraw the equivalent of up to U.S. \$10,000 from their Syrian Pound accounts for outside use and permitted the establishment of private companies for the operation of foreign currency exchange (US Department of State, 2009). However, in spite of all these steps towards reform, the government is still controlling the majority of the Syrian economy resulting in these reforms appearing slow and rather ad hoc.

Given that the current research was applied in the industrial sector, it is useful to review in some detail the components of both the public (state-owned) and private industrial sectors in Syria. The main industries in Syria are: petroleum related, textiles, pharmaceuticals, food processing, beverages, tobacco, phosphate rock mining, cement, oil seed extraction, and car assembly. In terms of the state-owned industrial sector (SOIS), there are, according to the database of the Ministry of Industry, eight state-owned industrial organisations in addition to two industrial companies. Each of them specialises in manufacturing a particular industry. Moreover, each of these eight organisations has a number of industrial companies located in different geographic areas inside Syria. Each industrial company in turn specialises in producing a range of products that belong to the industry type of their home organization. Table 1, however, shows the names of the eight state-owned industrial organisations and the two industrial companies in Syria and the number and locations of industrial companies related to them.

Table 1: Number and distribution of state-owned industrial organisations in Syria

Name of Organisation	Number and location of related companies
Public Organization for Chemical Industries	13 different companies located in 5 different cities
Public Organization for Sugar	9 different companies located in 6 different cities
Public Organization for Food Industries	22 different companies located in 12 different cities
Public Organization for Textile Industries	27 different companies located in 9 different cities
Public Organization for Cement and Building Materials	10 different companies located in 5 different cities
Public Organization for Engineering Industries	13 different companies located in 5 different cities
Public Organization for Cotton Ginning and Marketing	8 different companies located in 7 different cities
Public Organization Of Tobacco	3 different companies located in 3 different cities
Public company for Agricultural machinery Distribution	One company located in Aleppo
Al-Fourat Company for the manufacture of tractors and Agricultural machinery	One company located in Aleppo
Total Number of Companies	107

On the other side, the database of the Ministry of Industry (according to the end of 2009 data) showed that the number of private industrial companies (PVICs) registered with them was greatly higher than that of the state-owned companies. This was obvious through the total number of PVICs established under the law No. 21 and 10, which reached to 1202 companies distributed throughout the country (mainly in Aleppo and the Damascus countryside). Table 2 show the geographical distribution of PVICs throughout the country per numbers and according to the two investment laws i.e. 21 and 10.

Table 2: Number and distribution of private industrial companies in Syria

City	Number of Companies		Total
	Law No. 21	Law No. 10	
Damascus	12	12	24
Damascus Countryside	162	200	362
Aleppo	273	202	475
Homs	41	57	98
Hama	4	26	30
Latakia	41	27	68
Dayr al-Zur	4	3	7
Daraa	22	24	46
Idilib	3	16	19
ArRaqqah	9	18	27
As Suwayda	10	12	22
Tartus	—	20	20
Al Hasakah	—	4	4
Total Number of Companies	581	621	1202

A comparison between table 1 and 2 shows that the PIS is bigger and more geographical distributed than the public sector in Syria. Given this fact in addition to the poor productivity of the state-owned sector (as mentioned above), more effort should be directed towards understanding the issues confronting the PIS, especially, after two decades of governmental efforts to involve and increase its activity in the Syrian economy. In particular, in the context of this thesis this concern should be driven by the MA researchers and practitioners i.e., instead of continuing to concentrate on studying the MA Systems of the SOIS, they should conduct and encourage research on the actual state of MA practices being used in the private sector and factors influencing their implementation and design. Therefore, the current research went through this direction and examined the management and cost accounting practices being used in Syrian PVICs and the contingent factors influencing their implementation.

2.4- Historical background on the economic system in Syria

It is known that the type and policies of a country's economy system have a direct influence on the design and implementation of accounting systems used in its companies. For example, broadly speaking, companies working in a centrally-planned economy tend to use an accounting system with a macro information focus while those operating in a market economy use usually an accounting system stressing micro information (Alnamri, 1993). Therefore, it is useful before reviewing the state of MA systems in Syria to shed some light

on the nature of Syrian economic system. The Syrian economy has experienced some transitions since the independence of Syria from the French occupation. The most important transitions in respect of the economic development were the investment law No.10 issued in 1991 and its amendments in 2000, and the tenth five-year development plan (2005-2010). This section reviews the main economic transitions applied in the Syrian economic system since independence from the French occupation moreover it summarises the socioeconomic antecedents that participated in creating this system.

During the period extending from independence on 17 April 1946, to the late 1960s, Syria experienced political instability due to a sequence of military reversals (BBC, 2012). The revolution of March 1963 then happened and resulted in the nationalisation of privately owned large and medium sized companies either completely or partially. The total nationalised companies reached 108 companies and created the core of the SOIS by January 1965 (All Refer, 2009). A further revolution occurred in 1970, and is considered a turning point in Syrian modern history through delivering economic and political stability (Damascus Online, 2009). One of its economic results was completing the nationalisation of previously partly nationalised companies (All Refer, 2009). Starting from that time, the Syrian SOIS was formed where the government relied on it as a main tool for economic development. To achieve this, like other LDCs, the Syrian government, tended to issue a series of decrees and laws (until the end of 1980s) that offered different aspects of support to the SOIS. In detail, they included support in the form of financial subsidies, granting superiority at the expenses of the private sector and finally protecting it from the forces of the market, e.g., preventing foreign competition and exercising direct control over prices.

Since the start of the 1990s, the Syrian economy has witnessed essential changes particularly when the government changed its economic policy regarding the private sector. In detail, the Syrian government started involving the private industrial and service sector in the economic development of the country. This was obvious through the laws and degrees that were issued for increasing investment and encouraging enterprise in the private sector. One of the most important laws was the law of investment No. 10 in 1991, which included deferred taxation and some exemptions to PIS (Dalila, 2000). Later this law was revised by decree No. 7 in 2000 (Habeeb, 2008). Indeed, the law No.10 and its amendments have played an efficient and effective role in enlarging and increasing the number of privately owned companies and

involving them in the economic development plans, especially after over twenty years of their exclusion.

The other important change was the tenth five year development plan (2005-2010), which included plans and programs for a significant transition of the Syrian economy from one centrally planned to an open socialist market economy (Planning Council of Government, 2009). As stated by PICC (2008), this five plan focused on the transition from a centrally planned economy, in which the SOIS was predominant and the economy was subsidised and semi-closed, to a 'socialist market economy' system, in which planning is indicative rather than central and the economy is one with an open market philosophy within socially responsibility framework. The desired system was focused mainly on improving the lives of an underprivileged population, the efficiency of production, providing sustainable economic growth, and finally distributing income more fairly in Syria (Planning and International Cooperation Commission, 2005).

Moreover, for achieving this target i.e. economic transition, the five year plan included the following sub plans; (1) issuing a variety of laws (e.g. a law for forbidding monopoly) for liberalising the Syrian market and improving and activating the PIS's role as an essential actor in economic growth; (2) signing several bilateral, regional and multilateral agreements with Arab and foreign countries, e.g., the free trade zone agreement between Syria and Turkey started in January 2007 and the free trade zone agreement between Syria and the European Union (EU) that was initially signed at December 2008 after it had been frozen in 2004; (3) constructing four industrial cities, and (4) eliminating gradually all the previous decrees regarding the protection of domestic industries. A very recent example concerning these plans was law No.24 issued in 2010, which aimed to protecting domestic nascent industry in Syria from external takeover. The essence of this law was protecting such industries for up to five years from long experienced competitors through: 1): imposition of customs duties or increase the customs duties applicable on imports of the product equivalent to that sought to be protected; 2): reducing customs duties on production inputs for the industry sought to be protected (Ministry of Industry website, 2007).

Practically all the economic changes applied by the Syrian government in turn have influenced effectively the role of PIS in Syrian economy. Relatively recently in 2007, the importance of PIS in the Syrian economy has been stressed, For example, the contribution of

PIS in the manufacturing sector of the Syrian economy has risen to 76% with only 24% by the SOIS by 2007 (Directorate of Statistics and Planning, 2007). Moreover, the distribution rates of the total industrial labour force (516,262 workers) in Syria were 84.9% employed in the PIS versus only 15.1% employed in the SOIS (Ministry of Industry, 2007). Table 3 illustrates the gradual changes in the participation rates of the PIS and SOIS in the manufacturing sector over the past three decades:

Table 3: Change in the participation rate of PIS and SOIS in industrial output 1985-2007

Participation rates in Syrian Manufacturing Sector	1985	1996	2007
PIS	27%	48%	76%
SOIS	73%	52%	24%

Source: Dalila (2000) and Ministry of Industry (2007).

Table 3 shows that by the mid of the 1980s, the participation rate of SOIS in the manufacturing sector was almost three times of that of the PIS and this can be simply referred to as the main governmental concern given to the SOIS especially after the revolution of 1970. After five years of issuing the investment law No.10, its impact was obvious through the participation rate of PIS in the manufacturing sector, which became almost the same as that of the SOIS. Finally, in 2007 i.e. after passing two years of the tenth five-development plan, the PIS became the biggest driver of the economic growth in Syria where its participation in the manufacturing sector was three times of that of the PYS. Another indicator on the increase of the PIS' role over the SOIS was the recent information provided by the Central Bureau of Statistics (CBS website), which showed that the PIS has participated in producing 81% of the net domestic product in the industrial sector in 2009 versus only 19% by the SOIS.

It is noteworthy that despite the governmental concern and support of the private sector, most of its companies to date are still family-owned enterprises and can be classified as medium or small size companies. The latter being those with less than 10 workers (Directorate of Statistics and Planning, 2007). Finally, only recently i.e. after the establishment of Damascus Securities Exchange (DSE) in 2007 that began functioning practically in 2009 has the Syrian economy witnessed a transformation of some companies to become a public organisations listed on the DSE. However, the number of public industrial organisations listed on DSE is still very limited (Damascus-Stock-Exchange, 2010).

2.5- Management accounting practices in Syria's private and public industrial sectors

As mentioned above, the early socioeconomic and political antecedents occurred in Syria resulted in the marginalisation of the PIS' function as a tool of economic development in that country. This meant the predominance of state-owned industrial sector (SOIS) on the main industries, which in turn entails on the one side, a potential direction of the accounting researchers' concerns in Syria towards studying and surveying the accounting systems of the SOIS, and on the other side, ignoring potential for research related to the accounting systems used in the PIS. All the MA literature available in Syria, therefore, concentrated on examining the accounting systems used in the SOIS. Except for the research conducted by Al-Taweel (2001) that conducted a comparison between the state and private owned organisations in terms of the association between the capacity extent of adoption of sophisticated MA systems and organisational contextual factors. The study revealed that due to its dynamic environment, the private sector was more capable of absorbing sophisticated MA practices than the public sector, which was described as having a stable environment and mechanistic strategies.

Therefore, in spite of the current study being implemented in the PIS, it is important, however, to briefly discuss the development of accounting system in general and MA in particular in the SOIS. This is useful for the following three reasons: (1) an absence of studies about the MA practices used in the PIS; (2) the potential continued influence of the SOIS on the PIS in respect of the MA practices and accounting systems given that many of accountants working in the PVICs had already worked in the SOIS; and finally (3): almost all the PIS' accountants were originally graduates of Syrian universities, which teach accounting syllabi relying mainly on teaching accounting practices and systems used in the Syrian UAS.

As stated by Al-Sakka (1981), in responding to the economic transition (socialist transformation) of the 1970s, which resulted in the predominance of SOIS in the main industries, the Syrian government tended to regulate the accounting practices in the SOIS. These efforts resulted finally in the issuing of the Syrian UAS through Decree No.21 in 1974. The UAS No.21 was considered an important and historical starting point in developing the accounting profession in Syria that was suffering from lack of organisation before 1974. This was because the UAS could develop the function of accounting in Syria from just a means for

recording and classifying financial transactions to an instrument of economic analysis able to link between the past and future and provide the necessary data for business planning in addition to monitoring the implementation of plans and evaluating their results. Therefore, the UAS (21) was based on two main functions:

- Unifying accounting standards and rules throughout all state business units.
- Connecting the accounts of these units with the national accounts for purposes of central planning and control.

Although this Accounting System has formed the basis for developing the accounting profession in Syria, it has faced several criticisms once put in practice at the start of 1975. One of the main criticisms being that the UAS (21) did not develop standards and rules in respect of organising cost accounting except for some broad definitions and expressions. Hence, the legislative decree (No. 287, 1978)¹ was issued and included significant revisions to address these problems. The decree (287) was considered a turning point in the MA history in Syria as it contained general standards and rules for regulating and applying cost accounting principles in public economic enterprises (Jilaty, 1993).

It is noteworthy that the UAS (287) imposed the implementation of standard costing systems on the whole of state business organisations and companies since the start of 1978. However, although a long period (over twenty years ago) of legal enforcement has passed, the extent of standard costing implementation was limited. This was reported in Ibrahim's (2007) study, which revealed that only under half of the state companies declared using standard costing systems and even they took the form of partial implementation.

The UAS (287), however, is considered the backbone of accounting in the public sector and still being taught as a main subject in Syrian Universities. Additionally it has greatly influenced accounting practices in the private sector as well given that a large number of Syrian accounting graduates is entering annually the private sector market. Given the link between practice and the need for systems the UAS (287) has also played a part in the design of accounting computer software².

¹ The UAS (287) took the form of legislative rules that should be applied by the entire economic public units.

² This is according to the knowledge of researcher through reviewing the accounting software used in the private sector and working as an accountant in a private company for between 2003-2006.

On 26 December 2007, in line with the economic reforms mentioned in the previous section, a new version of the UAS was issued in accordance with the decree No 490. This included also cancelling Decree No. 287. The main reasons behind issuing UAS 490 as stated by Hamdan (2009) were: 1): in line with the economic and financial reforms been started in Syria, particularly the contents of tenth five years development plan (2005-2010); 2): to be consistent with international accounting standards (IFRS) which are applied recently by most of international organisations and bodies, e.g., World Trade Organisation (WTO); and finally (3): harmony with some laws and regulation especially, the basic financial law No. 54 of 26.

Finally, the MA literature in Syria can be described as being fragile or even poor, especially that related to the PIS. Thus, it is very important to encourage research in this direction through conducting exploratory studies that considered an important background for developing the MA research in developing countries i.e. Syria.

2.6- The current situation in Syria

After presenting the summary above on the demography, history, economy, and MA practices used in Syria, it is useful to highlight the up-to-date situation in Syria. This is because roughly for the last one and half years Syria has witnessed a public uprising, which started in a few cities and at the time of writing spread to almost all Syrian cities and is still continuing. Furthermore, while it started peacefully more recently it has turned into military actions between the government and its opponents. Accordingly, this has affected greatly all types of activities in Syria including economic, business, and social activities throughout the whole country, especially in Damascus and Aleppo the biggest two cities in Syria. This uprising has not affected the main empirical study of research, which was conducted before the start of uprising. It has, however, prevented the researcher from supporting the findings which came from the empirical work with additional qualitative data that was expected to be collected through interviewing from some of the responding companies. More details on these issues are discussed in the methodology chapter and referred to in chapter 5.

2.7- Summary

In conclusion, this chapter has briefly given an overview of the background to this research by its discussions on the Syrian economy, its review of Syria's political evolution to its current state and the MA practices being used in the Syrian industrial sector. It can be seen

from this overview that there is a need to understand where Syria is, and has come from, in terms of understanding the background to the state of the implementation of the management accounting practices (MAPs) in that country. In this context, the current research is considered opportune for meeting such a need because it observes the cost and MA practices used in Syrian PICs and, as will be shown later, identifies the contingent factors influencing them. When Syria is ready to move forward having resolved its current political issues this thesis is seen as providing a basis for discussion around how such a moving forward should be effected in the context of developing best business and specifically MA practice.

Chapter (3): Cost and Management Accounting Systems Research

3.1- Introduction

The concept of MA is a broad construct and can include all practices used in business and governmental units for providing information helpful for the purposes of decision-making, control, and accountability (Hopper et al., 2009). From a different perspective, MA system was defined as a formalised information system consisting of elements applied by organisations to affect or control their managers to achieve their objectives (Bhimani et al., 2008). In the current research, however, the cost accounting systems and MAPs were treated as separate factors, rather than as a one construct, throughout the whole stages of research. It is noteworthy that in the literature, there is no clear distinction between cost and MA systems. Drury (2008), however, summarised the functions of MA into the following three tasks:

- 1- calculating costs of both sold goods and remaining inventories for the purpose of internal and external profit reporting;
- 2- supplying different managers with information for purposes of decisions making; and,
- 3- supplying information required for planning, control, and performance measurement systems.

After reviewing various MA textbooks (e.g. Jabal, 2000; Barfield et al., 2001; and Drury, 2008) and empirical researches (e.g. Alebaishi, 1998; Haldma and Laats, 2002; Hutaibat, 2005; and Triest and Elshahat, 2007, Al-Omiri and Drury 2007), the researcher chose to survey the implementation of the following conventional MA systems: costing, budgeting, standard costing, and performance measurement systems in addition to a set of advanced MA practices, e.g., ABC, TQM, and Activity-based budgeting. Greater emphasis, however, was placed on examining the state of cost accounting systems used in the responding companies through observing their complexity level. Moreover, this research identified those contingent and institutional factors having the greatest influences on that complexity level and the extent of the implementation of MA practices.

This element of the literature review, however, concentrates on reviewing the state of cost and MA practices used in developed and LDCs while the next chapter addresses the previous

MA studies in terms of every contingent and institutional factor observed in this study. Hence, the researcher reviewed comprehensively the relevant MA literature, particularly those been published since the 1980s. For the survey, the researcher first searched all the relevant literature for MA studies conducted in terms of CT and IT and then reviewed the extracted studies in detail. The search was through using the electronic databases, mainly, Science Direct, Business Source Premier, and Emerald, journals hardcopies, and PhD theses. Second, the researcher next used the list of references of every study reviewed in the first stage, and this helped in findings many of the most relevant articles. Third, the researcher repeated the previous step but this time in terms of searching about previous studies concerning the contingent and institutional factors examined in this study. Finally, the researchers checked systematically all volumes and issues (mainly since 1980s) of a set of the relevant journals, mainly, 'Management Accounting Research', 'Journal of Management Accounting Research', 'Accounting, Organizations and Society', 'The British Accounting Review', 'Management Accounting Quarterly', 'Contemporary Perspectives on Management Accounting'. The outcome was a review of over 400 relevant studies related to the research context.

This chapter is structured as follows:-

- section two displays a historical summary of the subject;
- the third section presents MA practices used in LDCs to which Syria belongs;
- the fourth summarises the development of cost and MA research;
- the fifth discusses the state of cost accounting systems in developed and LDCs; and finally,
- the sixth reviews the state of MA practices in developed and LDCs.

In terms of the last two sections, the discussion will be mainly descriptive to provide a comprehensive background on the cost and MA systems used in practice, their features, and for discussing the tools used in some contingency-based studies, for measuring the cost and MA accounting systems as dependent factors.

3.2- Management accounting: a brief historical background

The functions of MA have changed over time influenced by the changes in the business environment. During the period from 1840 to 1910, the purpose of cost accounting was only for recording in the accounting books the costs and revenues of companies (Bromwich, 2007). At the end of the 19th century and the beginning of last large enterprises started to

emerge (e.g. textile, railroads, and steel enterprises) and this called for more sophisticated costing systems and accounting practices to supporting decision-making and for planning and control purposes (Lapsley and Mitchell. 1994). Specifically, the first use of cost information for serving managerial requirements occurred in the New England textile industry in the US at the beginning of the 19th century. This business, which was considered the first large scale manufacturer in a time when most of the then existing industries were small, largely resulted in changing the purpose of the accounting 'profession' from serving the needs of the mercantile class to serving the needs of industry (Fleischman and Tyson, 2007). The techniques used included, for example, standard costing, overhead rates, profit pools, and opportunity costs that are still used today (Anthony, 1989).

After the Second World War, accounting academics and professionals started to emphasise the use of cost information by management and the influences of behavioural factors on management control. Thereafter, the collection of these concepts and practices has been taught as a required subject in academic institutions (e.g. Harvard Business School - Anthony, 1989). Moreover, the post-second world war period witnessed important changes in the functions of cost accounting. Horngren (1989) analysed cost accounting textbooks and summarised these changes as follows: 1) A survey of 1940-50 period textbooks showed coverage divided 73% for stock valuation, 21% for cost control, and only 6% for decision-making purposes; 2) the statistics of the 1951-60 period were 64%, 27%, and 9% respectively; and finally 3) the period 1961-70 period witnessed a notable increase in the decision-making and cost control concerns' percentages that approached 33% and 21% respectively and only 46% for stock valuation. The 1970s-80s saw new concepts covered such as 'agency theory' and an emphasis on studying organisational behaviour. This saw a further emphasis on activities to maximise profitability and issues of organisation performance evaluation. It is evident, however, that the main function of costing systems, before the 1980, was mainly for valuing the costs of sales and inventories for profit measurement to meet external financial reporting requirements. Such cost information that was available at that time was not particularly accurate due to simplicity of the costing systems in existence but was, however, being used by managers for decision-making purposes (Johnson and Kaplan, 1987).

The period after the 1980s experienced significant and numerous changes in the companies' business environment however, they can be summarised in three issues. First, there were

great developments in manufacturing technologies that were termed advanced manufacturing technologies (AMTs) e.g. flexible, lean, and just-in-time (JIT) manufacturing systems that were adopted by many manufacturing companies with the aim of improving product quality and reducing production costs (Bromwich and Bhimani, 1989). The second change was an increase in international competition due to deregulation in many countries. The last significant event identified here were the major developments in the field of information and communications technology (Drury and Tayles, 2000) which it can be argued have continued to this day. Under these conditions, the then used costing systems and MAPs became unable to meet the requirements of the new business environment and this was termed "the obsolescence of MA systems" (Kaplan, 1994). Thereafter, many criticisms emerged from MA researchers asserting the inadequacy and irrelevance the then current MAPs to the new business environment and calling for the release of MA from the chains of financial accounting and for the development of more effective MAPs (Eiler et al., 1982; Kaplan 1984, 1994; and Johnson and Kaplan 1987; and Roslender, 1995).

Numerous MA practitioners and researchers asserted that it was not only desirable but essential to develop new techniques that could better meet the needs of business but only after understanding the existing MAPs (Kaplan, 1984; Cooper, 1988; Hiromoto 1991; Drury and Tayles, 1998, and Libby and Waterhouse, 1996). Indeed as Kaplan (1994) stated in his article, which reviewed the development of MAPs between 1984 and 1994, the period from 1984 to 1994 experienced revolutionary and dramatic changes in MA theory and practice. This was through developing new techniques and conducting wide-ranging research in the field of MAPs. Moreover, the time needed for dissemination, acceptance, and implementation of these innovations if business was to move forward in both practice and educational domains was relatively short (Kaplan, 1994). Finally, The ABC system was conceptualised and introduced during that period and seen as a panacea to all the failings of traditional costing systems (Anderson, 1995).

3.3- Management accounting in less developed countries

Historically, the accounting systems in less developed countries (LDCs) were described as still in their embryonic stage with a low degree of professionalism. In other words, it was observed as suffering from a lack of accuracy and adequacy in its reported accounting information comparing to that in developed countries (Jaggi, 1973). This was because most

of the accounting practices being used in LDCs were acquired³ mainly from the developed countries without considering the unique social, economic, political variables of these countries (Hove, 1986). Indeed, Briston (1985) stressed that the UK (and by inference the US) accounting system displayed a virtual irrelevance to the modern business environment at that time but was not only being used in most of the developed countries, but was also gradually being adopted in many of LDCs. However, at the start of 1990 i.e. during the period of economic transition and reforms for some LDCs, they started to recognise the importance of accounting, especially MA practices, as a tool for economic development therefore they drew plans for improving them (Jaruga and Ho, 2002). Accordingly, accounting research in general and MA research in special has only flourished in LDCs over the last two decades (Hopper et al., 2009).

In detail, transformation to market economy was accompanied with economic changes, e.g., liberalisation, privatisation, deregulation; such transformations in turn caused the exposure of domestic companies in these emerging countries to influences of international competition particularly in respect of price, quality and innovation. This in turn, entailed the management of these companies needing to acquire accurate and timely cost information to enable more appropriate decisions. In this, they recognised the need to use a wide range of MA practices. In China, for example, Firth (1996) showed that under the centrally-planned economic system, management accountants in Chinese state-owned companies were not highly using detailed MA systems, which require having a great level of discretionary indecision making responsibilities. The transition to a market system, however, accompanied with a gradual dissemination of profit-oriented and a more market-focused attitude resulted in greater western MA practices being used. Such MA practices, however, were not well understood amongst local accountants and to address this issue participation in joint venture organisations with foreign partners was suggested and became more common place.

In Syria, as outlined in chapter 2, all the MA practices used in business entities were based on the Syrian UAS. In the SOIS, the UAS is imposed on its companies while in PIS most of the companies designed their cost and MA systems using UAS principles. This was because most of the accountants working in the PIS had already worked in the SOIS moreover the UAS is

³Examples about the methods of transferring the developed countries' accounting systems to LDCs are: the influence of accounting systems of LDCs' colonisers, influences of large and powerful transnational corporations working in LDCs, international accounting organisations selling accounting consultancies and services through their offices scattered in LDCs, and finally conditions of economic aid agreements usually offered to less developed countries (Hove, 1986 and Perera, 1989).

taught in Syrian universities as one of the main MA modules. Similar to LDCs, the Syrian UAS was improved on 26 December 2007 to cope with the economic reforms happening at that time in Syria.

In this context all previous accounting research studies in Syria have concentrated on observing the MA systems being used in state-owned companies especially the extent of adoption of Syrian UAS while the PIS has been ignored. The current research focused on surveying the cost and MA systems currently used in PICs in Syria thus breaks new ground.

3.4- Development of cost and management accounting research

This section briefly reviews the development of MA systems research in developed and LDCs from the 1980s to date. As mentioned above (section 3.2), the start of 1980s was characterised by the development of new MA practices, such as, ABC, target costing (TC), benchmarking, and balance score-cards, systems. The implementation of such systems stimulated MA researchers later to examine and survey their level of importance, extent of implementation, and to discover those factors which influenced their implementation or not amongst companies. This, as a result, has influenced the work of MA researchers studying and surveying traditional MAPs such as standard costing, budgeting, and AC systems. This was confirmed in an editorial of the respected MA journals *Management Accounting Research*. Scapens and Bromwich (2010) compared between the papers published during 1990-1999 (178 papers) and those during 2000-2009 (205 papers). It was reported that there was an increase in the number of papers published about contemporary MAPs (see also Lindquis and Smith, 2009) compared with those concerning traditional MAPs. The editorial indicated that on one hand, the percentage of papers about budgeting, standard costing, and variance analysis decreased from 7% in 1990-1999 to 5% in 2000-2009, moreover, there was a drop in the percentage of cost accounting systems and techniques' papers from 11% in 1990-1999 to 4% in 2000-2009. On the other hand, the report revealed the existence of an increase in the papers published about advanced MAPs from 7% in 1990-1999 to 10% in 2000-2009 (Scapens and Bromwich 2010).

In the UK as a developed country, there were at the start of 1980s calls for MA researchers to conduct empirical studies to identify and record the current state of MAPs and to discover the gap between MA practice and theory. One of these calls was made by the Manchester Business School Conference on MA research in 1980. It stated the limitation of the

accounting researchers' awareness about the implementation extent and features of MA practices being then used in UK companies (Scapens, 2006). Several studies were conducted and most of them found the existence of an increasing gap between theory and practice. Although there were theoretical advances e.g., probability theory in budgeting, residual income measure, and linear programming, almost none of them has been adopted practically (Dugdale, 1994).

MA research in LDCs was described as relatively limited and still in its infancy by Alawattage et al. (2005). The reasons underlying this lack of accounting researchers' concern with studying MAPs, particularly before the 1990s, can be summarised as follows. Before the 1990, the economic system of most LDCs was social (socio-economic system vs. capitalist system⁴ in developed countries) in which the state-owned sector was predominant and production and pricing decisions were made mainly according to social, political and economic considerations (Scapens and Yan, 1993). These issues caused the use of cost information for managerial purposes such as, pricing and performance measurement to be limited or even absent (Scapens and Yan, 1993) in the majority of LDCs. Finally, the function of accounting in such systems was not only for measuring profit, but also for generating statistical information required for preparing economic plans of the country (Jilaty, 1993). Consequently in LDCs attention was placed essentially on financial accounting at the expense of MA development, which was virtually ignored without any theoretical or practical developments especially before the 1990s (Scapens and Yan, 1993 and Hopper et al., 2009).

As mentioned above, at the beginning of the 1980s, some of LDCs started liberalising their economies and moving towards the free market mode. For example, the Central and Eastern European countries have stated the transformation processes since the late 1960s, but the actual change was completed in the 1990s (Jaruga and Ho, 2002). These transformations, which pushed first the MA accounting practitioners in the transforming countries to adopt and use more advanced costing and MA systems especially from the developed countries, encouraged later the MA researchers to conduct studies for observing the MAPs used and the contingent factors influencing their design and implementation in these countries (Jaruga and Ho, 2002). This can be confirmed by the more studies conducted recently in this area

⁴Scapens and Arnold (1986, cited in Scapens and Yan, 1993) stated that western economies are neoclassical in which MA researches are conducted according to two assumptions: 1) all activities are established based on an economic rationality and 2) the demand and supply mechanism organises economic activities.

(e.g.Szychta, 2002; Hutaibat, 2005; Nimtrakoon, 2009) although there is still a need to develop the field and hence this study on Syria.

In conclusion, it is evident that the MA literature in LDCs is relatively limited, in terms of quantity and quality of the research, comparing to that in developed countries. This might be attributed to issues pertaining to the type of economic system and the conventional wisdom for the MA development in a country (Scapens, 1994). In other words, the economic factors of a country (meeting market needs, improving product quality and reducing production costs) are considered at least partially as providing the impetus for the developments in management accounting practices (MAPs) and its associated research (Bromwich, 2007). Finally, another reason is the lack of published work about the LDCs' MA systems in addition to difficulties of collecting usable and reliable data from such countries (Hopper et al., 2009).

3.5- The state of cost accounting systems in developed and less developed countries

3.5.1- Introduction

This section reviews the main cost accounting studies conducted in developed and LDCs using two subsections. By this way, it can be easier to compare and consider the researcher's findings (section 8.3). The structure is thus designed as follows: the second subsection presents a background about cost accounting systems; the third subsection discusses the main costing accounting studies in developed countries; and finally, the fourth subsection reviews the studies available in LDCs in which the current research context belongs.

3.5.2- Cost accounting systems: a background

Before starting in a review of cost accounting studies, it is useful to identify the costing systems mostly used in the MA literature. Reviewing MA textbooks (e.g. Jabal, 2000; Barfield et al., 2001; and Drury, 2008) revealed that mainly there are three types of costing systems, which vary in respect of their sophistication and the types of costs they assign to cost objects as follows:

- direct or variable costing systems;
- traditional AC systems; and,
- activity based costing (ABC) systems.

The direct costing is considered the most simplistic system as it only assigns direct costs to cost objects. It followed by the variable costing system, which is similar to the direct costing, but it assigns in addition to the direct costs the variable proportion of the indirect (overhead) costs to cost objects. The other two types, i.e. absorption and ABC systems, are more advanced as they assign all manufacturing costs (direct and indirect) to cost objects and therefore they are referred to as full costing systems. However, it has been evidenced, through theory and practice that the ABC system can produce cost information which is more accurate than that given by AC systems. The advocators of the ABC system have claimed its ability to calculating the cost of outputs more accurately is due to using both volume and non-volume cost drivers and both manufacturing and non-manufacturing costs to better represent the resources consumed by products. Moreover, this has been confirmed empirically by a stream of ABC research that shown in a majority of these studies the superiority of ABC over traditional costing systems in terms of long and short-term profitability, reporting accurate product costs, and customer service level (Lea, 2007). Drury and Tayles (1994), however, summarised the criticisms of the traditional costing systems based on the publications of Kaplan (1983, 1984, 1988 and 1990) and Johnson and Kaplan (1987), in the following list:

- Using cost information that was calculated for valuating inventory for purposes of decisions making.
- A wide usage of a single overheads rate or as it is called a blanket overhead rate, for calculating the cost of objects, consequently reporting distorted costing information.
- A wide usage of direct labour as a main allocation base for assigning the overheads to cost objects.

3.5.3- State of cost accounting systems in developed countries

The review in this section includes the studies that had examined conventional costing systems i.e. variable and AC systems, hence the existence of some old studies.

U.S. accounting researchers were the first who surveyed the practical state of costing systems especially after the rising adoption of automation among US manufacturing companies. Hendricks (1988) studied the costing systems used in seven industry categories using a questionnaire survey. The findings based on 85 usable questionnaires, pointed out the

existence of substantial concern over cost accounting practices among the responded companies. In details, the majority were using full AC and only 15% used variable costing. However, this was justified as the percentage of manufacturing overhead costs in these companies was relatively high about one-third of their total costs. In terms of the number of allocation bases used for assigning the overheads to cost objects, it was found that they varied from 1 to 3 allocation bases with only nine respondents using three allocation bases simultaneously. Finally, in respect of the type of used overheads allocation bases, although the adoption of automation caused most of the overhead costs to be closely related to the usage of machine rather than direct labour hours. The analysis showed that direct labour was still extensively used as an allocation base with more than half of the respondents using it. However, other allocation bases such as standard machine hours, direct material, actual machine hours, and units of production were used as well but at relatively lower and declining percentages i.e. 35%, 26%, 22%, and 18% respectively.

Several UK MA researchers have surveyed the state of cost accounting systems used in manufacturing and non-manufacturing companies mainly since the start of 1990s. Drury and Tayles (1994) used the findings of Drury et al. (1993) study related to cost accounting systems in order to examine the gap between cost accounting theory and practice and to stand on the degree to which criticisms of the used costing systems were justifiable. The findings, which were generated from 260 questionnaires, showed that the criticisms were justifiable with most of the responding companies reported using simplistic costing systems and which indicated an existence of distortion in the reported products cost. In detail, over half of the responding companies (60%) advised using 'often/always' total manufacturing costs (the same as those used for valuating inventory) for making decisions. However, there was only limited evidence about adjusting the inventory valuation costs to using them in decisions making. Regarding the organisations that used total costs, all of them calculated products cost through adding non-manufacturing costs (using arbitrary allocation bases) to the costs of inventory valuation. The direct labour allocation base was the most used among the responding companies for assigning overheads to cost objects, and 25% of these companies reported using a blanket overhead rate. Finally, due to the comprehensive usage of total costs, this meant an existence of conflict between cost accounting theory and what is used in practice.

In Australia, Chenhall and Langfield-Smith (1998a) examined the state of a wide range (42) of traditional and advanced cost and MA practices as related to costing, budgeting and performance measurement systems used in 78 manufacturing companies. According to the resulted adoption rate, the researchers divided the surveyed practices into three groups as follows: highly adopted group (15 mainly traditional practices with higher than 90% adoption), moderately adopted group (14 practices with between 80-89% adoption), and low adopted group (13 mainly advanced practices with between 30-80% adoption). Surprisingly, the whole three surveyed costing systems were included in the last group with the following rates: AC 80%, variable costing 76%, and ABC system 56%. However, the researchers stated that the result of ABC adoption is still higher than what was reported in previous studies.

Lukka and Granlund (1996) surveyed the state of cost accounting systems used in large and medium size manufacturing units in Finland. The study, which was based on a questionnaire survey collected 135 responses (44% response), showed that the variable costing system was the slightly predominant system (42%) among the studied companies - mainly among the medium size companies. Moreover, nearly one third of the companies (31%) advised using full adsorption costing systems and 27% used variable and full AC together. Finally, in respect of product costing methods, the research revealed that the job-order and process costing were the most used with almost equal frequencies 30% and 32% respectively. Finally, although the researchers did not refer to examining factors influencing any companies' implementation of a particular costing system, they linked their findings to Finnish accounting history. They stated that Finnish cost accounting history was affected initially by German influence (full costing) in the 1920s to an American impact (variable costing) in the 1950s and, finally, through the emergence of ABC, which turned the general discussion, back again towards full AC systems.

Bjornenak (1997b) surveyed the cost accounting systems used in manufacturing companies in Norway. Analysing the data collected from 75 companies he showed that the majority (93%) used both the absorption and variable costing systems. In terms of the complexity level of the former, the research showed that one third of the user companies used a single overhead allocation base (only one company used the blanket overhead rate), another third used two different types of allocation bases, and the final third used more than two allocation bases. The most popular allocation bases were as follows: the number of units produced (40%), direct labour costs (37%), machine hours (29%), direct labour hours (28%), and direct labour

costs (26%). The researcher compared these findings with an older study conducted in Norway and found a decrease in the number of overheads allocation bases used; however, he asserted that this is consistent with the changes observed in the text-books⁵. Finally, in terms of the cost pools, two thirds of the surveyed companies used departmental-based cost pools, and the remaining companies established their pools relying on machine groups, working groups, and activities.

In 1998, Krumwiede surveyed the implementation of ABC system throughout 10 stages in U.S. manufacturing companies. The data collected from 225 responding companies showed that 28.4% of them used a single allocation rate (namely direct labour) for overheads allocation, and 66.2% used multiple volume-based overheads rates, e.g., direct material, machine hours. Finally, only 25% of the responding companies reported using an ABC system.

Similar to the previous study, Cinquini et al. (1999) observed the state of cost accounting systems used in large and medium size manufacturing companies in Italy and the factors influencing their tendency towards the adoption of an ABC system. The researchers showed that the full costing system was more in use (75%) than the direct costing system (25%) with a wide usage (78%) of direct labour hours as an allocation base. However, other allocation bases were also used such as, machine hours (45%), direct material quantity or price (45%), and finally revenues (45%) were used for allocating the cost of administrative and commercial centres. Finally, the adoption rate of an ABC system was limited to only 10%, however, the study concluded that 13.5% of the companies were considering the adoption of ABC.

Drury and Tayles had conducted another study in 2000 to collect details about the extent to which costing systems used in UK companies moved away from the simplistic to more complex costing systems. They examined the accuracy of cost accounting systems and the contingent factors influencing their design through surveying the number of both cost pools and second stage cost drivers used for assigning overhead costs to cost objects. The findings showed a very low usage (3% of 169 responding companies) of the most simplistic costing system i.e. a single cost pool and cost driver, 12% used from 2 to 5 cost pools, 49% used from 6 to 20 cost pools, 22% used from 21 to 50 cost pools, and finally 14% used more than

⁵The researcher stated that 'more attention is now given to different costs for different purposes and to the contribution margin approach, less to the allocation of overhead costs' (Bjornenak, 1997b, p377).

50 cost pools. They considered these results, especially which was related to using a single cost pool and driver, as an indicator of an improvement of the costing systems used in UK comparing to the findings of older studies. Regarding the number of second stage cost drivers, the study reported that 34%, 35%, 21%, and 16% of the responding companies advised using 1, 2-3, 4-10, and over 10 cost drivers respectively for assigning overheads to cost objects. However, the researchers used these findings as a proxy measure of the sophistication level of costing systems. The researchers compared these findings with the theoretical MA literature⁶ and classified the observed costing systems into three categories as follows:

- unsophisticated costing systems: included 35 (21%) companies with less than 5 cost pools and 2 cost drivers plus companies with 6-10 cost pools and only one driver;
- sophisticated costing systems: contained 36 (21%) companies using higher than 10 cost pools and 5 or more cost drivers;
- and finally low sophisticated costing systems: included the rest of companies 98 (58%).

Finally, according to these findings, the researchers concluded that the observed costing systems may not assign the overheads accurately to cost objects.

Adler et al. (2000) examined the extent to which New Zealand companies adopt conventional and/or advanced MA practices. Regarding cost accounting practices, the data collected from 165 manufacturing companies showed that the AC system was the most used amongst the responded companies with 57% reported using it and this was followed by the variable (direct) costing with 38.8%. Moreover, 19.4% of the companies (mainly large size) reported using the ABC system and 20.6% stated considering its adoption. It is noteworthy that although it was not mentioned explicitly in the research, it seems that some of the companies used multiple costing systems e.g., full and variable costing together.

Lamminmaki and Drury (2001) surveyed the state of cost accounting practices used by New Zealand manufacturing companies and compared the findings with a similar earlier study in UK. The data collected from 62 companies showed that over half of them (52%) reported using a plant-wide overheads rate, and 48% of the companies employed multiple different allocation bases (for each department and every centre within the department) for assigning

⁶ It was argued that employing ABC systems with many cost drivers and 30 to 50 cost pools would produce reasonably accurate costing information (Drury and Tayles, 2000).

the overhead costs to the cost objects. The researchers collected information also about the allocation bases most used in the responding companies, moreover they distinguished between two types of manufacturing activities i.e. automated and non-automated. However, the findings were not different from the previous studies in terms of finding direct labour hours as the most popular among the responding companies either in automated 84% or in non-automated 68% activities. Additionally machines hours, units of outputs, and direct material, were also used in both automated and non-automated activities at 53% vs. 30%, 47% vs. 32%, and 44% vs. 27% respectively. Finally, some companies indicated using ABC-based cost drivers in both automated 10% and non-automated 11% activities.

Abernathy et al. (2001) studied the influences of a number of contingent factors i.e. product diversity, advanced manufacturing technology (AMT), and cost structure on the design choices of costing systems used in five different sites in Australia. Instead of using two discrete choices i.e. traditional or ABC costing systems for measuring the sophistication level of costing systems, a framework was developed that depicted this level using a continuum with two edges. One of the research findings was that although two of the studied sites had high degrees of product diversity, there was no evidence of using an ABC system in any of them. In detail, only one of them declared employing a relatively sophisticated costing system while the other used only a traditional costing system. However, the management of the latter site was not happy with the accuracy of cost information particularly that used for making decisions and setting prices. Regarding the other three sites, they declared using the traditional costing systems and commented that such systems are adequate given the low level of product diversity and overheads. Finally, the researchers stated that although the significance of developed model to MA researchers, it was limited and needed to be extensively tested through applying it in large studies.

Returning to the US, the Institute of Management Accountant (IMA) sponsored research by Garg et al. (2003) to identify the then current state of MAPs (traditional and contemporary) management accountants used for meeting the goals of organisations they served. The researchers collected data from 180 IMA members (9% response rate) through a questionnaire. The result revealed that traditional MAPs were still widely used amongst the respondent companies. In particular, 76% of them announced using full AC system for calculating the cost of their outputs, 75% used operational budgeting systems, and 70% used

direct labour as a base for allocating the overheads to cost objects. The study showed also that new MAPs were available but their adoption was not a high priority list for 80% of the respondents. Alternatively, they stated that the adoption of new MAPs was of medium to low priority because factors such as a lack of buy-in commitment by management (large and small companies) and lack of adequate technology and expertise (small companies). However, there was some adoption of new MAPs at limited rates e.g., TC (26%), values-based-management (25%), and theory of constraints analysis (22%). Table 4 compares the findings of Hendrick's (1988) study with this research to highlight whether there is any change in the implementation of costing systems in U.S.

Table 4: Comparison between Hendricks (1988) and Garg et al. (2003) study

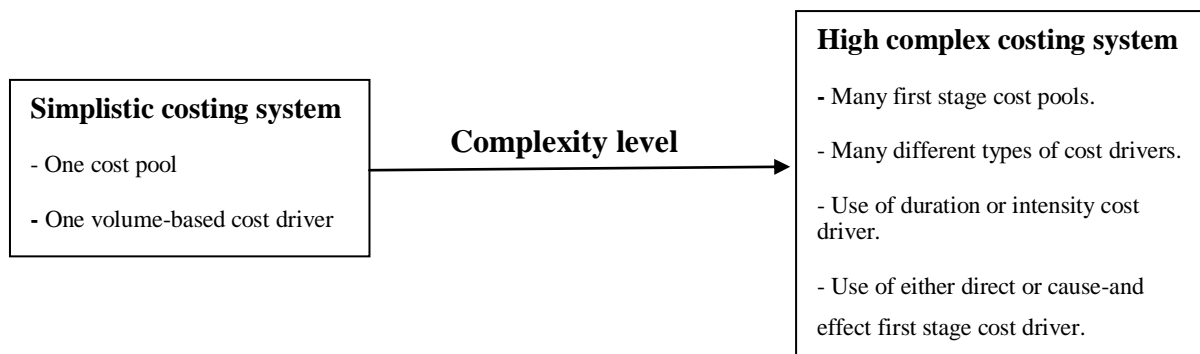
Studies	Costing systems features			
	Variable/direct costing	Full AC system	Overheads allocation rates used	Modern costing systems
Hendricks (1988)	15%	85%	89% used 1 to 2 bases vs. 11% used 3 bases (mainly direct labour hour)	NA
Garg et al. (2003)	0%	76%	The majority (70%) used direct labour	TC: 26% adapters.

It can be noted from table 4 that the implementation of AC system decreased slightly from 85% in 1988 to 76% in 2003. This reduction might be as a result of U.S. companies adopting modern costing systems such as the ABC and TC (26% in 2003). However, both the studies stated that a volume-based cost driver, namely direct labour, was the most used among U.S. companies. Hendricks (1988) also reported that the majority of companies used only up to three cost drivers. Finally, the Garg et al. (2003) study did not report any usage of the direct/variable costing system that was used by 15% of the responding companies in Hendricks (1988) study.

In UK, Drury and Tayles (2005) conducted a postal questionnaire-based survey in organisations, which had established costing systems, for the purposes of identifying their state and the extent to which contingent factors influenced their complexity level. For measuring the research dependent factor i.e. the complexity level of costing systems, Drury and Tayles, rather than using two discrete alternatives (ABC or traditional systems), adopted the Abernathy et al.' approach (2001) discussed above. This framework assumed that the costing systems differ in their complexity level along a continuum starting from simplistic

traditional system and ending with highly complex systems. The level of complexity was measured using four proxies/dimensions related to process of overhead assignment as follows: 1): number of cost pools; 2): number of different types of second stage cost drivers; 3): the nature of cost drivers (transaction, duration and intensity); and finally 4): using either arbitrary assignment or direct and cause-and-effect first stage cost drivers during the first stage of the overheads assignment to the cost pools. According to these four dimensions, the adopted model was as in Figure 2.

Figure 2: The framework for the measurement of the complexity of costing systems



Source: Drury and Tayles (2005)

The difficulty faced in measuring the four listed variables was behind tending Drury and Tayles (2005) to use the term ‘complexity⁷ level’, rather than the ‘sophistication level’ as in the original framework of Abernathy et al. (2001). The complexity level was measured through examining only the first two dimensions (rather than the four) i.e. the number of cost pools and the number of different types of second stage cost drivers. Therefore, the final measure of the costing system’ complexity was a composite measure, which was calculated through adding the respective score of the cost pools number (8-point scale) to that of the cost drivers number (8-point scale). By this way, the resulted measure was 15-point scale ranging from 2 to 16. Using this instrument, this research reported slightly similar findings to that conducted earlier (2000). In detail, around one third (34%) of the responding companies (170 large companies) used only one second stage cost driver for their overhead assignment, over one third (35%) used either 2 or 3 different types of cost drivers, 21% used from 4 to 10 cost drivers, and finally 10% of the responding companies employed over 10 cost drivers. In terms of the number of cost pools used in the first stage of the overhead assignment process, 14% of

⁷ The current research, as is mentioned in section 5.3.2.1, adopted the term of complexity level for surveying the different choices of the costing systems’ design.

the companies used less than 6 cost pools, half of the companies used from 6 to 20 cost pools, 21% used from 21 to 50 cost pools, and finally the remaining companies (15%) used more than 50 cost pools. Again comparing these findings with the theoretical MA literature resulted in considering the observed costing systems as having significantly lower numbers in both the cost pools and drivers than those suggested by MA theory. Finally, it is worth mentioning that the model adapted by Drury and Tayles (2005) was used only for examining the complexity level of costing systems and not the level of accuracy in assigning overheads to cost objects. This is because the costing system's accuracy is usually influenced by contingent factors where it is being used. For example, it is possible for a costing system with a single cost pool and single volume-based cost driver to produce accurate cost information where the rate of overheads to total cost is relatively low.

Al-Omiri and Drury (2007)⁸ followed the recommendations of the Drury and Tayles (2005) study particularly in respect of the need for observing additional features of costing systems whereby the sophistication rather than complexity level of costing system can be measured. Indeed, the researchers studied the state of costing systems and the association between their level of sophistication and a range of contingent factors. Their model depicted the sophistication level of costing systems also using a continuum that was extended from the most simplistic systems through to higher levels of sophistication in terms of assigning overheads to cost objects. In this study, the sophistication level was measured through examining the four dimensions mentioned in the previous study. It is noteworthy that these four dimensions were not homogenous therefore their scores could not be added together to form a composite measure similar to that for the case of complexity level measurement. Thus, it was possible to call a particular costing system as being less sophisticated than another only when the former shows in the case of each of the four dimensions lower scores than the latter. The findings showed that 13% of the responding companies (176) declared use of non-formal costing system, 22.7% used the direct costing system, 29% ABC, and 35% the AC system. Regarding the latter two, the researchers prepared a cross-tabulation table between the cost pools and drivers for assessing their sophistication level. The table showed that 15.3%, 35%, 40.7%, and 9% of the responding companies (121) used 1-5, 6-20, 21-50, and over 50 cost pools respectively and 27%, 23%, 44%, and 7% of the companies used 1, 2-3, 4-10, and over

⁸The main differences between Drury and Tayles (2005) and Al-Omiri and Drury (2007) research were, in addition to using the latter the term of sophistication (rather complexity) level, as follows: 1) the former research chose their sample according to standard of CIMA qualified member employment (two or more) while the latter research selected their sample randomly from the Financial Analysis Made Easy (FAME) including 1000 UK companies; 2) the former research surveyed the influence of 7 contingent factors on the complexity of costing systems while the latter research surveyed the influences of 9 contingent factors of the sophistication level of costing systems.

10 different second stage cost drivers in the overheads assignment process. Given that the findings of Drury and Tayles (2000) and (2005) were very similar, the researcher compared the 2005 study with the 2007 study to gain details about the development of costing systems in UK. The comparison showed that there was a decrease in the number of companies having highly complex costing system at the expense of the companies having medium complex costing system. Table 5 summarises the findings of both studies.

Table 5: Comparison between Drury and Tayles (2005) and Al-Omiri and Drury (2007) study

Studies	Cost Pools				Cost Drivers			
	1-5	6-20	21-50	Over 50	1	2-3	4-10	Over 10
Drury and Tayles (2005)	14%	50%	21%	15%	34%	35%	21%	10%
Al-Omiri and Drury (2007)	15.3%	35%	40.7%	9%	27%	23%	44%	7%

Table 5 shows a decrease in the percentage of companies using 6-20 and over 50 cost pools from 50 to 35% and 15 to 9% respectively and also in companies using 2-3 and over 10 cost drivers from 35 to 23% and 10 to 7% respectively. Moreover, there was a large increase in the percentage of companies employing 21-50 cost pools from 21% to 40.7% and in that of companies having 4-10 cost drivers from 21% to 44%. However, these differences in the findings might be attributed to the difference in the size and feature of the studies' samples; in particular, the sample in Drury and Tayles (2005) was 187 companies employing two or more CIMA accountants while it was 176 large companies for Al-Omiri and Drury (2007).

Friedl et al. (2009) examined the cost accounting systems used in 45 (19% response rate) large German companies, their purposes and the factors influencing their future development. Their study also conducted a comparison between these systems and U.S. accounting systems especially in terms of supporting managerial decisions making and the quality of resulting cost information. The research showed that on the one hand, the costing systems in U.S. have been mainly depending on direct labour for assigning overhead costs to cost objects, consequently producing inaccurate cost information unable to support management decision-making needs effectively. On the other hand, the costing accounting systems used in Germany companies provided a high level of detail concerning cost centres, cost types, and cost objects, consequently management was satisfied with the function they performed. In

detail, the analysis revealed that 42% of the responded companies used a GPK⁹ costing system, 24% used both the GPK and ABC simultaneously, and finally 7% used ABC as a stand-alone system. The GPK system was based on separating costs into variable and fixed, planning detailed cost centres, and analysis of contribution margin. The researchers found a high level of detail in the design of costing systems in Germany as follows: on average, companies established 472 centres as primary cost centres and 892 as final cost centres moreover they on average distinguished among 786 different types of costs, which were higher in the industrial sector than in other sectors. Finally, this detail, in turn, enabled the costing systems to meet the different needs of company management. For example, using a high level of detail meant relatively small cost centres being established for overhead allocation. This in turn meant that performance measurement and cost control practices could be more easily exercised by the manager of each cost centre by making a comparison between actual and budgeted costs at cost centre level.

Finally, again in Germany Schoute (2009) adopted the interaction form of contingency fit to examine the impact of the association between the complexity level of a costing system and the use of cost information to judge the effectiveness of a costing system. The dependent factor in such a study is the effectiveness of costing system, which was measured using two proxies i.e. the satisfaction with and intensity level of use. For measuring the complexity level of the costing system (independent factor), the researcher adopted two instruments similar to those used in the study of Al-Omiri and Drury (2007). The first issue concerned the nature of cost pools (departmental oriented, process oriented, or both) and overheads allocation rates (unit-level, unit- and batch-level, or both unit- batch-level and product-sustaining) used for assigning the overheads to cost objects while the second asked about their number. It is noteworthy that the researcher in this study, tended to standardise the scores of these four costing system' features and then took the average answer in order to reflect them in one score.

Table 6 summarises all the reviewed studies in this section i.e. the state of costing systems in developed countries. It shows that the full AC system is still the most popular among the developed countries with 8 out of the 9 reviewed studies reported a use of this system for

⁹ Due to the importance of cost accounting in Germany as a basic system in an organisation, the GPK system was developed as a sophisticated costing system able to effectively support a company management with the required information for decision-making. The GPK follows the principles of variable costing (short-term decision making) where only variable costs are allocated to cost objects while the fixed costs are used in the profit & loss account.

calculating the cost of outputs with percentages extended from 31% in Finland to 100% in New Zealand. Moreover, the five studies that surveyed the types of overhead bases reported the primacy of direct labour hours/costs as being used. Regarding the complexity level of the AC system, four out of these five studies stated that they used a single overhead allocation base. However, the percentage varied from 5% in the Finnish study to 52% in New Zealand.

Concerning the implementation of a variable costing system, although it has been criticised in the MA literature as not considering the overhead costs in calculating the product cost (does not support long-term decisions making), table 6 pointed out that it is still being used in 7 out of the 9 reviewed studies and at relatively high rates. However, these rates were lower than that of the AC system, in detail: from 23% in UK to 93% (with the AC system) in Norway. The results are surprising given that the averages of overhead costs indicated by the variable costing system users were relatively high (from 30.9% in UK to 40% in Italy), and this requires using more complex costing systems to avoid any distortion in the reported costing information.

Table 6: Summary of the state of cost accounting systems in developed countries

Costing systems	Research context	Variable/direct costing	Full/AC	Multiple costing systems	Single vs. multiple allocation bases	Type of overheads allocation rates used	Average of direct & indirect costs	Modern costing systems
Lukka and Granlund (1996)	135 Finnish companies	42%	31%	27% variable & full costing	5% vs. 95%	Mostly volume-based rates	64% & 36%	NA
Bjornenak (1997b)	75 Norwegian companies	0.0%	0.0%	93% variable & AC	33% vs. 67%	number of units produced 40%, direct labour costs 37%, machine hours 29%, direct labour hours 28%, and direct labour costs 26%.	NA	NA
Chenhall and Langfield-Smith (1998a)	78 Australian companies	76%	80%	NA	NA	NA	NA	ABC: 56% adopters
Cinquini et al. (1999)	132 Italian companies	25%	75%	NA	100% multiple bases	78% direct labour hours, 45% machine hours & 44% direct materials.	60% & 40%	ABC: 10% users & 13.5% adopters
Adler et al. (2000)	165 New Zealand companies	39%	57%	NA	NA	NA	NA	ABC: 19.4% users & 4.8% adopters
Lamminmaki and Drury 2001	62 New Zealand companies	0.0%	100%	0.0%	52% vs. 48%	Direct labour 84%, machine hours 53%, units of outputs 47%, & direct material 44%.	79% & 21%	ABC: 12% usage intention & 5% introduce it
Garg et al. (2003)	180 US companies	0%	76%	NA	NA	The majority (70%) used direct labour	NA	TC : 26% adapters
Al-Omiri and Drury (2007)	176 UK companies	23%	35%	NA	27% vs. 73% (up to over 10 drivers)	NA	69.1% & 30.9%	ABC: 29% adopters
Friedl et al. (2009)	45 Germany companies	69% variable costing and contribution margin analysis	NA	24% variable & ABC	NA	NA	NA	ABC: 7% Users

It is noteworthy that recently in some developed countries, e.g., US and UK, the implementation of variable/direct costing systems has been very limited mainly due to the

employment of advanced manufacturing technologies by which the rate of overheads costs has been increased (at the expense of direct labour costs). For example, although the study of Hendricks (1988) in US showed a limited application of the variable costing system (15%), the implementation of this system has been diminished to zero in 2003 study in the U.S. by Garg et al. (2003). Lamminmaki and Drury (2001) study in New Zealand reported the use of the full AC system by all respondent companies.

Concerning the implementation of modern costing systems, table 6 shows a limited full implementation for ABC. In particular, seven out of the nine reviewed studies announced the adoption of ABC and TC systems in principle but with different stages of application. In detail, the percentages extended from 5% of the responding companies had introduced the ABC principles in New Zealand compared to 56% of the companies in Australia. Concerning the TC, table 6 reveals that only one study (Garg et al., 2003) reported its adoption by 26% of the responding companies in US. However, recent MA studies dedicated to studying ABC systems have reported higher implementation/adoption levels among developed countries. For example, Gosselin's study (1997) in Canada found that nearly half of the responding companies (48%) announced adopting ABC - 64% of them implemented it while the remainder adopted its principles but had not fully implemented the system (36%).

3.5.4- State of cost accounting system in less developed countries

This subsection is important as it sheds light on the state of cost accounting systems used in LDCs and is thus highly relevant to the current research context. However, cost and MA practices' research in LDCs is still very limited comparing to that in developed countries and this can be attributed to different reasons. Duh et al. (2008) stated, in their review of 301 accounting PhD theses in China conducted from 1982 to 2001, that only 19 of them were about cost and MA techniques. They attributed this shortage to causes such as a lack of interest in MA as a doctoral field and being that Chinese universities employing only master-apprentice model for purpose of accounting doctoral training. In their view, the latter caused the 'production' of accounting graduates writing conceptual/normative type of dissertations within a very narrow knowledge base.

Alnamri (1993) investigated the differences and similarities, in terms of the sophistication level of MA practices used between Saudi owned firms and joint ventures located in Saudi

Arabia. Among the surveyed MA practices were the types of costing systems being used. The study showed that only four of the respondents (18 companies) declared using variable costing (three of them were joint venture companies) while the rest advised using full AC systems. Regarding the latter systems, three of the Saudi owned firms reported using a single allocation rate, which was prepared by industrial engineers. However, there was evidence about using the direct labour base, but it was used along with other allocation bases such as, machine hours, engineering hours, rates per tonne, and rates per barrel. Finally, the researcher linked between the widespread usage of full costing and the reported high level of overhead percentage comparing to total company costs. The study showed that on average the cost structure was as follows: 61% material, 11% direct labour, and 28% overhead costs.

Asechemie and Ikeri (1999) observed the extent to which Nigerian small-scale manufacturers apply cost accounting in their operations. The data collected from 150 manufacturers showed the following facts: only 13 out of the 150 manufacturers stated keeping a form of costing record, all respondents identified material and labour as components of output cost while almost half of them (74 respondents) identified overhead costs in costing their products. The respondents distinguished between variable and fixed costs and considered the former as product-driven and the latter as capacity-driven costs. In terms of the costing method and technique, job costing was the most used (49.3%) among the respondents followed by batch costing at 21.3% moreover, the marginal costing (variable costing) system was the most common with 53.3% and the AC system was the next most used with 24% of the respondents. Finally, the researchers concluded that there was a considerable level of informal but discernible cost accounting practices among the respondents.

In Poland, the transformation of the Polish economy from being centrally planned to market-based systems entailed essential changes in the accounting systems used by Polish business organisations and skills taught in Polish universities. This in turn stimulated MA researchers to survey the extent of implementation of cost and MA practices and to identify different factors influencing their implementation. A study conducted by Szychta (2002) collected data from 60 companies and revealed that the vast majority of responding companies (75%) used the conventional full costing system for calculating the cost of their products and services moreover, 15% of them used both the direct (marginal) and AC systems together while the rest (10%) used a standard costing system. Regarding the features of full costing' implementation, the research showed that 24% of the users employed only a single overheads

allocation rate (direct labour) while the rest (76%) used multiple rates e.g., machine hours, standard energy use, and quantity of products sold. However, the direct labour rate was the most used allocation rate by 69% of the users. The analysis showed that the average percentage of indirect costs was 33.5%, which is relatively high and justifies using the full costing system by the majority of companies. Finally, more than three quarters of the companies (48) used cost centres for recording and repartition of their costs.

Like cost accounting studies in western countries, Haldma and Laats (2002) conducted a study in Estonia, to observe the state of cost and MA practices used in manufacturing companies and to identify the internal and external contingent factors significantly influencing the implementation of these practices. The research showed that 54.8%, 38.7% and 6.5% of the responding companies used full AC, variable costing, and a combination of both of these systems respectively for calculating the cost of production units. In respect of the product costing methods, the findings revealed that 51.3%, 33.7%, and 15% of the participating companies used process costing, job-order costing, and again a combination of both the methods. Only 7% declared using the ABC system. Finally regarding the cost allocation bases observed, the results showed that all of them were of a volume-based type such as, direct labour costs (42%), sales volume (38%), direct labour hours (28%), direct materials (26%), machine-hours (16%) and the number of operating cycles (8%).

Another examination of the MA practices used in Saudi Arabia was conducted by El-Ebaishi et al. (2003) who surveyed a wide range of MAPs used including contemporary practices. The observed cost accounting practices were the allocation of service department costs, allocation of overhead costs, and ABC. The analysis, which was based on 121 medium and large sized Saudi manufacturing companies, showed that 59% of these companies confirmed allocating the cost of their service departments. Additionally, over half (56%) of the companies not allocating their service department costs indicated that they were considering the implementation of such an activity. Regarding the practice of overhead cost allocation, the majority (71%) of respondents indicated allocating overheads to their cost objects while the rest (29%) did not do so. The finding is almost consistent with the earlier study by Alnamri (1993) that reported only 22% of the responding companies used the variable costing system. It is, however, inconsistent in that the opinions collected in the current study on the usefulness of overheads allocation practice in that 94% of respondents assessed this practice as very important or important. Finally, concerning the implementation of an ABC system, the result showed 28% of the respondents claimed using the ABC system.

Hutaibat (2005) observed the state of cost and MA practices used in Jordanian industrial companies collecting 103 questionnaire responses from these companies. The study showed that job costing was the most used practice by 57.1% of the responded companies. This was followed by the process costing system with 50.4%, and finally by batch costing systems with 27.8% (some companies used dual methods). All the responded companies reported allocating their overheads to cost objects, the majority (61%) used a simplistic method i.e. the blanket-overhead base, 23% used cost centre bases, and 16% used a departmental base. Finally, in respect of the allocation rates used for overheads assignment, the analysis revealed that the number of units produced was the most used with 75.9% of the responded companies using it often or always. The next common rates were the direct material cost at 28.6% often or always, 15.8% often or always used direct machine hours, and finally 12.8% often or always used direct labour hours/cost.

Nimtrakoon (2009) surveyed the extent to which companies listed on the Stock Exchange of Thailand (SET) adopt a wide range (43 practices) of conventional and advanced (strategic) MAPs including the cost accounting systems. Analysing the data collected from 135 questionnaires showed that the AC system was from the group of highly adopted MA practices with 84% of the responding companies adopting it. Contrary, the variable costing system was recognised as having a lower adoption rate with 76% of the responded companies. Regarding the adoption level of contemporary costing systems, the analysis revealed that there was a “relatively limited” adoption as follows (p.110): ABC system (71%), TC (73%), and finally Kaizen costing (65%). Finally, it is worth to mention that the result about the adoption of ABC system was in contrast to the respondents’ scores about its usefulness, which categorised it as a high-benefit practice (ranked 10).

Joshi et al. (2011) examined the adoption rate of sixteen MAPs currently used in publicly-owned listed companies in the countries¹⁰ of the Gulf Cooperation Council. Based on data collected from 244 questionnaires, the analysis showed that the adoption rate of cost management as one of the surveyed MA practices was generally low.

Finally, for providing a brief picture about the state of cost accounting systems in LDCs, table 7 summarises the key findings of the above studies.

¹⁰The Gulf cooperation council includes the following six countries: Bahrain, Kuwait, Saudi Arabia, Oman, Qatar, and the United Arab Emirates.

Table 7: Summary of the state of cost accounting systems in LDCs countries

Costing system adoption/ implementation	Alnamri (1993)	Asechemie and Ikeri (1999)	Szychta (2002)	Haldma and Laats (2002)	Hutaibat (2005)	Nimtrakoon (2009) adoption
Research context	16 Saudi and joint ventures	150 Nigerian informal manufacturers	60 Polish companies	Estonia manufacturing companies	103 Jordanian manufacturing companies	135 companies list on SET
Variable costing	22%	53%	NA	39%	NA	76%
Full AC	88%	24%	75%	55%	100%	84%
Variable& AC	NA	23%	15%	6%	NA	NA
Single vs. multiple allocation rates	21% vs. 79%	NA	24% (direct labour) vs. 76%	50% (up to 2) vs. 70% (up to 4 rats)	61% vs. 30%	NA
Average direct& indirect costs	72% & 28%	only 49% identified indirect costs	66.5% & 33.5%	NA	NA	NA
The most used costing method	NA	Job order costing 49.3%	Job order costing	process costing 51.3%	Job order costing 57.1%	NA
ABC system	NA	NA	NA	7% users	NA	71% adopters

Table 7 reveals the absorption (full) costing system as the most used in LDCs (consistent with developed countries) with varying implementation levels extended from 24% in Nigeria to 100% in Jordan. However, the reported complexity level of full AC was limited where the four studies observed the overheads allocation rates announced using a single volume-based rate with percentages extended from 21% in Saudi Arabia to 61% in Jordan. Moreover the direct labour hours/costs was the most popular amongst the studies as a sole allocation rate. The variable costing system was also observed by the studies mainly as the sole costing system. Table 7 shows that 5 out of the 6 reviewed studies informed using it with percentages extended from 15% (together with the full costing) in Estonia to 76% adopted in Thailand. Surprisingly, these percentages are not considerably higher than that in developed countries (as shown in table 6).

Job order costing was the most used method amongst the reviewed studies where 3 out of 4 studies reported using this method mainly with rates extended from 49.3% to 57.1%. On the other hand, only one study announced using process costing more than the job order costing by 51.3%. Finally, the implementation of advanced costing systems was limited with only two studies finding evidence about the implementation of ABC system (7% in Estonia) and adoption (71% in Thailand) while the other four papers did not discover such evidence.

3.5.5- Summary

It can be said that the traditional AC systems are still the most popular in both developed and LDCs. Additionally, the majority of reviewed studies reported the wide usage of volume-based allocation bases, mainly direct labour hours/costs, for assigning the overheads to cost objects. In terms of variable costing systems, there was some evidence about its use in both developed and LDCs and with high rates in some studies. Finally, although the advocates of ABC system emphasised the necessity of updating to such a system, especially in nowadays manufacturing environment, for purpose of reporting timely and accurate cost information, the empirical studies are still showing limited implementation levels of the ABC system even in developed countries (Gosselin, 1997). However, it is worth to remind that the current study doesn't focus on studying the implementation of ABC system; hence the majority of reviewed studies focused only on examining the state of art of the costing systems.

3.6- Research on management accounting practices

3.6.1- Introduction

This section reviews and discusses the main studies available about the state of the art of MA practices particularly those observing a wide range of such practices. Although different traditional and contemporary MA practices are discussed in this section, the main concern is placed on the practices surveyed in the current research study i.e. budgeting, standard costing, and performance measurement systems. It is noteworthy that some of the studies reviewed in the previous section (section 3.5) have been discussed again in this section but for relevance to the implementation of MAPs as distinct from costing systems. Similar to the previous section, this section includes two subsections: the first is about the state of MAPs in developed countries and the second is about their state in LDCs.

3.6.2-State of management accounting practices in developed countries

Research into the state of MA practices intensified at the end of 1980s driven by MA theorists' views regarding the irrelevance of the then used MA techniques for management needs and the existence of gap between the MA theory (as in text-books) and practice (Drury et al., 1993). Moreover, due to the limitations and fragmentation of the evidence available about the MA practices being used then in developed countries, there were calls by the MA

theorists to survey the state of MA practises and to identify the extent to which traditional and/or contemporary MA practices were being used.

Puxty and Lyall (1989) investigated the budgeting and standards costing systems used by British industrial organisations. The study collected 453 usable questionnaires (23% response rate) and reported high levels of budgeting and standards costing implementation at nearly 95% and over three quarters (76%) respectively. Given that often a company using budgeting system also implements standard costing for controlling its activities, the study confirmed this fact by showing that 75% of the responded companies used both systems. The study detailed the implementation of these accounting systems through describing their features. It was concluded that only 13% of the responded companies revised their standards quarterly while the majority (71%) revised their standards annually. In terms of the bases used for preparing the cost standards, the study showed that although the MA academics recommended using a variable costing system, 70% of the respondents advised using AC systems for setting their standards and the rest used variable costing. Concerning the operation of variance analysis, 90% of the standard costing users advised including the variance analysis in periodic management reports with the rest reported it through a separate statement. The most calculated variances were the material variances, labour variances, and finally variable overhead variances. Finally, in respect of the features of budgeting system almost all the respondents prepared their budgets based on a one year period with few companies preparing their budgets over 3 months, 6 months, or even 2 years. Only 20% of users used flexible budgets.

Similar to the previous study but more comprehensively, Drury et al. (1993) collected data from 303 manufacturing organisations in the UK about a wide range of MA practices. Their study collected details about the implementation of budgeting, standard costing, and performance measurement systems. The analysis revealed that 76% of the responded companies advised operating standard costing mainly for the purposes of costing inventories (80%), cost control and performance evaluation (72%), helping in budgets preparation (69%), and producing information for decision making (62%). The study also showed that both 'average of past performance' (46%) and 'achievable but difficult to attain standards' (44%) were the most used standards among the companies. These were set using various methods: engineering studies (51%), historical average (44%), work study (42%), and trial run based observations (30%). like the previous study, most of the responded companies revised their

standards annually (68%) and only (14%) revised them monthly or quarterly. Regarding the budgeting, all responded companies operated a budgeting system, and the vast majority of them (85%) forecasted their budgets based on staff experience. However, other methods were reported - market research (36%) and statistical forecasting (31%). Less than half of companies (42%) used flexible budgets for comparing actual with budgeted costs. This demonstrates an increase in the implementation of flexible budgets compared to the previous study (only 20%). In terms of the use of performance measures, although MA theory asserts the significance of using 'residual income' as a tool for measuring the performance of divisions' managers, this study showed that only 20% of the responding companies used it while the majority (55%) used 'target return on investment'. Other used measures were 'target profit before charging interest on capital employed' (61%), target cash flow (43%), and the ability to stay within planned budgets (57%). The study reported mainly the use of monthly profit statements for performance evaluation (89%).

Chenhall and Langfield-Smith (1998a) studied Australian manufacturing companies to examine the state of a wide range (42) of traditional and advanced MA practices related to costing, budgeting, and performance measurement systems. The research showed that the adoption level of traditional MA practices was higher than that of advanced practices, the researchers, however, stated that the adoption level of latter was higher than that found in other countries. In detail, the researcher divided the surveyed MA practices into three groups according to the adoption rate informed by the companies studied as follows: highly adopted group (15 mainly traditional practices with higher than 90% adoption), moderately adopted group (14 practices with between 80-89% adoption), and low adopted group (13 mainly advanced practices with between 30-80% adoption). Regarding the implementation of conventional MA practices, the analysis showed the following: 5 different usages of the budgeting system mainly concerned with budgeting for financial planning (100%) and budgeting for controlling costs (99%), 6 different financial measures of performance were adopted including return on investment (96%) and residual income (60%); and, finally 6 different non-financial measures of performance were used.

Wijewardena and Zoysa (1999) surveyed and compared MA practices used in large manufacturing companies located in Japan and Australia. The study reported the existence of significant differences between the two countries in terms four MA issues. Firstly, the study revealed that Japanese companies control their cost during the stage of product planning and

design using TC while Australian companies concentrated on cost control using practices such as budgeting, standard costing, and variance analysis. This is consistent with the findings of a previous study for Australia (Chenhall and Langfield-Smith, 1998a). Secondly in terms of the costing system, the research showed that despite the diminishing rate of labour costs to total company costs, companies in both countries used labour-based rates for allocating overheads to cost objects however, the usage of ABC system was more common in Australia than Japan. Thirdly, regarding the usage of contemporary MA systems particularly JIT systems, only Japanese companies used this being obvious through the low inventory levels held. Finally, Australian companies used traditional measures, such as, return on investment, for measuring divisional performance (and this again is consistent with the result of above research) while the majority of Japanese companies used return on sales.

Adler et al. (2000) examined the extent to which New Zealand companies adopt conventional and/or advanced MA practices. Analysing the data collected from 165 manufacturing companies showed that a high percentage of the responded companies (73%) used standard costing systems. Moreover, 48% of the users used historical records for setting their standards while 26% used the engineering studies. Finally, the study revealed only a limited usage of advanced MAPs, e.g., 25.5% used strategic MA, 16.4% cost modelling, and 6.7% TC system.

It is noteworthy that since the start of 2000s MA researchers, especially in developed countries, have started concentrating on studying the implementation and significance of contemporary MAPs and identifying factors influencing their usage. This was accompanied by a decrease in the volume of conventional MAPs' research. An example here is a study conducted in the U.S. (Waldron and Everett, 2004) who observed the change in using MAPs in U.S. manufacturing companies through examining the past, current, and expected state of implementation of traditional (4 practices) and advanced/newly developed (13 practices) MAPs. The data collected from 156 respondents confirmed that there was a change in the implementation of different MAPs in U.S. In particular, the use of traditional MAPs was still dominant as compared with advanced MAPs as follows: standard costing (78%), job order costing (36%), full AC (30%), and process costing (17%) comparing to the advanced MAPs, e.g., backflush costing (22%), ABC (20%), cost of quality (19%), and cost modelling (17%), and life cycle costing (1.3%). However, the research revealed that the future or expected state

of MAPs was in favour of a move to advanced practices with a decline in the use of traditional MAPs anticipated.

Abdel-Maksoud et al.' large scale UK research (2005) observed the association between 19 non-financial performance measures used at shop-floor level and internal and external contextual factors. Moreover, the researchers examined the extent to which several contemporary MAPs were in use. Analysing the data collected from 313 UK manufacturing companies (14.3% response rate) using the questionnaire method showed that strategic MA, customer profitability analysis, and benchmarking of performance practices were widely implemented by more than 60% of the responded companies either partially or fully (systematically)¹¹. Activity based practices were also in evidence but with relatively limited usage.

Finally, it is worth mentioning that despite the development of advanced MA techniques and the numerous recommendations and calls made by the MA scholars to use them, recent MA surveys are still showing relatively high rates of use of conventional MAPs. For example, a study by Dugdale et al. (2006) in UK manufacturing companies provided evidence on the continuity of traditional MAPs. The researchers did find also a use of some advanced MAPs such as, ABC and throughput accounting. In this context, Bhimani et al (2008) expected the implementation of advanced MAPs would be gradually expanded, particularly in developed countries, to meet the changing information needs of companies' managers. This does not mean necessarily that the MA change will be on the expense of diminishing the traditional MAPs' implementation, which was anticipated to stay in use at least within the near future.

3.6.3- State of management accounting practices in less developed countries

This section reviews a number of studies conducted on the features and extent of implementation/adoption of MAPs in LDCs. While some of them have been already reviewed in sub-section (3.5.4) above, they are discussed herein the context of MAPs implementation. This sub-section ends with a table summarising the key features of MAPs used in the studies discussed.

¹¹ The researcher asked the respondents to indicate whether these MAPs were no applied (1), applied partially (2), or applied systematically (3).

Alnamri (1993) observed the level of sophistication of MA practices used in 8 Saudi owned and 8 joint ventures firms located in Saudi Arabia for specifying the differences and similarities between them. The study showed that all companies prepared one year-based budgets for all their main activities including, production, sales, profit, capital, cash flow, and purchasing. Purchasing budgets had the lowest level of use amongst the companies. Moreover, almost all the user companies prepared control reports¹² for their budgeted activities mainly on a monthly basis. Furthermore, 14 firms indicated conducting variance analysis of the budgets for their main activities. Not all the users revised their budgets by actual performance with only 8 companies conducting this on monthly basis. Finally, the study reported that none of the responded companies used flexible budgeting systems. Concerning the implementation of standard costing, only two joint ventures reported using this practice. Finally, in terms of performance measurement, the study revealed that none of the responded companies used the common financial measures, such as, return of investment and residual income alternatively seven of the joint ventures reported using budgets for evaluating managers' performance. Companies also used non-financial measure e.g., attendance, behaviour, and physical level of activity.

Joshi (2001) observed the extent to which medium and large size Indian manufacturing companies adopt a wide range (45) of traditional and modern MAPs in addition to the benefits obtained from them. The findings based on 60 questionnaires were presented through three groups of MAPs each with a particular level of adoption, namely a highly adopted group containing 8 practices, a moderately adopted group with 6 practices, and finally a low adopted group with the remaining 31 practices. The analysis showed that MAPs in the first group were traditional MAPs and related to budgeting and financial-based performance measurement practices (e.g., ROI and variance analysis). Contrary, the majority of modern MAPs were recognised as low adopted practices. Finally, the researcher attributed the lack of companies' interest in the adoption of modern MAPs to the conservative attitudes of company managers towards change.

The study of Szychta (2002) discussed in the previous section (3.5.4) examined the use of budgeting systems by Polish companies. The findings revealed that 80% (48) of the respondents prepared annual budgets in their companies. However, only 10 of these

¹² Control reports are prepared through comparing the actual performance with the budgeted performance for every budgeted activity in company.

companies prepared a full range of budgets for their activities while the rest (38) advised preparing two to three budgets only, such as, production, sales, and pro-forma financial statements budgets. Out of the users 39 discussed the method used for preparing their budgets as follows: 22 companies used incremental budgeting and 17 used zero-based budgeting. Finally, the majority of users (43 companies) prepared variance analysis reports to control their costs with 39 preparing such reports monthly with 4 using a quarterly basis.

El-Ebaishi et al.' study (2003) observed a range of the MAPs used in Saudi manufacturing companies. The implementation of standard costing system was as follow: over half of the respondents (57%) indicated using this technique; the vast majority of the users (91%) used currently attainable standards; 93% of the users announced reviewing their standards (monthly, semi-annually, and annually basis); and finally, 38% of the users claimed to always calculate variances. The researchers took the view that by stating that a company computes variances for cost standards doesn't necessarily lead to revising them. In respect of the budgeting system, Saudi companies showed a high implementation level of different budgets as follows: 74% used a master budget, 77% prepared a production budget, 76% a cash budget, 75% a sales budget, 68% a direct material budget, 58% a direct labour budget and, finally, 61% implemented both overhead and capital budgets. The researchers interpreted these findings basing on the research context, for example, they attributed the fact that production budgets were not implemented by all companies because such budgets is usually associated with large manufacturing companies which was not the case in this study. Finally, 60% of the users claimed to revise their budgets with 48% of them conducted that revision annually, 23% semi-annually, 13% quarterly, and finally 5% monthly. Finally, in terms of the performance measurement, the respondents announced employing variance analysis of standard costs for evaluating their performance additionally; they used responsibility accounting in cost centres (58%), revenue centres (38%), and profit centres (27%).

Hutaibat (2005) Jordanian study discussed also in the previous section (3.5.4) surveyed in addition to the costing systems used the state of MA practices, namely, budgeting, standard costing, and performance measurement systems. The findings showed that more than half of the companies operated budgets for their main activities as follows: 70% prepared sales budget, 64% prepared production budget, 63% prepared cash budget, 62% prepared master budget, and finally 60% prepared direct materials purchase/usage budget. Most of the companies (62%) followed the incremental budgeting method for preparing their budgets

while one third of the companies (35%) used flexible budgeting. Only 26% of the responding companies used standard costing systems with almost half of them (49%) used historical records to establishing their standards, 29% used currently attainable standards, and finally 20% used basic standards. Finally, the study surveyed the extent of the use of 13 financial and non-financial performance measurement practices. Performance measures included sales (91%), customer satisfaction (78%), product quality (76%), meeting the budgets (74%), and market share (56%). The analysis also revealed that less than half of the companies used such measure as return on investment (46%), budget variance analysis (42%), employee attitude (35%), benchmarking (31%) and, finally, share price (26%).

In Syria, Ibrahim (2007) observed the use of standard costing systems in state-owned manufacturing companies and the influences of selected institutional, intra-organisational, and technical factors on their implementation. Although there was governmental pressure (represented through Syrian UAS) on these companies to apply standard costing, the findings showed that only less than half of the responding companies (44.4%) reported using this system. Furthermore, only 5.5% out of this percentage indicated an extensive use of this system while the majority (38.9%) advised using a partial form of the standard costing system. All the companies established standards for direct material quantities while only 31.2% prepared standards for direct material prices, 43.8% used direct labour efficiency and 6.2% used wage rate, and finally no company reported preparing standards for variable or fixed overheads. Concerning the methods used for establishing the standards, the average of historical records (68.8%) and engineering studies (56.2%) were the most frequent methods. In respect of the type of cost standards, the study indicated currently attainable standard as the most used by the user companies with 62.5% moreover the basic standards by the remaining users (37.5%). Finally, all companies computed direct materials quantity variances while only 25% computed the direct labour efficiency variance.

Kattan et al. (2007) conducted case study based research on a company in Palestine exploring the current state of MA systems and identifying how the external factors influence the design and implementation of these systems in that company. The analysis showed that the company prepared its budgets annually and only the production and marketing departments were involved in preparing the budgets. The company implemented some non-financial measures for measuring its performance, for example, number of defects, and items reworked to meet customer expectation, on-time delivery, and responsiveness to customers needs.

Like Chenhall and Langfield-Smith (1998a), Nimtrakoon (2009) examined the extent of adoption of a wide range (43 practices) of conventional and advanced (strategic) MAPs in companies listed on the Stock Exchange of Thailand (SET). To interpret the research results, the 43 MA practices were classified (according to the adoption rate) into three groups as follows: the first was 'high adoption' that was indicated by at least 83.7% of the responding companies and included 12 practices with a top 10 ranking; the second was 'moderate adoption' announced by at least 75.6% and included 15 practices ranking from eleventh to twentieth; and finally the third was 'low adoption' declared by at least 64.4% and included the remaining 16 practices ranking from 21 to 32 rate. The results relied on 135 completed questionnaires and showed that traditional MAPs were more in use among the responded companies than advanced MAPs. In detail, 10 out of the 12 practices in the first group were from the traditional MAPs, and their adoption rates were as follows: Budgeting systems for costs control (96%); performance evaluation based on budget variance analysis (93%), return on investment (92%), customer satisfaction (87%), divisional profit (84%); and standard costing (85%). However, there were other traditional MA practices categorised in moderate & low adoption group such as, residual income (74%) and employee attitudes (67%). Moreover, these results were confirmed through observing the perceived benefits of traditional MAPs. The findings also supported the significance of traditional MAPs where 9 out of 14 such practices were seen as highly beneficial to the company.

It is worth to mention that recently the concern of MA researchers in LDCs has turned to studying the implementation of advanced MAPs. This is due to some organisations in LDCs have started adopting such practices as ABC based on observed successful adoption in some developed countries. For example, Isa and Thye (2006) examined the implementation extent of advanced and traditional MAPs in manufacturing companies in Malaysia. The results showed that traditional MAPs were still the most commonly used amongst the responding companies as follows: standard costing system (68.3%), full costing (38.7%), process costing (25.3%), and job order costing (21.3%). The respondents claimed also use of advanced MAPs but with lower rates as follows: ABC system (28%), value added accounting (12%), cost modelling (12%), TC (10.7%), cost of quality (10.7%), and another 8 practices with usage rates less than 10%.

After reviewing the above studies, it is more beneficial to list the findings using a table to summarise the state of different MA techniques in LDCs. Table 8 shows that the use of budgeting system for planning activities is very widespread with high usage rates (from 100% to 60%). However, the implementation across all activities was not high among the user companies. The vast majority of companies prepared budgets for their main activities such as, production, sales, and profit with other activities seen as less important in budgeting terms. The most used method for preparing the budgets was the incremental budgeting with 100% in Saudi Arabia, 62% in Jordan, and 46% in Poland. In respect of the flexible budgeting method, although none of the Saudi companies used it, it was implemented in both Poland and Jordan with rates 44% and 35% respectively. In Poland 35% of respondents reported employing zero-based budgeting. Finally, five studies reported companies conducting variance analysis of their budgets at percentages extending from 42% in Jordan to 100%, in India. Only the Saudi studies surveyed whether companies were revising their budgets against actual performance where the rates were 39% in 1993 and 88% in the later study in 2003.

Table 8: Summary of the state of MAPs in LDCs countries

MAPs implementation/ adoption	Alnamri (1993)	Joshi (2001)	Szychta (2002)	El-Ebaishi et al. (2003)	Hutaib at (2005)	Ibrahim (2007)	Nimtrakon (2009)
Research context	18 companies in Saudi Arabia	60 Indian companies	60 Polish organisations	121 Saudi companies	103 Jordanian Companies	53 Syrian companies	135 organisations In Thailand
Budgeting system implementation/ per whole respondents	100% to 50% annual budgets	100% to 91%	80% to 17% annual budgets	77% to 58% for different budgets	from 70% to 60%	NA	From 96% to 79%
Budgeting Variance Analysis/ per users	74% on monthly basis	100%	81% on monthly & 8% on quarterly basis	NA	42.1%	NA	93%
Budgets revision	28% on quarterly, 11% semi-annually basis	NA	NA	88% mainly annually and semi-annually	NA	NA	NA
Budgeting method/ per users	100% incremental & 0% flexible budgeting	NA	46% incremental, 35% zero-based, & 44% flexible budgeting	NA	62% incremental & 35% flexible	NA	NA
Standard costing Imp	12.5%	68%	10%	57%	26%	44.4%	85%
Standards methods and types	NA	NA	NA	79% CA & 16% ideal standards	49% HR & 29% CA- 20% BS	69% HR & 56% ES - 62.5% CA & 37.5% BS	NA
Standards revision	NA	NA	NA	93% of the users	NA		NA
Standards variance	NA	NA	NA	38% of the users	NA	100% direct Material & 25% Direct labour	NA
Performance measurement	44% used budgets & 50% non-financial measures	100 to 43% for 6 financial & 88 to 22% for 6 non-financial practices	NA	21% variance analysis, 58% cost centres, 37% revenue centres, & 27% profit centres.	91 to 74% for 7 financial & 56 to 1.5% for 6 non-financial practices	NA	96 to 74% for 7 financial & 87 to 67% for 5 non-financial practices

Standards methods: HR: historical records and ES: engineering studies; Standards types: CA: currently attainable and BS: basic standards; Per users: means that the percentage was calculated according to the number of companies announced using the particular MA practice.

In terms of the implementation of standard costing systems, table 8 reveals that it was commonly being used in all the 7 reviewed studies. However, the implementation extent was relatively low with percentages from 85% in Thailand to 10% in Poland. Moreover, there were differences between the studies in terms of the intensity of implementation, for instance, Ibrahim (2007) reported that all the standard costing users (44.4% of the respondents) declared establishing standards for direct material quantities while not all the users established standards for the other cost elements. The most used method here was the average of historical records with 69% in Syria and 49% in Jordan however; the engineering studies method was reported as in use by 56% of the respondents in Syria. The results indicates that LDCs tended mainly to employ a simple method for establishing their standards through relying on historical records that might be inefficient for the particular period where they are being used. Finally, currently attainable standards were the most used among the studies with rates varying from 79% in Saudi Arabia to 29% in Jordan, and the next most used standard was the basic standard with rates extended from 37.5% in Syria to 20% in Jordan. Finally, in terms of the MA practices used for measuring companies' performance, table 8 reveals that all the five studies that examined this type of techniques concluded that both the financial and non-financial measures were highly implemented, except for El-Ebaishi et al.' research (2003) which reported that only financial measures were in use. However, the reported financial measures were more highly used than non-financial, except for the study of Alnamri (1993) in Saudi Arabia who reported that the non-financial practices were used by 50% of the responding companies comparing to 40% using financial measures only.

3.6.4- Summary

After reviewing the MAPs studies in developed and LDCs, the researcher noted that there has been increasing attention, particularly in developed countries, since 2000s to the adoption of newly developed MAPs. This was obvious through the MA studies conducted at the start of 21th century (e.g., Waldron and Everett, 2004 and Abdel-Maksoud et al., 2005). However, the same studies revealed that traditional MA practices were still being employed in developed countries and this was supported by Dugdale et al. (2006) study in the UK. Regarding LDCs, there was also a tendency towards the adoption of advanced MA practices as mentioned by some studies (Isa and Thye, 2006 and Nimtrakoon, 2009), but this was

mainly in emerging countries¹³ (e.g., China, Malaysia, and Thailand). However, these studies still showed also that the use of advanced MA practices were largely limited comparing to the use of traditional MA practices.

¹³ In the current study, the researcher distinguishes between developed countries and less-developed countries (LCDs) where the latter includes both emerging and developing countries.

Chapter (4): Theoretical Framework of Research

4.1- Introduction

It is essential before designing MA systems to consider factors faced by organisations either those from internal or those from external environment. A proper understanding of such factors helps greatly to design effective MA systems able to meet different needs of organisations' management. In this context, MA researchers have utilised from few theories that helped them in recognising the means by which these factors affect the design and implementation of MA systems. Among the used theories, there are two rival approaches been used largely in the MA literature, namely, contingency theory (CT) and institutional theory (IT). Consistent with some scholars (e.g., Oliver, 1991 and Chenhall, 2003), this study utilised both CT and IT for better perceiving the factors influencing the complexity level of costing systems and the implementation extent of MAPs. In detail, CT was used for studying the influence of almost all the independent factors on the research dependent factors while IT was used for observing only the impact of accounting environment (AE). Therefore, the focus in this chapter is placed on CT with a lighter emphasise on IT. For purpose of a comprehensive review of MA research in the context of both theories and for a detailed understanding of the research framework design, this chapter was designed as follows: section two outlines a background about CT in the MA context; section three presents the different forms of contingency fit; section four reviews the early theoretical contingency-based MA studies; section five presents a background about IT and its different patterns; section six presents the research framework; section seven reviews in detail the main empirical MA studies about the association between selected contingent factors and the design and implementation of MA systems in addition the research hypotheses; and finally the last section summarises the chapter.

4.2- Contingency theory in the MA context: a background

CT was developed originally at the beginning to mid of 1960s as an approach for studying the association between organisational structure and context and the influence of these factor on performance. The basic assumption of this theory can be summarised in that an organisation structure should be designed and built up in a form that fits its context, and consequently enables it to operate effectively (Drazin and Van de Ven, 1985). The use of CT in the context of MA systems began in the mid of 1970s when a number of MA researchers began moving

from a universalistic approach in conducting their MA research (Otley, 1980). MA researchers have recognised the fact that designing effective MA systems requires a comprehensive consideration and understanding of different factors that drive change in these systems. The contextual and organisational factors of a company were recognised as one of the main factors that should be understood along with other technical factors for purpose of designing effective MA system (Hopwood, 2008). Different theories have been used by MA researchers for studying the factors influencing MA systems' design; of those CT has been adopted for some three decades. Since that date, a continuous and active stream of contingency-based MA studies has run in developed and LDCs. The adoption of CT was based on an idea that the management control system (MCS) of an organisation, including its management accounting (MA) system, was considered a part of its organisational structure. Given that contextual factors have an influence on organisation structure, it was then hypothesised that these factors have also significant impacts on the design and implementation of the MA system. Moreover, the organisational structure per se was studied in terms of its influence on the MA system' design (Bruns and Waterhouse, 1975; Hayes, 1977; Waterhouse and Tiessen, 1978; Ginzberg, 1980; and Otley, 1980). According to this background, the current research used CT as the main theoretical framework of research in addition to IT, which is discussed later in this chapter.

Otley (1980) contended that the contingency approach to MA meant that each organisation tends usually to design its MA system to include particular features fitting the specific situation in which it works. Using CT resulted in enabling the MA researchers to link specific MA practices/systems to particular defined circumstances. Therefore, it can be said that there is not a ready prescribed MA system appropriate for all organisations. Alternatively, each organisation should develop and implement its own MA system that takes into consideration the internal and external circumstances facing it (contingent variables) (Fisher, 1995). This will drive organisations eventually to design efficient and relevant MA systems able to meet their different needs of cost and management information precisely, on time, and in its organisational context. Additionally, it is required from organisations, in order to keep competitive and efficient, to conduct an ongoing dynamic update to their MA systems to reflect fast changes in business environment. Hence, any delay from an organisation in updating its MA system will make it less effective or even irrelevant to the business environment where operates (Jones, 1985).

From the MA literature, the researcher noted that the contingency framework has helped in improving and enlarging the MA body of knowledge through adding new active streams of studies. Chenhall (2003), in this context, reviewed the contingency-based MA studies conducted since the beginning of 1980s and categorised them broadly into two streams. The first or early research, which was addressed by the early studies of Waterhouse and Tiessen (1978) and Otley (1980), focused on studying the influences of traditional contingent factors i.e. competition intensity, technology, organisation structure, and size on the design of MCS¹⁴. The second stream included more recent MA studies (e.g., Haldma and Laats, 2002 and Abdel Kader and Luther, 2008) that have observed, in addition to the influences of conventional contingent factors, impacts of potential new contextual factors such as, organisational culture (OC), accounting education (especially in LDCs), and customer power factors on MCS design.

Finally, it can be noted that on one hand, contingency-based MA research has received a considerable attention from MA researchers as a framework used for understanding the variation in the implementation of MA systems. This was evidenced by the number of empirical and theoretical MA studies that have adopted this framework so far. For example, Scapens and Bromwich (2010) in their editorial comments, *Management Accounting Research*, reported the increase in the CT usage from 6% (1990-1999) to 13% (2000-2009). On the other hand, this stream of research has faced several criticisms from some researchers (e.g., Dent, 1990 and Fisher, 1995) who, for example, argued that the results of contingency-based research tend to be incomplete and sometimes contradictory. They, however, attributed this to such reasons as the adoption of different research designs, non-existence of agreed definitions to the contingent factors (Dent, 1990; Fisher, 1995; and Langfield-Smith, 1997), and the absence of appropriate measures for these factors consequently using proxy measures (Drury and Tayles, 2000). All these drawbacks in turn have influenced the comparability extent of researchers' findings. However, CT is still being adopted by MA researchers who are trying to expand its body through studying new possible factors. For example, recently Soobaroyen and Poorundersing (2008) adopted the CT (mediation approach) for examining the influence of two contextual factors (task uncertainty and decentralisation) on managerial performance mediated by the MAS characteristics (timeliness, scope, integration, and aggregation) in Mauritius. However, they concluded that only decentralisation has influenced significantly the performance through all the MAS characteristics. The current research

¹⁴Accounting information system (AIS) is considered as a part of a broader management information system (MIS), the latter per se is part of management planning and control system (MCS), and all of these ingredients form the control package of an organisation (Otley, 1980).

follows this tradition by surveying the influence of new added contingent factor namely, the accounting environment (AE) and adapting an existing factor i.e. the organisational culture (OC), in addition to observing a set of other conventional factors commonly surveyed in the MA literature.

4.3- Different forms of contingency fit in MA

Within CT in the MA context, there are several forms of contingency fit. MA researchers who adopt CT should reveal which form of fit they have adopted and justify their selection. The main two studies which debated the different forms of contingency fit were Chenhall (2003) and Gerdin and Greve (2004). This sub-section reviews the different forms of contingency fit discussed in these two studies and clarifies the form adopted in the current research and reasons behind this selection.

Chenhall (2003) identified three different forms of contingency fit in the context of MCS, namely selection, interaction, and systems approaches. MA researchers adopting the first form examine usually the extent to which the contextual factors affect the MA systems (dependent factor) without observing whether this relationship has any influence on company performance¹⁵. In the interaction form, researchers study the association between the MA systems and company performance (dependent factor) with reference to the moderate role of contextual factors. Finally, the systems-based MA research examines the combined influence of both contextual factors and the MA systems characteristics on the company's performance.

Similar to the above, Gerdin and Greve (2004) discussed the different forms of contingency fit but in the context of strategy-MA system, they developed a more detailed (hierarchy-based) framework for explaining these forms. The designed framework¹⁶ was started from the two conflicting paradigms of fit i.e. Cartesian vs. Configuration and ended in showing whether the fit concept is showing the strength of association between factors or just depicting its form. The Cartesian (traditional) paradigm that is featured by reductionism concentrates on studying the association between single contextual factors and single structural features and how this relationship affects performance. Moreover, it depicts the fit between the organisation structure and its context as a continuum where it is possible for an organisation to make frequent small movements from one fitting position to another for

¹⁵ The company performance is assessed usually using proxy measures, e.g., the usefulness or satisfaction of the MA system (Al-Omiri and Drury, 2007).

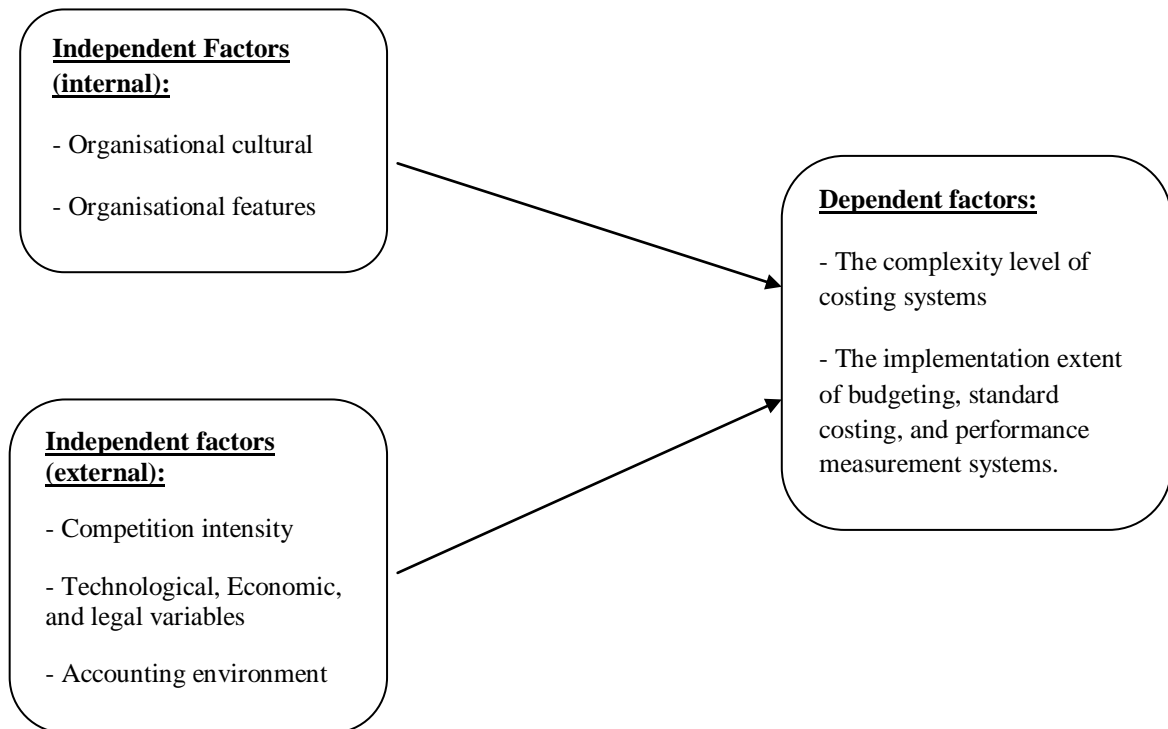
¹⁶ For more details about the framework of contingency fit, review the study of Gerdin and Greve (2004, p.304).

purpose of improving its performance. In contrast, the configuration paradigm that is conducted holistically focuses on observing the relationship between a wide range of contextual factors and many structural attributes. Additionally this approach hypothesises that there are only few positions of fit through which an organisation can make what is called 'quantum jumps' from one position to the other. The next stage in the designed framework was the difference between the congruence and contingency approaches of fit. Specifically, the first approach argued that only an effective organisation can survive in its context consequently there is only a need to study the relationship between organisation structure and its context without testing the influence on performance (similar to the selection approach). The contingency approach in contrast examines the influence of such a relationship on the organisation's performance in order to identify the form of contingency fit achieving the best performance (like the interaction approach). Finally, within the Cartesian approach, there are two different methods for conducting research namely, the moderation approach and the mediation approach. On the one hand, the first supposes that the influence of independent factor (MA systems design) on the dependent factor (performance) is moderated by some third factor¹⁷ (e.g., business strategy). On the other hand, the mediation approach allows a factor (MAS attributes) to play an intervening role between the contextual factor and the dependent factor (performance). In other words, the intervening approach supposes that the fit between the contextual factor and company performance can operate only through the intervening factor i.e. the MAS features.

It is noteworthy that the majority of MA studies, particularly in the context of costing systems, adopted the selection form of fit (e.g., Bjornenakm, 1997a; Krumwiede, 1998; Malmi, 1999; and Luft and Shields, 2003). Accounting researchers justified using it being that companies tend often to employ only MA practices able to improve their performance, consequently there is no need to study the influence of association between the MA system's features and contingent factors on company performance. Similar to these studies and given the exploratory nature of this study, the selection (congruence) approach was adopted (Figure 3) by which the relationship between each of the dependent factors (the complexity level of a costing system and the implementation extent of MA practices) and a set of the internal and external contingent variables was studied without examining its influence on the performance of the responding companies.

¹⁷ An important assumption in the moderation approach is that there should not be any significant bivariate association between the third factor and either the dependent or the independent factor.

Figure 3: The contingency theory model of the MA system



4.4- Early contingency-based MA studies

This section reviews the early MA studies, especially the period between 1975 and 1985, which adopted CT as an approach for studying the design and implementation of MA systems. The reviewed studies were of theoretical type and used by MA researchers as a foundation to conducting contingency-based MA research. Before starting the review, it is useful to mention that MA researchers have used different MA constructs, e.g., MA system, accounting information system, and MCS. The current study, however, focused on studying the MAS that includes both costing and MA systems as tools of planning and control in the responding companies (see section 5.3.2).

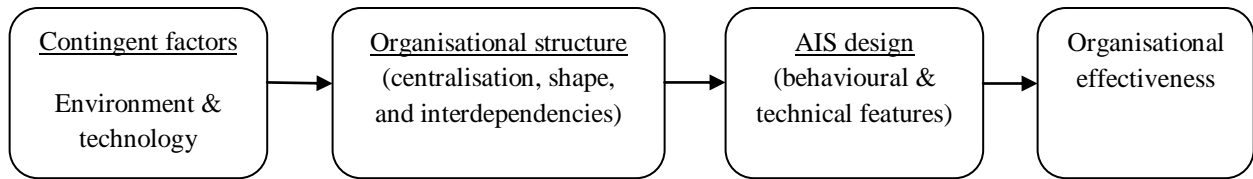
Bruns and Waterhouse (1975) conducted an empirical study using a mail questionnaire and showed that the structure of an organisation significantly influenced the implementation of its budgeting system. Moreover, the results were consistent with organisational studies in terms of viewing the organisation structure as contingent upon the context factors e.g., technology, size, and environment. Gordon and Miller (1976) constructed a theoretical framework, which featured a more adaptive and broader view, for designing the accounting information systems. The resultant framework revealed that there is no one formula that can be used

effectively for designing the accounting information system in all organisations, moreover it offered various features of AIS that could be effective under particular characteristics of organisation contextual factors including environment, styles of management decision making, and organisation attributes.

Waterhouse and Tiessen (1978) added a considerable contribution to contingency-based MAS research when they formulated a theoretical framework for explaining variation in MAS design and implementation among organisations. The resulted framework, which was drew on the essential idea of CT in organisational studies, hypothesised that an effective design of MAS is contingent upon contingent factors through an intervening role of the organisational design features, such as, centralisation and autonomy. Amigoni (1978) similarly developed a contingency-based theoretical model for helping companies in designing and implementing an appropriate MCS. The model hypothesised that both the degree of complexity of the organisation structure (defined through both number and degree of interdependence of business units and their types) and company environment characteristics including stable, dynamic, and complex environment have an influence on the MCS design.

Otley (1980) reviewed the contingency-based MA literature for purpose of evaluation and improving a model basing it on ideas of organisational control and effectiveness. Otley (1980) stressed the importance of CT in MA research, but on the other hand recognised that the reviewed studies were based on an insufficiently and inadequately articulated model. The review resulted in three reservations as follows. The first issue was related to the need of contingent factors to be more fully explained and theoretically and empirically examined. The second concern was the necessity of considering organisational effectiveness for purpose of gaining a correct CT of control system design. Given that contextual factors affecting the organisational structure and MAS design are likely to be the same, the last reservation called MA researchers to avoid using the organisation structure as the only intervening factor while examining the association between the contingent factors and the design of MA systems. Before explaining the Otley (1980) model, it is worth mentioning that Hayes' model (1977) considered earlier organisational effectiveness during studying the association between contingent factors and MAS design. However, it was comprehensively criticised by Tiessen and Waterhouse (1978). Considering these reservations, Otley (1980) developed his theoretical model, which combined four stages as follows (Figure 4).

Figure 4: Four stage theoretical framework for designing the AIS



The above framework supposed that according to the contextual factors of an organisation, the features of its AIS should be identified, and by this way, the organisation can run and perform effectively. Moreover, Otley stressed that it is more appropriate, for understanding the variation in the AIS design among organisations, to survey the influences of both the contingent factors and organisational structure together.

To conclude, although there were differences between the reviewed frameworks, they all encouraged MA researchers to adopt CT for explaining variation in MA systems design among different organisations.

4.5- Institutional Theory

Some organisations operate in an environment that can be described as a highly institutionalised. Such environments include usually particular social norms and cultural rules that should be adopted by operating business entities in order to achieve their legitimacy and efficiency or even to survive in these environments. The application of these norms and rules by these entities are reflected, for instance, in implementing particular formal procedures, structures, and practices (Covalesski et al., 2007). For understanding the influences of the institutionalised environment on companies, researchers used what is called institutional theory (IT).

In near past, MA researchers (e.g., Granlund and Lukka 1998 and Ibrahim, 2007) have started adopting IT as a theoretical framework for purpose of understanding the extent to which the institutional and social variables impact on MA systems' implementation and MA change (Hoque, 2006). Within this IT, three directions were developed subsequently by researchers namely, old institutional economics, new institutional economics, and new institutional sociology (Ribeiro and Scapens, 2006). However, the latter was adopted in this research as

the most appropriate approach for understanding the degree of association between accounting environment (AE) and both the research dependent factors. New institutional sociology (NIS) approach, which was established by Meyer and Rowan' seminal study (1977), concerns with studying the change in MA systems from the viewpoint of outside of organisation. Moreover, it interests in examining institutions (e.g., companies) at the more macro level of organisational sectors or fields. NIS is based on the idea of that the structure of organisations are usually designed to conform to the myths of their institutional environments rather than according to the circumstances faced by organisations (Meyer and Rowan, 1977) (as in CT).

NIS approach contends that in an institutionalised environment, particular structures and procedures are usually diffused across working organisations. This diffusion in turn creates pressures, which cause eventually to making organisations isomorphic with each other (this is the model of institutional isomorphism by DiMaggio and Powell, 1983). Moreover, they identified three sources of isomorphism namely, coercive, mimetic, and normative isomorphism. They differ in terms of the nature of pressures in the institutional environment that lead organisations to become homogeneous. After considering these sources, the researcher adopts the model of normative isomorphism as the more appropriate one to perceive the influence of AE on the research dependent factors. The model of normative isomorphism assumes that homogeneity in practices, procedures, structures, and so on among organisations is caused by less compelling factors (comparing to those in coercive isomorphism) such as, professional networks and university education (DiMaggio and Powell, 1983). In detail, the skills gained through studying in universities or any professional institutions and those acquired through working in professional networks influence the method by which educated/professional staff undertakes activities in their organisations. This in turn leads to a diffusion of such skills across different organisations at least those operating in the same field (Carruthers, 1995).

In this research, it is assumed that the factor of AE through its two dimensions, i.e., the quality of accounting education and imported accounting experiences, has an impact on both the dependent factors. In detail, it is hypothesised that MA skills acquired by accounting personnel of Syrian PICs, during their learning in either domestic Syrian or foreign educational institutions, are reflected in these PICs; consequently, they influence the design and implementation of MA systems in these companies.

4.6- Research Theoretical framework

4.6.1- Introduction

As mentioned previously, this study examines the extent to which a wide range of internal and external contingent factors and one institutional factor influence two dependent factors, namely, the complexity level of costing systems, and the implementation extent of MAPs used in Syrian private industrial companies (PICs). Therefore, this section discusses two models as the research theoretical frameworks. For designing the models, the researcher adopted, like many MA studies, e.g., Haldma and Laats 2002 and Drury and Tayles 2005, CT (selection approach) as the main theory of research. Moreover, IT was adopted also (consistent with, e.g., Oliver, 1991 and Chenhall, 2003) for understanding the association between the AE construct and both the research dependent factors.

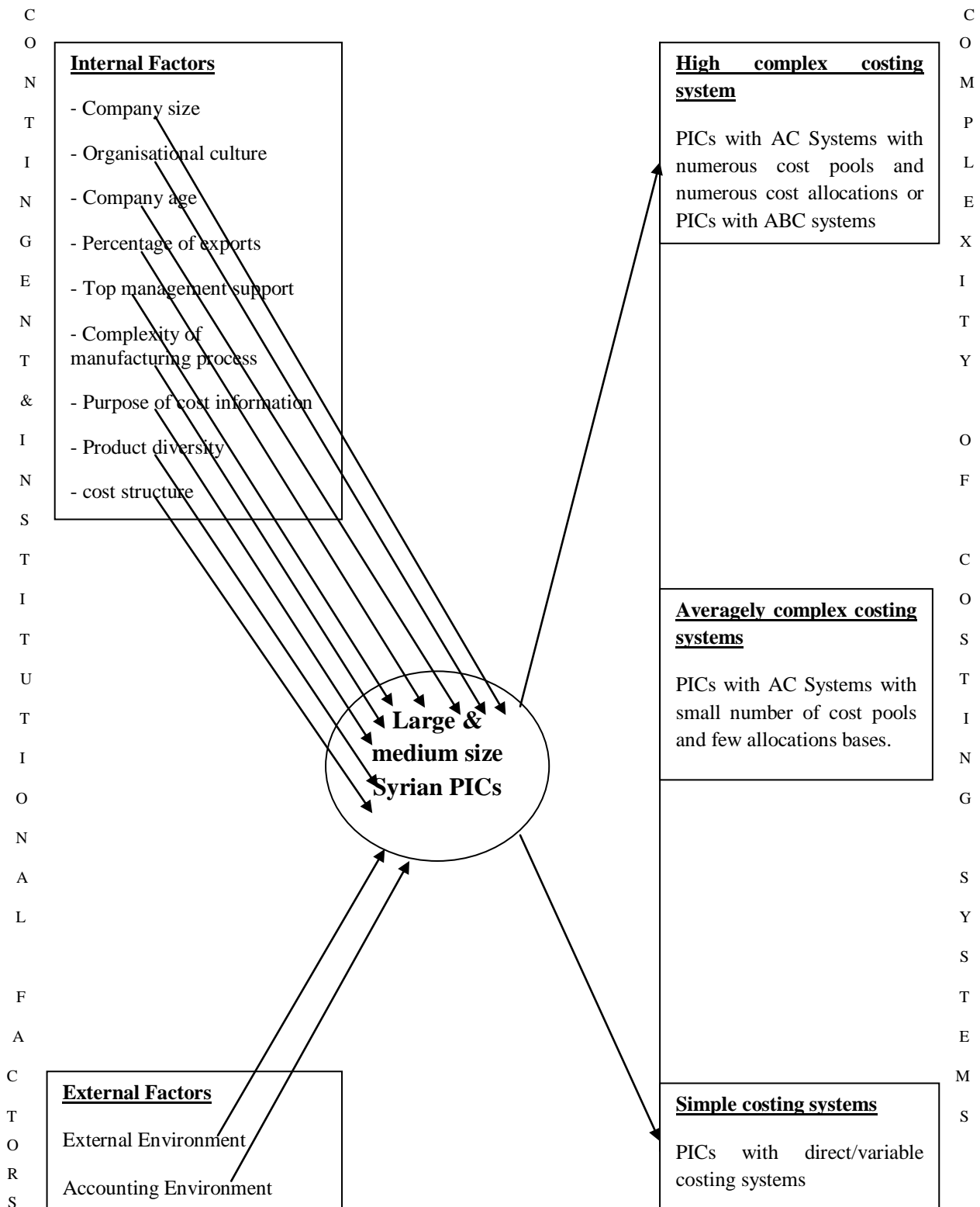
For developing the research frameworks, the researcher used two sources. The first was a comprehensive review of the MA literature in developed and LDCs. The second is the initial exploratory study (section 5.3.1.4), which was developed basing on the outcome of first source. The literature review (Abernathy, 2001 and Al-Omiri and Drury, 2007) helped in structuring the research frameworks while the collected feedbacks from the exploratory study used in making the structured frameworks more relevant to the Syrian environment. In the designed frameworks, the researcher included both those internal (in-firm) and external (out-firm) contextual and institutional factors having an influence on both research dependent factors.

4.6.2- Model of the complexity level of costing systems

Figure 5 depicts the theoretical framework of the first dependent factors, i.e., the complexity level of costing systems. As it can be noted, on the left hand side of this figure, there are the research independent variables categorised into external and internal factors. Within the external factors, the framework included the influence of both the EE (including seven components) and the AE (newly developed factor). The other category contained a wide range (9 factors) of internal contingent and institutional factors, which were adopted and adapted from the MA literature, namely: company size, organisational culture (OC), age of company, percentage of exports, top management support (TMS), complexity of manufacturing process, purpose of cost information, product diversity, and cost structure. All

these independent factors (11) were examined in terms of the complexity level of the costing system.

Figure 5: The research theoretical framework of complexity level of costing systems



In the middle of research framework, there is the research empirical area i.e. large and medium size Syrian PICs. Finally, on the right hand side, there is a vertical continuum representing the first research dependent variables i.e. the complexity level of costing system. It starts from the bottom right with the most simplistic costing systems (e.g., direct and variable costing) and finishes in the top right that represent Syrian PICs with the most complex costing system (e.g., advanced AC or ABC system). Furthermore, between the top and bottom of this continuum there is a series of different levels of costing systems' complexity with other 'stop off points' possible. Finally, it is worth to mention that although the majority of factors of this framework were measured using instruments adopted from the previous studies, few factors were assessed through developing and adapting existing instruments. They are AE measured using almost newly developed instrument and TMS assessed through adapting an instrument from MA literature (for details about the measures of factors see section 5.3.2).

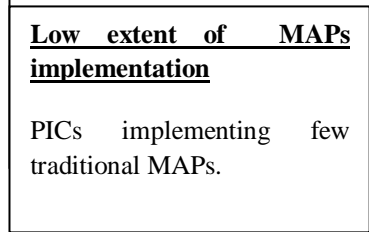
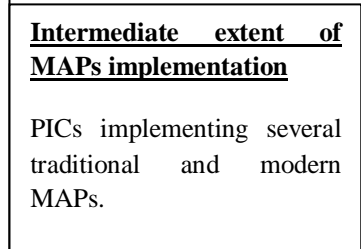
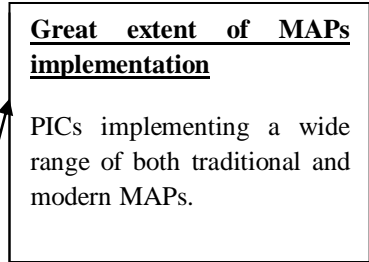
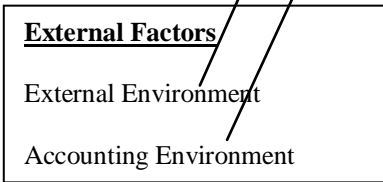
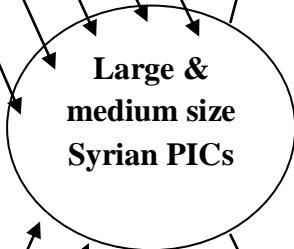
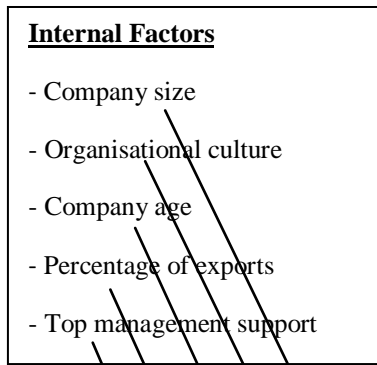
4.6.3- Model of the implementation extent of MAPs

This subsection discusses the second framework structured for illustrating the relationship between the implementation level of MAPs and different contingent and institutional factors. In this model, it was hypothesised that only 7 (out of the 11 independent factors mentioned above) have an influence on this dependent factor. like figure 5, figure 6 illustrates the second framework. On the left hand side, the contingent and institutional factors are listed using two categories, i.e., one for external and another for internal factors. The external factors contained the influence of both the EE and the AE. The internal factors included 5 contingent factors, namely: company size, OC, age of company, percentage of exports, and TMS.

The middle of this research included also the surveyed companies i.e., large and medium size Syrian PICs. Finally, on the right hand side, a vertical continuum, which represents the different implementation extent of MAPs, was drawn. It starts from the bottom right including PICs implementing a low extent of traditional MAPs (few), and ends in at the top right of this continuum containing Syrian PICs applying great extent (wide range) of different modern and traditional MAPs. Again, between the top and bottom of this continuum, there are different extents of MAPs' implementation with other 'stop off points' possible.

Figure 6: The research theoretical framework of implementation extent of MAPs

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4.7- Research independent factors and hypotheses

As mentioned above, the primary theoretical and empirical studies conducted over three decades ago (e.g., Ginzberg, 1980 and Otely, 1980) planted the first seeds in the field of contingency-based MA research. This section is dedicated mainly to reviewing the contingency-based MA studies conducted in developed and less developed (emerging/developing) countries during the last three decades. The review is organised according to the research independent factors (10 contingent and 1 institutional) studied in this research i.e. eleven subsections. Moreover, at the end of each subsection, relevant hypothesis/hypotheses¹⁸ were formulated resulting in 18 hypotheses (11 related to the first dependent factor i.e., the complexity level of costing systems and 7 about the second dependent factor i.e., the implementation extent of MAPs). It is noteworthy that the lack of consistency among MA researchers as to the degree and nature of contingent/institutional factors' influence on the MA systems means that the research hypotheses should be formulated differently. Accordingly, the researcher hypothesised the existence of 'positive association' for some contingent factors and only 'an association' for other factors with both research dependent factors.

4.7.1- External contingent factors

4.7.1.1- External environment

The external environment (EE) is one of the primary contextual factors, which has been extensively studied in the contingency-based MA literature (Chenhall, 2003). The EE is a source of several different types of pressure on the organisation. The strength and direction of this pressure are according to features of the EE' components where a company works, for example, the intensity level of market competition, extent of technological innovation and economic factors, and the stability level of legal constraints (Khandwalla, 1977). MA researchers hypothesised that working in a business environment featured high levels of intensity, dynamism, and instability requires companies to have more precise and timely cost information, which can be acquired through implementing advanced cost and MA practices.

¹⁸ This is because some independent factors, namely, the complexity of manufacturing process, cost structure, product diversity, and the purposes of cost information factors, were examined only in respect of the complexity level of costing systems while the remaining 7 factors, namely, the EE, AE, company size, OC, age of company, percentage of exports, TMS, were studied in regard of both the dependent factors.

The EE is a category factor including a variety of contingent variables that are called components. For studying the influence of EE on the MAS design, MA researchers adopted the outcomes of organisational theorists who had worked theoretically and empirically on identifying its components and dimensions. The type of EE was assessed through surveying the levels of EE' dimensions related to its components. It is worth to mention that although most of the organisational studies were consistent regarding the importance of EE on organisational structure, they were not alike in terms of identifying its components and dimensions. The researcher, however, reviewed the methods used in the MA literature for measuring the EE factor and summarised the main two instruments in table 9.

Table 9: External environment factor- measurement instruments

EE' Measures	Duncan 1968	Khandwalla (1977)
Dimensions	Simple-complex	Turbulence
	Static-dynamic	Hostility
	NA	Diversity
	NA	Technical complexity
	NA	Restrictiveness
Components	Company customers	Price, inputs, labour, advertisement, and quality competition
	Company suppliers	Competitors activities
	Company competitors	Technological change
	Socio-political component	Economic activity
	Company technologies	Governmental policies

In 1968 method, Duncan (1968, cited in Duncan, 1972) conducted an empirical study for identifying a comprehensive list of the internal and external components of EE. He summarised the external components as follows: 1- company customers (distributors and end users); 2- company suppliers (production inputs, machines, and labour); 3- company competitors (for customers and suppliers); 4- socio-political component (governmental regulatory rules, people political attitude, and relationships with other bodies); and company technologies. Duncan used these components in a further study conducted in 1972 for identifying the features of EE influencing the process of decisions making. Moreover, the author adopted two dimensions from organisational studies to examining these components, namely, simple-complex and static-dynamic dimensions. The first represents the number of EE components that should be taken into consideration when making company decisions, and the second included two sub-dimensions. The first focused on the extent to which the EE

components do not change over time or are changing frequently while the second concentrated on the frequency with which decisions makers considers new/different EE components in the process of decision making.

Another source for identifying and measuring the EE was a work of Khandwalla (1977) who identified five characteristics of the EE as follows: turbulence (turbulent vs. stable environment), hostility (hostile vs. benign environment), diversity (heterogeneous vs. homogenous environment), technical complexity (high vs. low sophisticated information for making strategic decisions, quickly vs. slowly developing, and extremely vs. slightly capital intensive manufacturing techniques), and restrictiveness (high vs. low politically, legally, and economically restrictive environment). Moreover, he stated that these five features can be attributed to any of the EE' components namely, prices, inputs suppliers, labour, advertisement, and the product quality competition; competitors activities; technological change; economic activity; and governmental policies. Finally, Khandwalla (1977) emphasised that using these attributes cannot be considered as a simple formula for identifying the type of EE a company works in. Alternatively, judgment should be always exercised in measuring the different components of EE for example, in a case of an organisation operates in a market featuring severe price competition while at the same time there are many tax discounts, it can be said that this company is working in a moderately hostile environment.

Finally, after reviewing the main two sources of EE assessment, it is useful to shed some light on some of the early MA studies that examined the EE influence on the design of MA systems.

4.7.1.1.1- Early research about the external environment

Most of the early studies in this context were of a theoretical type moreover most of them emphasised the importance of the environment' features on the design and implementation of MAS. Therefore, such studies helped and encouraged MA researchers to survey this construct further in terms of developing different MA themes.

Hayes (1977) was one of the first scholars who examined the EE using two dimensions i.e. stable-dynamic and homogenous-heterogeneous. He developed a framework for identifying

contingent factors influencing methods of evaluating subunits performance. The resultant framework developed using a field study lent support to the importance of EE on aspects of a subunit's performance i.e. on practices used for performance assessment.

Waterhouse and Tiessen (1978) later hypothesised in their theoretical framework that organisations working in an environment featuring high levels of uncertainty need to design their budgets based on time-constrained coordination. Moreover, they further indicated that for meeting unpredictable and changing events in an environment, organisations should use flexible budgets and conduct budget revision. Amigoni (1978) studied also whether there was an association between the different features of EE and the design of MCS. He formulated a framework, which supposed that organisations working in a stable environment use usually a control system featuring formality and procedural rigidity. On the other hand, organisations operating in a turbulent environment design usually their control system to be featured with a high level of rapid flexibility (speedy reaction to occurrence of an environmental event) and very less procedural rigidity i.e. they adopt a loose rather than tight design of the control system.

The study of Ewusi-Mensah (1981) also focused on studying the effects of EE on designing the MIS. The EE was identified using three states that were adopted from Ein-por and Segev (1978). The three concepts, which related to the complexity and uncertainty of environmental variables, were controllable, partially controllable, and uncontrollable environments. The study concluded that an effective MIS should feature an information profile based on an organisation's responses to changing environmental variables. Moreover, for achieving required goals and objectives, the MIS should be characterised with an ability to search the EE frequently for relevant information.

The theoretical studies discussed above paved the way for researchers to conduct further empirical studies about the relationship between the MA systems and EE factor. Gordon and Narayanan (1984) studied empirically the associations among three constructs namely, EE, organisational structure, and accounting information system (AIS) in US' companies. Using the tools developed by Khandwalla (1972a, 1977), they reported the existence of a significant association between the environment's features and the characteristics of AIS system. For example, organisations working in an environment with a high level of perceived uncertainty

in most or all of its variables tend to employ AIS able to produce in advance, from external sources and of a non-financial nature accounting information.

Chenhall and Morris (1986) collected data from 68 managers in Australia in examining the influences of perceived environmental uncertainty (PEU) and organisation structure on the design of MA systems. The latter was identified through surveying characteristics of information, as perceived by managers, namely, timeliness, scope, level of aggregation, and information assisting integration. The findings were consistent with Gordon and Narayanan (1984) results in that managers working in high level of environmental uncertainty tend to employ a MA systems able to produce broad scope and timely MA information for purposes of environment scanning and improving their decisions response time respectively. Finally, the research did not report any relationship between the PEU and aggregated information.

Regarding the influences of EE on the design of costing systems, Cooper and Kaplan (1988) argued that under higher levels of competition, especially in a global context, companies needs urgently to get timely and accurate cost information for decision making' purposes. Consequently, they need to shift away from the traditional to advanced costing systems, such as ABC, to avoid competitors exploiting their costing errors.

Notably, the five MA studies reviewed above emphasised the necessity of examining the EE variables for a correct perception of the design and implementation of different MA systems (e.g., costing, budgeting, control and performance measurement systems).

4.7.1.1.2- Recent research about the external environment

After the early theoretical and empirical studies discussed above, many MA researchers, in different developed and LDCs, have started conducting studies for observing the relationship between the EE and the implementation of MA systems. It is noteworthy that many studies concentrated on examining only few EE's components (e.g., price, suppliers, and manpower competition) while others, to which the current research belongs to, have observed the EE within its comprehensive construct. This section reviews studies conducted since 1993 and summarises the findings at the end in table 10.

In an attempt to assess the gap between MA theory and practices and to identify the factors influencing practices implementation, Drury et al. (1993) reported surprisingly, basing on data collected from 300 survey questionnaires in UK, that the level of competition faced by the responding companies didn't have an influence on the costing methods used. Libby and Waterhouse (1996) conducted an exploratory study to survey the association between changes in MA control systems and a range of chosen contingent factors including the EE. The empirical part of this study was applied on a sample of Canadian medium size manufacturing organisations. The study supported moderately that working in an environment featuring a high level of competition pushes managers to employ a large number of MA and control systems¹⁹. Managers usually did this to meet their increasing needs for different types and complex MA information due to working in such an environment. Contrary, Bjornenak (1997a) found that the competition level, which was measured through exports percentage and number of competitors, faced by a company was not significantly associated with the adoption of ABC.

Drury and Tayles (2000) observed the association between the complexity level of a costing system and a range of six contingent factors including the competitive environment in 623 large manufacturing and non-manufacturing organisations in UK. The results, which were based on 187 respondents (30% response rate), showed that competitive environment represented through the competition degree for major products, predictability of competitors' activities, and price competition, had a significant influence on the complexity level of costing systems.

Abdel-Maksoud et al. (2005) conducted a large-scale UK research study observing the association between 19 non-financial performance measures used at shop-floor level and internal and external contextual factors. The researchers collected usable data from 313 UK manufacturing companies (response rate 14.3%). Analysing the collected data showed that the construct of competitive environment (including six different aspects of competition) was significantly associated with all the surveyed performance measures, which were represented through five category factors using the factor analysis technique. This implied that working in a highly competitive environment requires business units to measure every aspect of their activities since any of them could be a source of competitive advantage. A later study by

¹⁹ The number of MA and control systems was used in this study as a tool for measuring the independent factor i.e. the changes in MA and control systems.

Abdel Kader and Luther (2008) in the UK's largest industrial companies asserted that companies' environmental uncertainty and their customer' power (new contingent factor developed by the authors) significantly influenced the sophistication level of MAPs (a compound factor which relied on giving emphasis to 38 accounting practices) used in these companies. Finally, Al-Omiri and Drury (2007) observed the contingent factors influencing the sophistication level of costing systems used by UK large manufacturing companies. The researchers found that companies working in an environment featuring a high level of competition tend usually to employ higher levels of cost system sophistication.

In LDCs, Williams and Seaman' study (2001) in Singapore duplicated the research of Libby and Waterhouse (1996) and reported contrary results to what stated above. It concluded the existence of significant negative association between changes in MA and control systems (e.g., planning, costing, and decisions making) and the intensity of competition. Another study in Estonia by Haldma and Laats (2002) confirmed the literature findings that the intensity of market competition influences the design and use of MA systems in Estonian manufacturing companies. In the Middle East, Hutaibat' research (2005) in Jordan showed that the level of competition (international and domestic) influenced significantly the implementation of MAPs. Another study in Poland, Szycha (2002) studied the association between the implementation of MA practices and a number of potentially influential factors in Poland including the extent of competition. She concluded that although the previous MA studies in Poland asserted the importance of EE on changing and updating MA practices, the data collected in this research did not confirm such relationship.

In China, O'Connor et al. (2004) examined the factors influencing the adoption of Western MAPs by state-owned organisations. One of the observed factors was market competition, which included the following variables: domestic competition, foreign competition, increased market size, growth of company sales, and desire to apply quality certification such as ISO9000. Surprisingly, the study revealed that market competition was not among the factors significantly²⁰ influencing the adoption of Western MAPs in China. This indicates that the findings were inconsistent with the majority of previous findings especially those reported earlier by Firth (1996) in China. O'Connor et al. (2004), however, attributed this contrast with Firth' results to issues such as differences in the scope of used measures and increasing

²⁰ It is noteworthy that O'Connor et al. (2004) conducted interviews with four of the responded countries where they stated (contrary to the survey findings) that the change in the MAPs implementation was associated with the increase in the competition level of companies' environment.

ascendancy of other variables, e.g., listing on the stock market, during the period within which this study was conducted.

In Malaysia, Isa and Thye (2006) surveyed the state of both traditional and advanced MA practices used in manufacturing companies and factors influencing their implementation. The researchers found that the EE, which was measured using Khandwalla's instrument (1977), was associated significantly and negatively with the usage of advanced MAPs. Regarding traditional MAPs, the EE was associated negatively and only in terms of one of its components, namely changes in legal constraints.

Kattan et al. (2007) conducted a case study-based research in a company in Palestine exploring the state of MA systems and identifying how external factors influenced the design and implementation of these systems. The analysis showed that during a period of higher political and environmental uncertainty, the company applied budgeting systems that were organic-based rather than mechanistic-based in nature. Contrary, when the company's environment became relatively more stable, the budgeting systems moved towards a more mechanistic style.

To conclude, Table 10 summarises the MA studies reviewed above and shows their findings regarding the degree and direction of EE influence on MA systems. It can be noted that half of reviewed studies asserted the existence of a significant positive association between the EE with its two aspects i.e. market competition and environmental uncertainty, and the design and implementation of different MA systems including costing, budgeting, performance, and measurement systems.

Table 10: Summary of the main studies about the association between the EE and MAPs

Studies	Context	Dependent factor	EE construct used	Result
Libby and Waterhouse (1996)	Medium size manufacturing organisations in Canada	MA and control systems	Perceived intensity of competition	Moderate positive association
Bjornenak (1997a)	Largest manufacturing companies in Norway	The ABC adoption	Number of competitors & exports percentage	No significant association
Drury and Tayles (2000)	187 large manufacturing and non-manufacturing organisations in UK	Complexity level of costing system	Market competition & uncertainty	Significant positive association
Szychta (2002)	Polish manufacturing companies	The implementation extent of cost & MA practices	Market competition	No significant association
Haldma and Laats (2002)	Estonian manufacturing companies	The implementation of MA systems	market competition	Significant positive association
Abdel-Maksoud et al. (2005)	UK manufacturing companies	non-financial performance measures	Market competition	Significant positive association
Firth (1996)	Chinese foreign joint venture and state-owned enterprises	the adoption of managerial accounting practices	Market competition	Significant positive association
Williams and Seaman (2001)	Manufacturing companies in Singapore	Changes in MA and control systems	Market competition & uncertainty	Significantly negative association
O'Connor et al. (2004)	State-owned organisations in China	The adoption of Western MAPs	Domestic & foreign competition	No association
Hutaibat' research (2005)	Jordanian industrial companies	The implementation of MAPs	international and domestic competition	Significant positive association
Isa and Thye (2006)	Malaysian manufacturing companies	Usage of traditional and advanced MAPs	Market competition & uncertainty	Significant negative association
Al-Omiri and Drury (2007)	UK manufacturing companies	sophistication level of cost system	Intensity of market competition	Significantly negative association
Kattan et al. (2007)	Case study in a company in Palestine	Implementation of MA systems	Environment uncertainty	Significant positive association
Abdel Kader and Luther (2008)	Large questionnaire survey	The sophistication of MAPs	environmental uncertainty & customer' power	Significant positive association

Other three studies, however, reported a significant negative association between the EE and the adoption of MAPs. This indicates that there has been no conclusive finding concerning the nature and extent of the relationship between the EE and the MA systems. Alternatively, it depends on the research context and instruments. For example, Williams and Seaman (2001) attributed their contrary findings (to those found by Libby and Waterhouse, 1996) to the existence of differences in the economic circumstances between Canada and Singapore. Moreover, Isa and Thye (2006) justified their results through the existence of differences in the instruments used for measuring the EE factor. Indeed, the latter issue has been recognised as one of the criticisms of the CT in MA research. For example, Chenhall and Morris (1986) used the measure developed by Duncan (1972) for examining the PEU while Libby and Waterhouse (1996), Williams and Seaman (2001), and Isa and Thye (2006) used the instrument devised by Khandwalla (1972), and this in turn has affected the comparability of the research' findings. Finally as noted, there was a relative limitation in the studies observed the EE' influences throughout the LDCs, hence the researcher might introduce further avenue through conducting this study. In consistency with the majority of previous studies' findings, this study hypothesised the existence of positive association between the uncertainty level of EE' components and each of the two dependent factors as follows.

H1-1: There is a positive association between both the competition and uncertainty levels of EE' components and the complexity level of a costing system.

H2-1: There is a positive association between the competition and uncertainty level of EE' components and the implementation extent of MAPs.

4.7.1.2- Accounting environment

Accounting environment (AE) is considered as one of the EE's components however, the researcher examined it as a stand-alone factor due to its idiosyncratic nature, especially in LDCs, as a critical contingent factor justifying the variation in the design and implementation of MA systems among countries. In this research, it was hypothesised that AE might have an influence on the cost and MA systems used in Syrian PICs as an institutional variable. This is because either domestic accounting graduates or foreign accountants usually transfer what learnt from their academic institutions to their companies where they work. Haldma and Laats (2002) stated that AE affects the MA systems usually in two ways i.e. the state of

accounting education' and the availability of properly qualified management accountants. It is noteworthy that a limited research has addressed the influence of AE in the MA context, and this can be attributed to being that this factor are mainly related to LDCs, which in turn suffered from a lack of the MA studies as outlined earlier (see section 3.3).

Theoretically, accounting researchers emphasised the importance of the availability of a quality accounting education on the development of accounting systems in LDCs. This was stated early by Ronson (1958, cited in Alnamri, 1993, p.25) as follows:

"The state of accounting in underdeveloped countries usually depends upon the availability and background training of both management and accounting personnel."

Moreover, Scott et al. (1976) emphasised that many problems of accounting practice in the LDCs are due to deficiencies in and the low quality²¹ of accounting education in these countries.

It is useful to examine the association between AE and the implementation of MA systems because of two issues. The first is related to the existence of deficiencies in accounting education available in LDCs as reported by many studies (e.g., American Accounting Association, 1977). Therefore, it is useful to examine the influence of accounting education's quality. The second issue is linked to tendency of the majority of LDCs, especially rich ones (e.g., Gulf Cooperation Council countries) to employing foreign-qualified accountants. They usually do to meet the fast increasing needs of their economies coupled with a low qualification level of their native accountants (Khasharmeh 1995). Additionally and for purpose of enhancing job opportunities, a large number of accounting graduates in LDCs tend to hold one of a number of professional accounting degrees offered usually by international accounting bodies and institutes (e.g., ACCA and CIMA in UK). Therefore, in this context, it is beneficial to find out whether the existence of such foreign qualifications, either by imported or domestic accountants, in LDCs has an influence on the implementation of MA systems.

The state of AE in Syria is similar to what described above, except for that the employment of foreign-qualified accountants is relatively limited. Additionally, one more difference that

²¹ Accounting experts in the Scott et al. (1976) study found that the essential problem causing decreasing quality of the accounting education in LDCs is a shortage of qualified accounting educators i.e. the quality of the accounting instructors and conditions of their employment.

is closely linked to poorer LDCs such as Syria is a tendency of the majority of accounting graduates to find work outside Syria mainly associated with the higher salaries on offer.

Accordingly, the factor of accounting environment was examined in the current research through two dimensions namely, the quality level of accounting education as seen by financial managers and the usage level of foreign-qualified accountants. The first dimension is related to the qualification capacity of the national (domestic) accountants available in Syria. This was assessed through asking practitioners (respondents) about their satisfaction' levels with the capacity of Syrian accounting graduates in the following three skills: thinking innovatively, cost and MA practices, and accounting software (IT skills). The second dimension is the imported accounting experiences (a new dimension developed by the researcher) that can be acquired through two sources. The first is Syrian accountants holding foreign professional/academic accounting qualifications, and the second is foreign accountants imported by some companies. Therefore the second dimension was examined (according to the pilot study' findings) through observing the employment extent of such accountants in the responding companies and the extent to which this employment helped the responding companies in improving/updating their costing and MA systems.

Empirically, all the studies reviewed by the researcher asserted the importance of employing properly qualified management accountants to develop and implement of modern MAPs. Clarke et al. (1999) found that a shortage of innovative management accountants was the main factor behind the low adoption rate of ABC systems in Ireland. Xu's Australian study (2003) identified the factors influencing the quality of data in the AIS and revealed that the training and educational level of employees was one of the significant factor influencing this quality. Haldma and Laats (2002) emphasised the importance of AE factor on the design and use of cost and MA systems in Estonia through two dimensions 'the legal AE and shortage of qualified accountants' (p.397). These were introduced by the researchers as new variables relevant to emerging and developing countries. The study concluded that the shortage of qualified accountant has an important influence on the implementation and cost and MA practices.

Recently, it has become very popular among business companies to call for accounting graduates who are well qualified and trained in spreadsheet applications and accounting software. This means that it is required from business schools to progress accounting graduates to the job market who have an appropriate level of analytical accounting

knowledge and are ready to deal with a full range of the accounting computer programs and information processing packages. This fact pushed MA researchers to examine empirically whether there is a gap between the MA practices taught academically and those needed and used in the practical life. This has been started especially, after the Bedford report (1986) (American Accounting Association), which asserted an existence of a gap between academic and practical accounting activities.

Ahadiat (2008) surveyed the opinions of 1000 accounting practitioners in the US business environment about the capacities of accounting graduates. The findings stated the necessity of restructuring the MA curriculum, in American universities. The recommended courses were mainly related to the technical accounting knowledge in addition to teaching students different organisational and strategic skills to make them able to deal with the new emerging corporate challenges. A similar research later by Siegel et al. (2010) who observed whether there was still a gap, between the MA curriculums taught in the American universities and colleges and the MAPs been used in practice. The researchers reported that only small changes had been achieved in minimising this gap since the Bedford report. Moreover they recommended that any plans for bridging this gap should be performed gradually and aimed to rebalancing the accounting curriculum, for example, making the academic period of accounting degrees four years emphasising basic accounting subjects, and shifting the financial courses with heavy GAAP emphasis and the external auditing to Master degrees.

Regarding studies that examined the gap between the skills of information technologies taught in the MA academic courses and those needed in the job market, they were limited. Ahadiat (2003) surveyed the use of technology by accounting academics in US business schools and asserted that there was limited agreement among the accounting faculties about their preferences of the technologies needed to be taught to accounting students (e.g., spreadsheets, presentations, E-mail, and internet). In other words, the study reported the existence of differences in the range of technologies courses offered by the US universities. Moreover, Chandra et al. (2006) observed the extent to which business schools in the North American Universities teach information technology (IT) skills, as one of the MA courses. The study, which was conducted through surveying MA educators, found a developing gap between the IT skills demanded in the American job market and those provided to accounting students.

According to the above, it is often that there is a difference between the MA knowledge and technological skills taught in the academic institutes and the growing needs and challenges in the business environment. This in turn encouraged the researcher to examine the influence of accounting education (national and foreign) available in Syria on the research dependent factors i.e. the complexity level of costing system and the implementation extent of MAPs. Finally, in consistency with both limited literature available about this factor and the insights collected by the initial exploratory study, the following two hypotheses are formulated.

H1-2: There is a positive association between the quality level of accounting environment (AE) and the complexity level of a costing system.

H2-2: There is a positive association between the quality level of accounting environment (AE) and the implementation extent of MAPs.

4.7.2- Internal contingent factors

4.7.2.1- Company size

Company size has been recognised in the MA literature as one of the factors largely influencing the design and implementation of MAPs. It was adopted from the organisational literature that asserted the existence of a causal relationship between the size of a company and its structure (Dewar and Hage, 1978; Marsh and Mannari, 1981). Researchers have used several scales for measuring company size, for example, number of personnel, total assets (capital), or the sales turnover (Bruns and Waterhouse, 1975). MA researchers drew on the organisational studies in order to examine the influence of company size on the implementation of MA systems. The logic underlying this association is stated in the literature of organisational theory. It was argued that when an organisation becomes larger, there will be often an increase in the complexity of its tasks and activities, and this require dividing an organisation's activities by which similar tasks are grouped together to form a particular unit. The existence of multiple units and sub-units in an organisation needs in turn employing more sophisticated MA practices for ensuring that all different units are working properly to achieve company aims (Galbraith, 1973, cited in, Chenhall and Langfield-Smith 1998a, p.13). Moreover, it is likely that a large company has a larger numbers of products and customers, and its recourses and capacity are bigger to the extent enabling it to invest in advanced planning, control, and performance evaluation practices. Drury and Tayles (2000)

stated that sophisticated costing systems are designed or implemented often in response to particular variables and circumstances, e.g., the company size. Over the last three decades, numerous empirical studies have examined the influence of company size, and the vast majority reported the existence of a significant positive association between this factor and the implementation of cost and MAPs.

Empirically, early studies by Bruns and Waterhouse (1975) stated that when company size increases, a need for implementing better budgeting techniques emerges for planning and controlling different activities. Furthermore, Merchant (1981) surveyed the relationship between budgeting systems and the company size. His findings again supported the research hypothesis that the budgeting/control systems of large companies are usually more formally administered in contrast to systems used by small companies. Puxty and Lyall (1989) reported the existence of differences between small and large companies in respect of the implementation of standard costing and budgeting systems in 453 industrial companies in UK.

Drury and Tayles (2000) used CT for surveying the factors influencing the design and selection of both the costing systems and information extracted from these systems in UK. The analysis outcome showed that firm size was one of the factors positively influencing the complexity level of costing system in UK. Another study, also in the UK, by Abdel Kader and Luther (2007) studied the factors influencing the firm's selection of MAPs. It reported as well that the company size was a key contingent factor. In US manufacturing companies, Waldron and Everett (2004) surveyed the association between the usage level of traditional and advanced MAPs and company size. The findings revealed a significant positive association between the latter and the usage of MAPs, especially regarding advanced techniques.

In LDCs, Alebaishi (1998) conducted a study in Saudi Arabia to survey the factors influencing the implementation of some MAPs. He concluded that corporate size was positively associated with the implementation extent of MA practice. Furthermore, Isa and Thye (2006) study in Malaysian manufacturing companies showed perhaps surprisingly that the factor of company size measured by sales turnover was not significantly associated with the implementation of advanced MAPs. They commented on this result by stating that 'these factors may play important roles in influencing the decisions to use advanced MA techniques but their effects may not be as direct as predicted' (Isa and Thye, 2006, p14).

The influence of company size has been studied extensively in terms of the implementation of ABC systems. Like the above studies, the vast majority of studies also found a positive significant impact of this factor on the implementation extent of ABC system. Booth and Giacobbe (1998) surveyed the factors influencing the company's decisions in three stages (interest, adoption as an idea, and implementation or rejection) of ABC implementation in Australia and concluded that size was only a significant factor at the first stage i.e. interest in an ABC system. Moreover, Krumwiede (1998) surveyed US manufacturing companies and concluded that 'larger firms are consistently found to be more likely to adopt ABC than smaller firms' (1998, p269). Finally, Baird et al. (2004) studied the association between company size and activity management (identified through three levels²²) in Australia. They asserted that there was only an association between company size and the first two levels of activity management. Likewise, the Australian study of Brown et al. (2004) concluded that company size influenced positively a company's enthusiasm for the adoption of an ABC system.

Although the vast majority of MA studies reported the significant positive influence of company size, a few researchers, however, did not state such a result. Like Isa and Thye (2006)' study, Libby and Waterhouse (1996) explored the factors correlated with changes in MAPs in Canada. They concluded that company size was not a predictor of changes; alternatively, the capacity of an organisation for change was the most relevant predictor for MA practice change. Bjornenak (1997a) examined the adoption of ABC in Norway and identified the contingent influencing this adoption. He concluded the absence of any significance difference between the ABC adopter and non-adopters in respect of their size measured by the number of employees. Furthermore, a replication of Libby and Waterhouse (1996) study was conducted by Williams and Seaman (2001) in Singapore who concluded similarly an absence of any evidence for supporting the positive association between company size and changes in MAPs. Table 11, however, lists the studies reviewed in this section and summarises their results.

²² The three levels are activity analysis, activity cost analysis, and ABC.

Table 11: Summary of the studies about the association between company size and MAPs

Studies	Context	Dependent factors	Result
Puxty and Lyall (1989)	453 industrial companies in UK	The implementation of standard costing and budgeting systems	Positive and significant association
Drury and Tayles (2000)	187 large manufacturing and non-manufacturing organisations in UK	The complexity level of costing system	Positive and significant association
Waldron and Everett (2004)	US manufacturing companies	Usage of traditional and advanced MAPs	Positive and significant association
Bjornenak (1997a)	Largest manufacturing companies in Norway	The ABC adoption	No significant association
Alebaishi (1998)	Saudi owned and joint ventures companies	The implementation of MAPs	Positive and significant association
Isa and Thye (2006)	Malaysian manufacturing companies	Usage of traditional and advanced MAPs	No association
Booth and Giacobbe (1998)	Australian manufacturing companies	The adoption of ABC	Positive and significant association
Krumwiede (1998)	US manufacturing companies	The adoption of ABC	Positive and significant association
Baird et al. (2004)	Australian manufacturing companies	Activity management	Positive and significant association
Libby and Waterhouse (1996)	Medium size manufacturing organisations in Canada	MA and control systems	No association
Williams and Seaman (2001)	Manufacturing companies in Singapore	changes in the MAPs	No association

Finally, the researcher formulated the hypotheses related to the company size in consistency with the majority of previous studies' findings as follows:

H1-3: There is a positive association between the company size and the complexity level of a costing system.

H2-3: There is a positive association between company size and the implementation extent of MAPs.

4.7.2.2- Organisational culture

This research investigated the influence of culture construct on the cost and MA practices. Out of the different cultural aspects e.g., hierarchical, professional, national, and corporate cultures, the researcher observed the influence of the latter aspect on both research dependent factors. This selection was based mainly on the results of the initial exploratory study (section 5.3.1.4). Most of the studies observing the influence of corporate culture recognised it as an internal contingent factor because it can be changed through company managers while on the other hand, the national culture was often examined as an external factor (Goddard 1997a).

Corporate or organisation culture (OC) is one of the constructs resulting from the intersection of organisational theory and culture theory, moreover it has, like a number of themes in the organisational theory, a wide variety of different definitions (Smircich, 1983). After reviewing the relevant literature (e.g., Schein, 1984 and 2004; Barney, 1986; and Green 1988), the researcher defined the OC as an unique collection of shared values, beliefs, myths, rituals, customs, symbols, and regulating rules that discriminate one company from another (Green, 1988). Moreover, it is supposed (for proposes of good performance) from business companies to maintain adaptive culture values able to meet the emerging difficulties in their business field (Gordon and Ditomaso, 1992). However, the cultural values of companies (especially the domestic) are influenced largely by the national culture of the country where they are located (Tata and Prasad, 1998).

Although the OC literature is massive and has a long history in the context of organisational studies (Dent, 1991), its literature in the MA context is limited being has started relatively recently (e.g., Dent 1991, Goddard 1997a, and Goddard 1997b). However theoretically, it was stated the importance of considering the OC in any attempt to understand the used MA systems and their changes. Furthermore, it was argued that OC influences the implementation

of MAPs at different levels and according to different variable, e.g., the company' size, age, and industry field. For example, in some industries (e.g., electronics and computers) innovation cultural values exist at levels higher than those at other older industries (e.g., food and stationery) additionally, in some old companies the cultural values are strongly ingrained to the extent that means these companies resist any attempt to change and improve their MAPs. Therefore changing the used MAPs in such companies requires achieving changes in their cultural values first (Joseph, 2006).

Given that each company/group develops its own culture values gradually and these are often different from those of other companies if not unique to that company, it is not effective for the purpose of assessing the OC of these companies to use closed models (typology) i.e. a set of cultural values (Schein, 2004). Other scholars, e.g., Zammuto and Krakower (1991), however, asserted that it is possible to use a quantitative method (e.g., survey instrument) to observe OC. They stated that the existence of various OC values among companies can be attributed to difference in their concern about a particular set of cultural values and not to holding different cultural values. Two main models, however, have been mainly used for diagnosing OC values namely, the competing values model by Cameron and Quinn (1999)²³ and the organisational culture profile by O'Reilly et al (1991). The first model consists of three competing cultural dimensions as follows²⁴: control vs. flexibility, internal vs. external, and means vs. ends. The second model, which is used in the MA literature (e.g., Baird et al., 2004), includes 26 cultural values. Accordingly, the researcher adopted the second model for assessing OC (for details about the measurement of OC, see section 5.3.2.3.2).

Empirically, the research of Dent' (1991) is considered one of the first studies that recognised the importance of observing accounting practices within the OC' context. Goddard (1997a) studied the association between budget related behaviour and culture factors including its multiple aspects i.e. corporate, professional, national, and hierarchical. The findings were positive, particularly regarding the effects of corporate and hierarchical cultures, which were significantly associated with budget related behaviour, moreover there was also an association (but to a lesser degree) with the professional culture, and finally there was no

²³ This model was developed basing on the work of Quinn and Rohrbaugh (1983) who created a framework to explain variety in the values underlying different organisational effectiveness. It concentrates on the competing tensions and conflicts inherent in any human system.

²⁴ The first dimension is related to the company structure including the values between two ends stable vs. flexible, the second dimension is related to the company focus either on internal micro issues or on external macro issues, and finally the third dimension is related to the company priority in performing its activities including the values between emphasising on processes (planning, control, and procedures) and emphasising on results (final outcomes) (Quinn and Rohrbaugh, 1983, P.369).

significant influence found for national culture. Later, Bhimani (2003) also asserted that the degree of alignment, between the employees' cultural beliefs and the cultural values embedded within the adopted MA systems, played an important role in those systems succeeding.

Baird et al. (2004) conducted a study in Australia examining the relationship between the implementation extent of activity management (including three practices²⁵) and the OC measuring three dimensions i.e. outcome orientation, loose vs. tight control, and innovation. The findings revealed the importance of the first two dimensions in justifying the implementation extent of activity management practices. It also concluded that the third dimension, i.e. the innovation values, influenced only the implementation extent of the first two practices, namely, the activity analysis and activity cost analysis. They attributed the result to being these practices represent the earlier stages of ABC system application and implementing them requires from a user company to have the innovative cultural values.

Henri (2006) examined the association between the OC and the implementation of performance measurement systems. The study, which observed one cultural dimension i.e. control/flexibility competing values, revealed that the OC was considered an essential and comprehensive factor in justifying diversity in the implementation of performance measurement systems. Finally, in LDCs, Liu and Pan (2007) implemented the ABC system in one of the largest manufacturing companies in China and identified its success factors. They found that the OC, namely top-down instigation of the adoption of management innovations, was among the success factors in ABC implementation.

Finally, the research hypotheses about the OC assumed, consistently with the relevant literature and the insights collected through the initial exploratory study, the existence of positive association between this factor and both the dependent factors as follows:

H1-4: There is a positive association between the level of organisational culture and the complexity level of a costing system.

H2-4: There is a positive association between the level of organisational culture and the implementation extent of MAPs.

²⁵ The three practices are activity analysis, activity cost analysis, and ABC.

4.7.2.3- Top management support

The top management support (TMS) is one of the organisational factors recognised in the MA literature as a key factor having an influence on the design and implementation level of cost and MA systems, especially in LDCs where family-based companies are the most popular. In Syria, the majority of private companies are family-based where top managers, represented mostly through company owners, are largely involved in and authorised to take final managerial decisions of company. Moreover, sometimes company owners take such decisions even without considering the views and comments of middle managers. For example, it happens that owner/top manager ends to take final decision relating to the adoption/non-adoption of a new costing system without considering the recommendations of financial managers.

Shields and Young (1989, cited in Shields, 1995) developed a model that helps companies to implement cost management systems (e.g., ABC) successfully. In the created model, the application of such systems was recognised as an administrative, rather than technical, innovation. This distinction was significant given that success factors in the adoption and implementation of administrative innovations are mainly of an organisational and behavioural nature while those for technological innovations are mainly of a technical and economic nature. Furthermore, they considered the TMS as one of the organisational success factors. The TMS influences the MA systems directly, through providing adequate financial and human resources for their implementation (Anderson and Young, 1999) moreover, there is further influence. In detail, when the top management in a company supports the implementation of new MA system (or MA improvement), a belief will be disseminated amongst company personnel that this system potentially holds benefits to the company in general including themselves. This in turn motivates them to accept the new system and consequently this helps greatly to implementation it successfully (Doll, 1985 and Alnamri, 1993).

Over twenty years ago, when ABC systems were first developed, they were introduced as advanced MA practices their implementation required the support of top management in adopting companies (Gering 1999). Indeed, reviewing the MA literature reveals that the majority of studies that observed the TMS focused on examining its influence in the context of ABC system implementation (e.g., Shield, 1995 and McGowan and Klammer, 1997). In LDCs, the TMS is considered not only a key factor to the implementation of advanced MAPs

but also to the adoption of traditional MAPs, therefore the TMS was examined in LDCs in terms of both advanced and traditional MAPs (e.g., Alnemri, 1993 and Hutaibat, 2005).

Many studies were conducted at the beginning of the 1990s, especially in U.S., for observing the success determinants and experiences of different companies with the implementation of ABC systems. Most of these studies asserted the significance of TMS as a key factor in successful ABC implementation. Shields (1995) studied the success degree 143 U.S. companies had with the ABC implementation in addition to identifying factors influencing this success. The study supported the idea that TMS had a significant role in explaining the difference in the success of ABC implementation among the studied companies. Foster and Swenson (1997) consistently asserted using data collected from 332 companies that TMS played an essential role in implementing successfully ABC systems. Another study that was conducted in four sites in the South-Western U.S. lent support to the existence of a positive association between the acceptance and support of top management for ABC system implementation and the ABC preparers and users' perceptions of its effectiveness (McGowan and Klammer, 1997). Krumwiede (1998) surveyed the U.S. manufacturing companies to examine the contextual and organisational factors most influencing the ABC implementation throughout its ten stages. The results showed that TMS is essential particularly during the advanced stages of ABC implementation i.e. when the ABC system is being used routinely or integrated with the company financial systems. Anderson and Young (1999) observed the influence of TMS on ABC system evaluations using the case study method of 21 sites located in two companies. They stated as well the existence of a significant association between TMS and successful ABC implementation.

In other developed countries, in the UK, both the Innes and Mitchell (1995) study and its repetition by Innes et al. (2000) reported, consistently with the U.S. studies, the significance of the TMS factor for explaining the success of ABC system implementation. Again, Arnaboldi and Lapsley (2005) in the UK healthcare sector showed that TMS was among the factors significantly influencing the ABC implementation. However, they were inconsistent with Krumwiede's study (1998) where they stated that TMS was particularly important during the initial (rather than advanced) stages of ABC implementation. In Australia, Chenhall (2004) examined the influence of the implementation factors of ABC management (ABCM) on its usefulness as a system. The study found that the TMS was one of the factors significantly associated with the ABCM success, particularly regarding its usefulness for cost management, and this was through providing sufficient resources and formulating links to

competitive strategy. Only one study conducted by Fortin (2007) reported no association between TMS and the success of ABC implementation. It was a replication to the study of Foster and Swenson (1997) but in Canadian public sector organizations. Finally, it can be said that almost the whole studies emphasised the important role played by the TMS factor in successfully implementing ABC systems either during the early or advanced stages of their implementation.

In LDCs, company concern in the adoption of advanced MA systems such as ABC is still limited therefore; the TMS factor was examined mainly in terms of the implementation of traditional MAPs. In Saudi Arabia, Alnamri (1993) revealed the importance of TMS in explaining differences in MAPs implementation between the Saudi owned and managed companies and joint venture companies based in Saudi Arabia. He stated that when top management enhances and supports using accounting information such as the budgeting system' information, this in turn prompts the employees and middle managers in the company to use this type of information. Another study by Hutaibat (2005) conducted in the Jordanian manufacturing sector, reported that the TMS factor significantly influenced the implementation extent of MAPs. A final study by Liu and Pan (2007) asserted, through a case study in one of the large Chinese manufacturing companies, that TMS was one of the most significantly influential factors on ABC success. Similar to this stream of research, this study assumed that TMS has a positive impact on both the complexity level and implementation extent of cost and MA systems as follows.

H1-5: There is a positive association between the level of TMS and the complexity level of a costing system.

H2-5: There is a positive association between the level of TMS and the implementation extent of MAPs.

4.7.2.4- Percentage of exports

The percentage of exports in a company if relevant is used as an indicator/measure to estimate the level of international competition faced by organisations. The use of this indicator is based on an assumption that as an organisation exports its outputs, it will be exposed to the pressure of international competition (Bjornenak, 1997a). This factor has had, however, only a limited use in the MA literature.

The study of Bjornenak (1997a) used both the exports percentage and the number of competitors in a company's activity field as proxy measures for surveying the impact of external and internal competitors on the adoption of ABC systems. However, he did not find a significant association between ABC adoption and the export percentage. Similarly, Malmi (1999) used the proportion of exports (along with the perceived change in competition) as a proxy measure for assessing the competition factor. Malmi (1999), however, reported an important relationship between the export percentage and the ABC adoption. Hutaibat (2005) surveyed the impact of exports percentage (to the total company sales) as a stand-alone contingent factor on the implementation extent of MAPs in Jordan, and concluded that this factor did not have any significant influence. Like Hutaibat' study, this research surveys the impact of exports' percentage on the complexity level of costing systems and the implementation extent of MAPs in Syria. However, due to the limitation of MA literature about this factor, only an association (without assuming the direction of relationship) was hypothesised between the exports' percentage and both the dependent factors as follows:

H1-6: There is an association between the percentage of company exports and the complexity level of a costing system.

H2-6: There is an association between the percentage of company exports and the implementation extent of MAPs.

4.7.2.5- Age of company

On one hand, it was hypothesised that when a company gains history i.e. it has been in operation for a long time, it acquires adequate experience in terms of its own activities (e.g., operational and administrative) including the implementation of MAPs. This potentially means that older companies are more able to adopt and use more and newer MAPs than younger companies (Firth, 1996). On the other hand, another opinion (e.g., Khandwalla, 1977) distinguishes between two age's categories namely, organisations with average age (40-60 years old) and organisations with an older age (more than 60 years old). Accordingly, he emphasised that the latter are usually more conservative, structured, and less able to accept any risk in their performance than the former to the extent that it might make them averse to applying any update/development in their MA systems. Basing on these two arguments, a relatively small number of studies examined the impact of company age on the implementation of MAPs. However, most of the reviewed studies revealed either non-

existence or negative association between the company age and the extent of MA practices' implementation.

Alnamri (1993) identified the managerial, organisational, and environmental factors having the greatest influence on the sophistication level of MAPs' implementation in Saudi companies. The study found that there was no trace of any significant association between the company age and this sophistication level. Firth (1996) examined the adoption state of developed MAPs by Chinese companies with reference to the impact of foreign joint ventures. He concluded also that there was no evidence of any relationship between the company age and the adoption rate of capitalist MAPs. In Syria, Al-Taweel (2001) observed the association between the adoption of accounting information technology and organisational contextual factors including the company age. The study concluded, however, the existence of significant negative association between the two factors by which younger companies were more changeable and adaptable towards accounting systems than older companies. Furthermore, O'Connor et al. (2004) concluded that the age of a company is one of the factors influencing negatively the adoption of developed MAPs by Chinese state-owned enterprises. They interpret this finding in that when these enterprises become older, Chinese management standards become more established and coherent inside them and over time this turns into impediments to change.

Recently, the age of operating activities was used by Tillema (2005) as an influential factor on the dynamism of a company's environment for studying the relationship between that environment's dynamism and one of the MA sophistication dimensions, namely scope (narrow, average, and broad). She found that the older the operation activities²⁶ in a company, the less dynamic the company' environment, consequently, the company will be able to use more complex level of MA systems i.e. either average or broad scope MA accounting instruments. Finally, in Jordan, Hutaibat (2005) concluded that there was no relationship between the company's age and the implementation extent of advanced MAPs.

Given an inconsistency among the reviewed studies above, the researcher hypothesised the existence of association between the company age and both the dependent factors without indicating the direction of this association as follows:

²⁶ When the operation activities get older, this means that the association between the size and nature of these activities and the financial consequences of them becomes stable and not dynamic.

H1-7: There is an association between the company age and the complexity level of a costing system.

H2-7: There is an association between the company age and the implementation extent of MAPs.

4.7.2.6- The complexity of the manufacturing process

The nature of manufacturing technology adopted by an organisation is again one of the conventional contingent factors studied extensively in the organisational literature (e.g., Pugh et al, 1968 and 1969). Several organisational theorists defined the construct of technology, however, Pugh et al, (1969, p.102) defined it as ‘the sequence of physical techniques used upon the workflow of the organisation, and this covers both the pattern of operations and the equipment used’ moreover they stated that the definition is applicable in both manufacturing and service organisations.

Before starting reviewing the technology literature in an MA context, it is useful to highlight that the MA researchers have studied the influence of technology on the MA systems through two research streams. The first or the early stream started when, for example, Bruns and Waterhouse, 1975) adopted CT and started examining the influence of the complexity of an organisation’s production processes on MA systems design (Chenhall, 2003). The second, or the modern stream, has started since the end of the 1980s when some MA researchers (e.g., Yong and Selto, 1991 and Drury et al., 1993) stressed the significance of improving the then used MA practices to cope with the newly adopted contemporary manufacturing technologies, e.g., computer integrated manufacturing, computer-aided design, material requirements planning, Flexible Manufacturing, and JIT systems. Therefore, there were calls for studying the association between the contemporary manufacturing technologies and the design of MA systems. The current study, however, followed the first stream of research and studied the influence of the complexity level of manufacturing process on the complexity level of cost accounting system used. Addressing this type of research was mainly because the present study was applied in Syria, where there are no or only very limited advanced industries such as those existing in developed countries.

In respect of the second stream, most of the studies asserted the existence of significant association between the adoption of advanced manufacturing technologies and the design of

MA systems, for example, Fullerton and McWatters (2002) in the U.S. and Abdel Kader and Luther (2008) in the UK. Concerning the first stream, the literature showed that such a research was started in response to the intensive criticism of the then used traditional cost accounting systems by some MA researchers, e.g., Johnson and Kaplan (1987), Cooper and Kaplan (1988), and Cooper (1988). They stated that although the production processes used in organisations had changed and expanded, the same costing systems developed decades ago were still being used in these organisations. The production processes became more complicated where instead of producing a limited range of customised products primarily with the predominance of the direct labour and material costs in the total costs (Job shop manufacturing process), organisations had changed to produce a wide range of standardised products with a limited rate of direct labour costs due to a wide usage of machines (process manufacturing process). Carrying on using the traditional costing systems within such a manufacturing environment became unjustifiable and would cause wrong or misleading decisions, e.g., product mix and pricing decisions.

Earlier empirical studies such as that conducted by Bruns and Waterhouse (1975) opened the door for observing the influence of manufacturing technology on the implementation of MA systems. Their research showed that the adoption of advanced process technologies was positively and significantly associated with structuring an organisation's activities and this implies distribution of authority and increases in perceived control and planning i.e. more usage of budgets. MA academics defined the technology from different angles relying on definitions existing in the organisational literature. For example, Waterhouse and Tiessen (1978) defined the technology like that of Perrow (1967, cited in Waterhouse and Tiessen, 1978) emphasising the nature of a conversion process as 'the routineness or non-routineness of the conversion processes for the organization's raw material and search processes' (1978, p67). Moreover, Otley (1987) stated in his theoretical study that the type of production technology, as defined by Woodward (1965, cited in Otley, 1987) being in five types i.e. unit, small batch, large batch, mass and process production, was one of the factors having a great influence on the design of AIS. Otley (1987) further detailed and stated that according to the production technology used, the amount of cost allocation rather than cost appointment can be determined. For instance, in continuous manufacturing systems, there is a mix of final products that need a costing system able to apply accurately an extensive allocation of costs incurred jointly by the whole products. In contrast, in the case of job-shop manufacturing system, a limited cost allocation is required because a big volume of total costs can be

directly assigned to specific job orders. Therefore, it was supposed that companies based mainly on the process manufacturing systems need to apply a complex costing system able to assign accurately the overheads to the mix of products. For measuring the factor of the complexity of a manufacturing process, Cooper and Zmud (1990) used a continuum that starts from the continuous and ends with the job shop manufacturing process. However, practically manufacturing systems of most companies fall between these two extreme edges, and it is rare to find a company using only the process or job shop system as a sole manufacturing process.

Empirically, most of the reviewed studies revealed a positive significant influence of this factor. Krumwiede (1998) examined the association between the complexity of the manufacturing process and the implementation stages of ABC system in US manufacturing companies. The results revealed that ABC is more likely to be adopted in companies with a continuous manufacturing process because of the less task uncertainty associated with this type of manufacturing process. Haldma and Laats (2002) examined the influence of production technology factor, including the nature of production process and an extent of routine on the implementation and design of cost and MA practices used in Estonia. The research reported, contrary to the theoretical studies, the absence of a significant association between the two factors.

Waldron and Everett (2004) observed the association between the complexity of the manufacturing process and the extent to which US manufacturing companies employ traditional and advanced MAPs. The findings supported the existence of a significant association between this factor and the MAPs in general and yet it was more significantly associated with the advanced practices. Isa and Thye (2006) conducted a similar study, but the findings showed no significant association between using complex production system and implementing advanced MAPs where respondents with low complex production process announced using advanced MAPs.

Table 12: Summary of the studies about the association between the manufacturing process and MAPs

Studies	Context	Dependent factor	Result
Krumwiede (1998)	US manufacturing companies	Implementation stages of ABC system	Positive significant association
Haldma and Laats (2002)	Estonian manufacturing companies	Implementation of cost and MA practices	No association
Waldron and Everett (2004)	US manufacturing companies	Usage of traditional and advanced MAPs	positive significant association
Isa and Thye (2006)	Malaysian manufacturing companies	Usage of traditional and advanced MAPs	No association

Finally, Table 11 summarises the above findings and shows a lack of consistency among the reviewed studies in terms of the degree of association between the complexity level of manufacturing process and the implementation of MA systems. Some studies, especially in developed countries, reported the existence of a significant positive relationship while others, especially in LDCs, reported an absence of such an association. However, the difference in findings might be attributed to a use of different definitions and instruments for assessing this factor. For example, on one hand Isa and Thye (2006) supposed the continuous production process as the least complex manufacturing process and the job shop as the most complex manufacturing process. On the other hand, as stated above, Otley (1987) hypothesised that the continuous manufacturing process requires the employment of complex costing system while it suffices in the case of job-shop manufacturing process to use a less complex costing system. However, like some of the above studies, the researcher hypothesised that this factor has a positive influence on the complexity level of costing systems used by Syrian PICs as follows:

H1-8: There is a positive association between the complexity level of manufacturing process and the complexity level of a costing system.

4.7.2.7- Product diversity

The factor of product diversity has been examined by MA researchers as one of the factors influencing the design and implementation of costing systems. Drury and Tayles (2000) asserted that products can be termed diversified when they consume the activities' resources, particularly support activities, at different rates. In addition to product diversity, there is also volume diversity that happens when different products are produced in different batches/volumes. Copper (1988) argued that the diversification of company' products is associated with an increase in the overhead costs especially those of non-volume driven type to the extent that makes the traditional costing systems, which are based on a small number of cost pools and volume-based cost drivers, unable to measure accurately product cost. In other words, using the traditional costing systems for calculating the cost of diversified products is usually associated with reporting distorted cost information. At that time, Copper (1988) called on organisations to use the ABC systems as an advanced costing system to avoid producing misleading cost information. The factor of product diversity was not measured directly in previous studies; alternatively, proxy measures have been employed, such as, the number of products/product lines/product variants (Drury and Tayles, 2005).

The relationship between product/organisation diversity and the implementation of MAPs has not been tested for over two decades but has often been put together with other factors of context, such as, company size and technology (Chenhall, 2003). For example, Merchant (1981) studied the influences of organisation' diversity and size factors on different choices of budgeting systems. He concluded that the increase in company's diversity, number of channels and activities, required using 'a more administrative-oriented control strategy that involves greater structuring of activities, more formalised communication, and an increased usage of standardised information for purposes of evaluating managerial performance' (Merchant, 1981, p815).

After reviewing the MA literature, it was noted that a large volume has concentrated on observing the influence of product diversity on the adoption of an ABC system. Furthermore, the majority of these studies revealed no significant association between these two factors. Nguyen and Brooks (1997) studied the influence of both company size and product diversity on a company's decision to adopt ABC in Australia and found that only company size had an impact on this decision. In the same year, Bjornenak (1997a) studied the potential factors

influencing the diffusion and adoption of ABC systems in Norway, and again he discovered that product diversity was not a critical factor. Later, Booth and Giacobbe (1998) conducted a similar research in Australia. They revealed that product diversity measured using the number of product lines was significantly more important for user companies in the stage of ABC adoption as an idea, but it was not so in both developing interest and the adoption' stages of ABC and its diffusion. Krumwiede (1998) in the US studied the influence of cost distortions caused by the product, processes, and volume diversity, on the early stages of ABC adoption. He concluded that the possibility of cost distortions was an important reason in both the adoption and re-utilisation stages of ABC. A further study by Brown et al. (2004) in Australia did not find any kind of association between product diversity and the adoption of ABC systems.

Furthermore, the product diversity has been observed in terms of the design, implementation of costing systems in developed, and LDCs. Drury and Tayles' research (2000) in UK showed that product diversity was not among the contingent factors having the most significant influence on the complexity level of costing system design. In contrast, Abernathy et al. (2001) revealed that product diversity was one of the factors greatly affecting the sophistication level of the costing system, but its impact was not direct but influenced by the method in which companies employ technology to manage the diversity of their products. Waldron and Everett (2004) observed the association between the implementation extent of MAPs and several contingent factors including product variety in US manufacturing companies. The researchers measured this factor using two instruments, namely, 'the number of products with and without respect to the diversity in color, size, texture, etc' (p.7). The analysis supported a significant positive association between the implementation extent of MAPs, (particularly full costing, strategic MA, and cost modelling) and the product variety (particularly concerning variety in size, colour, and texture). Finally, in LDCs, Isa and Thye (2006) asserted that the product diversity measured through observing the number of companies' products was not significantly associated with the implementation extent of advanced MAPs. Given inconsistency among the above studies, the current study hypothesised that the product diversity has an influence on the complexity level of costing systems used in Syrian PICs without assuming its direction as follows:

H1-9: There is an association between the extent of product diversity and the complexity level of a costing system.

4.7.2.8- Purpose of cost information

Typically, companies design their costing systems in the way that meet their needs for different cost information, especially in those companies using more than one costing database where each database is structured to meet particular purposes (Drury and Tayles, 2000). However, most of the cost accounting studies revealed that the vast majority of companies tend to use only a single costing system from which they extract all their needs of costing information. For example, a UK study conducted by Drury and Tayles (2005) revealed that only 9% of the respondents confirmed using multiple costing systems i.e. one for decisions making purpose and another for inventory evaluation (financial accounting needs)²⁷. Costing information is vital for companies in numerous ways; however, their main usages can be summarised in evaluating the cost of remaining and sold goods, profit measurement, pricing products, profitability analysis, and make/buy decisions. It is noteworthy that in addition to using costing information for financial purposes, the MA scholars distinguished between using it for operational usages, e.g., cost reduction, cost modelling, and performance measurement, and its usage for strategic purposes, e.g., pricing decisions, profitability analysis, product make/buy decisions (Cokins, 2001). Therefore, the costing system in companies having only a single costing database is usually designed (in terms of the complexity level) as a compromise meeting the different costing needs of a company imperfectly.

Empirically, Innes and Mitchell (1995) surveyed the adoption rate of ABC systems and the scope of their usage (10 purposes) in a sample of 1000 of the largest companies in UK. Moreover, the ABC users were asked to point out the significance extent (5-points scale) of each of these purposes. The study showed that only 49 out of 439 companies used ABC systems additionally 6 out of the 10 purposes were used by more than half of the ABC users as follows: cost reduction (88%), performance measurement (67%), pricing decisions (65%), cost modelling (61%), budgeting (59%), and cost profitability analysis (51%). Finally, the remaining four purposes were used with rates extending from 47% to 16% of the ABC users.

Drury and Tayles (2000) observed the extent to which six contingent factors have an influence on the complexity level of costing systems in the UK. The purposes for which

²⁷ One of the main differences between the decisions making-based and financial accounting-based costing systems is that the former considers all the direct and indirect (manufacturing & non- manufacturing) costs during calculating the cost of outputs while the latter concentrates mainly on the manufacturing costs.

costing information is used was one of the examined factors and assessed through asking the respondents about three usages, namely, stock evaluation, profitability analysis, and pricing decisions. The researchers supposed that the first usage can be met using only unsophisticated costing systems, followed by the second usage requiring somewhat complex costing system, and finally the pricing decisions' usage needs a more complex costing system able to assign most of costs, including facility-sustaining costs, to cost objects. Their analysis concluded that this factor did not affect significantly the design of costing system. The researchers attributed this result to the respondents (90%) declaring using a single costing system from which they extracted all their needs for cost information.

Chenhall (2004) surveyed large manufacturing companies, which had recently implemented activity based cost management (ABCM), for examining the association between behavioural implementation factors of ABCM and its usefulness. In respect of the latter construct, it was measured using a list of nine purposes of a costing system namely, pricing decisions, the range of products decisions, the output of products decisions, product development and design decisions, customer profitability analysis, cost modelling and reduction, budgeting, improvement and reengineering, and performance measurement. Using the EFA, they were represented through two dimensions a product planning dimension and a cost management dimension. The study revealed the existence of a significant association between ABCM's usefulness for product planning and two of the behavioural implementation factors, namely, training and clarity of objectives. There was also a significant relationship between ABCM's usefulness for cost management and clarity of objects and TMS as behavioural factors.

A recent study by Schoute (2009) collected data from 133 Dutch medium-size manufacturing companies for examining the shared influence of the extent to which costing information is used and the effect complexity of costing system has on the effectiveness of that costing system. This was measured using two proxies i.e. satisfaction level and intensity of use. For measuring the factor of cost information' uses, the researcher adopted nine usages developed by Innes and Mitchell (1995). Using EFA, these nine uses were reduced to two dimensions. The first was cost information used for purposes of cost management, which examined the following purposes: cost reduction, cost modelling, and performance measurement. The second was cost information used for the purposes of product planning linked to the following purposes, product pricing, stock valuation, and customer profitability analysis. On one hand, the study showed that the responded companies using cost information mainly for

the cost management tended to have more complex costing system, and this in turn affected positively its effectiveness. On the other hand, using cost information mainly for the purposes of product planning was associated with employing less complex costing system, and this negatively influences its effectiveness. Finally, the study revealed that product pricing, budgeting, and stock valuation uses were the most practiced by 95.5% 90.2%, and 77.4% respectively of the respondents.

Finally and like Drury and Tayles (2000), this study examined the influence of purposes for which cost information is used on the complexity level of costing systems, hence the following research hypothesis was formulated:

H1-10: There is an association between the purposes of cost information and the complexity level of a costing system.

4.7.2.9- Cost structure

The nature of cost structure in a company has been studied as a key factor in terms of designing cost accounting systems especially regarding ABC systems where the change in cost structure was considered as one of the main motivators to their adoption. The percentage of overhead costs to total company cost has been used as a measure of the cost structure factor. Some MA researchers, such as, (Bjornenak, 1997a and Booth and Giacobbe, 1998), assessed it using the overheads percentage to what is called 'total value added cost' (direct labour + overhead costs) to exclude the significant difference in the total costs amount caused by the direct material cost. Several factors affected the cost structure, e.g., the increase in complexity of manufacturing process and the adoption of advanced manufacturing technology. Such changes were associated with an increase in an organisation's investments, especially for establishing numerous product lines and wide usage of distribution and marketing channels. This in turn entailed an essential change in the company cost structure, in detail, increasing the rate of indirect and fixed costs, e.g., increasing the amount of highly skilled workers' costs, at the expense of variable costs particularly the direct labour costs.

Cooper and Kaplan (1988) stated that carrying on using the traditional costing systems under new production environment would cause reporting distorted cost information and means ultimately making wrong decisions. Accordingly, they emphasised the necessity of adopting more sophisticated costing systems, which use multiple allocation rates, to realise the cause-

effect association between activities level and the consumption of resources. Moreover, using advanced manufacturing technology brings about changes in the information needs of management to the extent that it requires either employing new MA systems or applying updates on the current traditional MA systems (Johnson and Kaplan, 1987).

Empirically, most of the MA studies revealed the non-existence of a significant relationship between the cost structure and the implementation of costing systems. A few studies, however, found such an association; for example, Bjornenak (1997a) surveyed the factors influencing the diffusion of ABC systems in Norway and found that only cost structure was the key influential factor. Likewise, Booth and Giacobbe (1998), in an attempt to describe the diffusion of ABC systems in Australia, concluded that the percentage of overhead costs was higher at the companies interested in ABC adoption moreover they found that the increase in overheads rate was larger at the companies deciding to adopt an ABC system as an idea.

In the UK based studies, the findings were different; Drury et al. (1993) surveyed the factors influencing the design of costing systems. They did not find any evidence to prove the existence of a significant association between the overhead costs ratio and the design of costing systems. Again, in the UK, Drury and Tayles (2000) did not find a relationship between the cost structure measured by the rate of overhead cost to the total costs and the complexity level of the costing system. These results were confirmed more recently by Al-Omiri and Drury (2007) in the UK but in terms of the sophistication level of costing systems.

Additionally in Australia, Nguyen and Brooks (1997) did not report any 'significant difference in the proportion of overhead costs between adopters and non-adopters of ABC' (p.16). Similarly, Brown et al.'s (2004) study did not discover any kind of association between the cost structure and the adoption of ABC systems. In US, Waldron and Everett (2004) examined the association between the implementation extent of 17 traditional and advanced MAPs and a series of contingent factors including the cost structure. The study showed no significant relationship between this factor and the MAPs except for the practice of 'life cycle costing', which was positively associated. Recently in LDCs, Isa and Thye (2006) concluded, like the vast majority of MA literature, that the cost structure was not amongst the factors significantly associated with the implementation level of advanced MAPs. According to the reviewed studies above, this study assumed that the cost structure influences the complexity level of costing systems used in Syrian PICs but without hypnotising the direction of association as follows.

H1-11: There is an association between the cost structure and the complexity level of a costing system.

4.8- Summary

This chapter has reviewed the main MA studies in developed and LDCs and examined the association between cost and MA systems and the selected contingent factors. The review was structured according to the research contingent factors individually. The review was extensive in terms of the fundamental contingent factors (EE, company size, and technology) while it was limited regarding other recent factors (AE, company age, and exports percentage). It is useful to highlight the significance of this chapter, particularly the review related to the LDCs, because it will be compared later (section 8.6) to the study findings (section 7.4) concerning the influence of contingent factors.

This chapter revealed that although MA researchers have started recently to adopt new theories such as, institutional theory and agency theory, the contingency theory is still being utilised for understanding the association between the implementation of cost and MA and identified contingency factors. This was evidenced by the recent studies still adopting CT (e.g., Abdel Kader and Luther, 2008 and Schoute, 2009). In terms of the extent and nature of the relationship between the contingent factors and the implementation of MA systems, there was some consistency among MA researchers regarding few factors, namely, the EE, company size, TMS, and OC, however, an inconsistency was found concerning the other contingent factors.

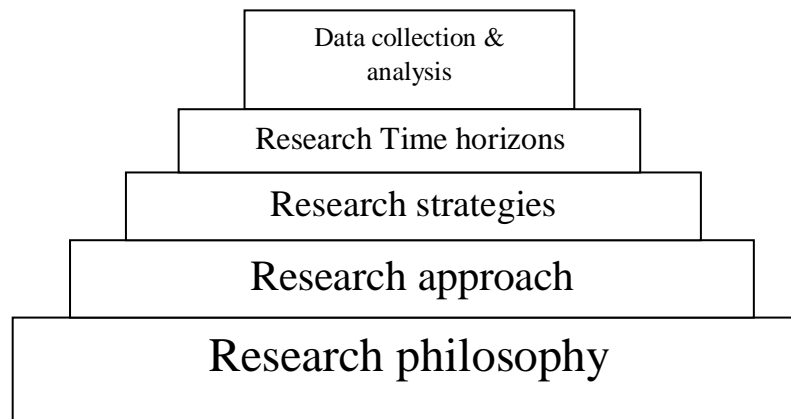
Finally, this chapter presented the research framework and hypotheses, which were developed basing on both the literature review and the insights collected in the initial exploratory study (section 5.3.1.4). In the next chapter, the researcher discusses in detail both the research methodology and methods used for achieving the research objectives.

Chapter (5): Research Methodology and Methods

5.1- Introduction

This chapter discusses the research methodology and methods used to conduct the research. It reviews extensively the whole research process starting from the philosophy under which the research was conducted through to the measurement of the research variables. The current chapter was structured similarly to the research process onion presented in Saunders et al., (2009, p108). Figure 6 depicts the stages of research process that were followed in conducting the current research.

Figure 7: Stages of the research process



According to figure 7, the researcher reviewed the research philosophies (e.g., positivism, realism, interpretivism, and pragmatism) that are used widely in the business studies area and identified the one into which it was felt the current research falls. This was followed by determining which of the research approaches (e.g., deduction and inductive) used within the adopted philosophy is the most appropriate for the research questions. The third stage was selecting the research strategy (e.g., survey, case study and experiment) that is the most efficient to achieve the research aims. Clarification of the time horizon of the research (longitudinal or cross-sectional) was within the fourth stage with the fifth stage being validation. Finally, after recognising the research methodology, the researcher explained the research methods and techniques used. In detail, within the last stage i.e. the research methods, the researcher discusses the research population and sample, the questionnaire as the main data collection method and its pilot study, the instruments used for measuring the

research dependent and independent factors, and finally the research internal and external validity.

5.2- Research methodology

This section reviews the methodologies commonly used in business studies moreover it identifies the methodology adopted with the reasons for that adoption. In particular, this section discusses the research philosophies, research thinking, and approaches.

5.2.1- Research philosophy

One of the first issues a researcher needs to address when embarking upon his/her research (whatever was the subject and problem) is the type of philosophy most appropriate to the research topic. It is vital to determine and understand the type of philosophy the research falls under not only for making the research philosophically well informed but also because according to the research philosophy the overall research process (including the approach, strategy, and broadly speaking the data collection methods) will be determined. Although there are different types of philosophies namely, positivism, realism, interpretivism, and pragmatism, an adoption of any of them relies mainly on the questions to be addressed during the research. In approaching the choice of research philosophy, it is necessary firstly to clarify the research thinking adopted underpinning that research (Saunders et al., 2009).

5.2.1.1- Methods of research thinking

A number of scholars have stated that accounting researchers have developed only limited theory and research methods of their own, therefore they rely mainly on the areas of finance, sociology, economics, psychology, and organisational behaviour literatures as sources of theory and methods. Moreover, most of their own tools were adapted from the social and natural world (Smith, 2003). To recognise the research thinking underpinning the majority of accounting studies, the researcher reviewed a significant number of business and accounting research methods textbooks. It was found that both the epistemology and ontology thinking methods have been the most commonly used for developing the social body of knowledge in general and especially for business and accounting studies. Every method differs from another in terms of recognising and understanding the world in the form influencing the research approach starting from the philosophical framework and ending in the data collection method and analysis. It is useful, for purpose of approaching the appropriate

research thinking used by the current research, to highlight and understand the essence and aspects of both the epistemology and ontology.

The first method is epistemology that seeks to find what is considered acceptable knowledge in a particular field of study and is used usually by what are termed natural researchers. Therefore, there was an issue questioning about the extent to which the epistemology can be used for studying the social world (Bryman and Bell, 2011). For many hundreds of years, researchers, particularly natural scientists, following their epistemology have used only one research philosophy for developing their knowledge, namely, positivism. This philosophy, which was used as a main paradigm until the end of 19th century, concentrated on collecting data about the properties of inanimate real objects, such as, techniques, machines and trucks in a company (Collis and Hussey, 2009). The natural scientists considered that such data are much less open to bias and therefore can be featured as more objective and having external validity. However, this does not mean that they could not collect details about the feelings and attitudes of individuals in their studies; alternatively, they can but only in the form of statistical data tables (Saunders et al., 2009).

It is noteworthy that positivism was kept in use as a sole research philosophy until the advent of capitalism and industrialisation by which time researchers started to turn their attention towards social phenomena. Social researchers in turn used initially the paradigm of natural scientists i.e. positivism, for conducting their studies, which was challenged frequently and for many decades by many social scientists for being inappropriate for studying the social world. Eventually, the debates led to formulating a new paradigm particularly for social studies called loosely 'interpretivism' (Collis and Hussey, 2009). To conclude, both the natural and social scientists have developed their knowledge using the epistemology thinking, but they developed different paradigms. In detail, although both of them have used a positivist philosophy for conducting their research, a number of social researchers have changed to using the interpretivism philosophy as an alternative for thinking about their research.

The second common method used for thinking about business research is its ontology, which concerns studying the existence and the discernment of what is 'real' (Ryan et al., 2002). Within ontology, the social researchers interpret the reality through two different methods i.e. objectivism and subjectivism. In the latter, the researchers see the reality as existing inside

the individual's mind and they must be aware of that reality. In the former aspect, the researcher's perceive reality as an external to the individual and therefore, the reality can impose itself into the awareness of people. This difference between the subjectivism and objectivism aspects of reality can be considered like that between white and black colours (Cua and Garrett, 2009). In the context of business studies, the ontology has its devotees among the researchers who accepted it as a producer of valid knowledge. An example about the ontology method is the case of management in a particular organisation which can be studied as an objective or subjective entity. In detail, for studying specific aspects of management, e.g., a job policy, which describes duties and operating procedures that should be followed by managers (social actors), objectivism advocators hold that this policy would be kept the same despite changing the managers in this organisation. The advocators of subjectivism contend the contrary in that a job policy cannot continue always in the same way, but it is exposed to revisions caused by the social interaction of managers (Saunders et al., 2009).

Out of the two thinking methods mentioned above i.e., epistemology and ontology, the post-positivism philosophy was emerged. In particular, it was developed basing on both the positivism and ontological realism philosophies to be used mainly in the social sciences. It is noteworthy that post-positivism paradigm was used in the current study for thinking about the research design and methodology.

5.2.1.2- Positivism and post-positivism philosophy

As mentioned above, the philosophy used in this study is post-positivism. Because it is developed actually from positivism, it is useful to review first positivism and then address post-positivism. This section, therefore, presents a review about the positivism and post-positivism philosophies with a concentration on the latter. This was through displaying a detailed review about these philosophies, its essence, and reasons behind its adoption.

5.2.1.2.1- Positivism philosophy

As mentioned above, positivism is one of the epistemological paradigms, which was the dominant in use in the social world throughout the period extending from the 1930s to 1960s i.e. until the formulation of other paradigm, e.g., interpretivism (Gray, 2004). The essence of positivism, which is still being widely used in the social studies till now, is based on the

belief of that social phenomena existed independently and can be discovered and studied through empirical-based research (experiment and observation) i.e. using quantitative methods (Collis and Hussey, 2009). Therefore, the studied social phenomena should be observable and not influenced by the involvement of researcher with the data collection process.

In terms of this condition, some scholars have debated on the extent to which the social phenomena can be observed by value free researcher. It was argued that it is difficult to isolate the researcher completely from the process of collecting data about social phenomena. They justified their argument by stating that it is difficult to assume that the social researcher can ask each respondent the survey questions in exactly the same method and interpret each response similar to a consistency of computer (Saunders et al., 2009). It is noteworthy that the difficulty of observing the social phenomena without the involvement of researcher was one of the main reasons behind debates that led finally to the formulation of the interpretivism (Collis and Hussey, 2009) and later post-positivism paradigms. However, for at least part of the data collection process, it would be normal to embrace the personal involvement of social researcher with the respondents, e.g., in the case of collection data about the attitudes and feelings of employees toward their managers, it is normal to have such an inclusion (Saunders et al., 2009).

By using the positivism philosophy, the final findings of research can be considered as law-like generalisations like those generated by the natural and physical researchers. For selecting the suitable research strategy for data collection, researchers within the positivism paradigm tend to develop their hypotheses using existing theory. The formulated hypotheses are tested in turn through analysing the collected data, and the outcome is a confirmation (wholly or partly) or otherwise of some or all the research hypothesis, consequently further advancement in the adopted theory and eventually pushing forward the development wheel of knowledge (Bryman and Bell, 2001). Therefore, for purpose of generalisability, researchers using the positivism philosophy ought to apply their study on a quite large sample of the study population that should be selected randomly (Saunders et al., 2007).

Finally, although the positivism philosophy is one of the epistemological paradigms used mainly by the natural scientists, it has been also the dominant in the social world during the twentieth century. However, through a review of the research methods literature, it can be

noted the emergence of alternative perspectives to the positivism paradigm, e.g., post-positivism, naturalistic, and anti-positivism (Gray, 2004).

5.2.1.2.2- Post-positivism philosophy

Post-positivism or as it is sometimes called anti-positivism philosophy was created relatively recently by social researchers in responding to criticisms of the natural paradigm i.e. positivism. In fact, post-positivism can be considered an amendment to positivism philosophy by which it becomes more appropriate for studying social phenomena (Gray, 2004). In detail, post-positivism devotees claim that it addressed the following criticisms about positivism paradigm (as summarised by Collis and Hussey, 2009):

- it is unreachable to separate individuals from the social world in which they live;
- collecting data using highly structured method restricts the findings and may ignore other relevant results;
- it is illogical to say that researchers are objective in doing their research, as they are inevitably involved in their study through bringing their own values and concerns to the research; and finally,
- measuring complex phenomena using a single instrument leads to misleading results.

Unlike positivism, post-positivism believes that we cannot conduct a research with a researcher involvement-free. Alternatively, post-positivism agrees that researcher, theory, background affect inevitably to some extent an object examined. However, both positivism and post-positivism share the belief that reality is existed, but the latter paradigm believes that its existence is only probabilistically imperfectly (Cua and Garrett, 2009). In detail, one of the most common aspects of post-positivism philosophy is critical realism. Critical realists, like positivists, believe in the existence of reality in a form that is independent of researcher thinking about it. They are different, however, in respect of that critical realists accept that there might be mistakes and errors in examination and in that theory per se can be revised according to the outcome of observation (Bisman, 2010).

5.2.1.2.3- The adopted research philosophy

After reviewing the different philosophies used in MA literature, namely, positivism, interpretivism²⁸, realism, and recently post-positivism, the latter was used in the current study for understanding the research design and methodology. This is because of the following justifications;

1): this research is related first to positivism paradigm, it is of exploratory studies aiming to generalise its findings to the whole research population, therefore a large random sample (480 cases as detailed in the next section) was selected to represent the research population, and this is consistent with objectives of positivism paradigm.

2): again the research is consistent also with positivism paradigm because it aims to collect and analyse data about the influence of a particular set of real factors (the contingent and institutional factors) on selected real objects i.e. the cost and MA practices using the questionnaire survey;

3): however, because the researcher believes that collecting qualitative data, in addition to quantitative data, is required for achieving the study aims, post-positivism can be adopted, rather than positivism, for better understanding to the logic behind this study. It is important to mention herein that collecting qualitative data in this study was for purpose of questionnaire design only, rather than for collection in-depth qualitative data (as in the case of interpretivism philosophy).

5.2.2- Deductive, inductive, and hypothetico-deductive approach

Basically, there are two main approaches, which have been used by the majority of researchers in the social world. These approaches, which are called deductive and inductive approaches, differ in terms of the stages followed for conducting social research. It is noteworthy that the majority of research methods textbooks agreed that the deductive approach is nearer to positivism philosophy while the inductive approach owes more to

²⁸ Interpretivism philosophy requires from the researcher to be an active, rather than independent researcher, in order to be able to measure not only the research factors, but also to develop an understanding about the research situation (Smith, 2003). Therefore, researchers adopting the interpretivism philosophy collect their data using qualitative methods, which allow them to describe and translate the collected data (Collis and Hussey, 2009).

interpretivism philosophy. This section discusses both methods and highlights the one adopted in the study.

Simply, the deductive (rationalists' approach) starts from deducing theory and hypotheses from the relevant literature, and then collects appropriate data for testing the suggested hypotheses and the outcome is verifying, refuting, or modifying the used theory according to the resulted findings (Lancaster, 2005). Bryman and Bell (2011) summarised the deductive approach in five successive stages as follows:

- 1- conducting a thorough review of the relevant literature and accordingly adopting a suitable theory for formulating the research hypothesis/hypotheses (e.g., suggest the existence of association between two factors);
- 2- operationalise the suggested hypotheses i.e. identifying exactly instruments ought to be used for measuring the research factors;
- 3- testing the operational hypotheses using appropriate strategy/strategies;
- 4- analysing the collected data and summarising the finding that will either confirm or modify the adopted theory; and finally,
- 5- applying the resulted modifications if needed.

The inductive (empiricists' approach) is considered the earliest and, to date, the most popular method used for conducting scientific research (Walliman, 2006). Induction represents the opposite direction from the deductive approach. It starts from preparing strategies (interviews and/or case studies) for collection of data; the collected data in turn are analysed, and finally attempts are made for constructing generalisations and even theories from the analysis results. In other words, induction used not to amend or corroborate a theory, alternatively it is used for establishing theories (Gray, 2004).

To mitigate the shortcomings of the above two approaches, hypothetico-deductive approach was developed (by the start of 1960s) using a combination of deductive and inductive approaches. As was mentioned by Walliman (2006)

The hypothetico-deductive method combines inductive and deductive reasoning, resulting in the to-and-fro process of developing hypotheses (testable theories) inductively from observations, charting their implications by deduction, and testing them to refine or reject them in the light of the results (Walliman, 2006, p18).

Other researchers (e.g., Gill and Johnson 2002 and Carter 2005), however, stated that hypothetico-deductive approach is closely connected to positivism philosophy. In terms of the stages followed in this approach for conducting research, they are like those mentioned above regarding the deductive approach with a note of that in hypothetico-deductive, research hypotheses are formulated not only basing on reviewing the relevant literature, but also through comparing them with reality (this is through conducting an initial/exploratory study) (Walliman, 2006).

In this study, hypothetico-deductive approach was adopted by which the researcher reviewed the relevant MA literature first and resulted in adopting both CT and IT as theoretical framework of research and formulating the initial research hypotheses accordingly. The hypotheses assumed the existence of relationship between research dependent factors and a range of contingent and institutional factors. Second, these hypotheses were tested initially using an exploratory study (by several interviews) in order to test them against the reality of Syrian context. Third, the results of interviews were used for formulating the final research hypotheses, which were tested using the survey questionnaire method (quantitative data), applied on a random sample of 480 cases. The remaining stages of hypothetico-deductive approach are presented in the next section that discusses and debates the research methods used for collecting the required data (quantitative and qualitative). Furthermore, it presents details about the research strategy, measures of research variables, and finally the credibility of research.

5.2.3- Strategy of research

Identifying the research strategy is important as it helps the researcher to devise a plan required to solve the research problems. The researcher must pay close attention to choosing the appropriate research strategy that is able to answer the research questions and objectives and consistent with the adopted philosophy and approach. Moreover, the selected strategy should be achievable by the researcher in terms of the available time and resources. Several

research strategies have been used in business research. Saunders et al. (2009) named seven research strategies as the most used in the business area as follows: 1): experiment; 2): survey; 3): case study; 4): action research; 5): grounded theory; 6): ethnography; and 7): archival research. They stated also that a number of these strategies, e.g., survey and experiment, are linked clearly to positivism, post-positivism, and deductive approach and others, e.g., ethnography and grounded theory, are used mostly within the interpretivism and inductive approach.

Due to the advantages of using more than one research strategy, business researchers have tended recently to adopt two strategies for conducting their research. For example, reviewing the MA literature shows that many studies have used both the survey and case study strategies for collecting the research data. This was useful as the quantitative and qualitative data, which are collected mainly by the questionnaire and interview methods respectively, can supplement each other and consequently reinforce the validity of research. In detail, on one hand, the results of quantitative data can support the qualitative data through making them generalisable to the research population; on the other hand, the qualitative data can support the quantitative data through providing a rich understanding of the research context and process (Jankowicz, 2005).

In the current study, for determining the most appropriate strategy, the researcher reviewed the available strategies and decided that, in light of the research philosophy and approach i.e. post-positivism and hypothetico-deductive respectively, both the survey (as the main strategy of research) and the case studies are the most suitable strategies for collecting the research data. However, due to the current situation in Syria, it was not possible to conduct any interview with Syrian PICs, hence, it can be said that the current research is a survey-based study.

In practice, the researcher collected first the main research data using the questionnaire survey method, and then the collected data were analysed using one of the statistical software namely, SPSS. The researcher did not find any contrast in the answers of questionnaires that require further explanation through, for instance, interviews with the respondents having such a contrast. However, it was preferable to conduct some interviews for collecting qualitative data about such questions as 'why?' type, e.g., why none of the respondents announced using the ABC system although there were justifications for its implementation in their companies (for details see the next chapter). However, only few respondents showed a willingness to

participate in further interview belonging to the research. The researcher phoned them in addition to some other respondents, especially those of large size companies, and asked for participation in a telephone-based semi-structured interview. Unfortunately, none of them accepts participation in such an interview. Probably, the main reason behind these negative replies might be attributed to the Syrian uprising, which has been triggered around 15th of March 2011. In detail, when the researcher was ready to conduct the interviews, the Syrian uprising has been reached an extreme level of violence throughout the majority of Syria's regions. Additionally it had by then associated with military actions that had frozen most of the business activities in Syria. However, the researcher provides guidance and key questions could be used in such interviews (for details see appendix E), moreover some issues are recommended, in the chapter 9, as topics for future studies particularly in Syria.

The researcher had collected a qualitative data from a small sample (25 companies) of the research population. This was in November 2008, i.e. before collecting the main data of research, when the researcher conducted the initial exploratory study (for details see section 5.3.1.4) using semi-structured interviews. The collected data was used for testing the questionnaire draft (pilot study) and for help in the design and structuring of questionnaire. However, it cannot be said that the researcher triangulated²⁹ the data collection method of research because the questionnaire survey was the mere method used for collecting the research data. Accordingly, this section reviews only the survey method as the mere strategy of research however, the case study is discussed briefly as the strategy of initial exploratory study.

Survey strategy

The survey strategy is one of the most commonly used strategies in business studies research (Saunders et al 2009). In terms of the MA studies, following a review of the contingency-based MA literature, it can be noted that a large volume of research has been conducted using the survey strategy, particularly using the questionnaire data collection method. In fact, the survey strategy is used in the case of exploratory and descriptive studies as it is capable to answer such questions as what?, where?, who?, and such questions are usually associated with the deductive approach. One of its main advantages is that enables the researcher to collect a large amount of data from a large population in a relatively short period of time and by using small resources. It can do that through collecting the required data from a sample of

²⁹ Triangulation refers to 'the use of different data collection techniques within one study in order to ensure that the data are telling you what you think they are telling you' (Saunders et al., 2009, p.146).

the research population, which is carefully extracted (using an appropriate sampling technique) to be representative of the research population (Gill et al.2010). Furthermore, the survey strategy enables the researcher to collect quantitative data about the research variables, and this data in turn are analysed using statistical techniques. By this way, the survey allows the researcher to test the hypothesised relationships between the research factors and consequently developing the research model. Although using the survey holds various benefits for the researcher, it has some disadvantages represented through, for example, the limitation of questions asked in the questionnaire and the possibility of misunderstanding the questionnaire' questions by the respondents. However, although the questionnaire is considered the main method used within the survey strategy for data collection, there are also other methods, e.g., structured observations and structured interviews (Gray, 2004). In the current study, the questionnaire was selected as the main data collection method of research therefore the next section discusses and presents all issues related to the data collection process including the questionnaire administration issues. Given the situation as it developed in Syria it was also probably the only realistic way of getting the data that was gathered.

5.2.4- Time horizons

Assigning the research to its time horizon means classifying it into two types of research i.e. 'cross-sectional' and 'longitudinal' research. In the cross-sectional study, the researcher collects the required data once and during a short period (e.g., few weeks or few months). Therefore, the cross-sectional study can be described as a snapshot of the research phenomenon/phenomena at a particular time. It is often that cross-sectional studies employ the survey method as a strategy; however, they may use the strategy of case studies through conducted interviews over a short period of time (Ghauri and Gronhaug, 2005). Contrary, in the longitudinal study, the researcher collects the needed data several times over a long period, and this is usually for purpose of studying the influence of time on the research phenomenon/phenomena over time. The longitudinal study usually uses the interviews method for collecting research data. Although the longitudinal study allows examining the development of research variables over time, it often faces time and resource constraints (Walliman, 2006). Like the majority of MA studies, this research can be recognised as a cross-sectional study as it was conducted using the survey strategy over a short period.

5.2.5- Validation of research constructs

5.2.5.1- Introduction

The construct validity or research validation is a process desirable to be conducted in studies that examine constructs (latent variables)³⁰ for purpose of asserting their quality. The main concern of construct validity is validating the research findings conclusions regarding the unobserved variables (constructs) from the observed variables (empirical indicators). Therefore conducting the construct validity is considered a key indicator of the validation of the research results and their interpretation i.e. they were obtained using valid measures/instruments (Pedhazur and Schmelkin 1991). For construct validity, the researcher needs to conduct few subsequent steps starting from identifying the items (empirical indicators) comprising each measure of the research latent variables, to assessing the extent to which these items are able to measure the research constructs (O Leary Kelly and Vokurka, 1998). Through reviewing the accounting literature, it can be inferred that a large number of studies did not fulfil or comment on the construct validity. Moreover this phenomenon was not only common in the accounting field but also among other business areas such as management, marketing, human resources and strategy studies as mentioned in the study of Brahma (2009). Given this lack of concern in construct validity and because the current researcher has modified the adopted instruments used for measuring three of the research constructs i.e. OC, AE, and TMS, the researcher conducted a process to validate these research constructs. The validation process contained the following three steps: 1): content validity, 2): reliability, and finally 3): construct validity. In the current chapter, however, only the first step i.e. content validity is presented, and the last two steps, due to their statistical nature, are included in the statistical analysis chapter (chapter 7).

5.2.5.2- Content validity

Content validity is critical in establishing research validity. It indicates the extent to which a test represents adequately addresses the content of the construct it aims to measure (Thomas, 2006). In detail, it shows that the empirical indicators used for measuring the research constructs reflect largely the content of these constructs (Bryman and Cramer, 2011). In other words, the research latent variables should be identified and interpreted logically and

³⁰ The latent or unobserved variables (constructs) are common in the social sciences where the researcher often needs to measure something that cannot be assessed directly (e.g. organisational culture and depreciation), alternatively they measure such factors by examining few or many variables (items or empirical indicators) which relate to these constructs (Field, 2005).

theoretically through the items used for their measurement. This type of validity is called content validity and starts usually from generating the items/empirical indicators required for measuring the research constructs. For generating these items, the researcher needs to use either the deductive or inductive approaches. The approach adopted in the present study is the deductive approach by which 'the researcher develops the theoretical definition of the construct and then uses it as a basis of item generation' (Brahma, 2009, P.61). Under the deductive approach a researcher for measuring the research constructs, may adopt previous constructs that were defined theoretically in the related literature (if they exist); alternatively a researcher can also either develop new constructs, or modify the previously defined constructs through adding new empirical indicators for measuring them. It is necessary, in the latter situation, that the newly developed items to be reviewed and be discussed by some experts and greatly experienced respondents in the studied context (Bryman and Cramer, 2005).

In the current study, most of the instruments used for measuring the research constructs were drawn from the accounting literature where they were defined and tested extensively by many MA researchers previously. Therefore, it is expected and believed that the findings of this research will be valid. Regarding, however, three of the research constructs i.e. organisational culture (OC), accounting environment (AE), and top management support (TMS); the adopted measures were adapted to be more relevant to the Syrian business context.

The process of modifying the adopted measures was started with adapting the adopted measures with new items developed for measuring these three constructs. The newly added items were developed based on the insights collected from the initial pilot study (for more details see section 5.3.1.4.1) at the beginning of the PhD project in addition to the researcher's experience in the Syrian business context as a management accountant. The next step was the content-validation of the adapted three measures. This was conducted through the second pilot study (section 5.3.1.4.2) and before distributing the final questionnaire, to Syrian practitioners and academics who were widely experienced in the Syrian business environment (this is consistent with Subramaniam and Mia's 2001 study).

In the second pilot study, the participating accountants were asked to review and discuss the modified measures, as well as the adopted measures, for purpose of suggesting any change or adding new significant items to achieve the better measurement of the research constructs. It is noteworthy that the current study does not concentrate on studying the influence of a

limited number of contingent factors as main influential factors on the cost and MA practices; alternatively, it focuses on examining the impacts of a wide range of the contingent factors on the research dependent factors. Given this situation, the five participating accountants were further asked, to indicate the most important items, in terms of every measure, they think that are more related to identifying the research constructs in the context of the Syrian business environment, especially regarding the three research constructs (OC, AE, and TMS) measured using the modified instruments.

Concerning the OC, although this construct was mainly studied in the literature as a multidimensional construct (e.g., Windsor and Ashkanasy, 1996; McKinnon et al., 2003; and Baird et al., 2004), this factor was conceived in the current study as a unidimensional construct. This hypothesis was according to the results of content validity and being that, as mentioned above, the research does not concentrate on studying the OC influence comprehensively. In detail, the content validation of the OC construct resulted in 11 items selected for measuring this construct. 4 out of the 11 items were newly developed items in terms of the research area, which were developed for modifying the measure as explained earlier, and the remaining (7) items were from the adopted OC profile (26 items), from O'Reilly (1991).

Regarding the construct of the AE, it has mainly been developed as a new construct in the current research. It is a multidimensional construct containing two dimensions/factors i.e. accounting education quality and imported accounting experience. The former was identified using three empirical indicators where the first one was adopted from Alnamri (1993) while the other two items, which are related to the capacity of the Syrian accounting graduates in both MA practices and accounting software, were created using the insights collected from the initial exploratory study. The new items, however, were content validated through the pilot study that resulted in a number of minor changes in the layout of these two questions. The latter dimension i.e. imported accounting experience was observed through two items, which were again developed by the researcher relying on the initial pilot study. Moreover, they were content validated through the second pilot study. These two items were related to the extent to which Syrian PICs employ foreign-qualified accountants in addition to the degree to which the employment of such accountants helps in improving the cost and MA systems of the employing companies. The data collected about the dimension of imported accounting experience, however, were used only for the purpose of descriptive analysis. This was because only 5 out of the 108 participating companies declared themselves employing at

least one foreign-qualified accountant. Accordingly, the dimension of the imported accounting experience cannot be passed to the next step of construct validity.

The factor of TMS was measured using an instrument consisting of two items. The first item was adopted from Krumwiede (1998) while the second was adapted from Alnamri (1993). These two measures, however, were reviewed by the five accountants in the second pilot study and the result was to certify the validity of them as an instrument for measuring the TMS factor.

Finally, in terms of the remaining research constructs, which were measured using previously tested instruments, they were content validated as well in the pilot study. This was conducted through asking the five accountants to comment on the validity of using the adopted instruments for measuring the research constructs. The result showed that all items of the adopted measures were related to observing the research constructs in Syria however, there was only some recommendations for making some amendments on the structure and layout of some of the questionnaire' questions. Finally, after asserting the content validity of research constructs, the other two steps of research validation process i.e. the reliability and validity, are discussed later in the chapter of statistical analysis (chapter 7) as these two steps are of the nature of statistical tests and were run using the collected data.

5.3- Research methods

This section is dedicated to presenting all the techniques used in the current research for collecting the required data. It is structured to include two main sections; the first discusses all issues related to the data collection process i.e. the sampling and questionnaire administration while the second clarifies the instruments used for measuring the research factors.

5.3.1- Data collection method

Being that the main objective of this research is concerned with discovering the current state of cost and MA practices currently used in Syrian PICs and the factors influencing the implementation of these practices, the researcher adopted the survey strategy for planning the data collection process. Within such a strategy, the questionnaire has been used extensively in contingency-based MA studies for collecting the identified data. In the current study, as the research aims at exploring as many as possible of the population cases, the questionnaire was

used in the current research for surveying the research sample. Along with the known advantages of questionnaire method, it offers a very key attribute (especially for developing countries) i.e. collecting data with anonymity of the respondents and absence of potential researcher bias (Gray, 2004). Given the current political situation in Syria, this has given added emphasis to this choice. This section, therefore, concentrates on displaying the details of developing and administrating the questionnaire method.

5.3.1.1- Research population

The research population can be defined as the whole group of objects, items, or individuals from which the research sample will be drawn while the sampling frame is a list of entities from which the sample cases are selected for survey (Singh, 2007). In the current research, the research population is medium and large PICs working in Syria and the sampling frame is the complete list of medium and large PICs registered by the Ministry of Industry in Syria.

The researcher identified the features of research population according to the research aim as mentioned in chapter one i.e. surveying the state of cost and MAPs being used in Syria, which are mainly employed by the medium and large size privately owned manufacturing companies. Firstly, in terms of the research population's industrial field the researcher placed emphasis only on surveying manufacturing companies in Syria and excluding non-manufacturing companies. This focus can be attributed to the fact that manufacturing companies in Syria are predominant and historical when compared to the non-manufacturing companies, which have broadly been established in the last ten years ago. This fact means in turn that it is more probable to find greater use/understanding of cost and MA practices in the manufacturing companies than the non-manufacturing companies.

Secondly, regarding the size of the sampling frame cases, the current research addressed only medium and large manufacturing companies rather than the complete range of manufacturing companies. The exception of small manufacturing companies from the survey was consistent with the fact of that the majority of previous MA studies asserted that company size has a positive and significant influence on the implementation level of cost and MAPs (Drury and Tayles, 2000; Baird et al., 2004; and Isa and Thye, 2006). Finally, concerning the ownership type of the cases covered by the sampling frame, the researcher chose to survey only privately owned rather than the state-owned companies. This selection was due to two reasons first, the absence of previous MA studies about the private sector consequently the

current research will open the door to future studies about this relatively ignored sector. Secondly, the private manufacturing sector has recently achieved a predominant role in the Syrian manufacturing sector at the expense of the state-owned sector. This can be manifested through comparing the total number of state-owned manufacturing companies (SMCs) at 97 companies to that of the privately owned industrial companies (PICs) totalling around 1200 companies distributed throughout the whole country. Additionally, it is also anticipated that the number of latter will continue to grow and thus the research is aimed at benefiting these companies in future as well as discovering the present situation. Accordingly, the research sampling frame is the directory of all medium and large privately owned manufacturing companies (PICs) based in Syria.

In Syria, such a directory is usually held by the Ministry of Industry to which all the established PICs in Syria have to register formally. Indeed, the researcher booked a meeting (on 05 Jan 2009) with the department responsible about this directory that was the 'planning and statistics department'. After a discussion with the staff of this department, the researcher discovered that the standard used for categorising the PICs was the size of their capital. In detail, if the company's capital exceeds 25 Millions Syrian Pounds (SP), the company is classified as a medium to large company. The researcher therefore asked the Ministry to extract a full list of the whole PICs, where their capital exceeds, 25 Millions Syrian Pounds (SP). The result was a list of 1,202 PICs specialised in four industrial sectors (Engineering, Food, Chemicals and Textiles) across the country. For purpose of acquiring/maintaining an accurate, complete, and up-to-date as possible sampling frame, the researcher revisited this department after one year (Jan 2010) i.e. just before distributing the survey questionnaire, and obtained from the Ministry to extract the latest copy of this directory. The latest copy (2010) included 1210 companies instead of 1202 companies (2009 copy) i.e. a small increase in the total number of population following updating the directory consequent on a number of companies having ceased their activities and a number of newly established companies being created.

It is noteworthy that while the number of workers employed could be used as a measure to determine what is meant by medium to large companies, this research uses capital size for that definition. There is information on the number of employees in the private sector held by government ministry however, it is known to be a very unreliable as a measure of company size and hence the choice of capital – in any case the official definition. Numbers of employees, for example, are also held by the Syrian Industrial Chambers (like UK Chambers

of Commerce), but they are significantly different from those held by the Ministry (Directorate of statistics and planning, 2007). Capital size is thus seen as more consistently applied and hence more reliable for the purposes of this thesis.

5.3.1.2- Sample size and sampling technique

As mentioned above, the research population was all the large and medium size PICs based in Syria i.e. 1210 manufacturing companies specialised in four industrial sectors (Engineering, Food, Chemicals and Textiles) across the country.

Before discussing the sampling technique used in this research, it is useful to mention herein that the researcher (as will be detailed in the next sub-section) was compelled to use the delivery and collection method for administrating the survey questionnaire. Due to the relatively large volume of time and cost associated with using this type of questionnaire, it was difficult to survey the entire sampling frame i.e. 1210 Syrian PICs. Given these considerations (time and money), the researcher surveyed only a sample of the research population rather than the whole population. For meeting the essence of research approach (the deductive) i.e. generalisability of the research findings to every case in the population, it was required from the researcher to select carefully a sampling approach, which is able to extract the research sample representative to the whole research population.

One of the most used sampling approaches in the business studies is the probability sampling or as it is called sometimes representative sampling. It is almost used in the research adopting the survey strategy as it enables the researcher to acquire inferences from the research sample about the whole population. Probability sampling is an attempt to compromise between the time and resources needed for collecting the research data and the preciseness of the research results. Using this sampling approach requires from the researcher to follow three stages: 1): deciding the appropriate size of sample; 2): choosing the most suitable sampling technique and choose the sample; and finally 3): test whether the selected sample is representative of the research population (Gill and Johnson, 2002).

5.3.1.2.1- Sample size

For generalising the research findings to the whole population with as low as possible error, it is required from the researcher to make the sample size as large as possible. Researchers agreed that for applying statistical analyses on collected data, a sample of 30 cases and more

can be considered a useful rule of thumb for the smallest size of research sample. However, the larger the sample size, the more representative it is to the research population, and consequently the mean³¹ of the sample is more likely to equal the average of the population. Practically, for deciding the appropriate size of the research sample, researchers rely on what is called a 95% level of certainty with different margins of errors (5%, 3%, 2%, and 1%). Moreover, according to this rule, it creates a rough guide stating the various minimum sizes of sample that should be extracted from various population sizes (Saunders et al., 2009, p.219). It means that if the researcher repeats the research sample a hundred times, at least 95 of these selections will produce samples certainly representing the features of research population. According to this guidance, a research population of around 1000 cases (the current research population is 1210 cases) requires from the researcher to collect the data from a sample size of at least 500 cases given a 95% level of confidence for a 3% margin of error. Therefore, given the size of the research population i.e. 1210 cases, the researcher decided to survey 500 cases for a 3% margin of error.

5.3.1.2.2- Sampling technique

The next step after deciding the sample size is selecting the most appropriate sampling technique. In the probability sampling approach, a researcher can choose among five main sampling technique namely, simple random, systematic, stratified random, cluster, and multi-stage sampling techniques. They are varied in terms of the extent of representativeness of the research population and regarding the volume of time and resources needed for using them.

After a careful consideration to these five techniques, it was decided that the cluster sampling method provides greatest consistency with the research objectives. This method is broadly based on 1): dividing the research sampling frame into discrete clusters according to such factors as geographic area and type of industrial sector; 2): number each of the resulted clusters with unique number, and then select the research sample by choosing randomly some of them; and finally 3): collecting the required data from the entire cases of the selected clusters (Saunders et al., 2007). Cluster sampling is used usually in the case of the research population covering a large geographical area, and the researcher needs to use a face-to-face instrument for collecting the required data. By dividing the research sampling frame into clusters according to, for instance, the geographical area, the researcher needs less time and

³¹ Comparing the mean of research sample to the mean of population is called usually the law of large numbers.

resources than other techniques for collecting the required data. This is because the researcher will collect the data from a few relatively compact geographical clusters rather than from cases dispersed throughout the area as in the case of simple random sampling (Collis and Hussey, 2009).

In the current study as will be seen later, the researcher was compelled to use the delivery and collect process as a method of distributing the questionnaire. This needs a large volume of time and money particularly if a simple random technique was used for sampling the research population. Therefore, the cluster sampling was selected as it is featured with maximising the data collected when a face-to-face instrument (such as delivery and collect questionnaire) is used. However, cluster sampling is classified as being less accurate than the other probability sampling techniques in terms of the extent to which the selected sample represents the research population.

Applying the three steps of cluster sampling, the researcher first clusters the sampling frame of research according to the factor of geographical area³². The selection of this criterion was for the purposes of facilitating the data collection process and meeting cost and time constraints. Accordingly, the researcher divided the sampling frame into thirteen geographical clusters that were numbered with unique numbers starting from 0 to 12. Table 13 displays these clusters and the number of cases contained in each cluster in addition to the percentage of each cluster's cases to the whole number of cases.

Table 13: Distribution of the private Syrian manufacturing companies geographically

Geographic Areas	Private manufacturing Companies (PICs)	
	Number	Percentage
Cluster 0	158	13.3%
Cluster 1	278	21.16%
Cluster 2	133	15.95%
Cluster 3	44	3.64%
Cluster 4	74	6.11%
Cluster 5	31	2.56%
Cluster 6	58	4.80%
Cluster 7	328	23.72%
Cluster 8	33	2.73%
Cluster 9	19	1.60%
Cluster 10	5	0.41%
Cluster 11	21	1.73%
Cluster 12	28	2.31%
Total Number of Cases	1210	100%

³² The researcher uses the addresses of companies provided in the sampling frame for this clustering.

Notably, the PICs contained in each cluster are relatively near in geographical terms to each other and this in turn saves both time and cost for collecting the research data. For selecting the research sample, the researcher chose a few clusters based on random selection. The result was the choice of clusters 2, 7, and 9 for selecting the research sample i.e. 480 cases located in three different geographical areas and representing the size of the research sample.

5.3.1.2.3- External validity of research

The external validity of any research that is applied on a selected sample refers to the extent to which the research findings can be generalised to the whole research population. One of the main threats to this external validity is applying the research to an unrepresentative sample (De Vaus, 2001). Although the researcher selected the geographical clusters based on random selection, the last stage in probability sampling is checking whether the chosen sample is representative of the research population from which it is extracted. This can be made through conducting a comparison between the research sample and the research population in terms of particular features selected by the researcher according to the availability of data (Saunders et al., 2009). In the current research, as there are only information about the capital and the total assets of the research population's cases, the researcher conducted two comparison tests between the research sample and population. The first test compares the capital mean of the sample companies with that of the population's companies, and the second compares the mean of total assets of the sample cases with that of population's cases. Being that both the capital and total assets factors are numerical variables, the independent t-test was used for running this type of comparison.

In terms of the companies' capital, the result of the t-test is displayed in table 14 and shows that there was no significant different (between the capitals' mean of the research sample and that of the population where sig. (2-tailed) = .196 > 0.05. Consequently, it can be said that the selected sample can be seen as representative of the research population.

Table 14: T-test of the company capital

	Leven's Test for Equality of Variances		T-test for Equality of Means			
	F	Sig.	T	DF	Sig. (2-tailed)	
Company' capital	Equal variances assumed	6.816	.009	1.552	1208	.121
	Equal variances not assumed			1.296	525.98	.196

For confirming this result, the same t-test was run again but in terms of the factor of company total assets. Similarly, the result in table 15 reveals that Sig. (2-tailed) = .825 > 0.05, and this means that there was no significant difference between the total assets of the sample' case and those of the population' cases, consequently the chosen sample is representative of the research population.

Table 15: T-test of the company total assets

	Leven's Test for Equality of Variances		T-test for Equality of Means			
	F	Sig.	T	DF	Sig. (2-tailed)	
Company' total assets	Equal variances assumed	.184	.668	.221	1208	.825
	Equal variances not assumed			.216	938.74	.829

5.3.1.3- Design of questionnaire

It is argued that the structure of a questionnaire and the design of its questions have a great influence on the internal validity and reliability of the collected data and the questionnaire' response rate (Johns and Lee-Ross, 1998). The main purpose of the survey questionnaire was collecting data about the cost and MA practices being used in Syrian PICs moreover, it was designed to acquire data about the internal and external contingent factors having an influence on the implementation and design of these practices. In this context, the questionnaire was designed and structured carefully to avoid any potential confusion or misleading of the respondents. This was achieved through reviewing numerous methodology textbooks covering the design of a questionnaire (e.g., Dillman, 2007 and Gill et al., 2010).

The research questionnaire was quite long (appendix C) consisted of four main parts, which extended to thirteen pages. The first parts included general questions about the respondent and responding companies while the second part collected data and information about the complexity level of costing systems. In the third part, the researcher asked the respondents questions about the extent of implementation of MAPs, and finally the last part was dedicated to acquiring information about the internal and external contingent factors. The content of the questionnaire was mainly drawn from previously developed and tested instruments, however the researcher adapted (through the pilot study) some of them to fit the research context, moreover a new tool was developed in the current research to measure the newly developed factors. It is noteworthy that the next two sections presents the research pilot study and detail

the tools used for measuring the research factors. In addition to the questionnaire' content, there was a covering letter that was developed to encourage a significant response rate (Saunders et al., 2009). Moreover, to prevent any confusion in completing the questionnaire, the researcher provided where required an explanation to unclear terminologies.

The questionnaire was initially written in the English language, and then was translated into Arabic given the context. However, the researcher offered the respondents the English version copy of the questionnaire, but all of them prefer responding to the Arabic version. In terms of the translation from English to Arabic, the researcher first translated the questionnaire from English to Arabic language. For verifying the translation, four steps were applied. First, the questionnaire was translated again from English to Arabic by a Syrian academic who holds PhD degree from one of the UK University in the MA subject. Secondly, a comparison was made between the two Arabic-based copies (in terms of the meaning and content), and the result was a need for slight revisions. Thirdly, the revised Arabic-based copy of questionnaire was translated back to English language by one of the senior lecturers in a business school in Syria, who studied his Master and PhD degrees in UK universities. Finally, the two English-based copies of questionnaire were compared, and the result was that the English version of questionnaire was translated properly into Arabic language and both were judged to hold similar meanings.

5.3.1.4- Pilot study of research

Again the strictness of questionnaire' pilot testing influences greatly the internal validity and reliability of the collected data and potential final questionnaire's response rate (Saunders et al., 2009). Being that the current research is an exploratory, the researcher conducted two pilot studies where the first was as an initial exploratory study and pilot test, and the second was pilot study conducted before administrating the final questionnaire survey. For conducting the initial exploratory study, the researcher adopted the strategy of a case study, which is used usually for conducting exploratory studies. The case study enables the researcher to collect answers to the questions of 'how', 'what', and 'why'; therefore, the researcher can gain rich information about the research context and process. Within the case study, the researcher can use different methods for collecting data, e.g., observation, documentary analysis, questionnaire, and interviews (Saunders et al., 2007); however, the latter method was used in this study. The following sub-sections detail the two pilot studies conducted in this research.

5.3.1.4.1- Initial exploratory study

The researcher conducted an exploratory study during November 2008 with several individuals, namely, 7 (28% response rate) Syrian PICs, 1 (28% response rate) chartered accountant holding the certificate of Syrian Association of Chartered Accountants (SACA), and 6 (50% response rate) accounting academics from the University Aleppo. The study was conducted using the method of semi-structured interviews with durations ranged from around half an hour with both the academics and accountant to one hour with the financial managers of PICs. The discussion part of interview was recorded by hand-written notes (key words) because none of interviewees accepted tape recording although the researcher emphasised at the beginning of each interview on the importance of this research, and that the collecting data would be used only for academic purposes. The collected data, however, was analysed using a form of content analysis (for more details see appendix D). The main reasons behind the exploratory study, which was conducted after a year of reviewing the relevant MA literature, were as follows:

- identifying the main variables, out of the variables identified from the MA literature, having the most relevance to research context;
- suggesting new variables that might have a relevance to the research problem;
- refining the research problem; and finally
- pilot testing for the first draft of the questionnaire survey.

After analysing the collected data, three main findings were produced. The first was assurance (by the majority of interviewees) on the feasibility of the research in the Syrian context and demonstrating its potential importance for different bodies and individuals in the Syrian business environment. The second was confirming the relevance of the research variables to the Syrian context in addition to suggesting some new potential variables. In detail, the interviewees emphasised the importance of studying the influence of ‘TMS’ on the design and implementation of cost and MA systems in Syria. Moreover, they suggested examining the impact of ‘the purposes for which cost information is used’ on the complexity level of costing systems. Finally, there were negative comments regarding the relevance of ‘national culture’ factor to the implementation of cost and MA practices in Syrian PICs,

alternatively the interviewees recommended replacing it with the factor of organisation culture.

5.3.1.4.2- Second pilot study

For refining the final copy of questionnaire, the researcher conducted this pilot test with five qualified accountants in Syria. In addition to reviewing the questionnaire' questions, the researcher asked the accountants to comment on the relevance of the adapted research constructs i.e. the 'OC' and the 'TMS'³³ to the research context. Only limited feedback was collected from this study (given that this was the second pilot study), and the researcher in turn considered this when adjusting the questionnaire in terms of relevance to the research context.

Finally, after designing, structuring, and translating the questionnaire as discussed and after it was pilot tested twice, it was expected that the questionnaire' response rate and the internal validity and reliability of the collected data will be maximised.

5.3.1.5- Administration of questionnaire and its response rate

The questionnaire was administrated in Syria where the target sample was 480 PICs located in Syria. At the beginning of November 2009, the researcher started administrating the questionnaire. The distributed questionnaire package included, in addition to the copy of questionnaire, a covering letter and a copy of a recommendation letter, which was issued from the University of Damascus where the researcher is working. To increase the response rate, the cover letter included information about the research aims and potential benefits to be gained from the survey. Moreover, it was emphasised in the cover letter the anonymity of respondents, and that the collected data will be confidentially used only for purpose of this research. However, for purpose of the follow-up process i.e. administrating the reminders and the analysis of non-response bias, the researcher numbered all copies of the questionnaire before distributing them on the research sample. Finally, a copy of the executive summary of study was offered for encouraging the respondents to complete the questionnaire.

In terms of administration the questionnaire, although there are various methods and although the email/online is mostly the most convenient method, such a means is impractical in Syria for the sample frame. Accordingly, (see earlier) the researcher administrated the

³³ Regarding the construct of 'accounting environment', it was content-validated through the initial pilot study conducted earlier.

questionnaire survey by using the personal mail method. For securing a high response rate, the delivery and collection (personally by hand) questionnaire method was used as it is the most appropriate technique for doing study in developing country such as Syria where academic research is still at infancy stage. Van-Triest and Elshahat (2007), for example, used the mail questionnaire in LDCs, but they received only two responses out of 100 sent questionnaires. In order to achieve the practical distribution and collection of the questionnaires the cooperation of three friends and classmates was agreed and utilised.

All the 480 PICs (accounting department) were contacted by telephone for booking an appointment to hand in the questionnaire. For time and cost considerations, this happened by calling a number of companies located in the same area every day. During the call, the researcher introduced himself and gave the financial manger/accountant an idea about the study and its aims. The outcome was that 336 out of 480 PICs accepted participation in the study, a large number (198) of them accepted giving an appointment while the rest (138 PICs) preferred sending the questionnaire by email. Regarding the latter companies, their calls were longer where the researcher tried to convince the respondents to participate in the research and complete the questionnaire, to give them more details about the study, and to ask them to read the questionnaire and its instructions carefully. Finally, the researcher asks them to contact him in case of facing any difficulty or ambiguity during completing the questionnaire. Regarding the 144 companies rejected participating in the research; the reasons behind the rejection can be classified as follows:

- 48 PICs, According to their rules, they were not allowed to provide any information regarding this research (eligible).
- 59 PVMCs were too busy to participate or there is no interest in the study (eligible).
- 37 PVMCs although their capital exceeds the 25,000,000 SP (classified as medium and large), they stated that they could not participate in such study because their accounting system were very simplistic and they did not have any kind of MA systems (ineligible).

During three weeks, the whole questionnaire copies were distributed to the respondents i.e. 198 copies handed in and 138 copies emailed. After twenty-five days from completing the distribution, the researcher received 57 questionnaires. For increasing the response rate, reminders to respondents were made using the telephone and email methods where possible. The reminders helped in receiving new 61 completed questionnaires and this raised the total

number of received questions to 118 copies. However, among the 118 questionnaires, there were 10 questionnaires contained a large amount of missing data that made them unusable. Moreover, there were some missing data in some of the questionnaires, and this was solved through making some telephones calls to clarifying the answers. Therefore, the response rate of questionnaire survey can be calculated as follows:

$(118 \text{ total received questionnaire} - 10 \text{ total received not usable questionnaires}) / (480 \text{ total number of sample' cases} - 37 \text{ ineligible cases}) * 100 = 24.4\%$ response rate.

5.3.1.6- Non-response bias

For testing the possibility of non-response bias, the researcher compared the first amount of questionnaires 54 (57 minus 3 not unusable) with the second amount of questionnaire 54 (61 minus 7 unusable) collected from the respondents. In detail, the researcher compared between these two groups of questionnaires in terms of key variables i.e. company size, the complexity level of costing systems, and the implementation extent of MAPs. This test was conducted using the independent sample t-test. In the three tests, the results showed that $P > 0.05$, consequently it can be said that there was no significant difference between the first and second batches of questionnaires regarding the mean score of each of the three key variables. Moreover, the researcher has tested the possibility of non-response between the respondents (108) and the research sample ($480 - 37 = 443$), and this was conducted through comparing the capital mean score of these two samples (similar to section 5.3.1.2.3). Again, the results came positive where there was no any trace of bias between these two samples. This was because the P value was bigger than 0.05 i.e. there was no significant difference between the companies that responded and those that did not.

5.3.2- Measurement of research variables

This section details the instruments used for measuring the research variables. Many of the used measures were adopted from previous studies however, some of them were adapted and only one instrument was developed to fit the research context. It is noteworthy that all the research variables, which are measured by Likert-scale, have been assessed using a five-point scale. Using five rather than seven-point Likert-scale was one of the pilot study recommendations, which considered that using the seven-point scale in less developed country, such as Syria, confuses the respondents and may cause misleading information about

the research factors to be returned. The current section was structured into three sub-sections as follows; measurement of the complexity level of costing system, measurement of the implementation extent of Ma practices, and finally measurement of the research contingent factors.

5.3.2.1- Measurement of the complexity level of costing systems

The complexity level of costing system was measured in the current research using a proxy measure adopted from Drury and Tayles (2005). The original instrument was developed by Abernathy et al. (2001) who developed an instrument for measuring the sophistication level of costing systems using four proxy measures (for details refer to sections 3.3.3). Drury and Tayles (2005) in turn adapted this instrument to measure the complexity (rather than the sophistication) of the level of costing system using only the first two proxy measures i.e. the number of cost pools and the number of different types of second stage cost drivers. Therefore, for measuring this factor, the respondents were asked two questions (Q 2.5 & 2.6 in Appendix C). The first was to indicate the number of cost pools or activity centres being used for assigning overheads to cost objects, and the second was to indicate the number of allocations bases or cost drivers being used for this purpose. The final measure of the costing system's complexity was a composite measure, which was calculated through adding the respective score of the cost pools number (8-point scale) to that of the cost drivers number (8-point scale). By this was, the resulted composite measure was 15-point scale ranging from 2 to 16.

5.3.2.2- Measurement of the implementation extent of MA practices

For measuring the implementation extent of MAPs as a dependent factor in the correlation and multiple regression analysis, the researcher used the method of indexation by which the researcher asked the respondents to indicate whether they were using any of the MA practices listed in the questionnaire. Accordingly, each respondent was asked to answer yes/no against each MA practice, and then the researcher summed up all the 'yes' answers in each questionnaire. The resulted number was used in turn as a proxy measure of the implementation extent of MAPs in each company. This measurement has been used in the MA literature, e.g., Bright et al. (1992), Bjornenak (1997a), Chenhall and Langfield-Smith (1998a), Joshi (2001), and Hutaibat (2005).

5.3.2.3- Measurement of the research contingent factors

This section presents the instruments used for measuring the internal and external contingent factors of the research. Most of the measures were adopted from the literature, few were adapted, and only one was developed to fit the research context. This section is structured through two main sub-sections i.e. one for the measures of external factors and another for the measures of internal factors.

5.3.2.3.1- Measurement of the external contingent factors

Measurement of the external environment (EE)

The construct of EE is a category factor including several contingent variables that are called components of the EE. For measuring this construct, the researcher adopted the instrument developed by Khandwalla (1977), which has been tested and used extensively by many MA researchers (e.g., Gordon and Narayanan 1984; Chong and Chong, 1997; Drury and Tayles, 2000; and Al-Taweel, 2001). Accordingly, the respondents were asked seven questions (question 4.2 to 4.5 in Appendix C) about the level of competition/proliferation/dynamism/predictability of each of the EE's seven components, i.e. the level of competition on inputs, prices, labour, legal constraints' proliferation, dynamism of technological and economic environment, and predictability extent of competitors activities. These different levels were measured using a five-point Likert-scale ranging from very high to very low level. Finally, this measure has been content validated earlier (section 5.2.5.2) and is statistically validated later (section 7.2.3.3)

Measurement of the accounting environment

The construct of the accounting environment (AE) examined in the current research contained two dimensions i.e. accounting education quality and imported accounting experience. It is noteworthy that the AE has not been greatly examined in the MA literature as one of the factors influencing MA practices; therefore, for measuring this construct, the researcher has developed a mostly new instrument, which fits the Syrian context. In detail, the dimension of accounting education quality was observed using three items (Q4.7, Q4.9, and Q4.10 in appendix C); the first question adopted from Alnamri (1993) asked the respondents to indicate the extent to which they recognise the accounting graduates as accountants working and thinking innovatively. The other two questions asked the

respondents to point out their satisfaction level in terms of the capacity of accounting graduates in cost and MA practices and in using accounting software. Finally, the second dimension i.e. imported accounting experience was observed using two questions (Q4.11 & 4.12 in Appendix C). The first is related to the extent to which the responding companies employ foreign-qualified accountants, and the second asked about the level to which the employment of such accountants participates in developing the cost and MA systems of the employing companies.

5.3.2.3.2- Measurement of the internal contingent factors

Measurement of the organisational culture

For measuring the influence of OC on the implementation of cost and MA practices, the researcher adapted the organisational culture profile (26 cultural values) developed by O'Reilly et al. (1991), which has been used in the MA literature (e.g., Baird et al., 2004) for examining this factor. Given that the current study does not focus on studying the influence of few contingent factors on the MA practices, only some (7 values) of the adopted model' values were adopted for measuring the OC factor. Moreover, the researcher adapted this instrument through adding new four values related to the Syrian context. Consequently, for measuring the OC factor, the researcher asked the respondents 11 questions (Q4.21 to Q4.31 in appendix C) observing different cultural values at the responding companies. In detail, the researcher asked questions about the extent to which the responding companies have the following values: willingness to experiment, quick to take advantage of opportunities, risk taking, employees are not constrained by many rules, competitive/outward looking, a good reputation, being results orientated, providing training to staff, membership to professional bodies, managers follow specialised training courses, and chasing international professional exhibitions (trade fairs).

Measurement of the top management support (TMS)

This factor was measured using compound instrument consisting of two questions (Q4.19 & 4.20 in Appendix C). The first question, which was adopted from Alnamri (1993), asked about the extent to which top managers/owners consider the middle managers' recommendations and comments before making final decisions regarding the cost and MA systems. The second question, which was adopted from Krumwiede (1998), complements the

first and asked about the extent to which top managers/owners support the development of cost and MA systems.

Measurement of the complexity of manufacturing process

For assessing the complexity level of the manufacturing process in the responding companies, the researcher adopted a tool from Krumwiede (1998), which consisted of two questions (Q4.16 & 4.17 in Appendix C) about the diversity of both product lines and products of companies. The first question investigated the extent to which the product lines in a company are diverse in terms of the number of processing stages (e.g. design, production, assembly, and so on) contained in each production line. The second question concentrated on the diversity of company products through asking the respondents to indicate the extent to which products in their companies are different (concerning the requirements of production' processes i.e. design, manufacturing, distribution, and so on).

Measurement of the product diversity

The researcher measured the factor of product diversity using two proxy measures. The first question (Q1.8 appendix C), which was adopted from Bjornenak (1997a) and tested previously by Drury and Tayles (2000), asked the respondents about the extent to which their products are standardised (5 highly standardised to 1 highly customised). The second question (Q4.18 in Appendix C) adopted from Krumwiede (1998) and tested also by Drury and Tayles (2000) asked the respondents to indicate the extent to which their products are varied in terms of the consumption of support departments³⁴ overheads (5 considerable variation to 1 little variation).

Measurement of the company size

The size of company was measured using one single question (Q1.7 in Appendix C). The respondents were asked to indicate the category most representing the number of staff and workers working in their company (from 1 '1-50' to 8 'more than 1000 staff and workers').

Measurement of the company age

This factor has been measured using a single question (Q1.5 in Appendix C) which asked about the year of the company's establishment.

³⁴ Examples about the support departments are maintenance and production engineering departments in manufacturing companies.

Measurement of the cost structure

For measuring this factor, the researcher used the tool used by Krumwiede (1998) by which the respondents were asked (Q4.15 in Appendix C) to indicate the average percentage of the following cost categories; direct material, labour, and manufacturing overheads to the total of company costs.

Measurement of exports' percentage

This factor was measured through asking (Q1.9 in Appendix C) the respondents to point out the average percentage of their company's exports to the total sales (from 1 '0-10% of total sales' to 8 'more than 70% of total sales').

Measurement of purposes of cost information

This variable was assessed through asking one question (Q2.1 in Appendix C) about the purposes for which they use the cost information in their company. Four purposes were listed under this question as follows; 1 for stock valuation and profit measurement, 2 for pricing decisions, 3 for profitability analysis, and 4 for making other decisions, and the respondents were asked to select more than one option if appropriate.

5.4- Summary

This chapter presents and discusses the whole research methodology and methods used for conducting this study. After reviewing the main philosophies and approaches been used in business studies, the researcher found that the positivism, especially the deductive approach, is the most appropriate paradigm for conducting this research. For conducting the empirical part of study, the researcher has used the questionnaire method for surveying the entire cases of research sample. Moreover, before administrating the questionnaire survey, the researcher conducted several semi-structured interviews with 7 Syrian PICs (28% response rate) as an initial pilot study.

The researcher designs and structures the questionnaire carefully to avoid any potential confusion or misleading of the respondents. The personal mail method was used as the main way for distributing the questionnaire on the research sample (336 Syrian PICs). The outcome was 108 completed questionnaires resulting in a final response rate of 24.4%. In the

next two chapters, the researcher analysed the collected data descriptively and statistically for purpose of fulfilling the research objectives.

Chapter (6): Descriptive Information

6.1- Introduction

This chapter presents the descriptive part of the research results. It concentrates on displaying the research findings related to respondents' characteristics, responding companies' features, both dependent factors, and the research independent factors, using only the descriptive analysis tools, namely, the frequency tables, central tendency measures. Moreover, given cross tabulation is considered the basic method for describing factor and discovering its relationship with another factor (Bryman and Cramer, 2005), it was used in this chapter for describing the majority of factors and understanding their association with key factors, e.g., the company size (measured using the number of employees), classifications of costing systems' complexity level, and classifications of MAPs' implementation extent. Throughout this chapter, the researcher discusses and debates the findings moreover it conducts (in some sections) simple comparisons with the most relevant and recent studies. However, more comprehensive and in-depth comparisons with the MA literature are provided in a separate chapter (chapter 8), for purpose of providing more useful and obvious comments about the research objectives.

6.2- General descriptive information

6.2.1- Information about the respondents

Analysing the data collected from this part of questionnaire showed that the majority of respondents were with appropriate characteristics to complete the study questionnaire. In detail, almost 90% of the respondents were in the position of financial manager (35) and accountants³⁵ (62), yet, only 9 accountants³⁶ of the latter announced having a financial manager in their companies who empowered them to fill the questionnaire on his/her behalf. Moreover, 83.3% of the respondents were with the target specialism i.e., accounting-based qualification. Additionally, the qualifications and service years of the respondents were various and adequate for providing useful and accurate information about the research questions. This was reflected in a wide range of degrees (47.2% holding Bachelor's degree,

³⁵ In Syrian companies, financial managers or accountants (in case that there is no financial manager position) are in the position making them involved in every detail about the cost and MA systems used in their companies including, for instance, their design and decisions making.

³⁶ This is because the professional accountants (with SACA qualification) usually work as a financial manager in Syrian companies. After reviewing the collected information about the number of professional accountants (Q15, Part 1) in the responding companies, it was noted that only 9 out of 62 questionnaires completed by accountants showed employing professional accountant (working as financial managers).

30.6% with post-graduate degrees, and 18.5% with professional accounting qualification) and a relatively enough periods of employment (over half of the respondents have worked in their companies from 10 to over 20 years). Finally, it is worth to mention that for more detailed information about the profile of respondents, go to appendix F (table 1 to 4).

6.2.2- Information about the responding companies

This section reviews the data collected about some features of the participating companies; some of them are related to the research contingent and institutional (independent) variables, which will be further analysed in the following chapters and others are related to the features of responding companies, such as, the state of accounting function in general and MA in special.

6.2.2.1- Profile of responding companies

The collected data showed that the observed companies were medium (41.7%) and large (58.3%) companies only and this is in turn consistent with the research target (for details, see the next subsection). Moreover, their ages were adequate and diversified (38% of the responding companies were with ages from 9 to 20 years, 47.2% with ages from 21 to 30 years, and finally, 14.8% were the oldest companies with ages from 31 to 46 years), consequently a good experience in the job field they work in (for details, see tables 6 & 7, appendix F). Regarding the other features observed in this section, the results were informative to finding a good implementation extent of cost and MA practices among the companies. In particular, nearly half (45.4%) of the responding companies announced producing over 20 products (for details see table 5, appendix F); over half of the respondents (51.9%) informed producing mainly standardised products (for details, see section 6.2.2.3); and finally almost half of the respondents (48.2%) declared exporting their products with percentages extended mainly from 11 to 50% of their total sales (for details see table 8, appendix F).

In terms of the size and quality of accounting function in the responding companies, on one hand the number of accounting staff employed was from 1 to 9 accountants with a 25% (only large size companies) employed from 4 to 9 accounting staff. Moreover, the majority (90.5%) of the total number of accounting staff (387) was with accounting specialisation while the remaining (were employed in both medium and large size companies) was with relevant

specialism qualifications (for details, see tables 12, 13, & 14, appendix F). On the other hand, the quality level of accounting function (as assessed through the qualification profiles of accounting staff working in responding companies) was relatively adequate. In detail, almost one-third (125 staff, 32.3%) of the total number of accounting staff (387) was holding postgraduate degrees (including accounting professional qualification), half (50.4%) of the accounting staff was holding the bachelor degree, and finally the remaining were with institution qualification (college equivalent in UK) (for details, see tables 15 & 16, appendix F). This indicates the attention of responding companies in the accounting function through their preference to employ only individuals with accounting specialisation and adequate qualification to hold the accounting activities. Finally, regarding the MA function, the results reflected the interest of responding companies in the cost and MA information manifested by 10.2%³⁷ (all large size companies) of them with MA department and 62% with MA accountants moreover most of the responding companies (76.8%) informed having a special accounting software for MA function (for details, see tables 9, 10, and 11, appendix F).

6.2.2.2- Number of employees in responding companies

The number of employees in the responding companies is used as a proxy for measuring the factor of company size. Comparing the collected information table 16 with one of the company size' standards³⁸ used in Syria (Akeeli, 2005), it can be noted the following: first, over half of the participating companies 58.3% (100% minus 41.7%) were of large size companies. In detail, 28.7% of the companies employed 151-250 employees, 16.7% of the companies with 251-350 employees, 7.4% with 351-500 employees, 3.7 with 501-700 employees and only 1.9% with 701-1000 employees. Second, 30.6% of the participating companies were of medium size with 51-150 employees, and finally only 11.1% were of small size companies with less than 50 employees. Although the researcher target was only the medium and large size companies, there was a limited percentage (11%) of small size companies. However, this happened because that the criteria used for choosing the research sampling frame was the company capital size³⁹ and not the number of employees used herein

³⁷ The low percentage can be also attributed to being that most of Syrian PICs, even that of large size, are not structured similarly to those in developed companies. This means that it is possible to have Syrian PICs without MA department but at the same time, they employ particular accountant/accountants for purpose of the cost and MA.

³⁸ According to this standard the small companies are those employing 1-50 employees; the medium companies are with 51-150 employees, and finally the large companies are with over 150 employees (Akeeli, 2005).

³⁹ The size of company capital was used in the current research for selecting the sampling frame because the information available about it was more accurate than those about the number of employees.

for measuring the factor of companies size. Therefore considering the adopted criteria, the researcher considered (throughout the descriptive analysis) that the responding companies with less than 150 employees as medium size companies (41.7%) and those with over 150 employees as large size companies (58.3%).

Table 16: Employee numbers working in responding companies

Employees number	Frequency	Valid Percent	Cumulative Percent
1-50 employees	12	11.1	11.1
51-150 employees	33	30.6	41.7
151-250 employees	31	28.7	70.4
251-350 employees	18	16.7	87.0
351-500 employees	8	7.4	94.4
501-700 employees	4	3.7	98.1
701-1000 employees	2	1.9	100.0
Total	108	100.0	

6.2.2.3- Nature of products produced by responding companies

The nature of products manufactured by the responding companies' was the first proxy measure used for assessing the factor of product diversity. Table 17 shows that almost half (49.1%) of the participating companies announced manufacturing mainly standardised products and only 2.8% of the companies produce highly standardised products. Moreover, the other half of responding companies (48.1%) produce both types of products (25.9%), mainly customised products (18.5%), and highly customised. The findings indicated that it is expected to find high complex costing systems being used at least in a half of the responding companies.

Table 17: Nature of products produced by responding companies

Standardisation/customisation degree of products in responding companies	Frequency	Valid Percent	Cumulative Percent
Highly customised	4	3.7	3.7
Customised	20	18.5	22.2
Customised and Standardised	28	25.9	48.1
Standardised	53	49.1	97.2
Highly Standardised	3	2.8	100.0
Total	108	100.0	

6.3- The state of costing system in responding companies

6.3.1 - Usages of cost information in responding companies

This subsection provides information about whether the responding companies are using the cost information only for basic (financial accounting) purposes such as, stock valuation and profit measurement and/or for more advanced purposes such as pricing decisions, profitability analysis, and other decisions (make/buy and closing/continuation decisions). Usually, the purpose for which the cost information is produced in a company plays a fundamental role in setting the accuracy of this information (Drury and Tayles, 2000). Moreover, it is expected that large companies usually use the cost information for more functions than small and medium companies do. Hence, it is useful to cross-tabulate the usages of cost information in responding companies and their sizes (represented by number of employees).

On one hand, the results showed that all the responding companies, with different sizes, used the cost information for the stock valuation and profit measurement purposes; therefore, there is no reason to draw cross tabulation or even frequency table for this usage. Although all companies announced using the cost information for the financial accounting purposes, this does not indicate the accuracy or complexity of these companies' costing systems. This is because it is not required, for meeting such financial accounting needs, to measure accurately the consumption of every product from company resources (Drury and Tayles, 2000). On the other hand, the analysis revealed that not all the responding companies used the cost information for the advanced purposes. In detail, table 18 showed that 46 (42.6%)⁴⁰ of the responding companies were pricing their products based on the cost information moreover almost all of them (38) were large companies and 8 medium companies. The result lends support to the idea of that the bigger the company is, the more various the usage of cost information is, and this was confirmed by the Chi-Square test where the Sig. value was .000 <0.05 indicating the relationship between company size and using cost information for pricing decisions was statistically important. One justification to this finding is that the medium size companies are not usually the leader in market; therefore, they mainly price their products according to market prices that had been already set by the leaders (big companies) of job field (Drury, 2008).

⁴⁰ This was calculated by $46/108 \times 100 = 42.6\%$

Table 18: Cost information for pricing decisions by company size

Cost Information for Pricing decision	Employees Number							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	8	15	10	7	4	2	46
No	12	25	16	8	1	0	0	62
Total	12	33	31	18	8	4	2	108

In terms of using the cost information for the profitability analysis, table 19 reveals that almost half (49.1%) of the responding companies, declared using the cost information for such a purpose and 50.9% did not. Like table 18, table 19 shows that only limited number of the user companies (6 of 53) were of the medium size while the remaining 47 were large size companies using the cost information for analysing the profitability of their various objects. This points out as well the existence of association between the company size and this usage of cost information, and this was confirmed through Chi-Square test with a Sig value .000 <0.05 (statistically significant). Given that the usage of cost information for such purposes (pricing and profitability analysis) requires from the user companies to measure accurately the consumption of resources by different products, it is expected that these companies are employing costing systems more complex than those used in the non-users companies.

Table 19: Cost information for profitability analysis by company size

Cost Information for profitability analysis	Employees Number							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	6	17	17	7	4	2	53
No	12	27	14	1	1	0	0	55
Total	12	33	31	18	8	4	2	108

Finally, table 20 presents the number of companies used the cost information for other decisions according to their sizes; it can be noted that only less than quarter of the responding companies 23 (21.3%) stated using the cost information for other decisions, and almost all of them (20 out of 23) were large size companies. They specified the other decisions in terms of analysing the profitability according to geographical areas (cities and towns and markets), products categories. For example, in garment manufacturing companies, some of them informed analysing their profitability per men jeans and women jeans categories to see which one is more profitable additionally they analysed the profitability according to the cities (Damascus, Aleppo, Homes, and so on) in general and towns and streets in special. It is

evident from these usages that they meet mainly the needs of large companies that distribute and market their products to all local areas and outside the country and has a wide range of products. This in tune justifies the selection of this option ‘other decisions’ by almost only the large responding companies.

Table 20: Cost information for other decisions by company size

Cost Information for other decision	Employees Number							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	3	2	8	4	4	2	23
No	12	30	29	10	4	0	0	85
Total	12	33	31	18	8	4	2	108

6.3.2- Overheads assignment in responding companies

The extent to which the costing system assigns a fair share of the overheads (indirect costs) to cost objects is considered a fundamental indicator of the accuracy of this costing system. The result of investigation was relatively good where table 21 shows that over half (57.4%) of the responding companies announced assigning the overheads to their cost objects and under half (42.6%) of the companies informed not assigning. The sizes of latter companies were mainly medium (30) in addition to large (16) size companies. Finally, table 21 revealed contrary that the majority of large companies informed assigning their overheads to the cost objects.

Table 21: Overhead assignment to cost objects by company size

Overheads Assignment to Cost Objects	Employees Number							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	15	16	17	8	4	2	62 (57.4%)
No	12	18	15	1	0	0	0	46 (42.6%)
Total	12	33	31	18	8	4	2	108

6.3.3- Type and significance level of costing systems used in responding companies

Table 22 shows that over half (26) of the companies not assigning their overheads to their cost objects (46 companies) advised using the direct costing system (the most simplistic

costing system) while the remaining 20 companies used the variable costing system⁴¹. The direct costing was used mainly by the medium size companies (20 medium versus 6 large) while the variable costing was used by both sizes (8 medium and 10 large). The direct costing system is very simple as it traces only the direct costs (direct materials and labour) to cost objects, therefore this system does not report an accurate cost information when it is used in manufacturing environment featured with non-low overheads rate to the total costs. The variable cost system is relatively more accurate than the direct cost system because it traces, in addition to direct costs (100% variable), the variable fraction (avoidable)⁴² of the indirect costs to cost objects (Al-sakka, 1981). However, the cost information produced by the variable costing is still inaccurate as it does not charge the manufacturing fixed overheads⁴³ (usually the largest fraction of overheads) to cost objects (Dugdale et al., 2006). Especially nowadays, the fixed overheads become, due to increased technological innovations and wide usages of computerised machines, a big fragment of the manufacturing overhead costs, and in some industries, it exceeds the direct costs.

Table 22: Costing systems types by company size

Type of costing systems	Employees Number						701-1000	Total
	1-50	51-150	151-250	251-350	351-500	501-700		
Direct cost system	10	10	6	0	0	0	0	26
Variable cost system	2	8	9	1	0	0	0	20
AC	0	15	16	17	8	4	2	62
Total	12	18	15	1	8	4	2	108

The findings initially indicate the simplicity of the costing systems used in these 46 companies however; this does not mean a lack of accuracy in the produced cost information. This is because the efficiency and accuracy of costing system in a company cannot be assessed apart from considering the overheads' rate to the total costs (addressed in part 4, Q 4.15 in the questionnaire) in this company. For example, in some companies that manufacture mainly customised products, the share of overheads to total costs is relatively small due to the possibility of tracing most of costs to every individual job (order). In other words, the rate of overheads to total product (job) costs is relatively lower in customised than in standardised production system, and this means the accuracy of both variable costing and direct costing

⁴¹ Although the MA researchers do not distinguish usually between the direct and variable costing systems and have surveyed only the implementation extent of variable costing system, this research distinguished between both systems where this was according to the initial pilot study' findings.

⁴² Examples about the variable part of overheads are the hire cost of machine and its fuel for manufacturing a particular product.

⁴³ Examples about the fixt part of overheads are depreciation of machines and salaries of workers' supervisors.

systems used in mainly customised-based companies are not low. Regarding the costing system used in the other 62 companies informed assigning their overheads to cost objects, table 22 reveals an absence of any application of ABC systems. Alternatively, the whole 62 responding companies stated using the traditional AC systems for assigning the overheads to cost objects where they were mainly of the large size companies (57 out of 62). However, the ABC application is examined further in the next subsection. Concerning the significance level of the three costing systems used in the responding companies, table 23 shows that they all were reported mainly as very significant for the user companies while only limited percentages of the users stated them as just significant for their companies.

Table 23: The significance levels of costing systems used in the responding companies

Costing Systems	Significance Level					
	Significant '4'			Very Significant '5'		
	Frequency	Valid %	Cumulative %	Frequency	Valid %	Cumulative %
Direct costing	6	23.1	23.1	20	76.9	100.0
Variable costing	4	20.0	20.0	16	80.0	100.0
AC	7	11.3	11.3	55	88.7	100.0

Finally, for more understanding to the costing systems used in the responding companies, it is helpful to compare quickly (a comprehensive comparison is provided in chapter 8) these findings with a recent similar study. Al-Omiri and Drury (2007) study in UK stated that 13.1% (mainly the small companies) of the total responding companies (176) were using non-formal costing system, 22.7% (mainly small & medium companies) were using the direct costing system, 35.2% (small, medium, and large companies) used the AC systems, and finally 29.0% (mainly the medium and large companies) were using the ABC system. The corresponding figures in the current study are 42.6% for the direct costing and variable costing (including the different companies' sizes) and 57.4% (mainly large and some medium companies) for AC system. Therefore, the main differences between the two studies are that none of the respondents in the current research announced using non-formal costing system and the absence of ABC system implementation. However, there is still an important variation difference in the complexity level of the used absorption cost systems between the two studies which are discussed in the next subsection.

6.3.4- Complexity level of costing systems in responding companies

This subsection provides information about the first dependent variable of research i.e. the complexity level of costing systems used in the responding companies, which was assessed using two proxy measures. The first is the number of cost pools, and the second is the number of second stage cost drivers used for assigning the overheads to the cost objects in company. Manufacturing a wide range of standardised products, which consume often departmental overheads in different proportions, requires from companies, for purpose of reporting accurate cost information, to establish separate cost centres (pools) for accumulating the overhead costs. Moreover it needs using different types of cost drivers (allocation bases) that are considered significant determinants of the costs of each cost centre (cause-and-effect allocations), for examples, a number of receipts as a cost driver of the activity of receiving incoming materials. However, some companies use allocation bases that are not important determinants of the company overheads, such bases are usually called arbitrary bases, e.g., the direct labour and machines hours. In other words, the more the number of cost pools and drivers are used, the more the accuracy of cost information is reported (Drury, 2008).

This section displays the research findings regarding the complexity level of costing systems and compares them with latest relevant studies, namely, Al-Omiri and Drury (2007) study. Looking at table 24, it can be noted the following: first, almost 10% of the companies assigning their overheads to cost objects were medium size companies⁴⁴ and using the most simplistic traditional costing system i.e. blanket overhead rate (one cost pool and one allocation base) for overheads assignment; the corresponding percentage in Al-Omiri and Drury (2007) study was only 4.5%. Second, almost one quarter (9 medium and 6 large) of the user companies used a simple AC system with 2-3 cost pools and only one allocation base, and the corresponding percent in Al-Omiri and Drury (2007) study was only 2%. The remaining 41 users were all large size companies and used AC systems with 4-20 cost pools and 1-3 allocation bases. In detail, third, 29% of them used AC system with 4-5 cost pools and 1-2 allocation bases, and the corresponding percent was 5.4%. Fourth, more than one quarter (25.8%) were with 6-10 cost pools and 2-3 allocation bases, and the corresponding percent (in Al-Omiri and Drury 2007 study) was 17% but with 1-5 cost drivers. Finally, 11.3% used 11-20 cost pools and 2-3 allocation bases and the corresponding percent was 8.1% but with 1-3 allocation bases. It is noteworthy that Al-Omiri and Drury (2007) study

⁴⁴ Cross tabulation tables of company size by each of cost pools and cost drivers are available in appendix (F) table (23 & 24).

stated additionally that there were companies with 11-20 cost pools and more than 3 cost drivers (up to 7-10), which were using the ABC system.

Table 24: Cost pools by cost drivers

Cost pools number	Cost drivers number			Total
	1	2	3	
1	6	0	0	6 (9.7%)
2-3	15	0	0	15 (24.2%)
4-5	11	7	0	18 (29.0%)
6-10	0	15	1	16 (25.8%)
11-20	0	3	4	7 (11.3%)
Total	32 (51.62%)	25 (40.32%)	5 (8.06%)	62

Apart from the ABC system, it can be noted from the above table the limitation of complexity level of costing systems being used in Syrian PICs where the maximum number of used cost pools was 20 pools by only 11.3% of the companies and only up to 3 cost drivers were used by 8.06% of the responding companies. Alternatively, in the UK study⁴⁵ the reported highest complexity level was with up to over 50 cost pools and 5 drivers. The limitation of costing systems' complexity might be attributed to issues related to the size of Syrian PICs and lack of adequate experience required for employing such complex costing systems. For purpose of the descriptive analysis, particularly the cross-tabulation table, the researcher used the findings detailed above and classified the 62 user companies, which assign their overheads to the cost objects, according to their answers on the 15-point scale of the complexity level of their costing system, into three main categories:

- **Non-complex costing system category:** it included the responding companies that ticked 2 or 3 on the 15-point scale i.e. 33.9% of the companies that used either blanket overhead rate or one allocation rate with 2 to 3 cost pools.
- **Low complex costing system category:** it contains the companies that selected 4 or 5 on the 15-point scale i.e. 29.0% of the responding companies with costing systems featured with 4 to 5 cost pools and 1 to 2 allocation bases.
- **Complex costing system category:** this category included the companies that ticked 6, 7 or 8 on the 15-point scale i.e. 37.1% of the responding companies using from 6 to 20 cost pools and 2 to 3 allocation rates.

⁴⁵ For more details review Al-Omiri and Drury (2007) Table (6), p.414

Table 25, however, displays the frequency and valid percentage for each category of the costing system complexity' classifications, accordingly it can be noted that the 62 users were distributed nearly equally on the three classifications.

Table 25: Classification of user companies according to the complexity level of their costing system

Classifications of costing system complexity	Frequency	Valid percentage	Cumulative Percent
Non-complex	21	33.9	33.9
Low complex	18	29.0	62.9
Complex	23	37.1	100.0
Total	62	100.0	

6.3.5- Types and usage levels of allocation bases used in responding companies

The question collects details about the types of allocations bases (cost drivers) more popular among the responding companies, in other words, are the companies using arbitrary (traditional) bases, Or cause-and-effect bases (ABC-based driver), Or both types together? Moreover, the question assesses the extent to which these allocation bases are being used.

The analysis stated that none of the responding company used the ABC based-cost driver and only one company announced using the direct material cost as an allocation base. Surprisingly the majority of companies 46 (74.2%) announced using other driver for assigning their overheads to the cost objects; in particular they used experience-based allocation base. It is noteworthy that 22 (10 medium and 12 large companies) out of the 46 companies announced using the experience-based cost driver stated using it as a sole cost driver for assigning the overheads while the rest 24 companies used this driver along with other drivers. The next common allocation base was the direct labour hours with 29 (46.8%) companies using it, and finally 20 (32.3%) companies used direct machine hours as an allocation base for assigning the overheads to cost objects.

Regarding the usage degree of these allocation bases, table 26 showed that the experienced-based allocation base was the most used throughout the companies with 74.2% reported "always usage" and 4.0 mean of the usage levels. The next most used base was the direct labour hour with 46.8% of companies are always or often using it and 2.8 usages mean, followed by direct machine hour with 32.3% of companies and 2.2 usage averagely. Finally

the direct material cost was reported as always used by the sole company announced using it for assigning the overheads to cost objects.

Table 26: Usage extent of cost allocation bases by responding companies

Cost Allocation Bases	Extent of usage level (%)					Mean
	Never	Rarely	Sometimes	Often	Always	
Direct labour hour	53.2	0.0	0.0	8.1	38.7	2.8
Direct machine hour	67.7	0.0	0.0	6.5	25.8	2.2
Direct material cost	98.4	0.0	0.0	0.0	1.6	1.1
Other bases (experience-based base)	25.8	0.0	0.0	0.0	74.2	4.0

6.3.6- State of activity based costing in responding companies

Although the analysis showed earlier that none of the responding companies announced using the ABC system, this sub-section carries on providing further details about the state of ABC system in the responding companies. In detail, it observed whether any of the responding companies has recently considered the adoption or usage of ABC systems in addition to collecting information about the age of this consideration if existed. Finally, it collected information about whether any of the responding companies had an experience with the adoption or implementation of ABC system. Like the previous negative finding, this section states also that none of the responding companies has considered recently using or adopting the ABC system moreover none of them had used or adopted this system in the past. However, the results are not abnormal being that this study was applied in one of LDCs i.e. Syria where the companies do not have an adequate experience for employing such an advanced MA system.

6.3.7- Summary

The analysis showed that none of the responding companies was using the ABC system or considering its adoption, alternatively they all announced using the traditional costing systems, namely the direct and available costing (42.6%) and the AC system (57.4%). Moreover, the complexity level of latter was limited and featured with using volume/arbitrary cost driver (mainly experience-based, direct machine hours, direct labour hours). It is noteworthy that these findings are somewhat not consistent with the features of responding companies discussed so far. Such features were conducive and promising to find complex

costing systems and advanced costing system (e.g., ABC) being implemented at least by the largest responding companies. In particular, the company size, the exports' percentage to total sales, and the usage level of cost information for pricing decisions and profitability analysis, at least regarding some of the responding companies were all indicators for the usage of ABC system. For example, there were 6 large size companies with over 500 employees, and 4 of them were exporting 41-50% of their total sales; and finally the whole 6 companies announced using the cost information for pricing their products (see table 19 above). Furthermore, even the information collected about the accounting function in general and MA function in special was relatively good especially in the largest responding companies in terms of either the size (up to 9 accounting staff with accounting specialisation) or the quality (postgraduate professional and academic degrees) of accounting function.

The results imply that the accounting staffs working in Syrian PICs might be neither innovative nor dynamic; alternatively, they could be described as conservative or static keeping on using the traditional costing systems without any effort or intention to consider the adoption of modern cost accounting systems. However, there might be other variables, other than these discussed factors, that could have link or influence on the implementation of complex costing systems by the responding companies. The part four in the questionnaire examined a wide range of the contingent factors, e.g., TMS and accounting environment, which are analysed and discussed later in this chapter. Finally, it is useful to remind again that the implementation of ABC system is not the focus of this research, and such an objective can be recommended for future studies.

6.4- The state of the management accounting practices in responding companies

6.4.1- Significance and implementation extent of budgeting practices

Table 27 reveals that only less than quarter (22.2%) of the responding companies announced using the budgeting techniques for planning and controlling their activities, and all of the users were large size companies. The low rate of budgeting usage might be attributed to being the research was conducted in privately owned companies not in the state owned companies in Syria. In the latter, in addition to the fact of being these companies more capable (being larger and more structured than the private companies) to implement and benefit from the

budgeting system than the private companies; it is legally⁴⁶ imposed on them to apply the budgeting systems and prepare annual budgets for their different activities. However, concerning the private companies where there is no such legal enforcement, it all depends on the company' management either to use budgeting techniques or not. Usually, budgeting system is more common among the large private companies, with multi products and divisions, than small and medium companies. The former need it to plan and control their various activities, divisions and departments.

Table 27: Budgeting usage by company size

Budgeting Usage	Company Size							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	0	2	12	4	4	2	24 (22.2%)
No	12	33	29	6	4	0	0	84 (77.8%)
Total	12	33	31	18	8	4	2	108

In terms of the importance and extent of budgeting use, table 28 reveals that not all the surveyed techniques have been used by the whole 24 user companies except for the sales and production budgets that were used by all the users very significantly (Sig). The other surveyed budgets were used to a less extent as follows: nearly three quarters (70.8%) of the users announced using the direct material budget (16 companies very Sig and 1 company Sig); 66.7% used the cash budget (13 companies very Sig and 3 company Sig); 25.0% prepared the direct labour budget (1 companies very Sig, 4 company Sig, and 1 companies averagely Sig), only one user used the overheads budget Sig, and finally none of the users informed using the master budget. It is noteworthy that the usage of direct material, cash, direct labour, and overheads budgets was mainly by the largest companies employing over 250 employees.

⁴⁶ One of the public sector's rules in Syria is that the public-owned companies have to prepare their budgets annually and submit them to the ministry of finance.

Table 28: Usage and extent of significance of budgeting system

Budgets	Usage %		Yes (valid %)			Total
	Yes	No	Very significant 5	Significant 4	Slightly significant 3	
Sales budget	100	0.0	100.0	0.0	0.0	100.0
Production budget	100	0.0	100.0	0.0	0.0	100.0
Direct material budget	70.8	29.2	94.1	5.9	0.0	100.0
Direct labour budget	25.0	75.0	16.7	66.6	16.7	100.0
Overheads budget	4.2	95.8	0.0	100.0	0.0	100.0
Cash budget	66.7	33.3	81.2	18.8	0.0	100.0
Master budget	0.0	100	-	-	-	-

It is obvious from the results that the application of budgeting techniques in Syrian PICs was mainly limited to the basic techniques such as sales, production, direct material, and cash budgets; however, this is not abnormal given what was mentioned above about the absence of legal action imposing the implementation of budgeting techniques on the private companies. Moreover, the relative smallness and lack of structure of the private companies, comparing to the public companies, were other reasons behind the limitation of the implementation of budgeting techniques. Finally, it can be noted that almost the whole budgeting system' users reported that the used budgets were from 'very significant' to 'significant' for them; expect for one user that announced that the direct labour budget was only 'averagely significant' for it.

6.4.2- Budgeting methods used in the responding companies

The analysis revealed that the majority (87.5%) of responding companies announced using the budgeting techniques used the incremental budgeting for preparing their budgets and only 12.5% of the companies reported using the flexible budgeting manner. The findings are logic given that the incremental approach of budgeting is the main method being taught to accounting students in Syrian universities. The latter in turn are considered the main source of accounting stuff working for the public and private business entities in Syria.

6.4.3- Significance and implementation extent of standard costing practices used in responding companies

It is clear from table 29 that only less than half (42.6%) of the responding companies stated using the standard costing techniques for controlling their costs and activities while over half (57.4%) were not using this type of MA technique. Almost all the users were of the large size companies and only 3 users were of the medium size, and this again implies the existence of association between the company size and the implementation of MAPs, namely the standard costing. Unlike the Syrian state-owned sector where the existence of governmental coercive pressure on the manufacturing companies to use the standard costing system, there is no such a pressure on the Syrian private sector. It is noteworthy that although the existence of this legal pressure, Ibrahim (2007, p.303) concluded that the implementation extent of standard costing in the public companies was not high only 44.4% were using the standard costing, comparing to 42.59% in the present study. However, Ibrahim' study concluded as well that the majority (87%) of the user companies informed only partial level⁴⁷ of the standard costing implementation.

Table 29: Standard costing by company size

Standard costing	Company Size							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	3	15	14	8	4	2	46 (42.6%)
No	12	30	16	4	0	0	0	62 (57.4%)
Total	12	33	31	18	8	4	2	108

In terms of the implementation and importance extent of each of the cost standards, it can be seen from table 30 that the whole user companies established the direct material quantity standard and stated it as was very Sig for them, but only 21.7% of the users (ten large companies) established standards for the direct material price (4 very Sig, 4 Sig, and 2 averagely Sig). Nearly the whole standard costing users (91.3%) announced establishing standards for the direct labour hours (7 Sig + 35 very Sig) while almost one-third (32.6%) (all large companies) established standards for the direct labour wages (7 very Sig, 5 Sig, and 3 averagely Sig). Finally, only 2 companies (1 very Sig and 1 Sig) established the variable overheads standards while none of the standard costing users have informed establishing standards for the fixed overheads.

⁴⁷ The partial use was in terms of the types of cost standards used and reporting the variances.

Table 30: Usage and extent of significance of standard costing

Cost standards	Usage %		Yes (valid %)			Total
	Yes	No	Very Significant 5	Significant 4	Averagely significant 3	
Direct material quantity	100	0.0	100.0	0.0	0.0	100.0
Direct material price	21.7	78.3	40.0	40.0	20.0	100.0
Direct labour hours	91.3	8.7	83.3	16.7	0.0	100.0
Direct labour wages	32.6	67.4	46.7	33.3	20.0	100.0
Variable overheads	4.3	95.7	50.0	50.0	0.0	100.0
Fixed overheads	0.0	100	-	-	0.0	100.0

It is noteworthy that none of the cost standards used by the responding companies were announced as ‘under averagely significant’ or ‘not significant’ for them however two companies reported the material price standard and 3 companies stated the labour wages standard as ‘averagely significant’ for them. Comparing the current findings with the results of Ibrahim (2007) study, it can be concluded that the implementation extent of standard costing in Ibrahim’ study was slightly higher than that in the present study except for the establishment of variable overheads standards which was not used by any of the observed companies in Ibrahim’ study.

6.4.4- Establishment methods and types of cost standards used in responding companies

Table 31 showed that the majority (69.6%) of standard costing users announced using the average of historical records for establishing their cost standards, and nearly one third of them (30.4%) employed the manner of engineering studies. This finding is not consistent with that reported by Ibrahim (2007) study that showed that the engineering studies method was the most common (56.2%) among the Syrian state-owned companies. Regarding the types of used cost standards, the analysis showed that both the currently attainable and basic standards were only in use with 58.7% versus 41.3% of the user companies respectively. Moreover, none of the responding companies announced using the ideal cost standards.

Table 31: Establishment methods and type of cost standards used in PICs

Establishment methods	Frequency	Valid %	Cumulative %	Standards types	Frequency	Valid %	Cumulative %
Historical records	32	69.6	69.6	Basic cost	19	41.3	41.3
Engineering studies	14	30.4	100.0	Currently attainable	27	58.7	100.0
Total	46	100.		Total	46	100.	

On one hand, the engineering studies approach is based on focus study and controlled observation to the company activities individually for specifying the labour, materials and equipments needs for every activity in this company (Drury, 2008). All the companies informed using this approach were all of the largest companies (with over 250 employees) that probably have many activities and divisions manufacturing multiple products. On the other hand, the historical records method is simply based on reviewing past figures of the same or similar activities and using their averages. Although it is easier in use than the engineering studies, its usage might cause to reuse past inefficiencies. Accordingly, the historical records approach was used in the present study mainly by the medium size companies in addition to some of the large size companies for establishing their cost standards. Regarding the types of cost standards used in this study, the currently attainable cost standards represent the costs of company' activities in efficient conditions; in other words, they are the standards that are neither easy to reach nor impossible to reach. It was found that mainly the largest companies having over 250 employees used this type of cost standards. The other used cost standard was the basic standards that represent constant standards stayed unchanged for long periods. Due to its simplicity, this standard was used mainly by the responding companies having fewer than 250 employees. Finally, regarding the ideal cost standard that is defined as the cost of activities in the most efficient conditions, none of the standard costing user companies declared using it. However, this type of cost standards per se is practically inapplicable; alternatively, it was theoretically defined as aimed goals rather than performance standards to be achieved (Drury, 2008).

6.4.5- Significance and implementation of performance measurement practices in responding companies

It can be seen from table 32 that the majority of responding companies 86.1% informed using techniques for measuring their performance while the minority 13.9% were not using any practices. Notably, the latter were all of the medium size companies, and this is logic given that such companies are mostly managed directly by their owners who themselves conduct different types of direct control over all their company activities including for examples, manufacturing, sales and customers, which are themselves small activities.

Table 32: Performance measurement by company size

Performance measurement practices	Company Size							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	6	24	31	18	8	4	2	93 (86.1%)
No	6	9	0	0	0	0	0	15 (13.9%)
Total	12	33	31	18	8	4	2	108

Table 33 reveals that the whole responding companies stated using the sales and net profit figures as techniques for measuring their performance as follows: 98.9% very Sig and 1.1% Sig for the sales and 95.7 very Sig and 4.3 Sig for the net profit. The practice of product quality was the next common in use by 30.1% (42.9% very Sig, 50.0% Sig, and 7.1% averagely Sig), followed by the variances analysis⁴⁸ by 28.0% of the responding companies (57.7% very Sig and 42.3% Sig), return on investment by 15.1% (35.7% very Sig, 42.9% Sig, and 21.4% averagely Sig), and finally customer satisfaction by 11.8% (27.3% very Sig, 45.5% Sig, and 27.3% averagely Sig). It is noteworthy that although 22.2% of the responding companies advised using the budgeting system (section 6.4.1), none of them announced using ‘meeting budgets’ as a practice for measuring the company divisions performance, and finally no company announced using the practice of residual income.

Table 33: Usage and extent of significance of performance measurement practices

Performance measurement practices	Usage %		Yes (valid %)			Total
	Yes	No	Very significant 5	Significant 4	Averagely significant 3	
Sales	100	0.0	98.8	1.1	0.0	100.0
Net profit	100	0.0	95.7	4.3	0.0	100.0
Return on investment	15.1	84.9	35.7	42.9	21.4	100.0
Residual income	0.0	100	-	-	-	100.0
Product quality	30.1	69.9	42.9	50.0	7.1	100.0
Customer satisfaction	11.8	88.2	27.3	45.5	27.3	100.0
Variances analysis	28.0	72.0	57.7	42.3	-	-
Meeting budgets	0.0	100	-	-	-	-

Table 33 shows that only 6 out of the 8 surveyed practices were used by the responding companies moreover, none of them informed using any other practices for measuring their performance. Only two out of the used six practices were used by the whole user companies

⁴⁸ This variance analysis is related to the difference between the standard costs and the actual costs.

while the remaining four, namely, variances analysis, return on investment, product quality, and customer satisfaction, were used limitedly. In detail, they were used almost by the large size companies except for the last three practices, which were implemented by three medium size companies. This reflects in turn the existence of association between the company size and the implementation extent of MAPs i.e. performance measurement practices. All these six used practices were indicated by the users as ‘significant’ and ‘above average significant’ however there are only few user companies that indicated three of these practices as ‘averagely significant’, in other words none of these six practices was indicated as ‘under average significant’ or ‘not significant’ practice.

Finally, regarding the two non-used practices, the result was surprising regarding the practice of meeting budgets given that 22.2% of the responding companies declared using the budgeting system. This might be attributed to that the responding companies employed the budgeting system only for planning their activities without using it for purpose of controlling and measuring the performance of their divisions and activities. Finally, in respect of the residual income practice, the finding could be attributed to being that it is one of the modern MA practices (developed to overcome some weaknesses of the ROI practice). Furthermore, most of the MA studies reported the limitation of residual income implementation on the expense of the continual popularity of ROI practice (Drury, 2008).

6.4.6- Implementation and significance of modern management accounting practices

In the questionnaire, the researcher surveyed the implementation and significance extent of eight modern MA practices, namely, total quality management (TQM), profitability analysis, JIT, activity based management (ABM), activity based budgeting (ABB), profitability analysis, TC, life-cycle costing, and meeting the budgets. However, the results showed that only the first three practices were used by the responding companies. In detail, table 34 shows that only 13.9% of the responding companies announced using the TQM practices while table 35 reveals that the usage extent of the profitability analysis practices was higher with 42.6% of the responding companies declared using it. The third used practice i.e. the JIT was employed only by one of the largest companies, with 501-700 employees, that reported it as very significant practice. The findings, especially regarding the TQM and JIT, are not surprising given what was stated in the semi-structured interviews⁴⁹ conducted in the initial

⁴⁹ For details about the semi-structured interviews, refer to Appendix D.

pilot study (earlier with some of the accounting academics in Syrian universities) about the state of modern MA systems' teaching in Syrian Universities. They reported that such modern MA systems are included in the accounting syllabus but they are often taught to the accounting students shallowly (no more than some introductions & definitions). Moreover, this finding is consistent with Al-Taweel (2001) conducted in Syrian that revealed that the main focus in the accounting curriculum taught in Syrian Universities is on the financial accounting on the expense of MA and computerised accounting.

Concerning the sizes of companies used the TQM practices; they were all of the large size companies that informed exporting a part of their production. The user companies might use the TQM system for purpose of improving their competitive capacity, e.g., enhancing the quality of their products against the rival international companies, especially after the recent liberalisation of the local market by Syrian government, and reducing the cost of their products.

Table 34: Total quality management by company size

TQM usage	Company Size							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	0	2	4	4	3	2	15 (13.9%)
No	12	33	29	14	4	1	0	93 (86.1%)
Total	12	33	31	18	8	4	2	108

The practice of profitability analysis was also used mainly by the large size responding companies (38 out of 46). However, this finding is logic given that large company usually has multiple objects (customers, geographical areas, products range, and so on) that need to be analysed in respect of their profitability to the company.

Table 35: Profitability analysis by company size

Profitability analysis	Company Size							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Yes	0	8	15	10	7	4	2	46 (42.6%)
No	12	25	16	8	1	0	0	62 (57.4%)
Total	12	33	31	18	8	4	2	108

Finally, the results indicate the limitation of responding companies' knowledge and experience in the modern MAPs. However, it is expected to find in future an increase in

Syrian companies' attention in the employment of modern MA practices, especially the TQM practices. This is due to few factors, such as the establishment of new organisations⁵⁰ in Syria specialising in providing consultancies, trainings, and services to all types of companies i.e. manufacturing and service, in the field of TQM systems moreover the emergence of international accounting organisations that are considered a bridge for delivering the modern MA practices to Syria.

6.4.7- Classification of user companies according to the implementation extent of MAPs

Like the classification of costing systems conducted above, the researcher used the findings of the implementation extent of 21 MA practices in the responding companies and extracted 4 criteria by which the MAPs user companies were classified according to the implementation extent of their MAPs. In detail, as indicated in the methodology chapter (section 5.3.2.2), the implementation extent of MAPs was measured by a means of summing up all the answers 'yes' against the implementation of 21 traditional MA practices e.g., budgets, standard costing and performance measurement practices listed throughout the questionnaire. This means that the implementation extent of MAPs was measured using a scaled instrument. According to the collected data, the implementation extent of MAPs extended from scale 2 (companies using only two MAPs e.g., sales and production budgets) to scale 16 (companies using 16 MA practices). Based on this finding, the researcher grouped the user companies into four classifications⁵¹ as follows:

- 1- **User companies with low level of MAPs implementation:** includes the responding companies using from 2 to 4 MAPs.
- 2- **User companies with medium level of MAPs implementation:** includes the responding companies using from 5 to 8 MAPs.
- 3- **User companies with high level of MAPs implementation:** includes the responding companies using from 9 to 12 MAPs.
- 4- **User companies with very high level of MAPs implementation:** includes the responding companies using from 13 to 16 MAPs.

⁵⁰ For example, Arab Quality Makers (AQM) organisation was established in Syria in 1996 for providing all services regarding applying TQM systems (http://www.aqmsyria.com/index_e.html).

⁵¹ The purpose of classifying the MAPs user companies into four groups was conducting discussion and comparison about the implementation extent of MAPs, and it does not indicate the implementation extent of MAPs in any absolute sense.

Table 36 shows the frequency and percentage of each of the four MAPs' classifications. It can be noted that over half (61.3%) of the MAPs user companies (93 out of 108) declared using the low level (2-4 practices) of MAPs, 18.3% implemented the medium level (5-8 practices), 15.1% implemented the high level (9-12 practices), and only 5.4% used the very high level (13-16 practices).

Table 36: The classification of MAPs user companies according to the implementation level

MAPs classifications	Frequency	Valid percentage	Cumulative Percent
Low implementation	57	61.3	61.3
Medium implementation	17	18.3	79.6
High implementation	14	15.1	94.6
Very high implementation	5	5.4	100.0
Total	93	100.0	

Finally, the resulted classification will be used not only in the descriptive analysis, but also for purpose of the statistical analysis of the relationships between the research dependent factors and each of the research contingent factors as stated in the next part.

6.5- The research contingent factors

6.5.1-Introduction

This section presents the results of analysing the data collected about the research internal (5) and (2) external contingent factors however there are other 4 internal factors, namely, the company size, the company age, the usages of costing information, and the exports percentage, that were analysed earlier in both section 1 & 2. The analysis conducted in this section is based mainly on the cross-tabulation analysis by each of the research dependent factors for two purposes. The first is for providing descriptive information about the research contingent factors in the responding companies, and the second is for obtaining an initial idea about the relationship between each of the research independent factors and each of the dependent factors. Moreover, for supporting the second purpose, the test of Chi-Square is employed also by which the discovered relationship can be either supported or otherwise. The contingent factors are analysed using the means of the respondents' answers on each factor question/proxy questions while the dependent factors are studied using their classifications (as discussed above). However, for addressing the degree and direction of the relationship between the dependent and independent factors, statistical analyses (bivariate correlation and

multiple regression analyses) are conducted in the next chapters. Finally, it is worth to recall that not all the independent factors are hypothesised to have an association with both the dependent factors, therefore for some of the research contingent factors (cost structure, product diversity, complexity of manufacturing, and purpose from cost information) are analysed only through one cross tabulation table. It is noteworthy that the order of the following subsections will be the same of the questions' order in the questionnaire.

6.5.2- External contingent factors: descriptive analysis

6.5.2.1- External environment of the responding companies

This study observed the EE construct as a multi contingent factor containing seven variables examining the different elements of the environment surrounding the responding companies. For the purpose of descriptive analysis, table 37 and 38 display the means of the respondents' answers on the intensity level of all the seven variables in addition to one variable that assessed the intensity of overall competition faced by the responding companies. Moreover, table 37 and 38 shows the association of EE' items with the classifications of costing and MA practices respectively.

Table 37: External environment by costing system' classifications

Mean of the intensity level of the EE' elements	Classifications of Costing System			Mean in total
	Non-Complex	Low complex	Complex	
Overall Competition	3.8	4.2	4.48	4.0
Inputs Competition	2.1	2.6	3.13	2.4
Price Competition	4.0	4.2	4.6	4.1
Manpower Competition	1.4	1.9	2.1	2.0
stability/dynamics of technological environment	2.4	3.1	3.5	2.8
Stability/dynamics of economic environment	2.8	3.4	3.8	3.2
Changing in legal constraints	2.1	2.6	3.2	2.4
Predictability of competitors' activities	2.7	3.2	3.9	3.0
Total	2.7	3.1	3.6	3.0

Through looking at the last column on the right hand of table 37 'mean in total' it can be understood the following. First, on average, the competition level on both the companies' products in general and their price was the highest (4.0 and 4.1 respectively). Second, the responding companies were working in business environment featured with being neither

stable nor dynamic in respect of the economic aspect (3.2) and almost the technological aspect (2.8) moreover the responding companies indicated having a medium ability on predicting different activities of their competitors (3.0). Third, there was a low level of the competition on both the inputs with 2.4 mean and the manpower with only 2.0, and finally there was no proliferation in the legal constraints surrounding the responding companies with 2.4 mean.

The second result that can be inferred from table 37 is whether there is association between the uncertainty level of the EE and the complexity level of costing systems used in the responding companies. It can be noted from table 37 that the mean of the uncertainty levels has increased gradually starting from the non-complex to complex costing systems, and this behaviour has happened throughout the whole eight variables of the EE and throughout the total figure. This implies that the EE surrounding the responding companies with complex costing systems was featured with higher uncertainty level than that of the companies with low complex costing systems. For instance, the mean of price competition was jumped from 4.0 (with non-complex), to 4.2 (with low complex), and finally toward 4.6 (with complex costing systems). Finally, this positive association with the EE was confirmed as well through the Chi-Square test where Sig. value was $.000 < 0.05$.

Table 38 provides information about the relationship between EE' variables and the classification of MAPs according to their implementation level.

Table 38: External environment by MAPs' classifications

Mean of the intensity level of the EE' elements	Classifications of MAPs				Mean in total
	Low	Medium	High	Very high	
Overall Competition	3.8	4.29	4.43	4.40	4.0
Inputs Competition	2.1	2.82	3.14	3.4	2.4
Price Competition	4.0	4.2	4.5	4.4	4.1
Manpower Competition	1.5	1.9	2.2	2.4	2.0
stability/dynamics of technological environment	2.7	3.0	3.6	3.8	2.8
Stability/dynamics of economic environment	3.0	3.3	3.9	4.0	3.2
Changing in legal constraints	2.2	2.5	3.4	3.2	2.4
Predictability of competitors' activities	2.8	3.4	3.6	4.2	3.0
Total	2.8	3.2	3.6	3.7	3.0

Like table 37, table 38 showed the existence of positive association between the implementation level of MAPs and the EE construct throughout its eight variables and its

total value. Furthermore, the Chi-Square test confirmed this association as well with Sig. value (.000) smaller than 0.05. however, there was one exception regarding the item of 'changing in legal constraints' where the answers' mean of the respondents announced using 'very high level' of the MAPs implementation was at lower level (3.2) than that of the respondents with 'high level' of the MAPs implementation (3.4). This in turn might affect the strength of the relationship, which is tested statistically in the next chapter, between the EE and the implementation level of MAPs.

6.5.2.2- Accounting environment of the responding companies

The research observed the influence of the AE surrounding the responding companies on the implementation of cost and MAPs using two newly developed dimensions i.e. the available accounting education quality and the imported accounting experience.

6.5.2.2.1- Quality of accounting education

The dimension was observed using five questions, however only three of them were for purpose of the statistical analysis. The analysis showed that almost (103, 95.4%) the whole respondents asserted that the accounting graduates cannot work directly after their graduation, alternatively they stated that the accounting graduates require some trainings/courses before starting their practical life. Regarding the type of the needed courses, table 39 revealed that almost all of those respondents (100 out of 103) agreed that the accounting graduates require attending computer courses in order to be able to deal with the accounting software the most common in Syrian business. It is noteworthy that this finding is consistent with the Al-Taweel (2001) study result that found the majority of respondents (financial managers) declared that Syrian Universities do not teach accounting students even the fundamental principles of accounting software. Alternatively, all the accounting graduates wish to work for private business entities require to be ready for dealing with the accounting software and this is usually through attending courses provided by private accounting institutes. The other mentioned course, which was indicated by only 16.5% (17 out of 103), was the need of graduates to supplement their accounting knowledge with further courses while none of the respondents indicated other required courses.

Table 39: The training requirements of accounting graduates

Need for computer courses	Frequency	Valid %	Cumulative %	Need for accounting courses	Frequency	Valid %	Cumulative %
Yes	100	97.1	97.1	Yes	17	16.5	16.5
No	3	2.9	100.0	No	86	83.5	100.0
Total	103	100.0		Total	103	100.0	

For purpose of statistical analysis, the dimension of accounting education quality was examined also using three questions that were asked to the respondents being in the right position to evaluate the accounting graduates' performance. They were asked to indicate their satisfaction level from the accounting graduates' skills and capacities. Table 40 displays the mean of respondents' answers on each of the three accounting education' skills, and this was according to the classification of costing systems' complexity used in the responding companies.

Table 40: Accounting education by costing system classifications

Mean of the extent capacity of accounting graduates	Classifications of Costing System			Mean in total
	Non-Complex	Low complex	Complex	
To think innovatively	2.5	3.1	3.6	2.9
In cost & MAPs	2.8	3.1	3.7	3.0
In accounting software	3.1	3.4	3.7	3.2
Total	2.8	3.2	3.7	3.0

From the above table, it can be concluded the following: 1): the accounting graduates in Syria do not work and think innovatively but not to the extent of bookkeepers with an average mean of 2.9; 2): the respondents' satisfaction from the graduates' knowledge capacity for the cost and MAPs was also at medium level with mean of 3.0; and 3); the same level was the satisfaction from the graduates' capacities for the accounting software with a bit higher mean of 3.2. Another inference was acquired from table 40 is the existence of positive association between the accounting education dimension (throughout its three proxy measures) and the complexity level of costing systems where the answers' means have increased along with the increase in complexity level of the used costing systems.

Table 41 presents the collected details about the accounting education' aspect but with the second research dependent factors i.e. the implementation level of MAPs.

Table 41: Accounting education by MAPs classifications

Mean of the extent capacity of accounting graduates	Classifications of MAPs				Mean in total
	Low	Medium	High	Very High	
To think innovatively	2.6	2.9	3.6	4.2	2.9
In cost & MAPs	2.8	3.4	3.7	3.8	3.0
In accounting software	3.0	3.6	3.9	3.4	3.2
Total	2.8	3.3	3.7	3.8	3.0

Table 41 also revealed the existence of positive association with the implementation level of MAPs, and this was regarding the level of accounting education quality in total and the first two measures i.e. thinking innovatively and the graduates' capacity in cost and MAPs. However regarding the third measure i.e. the capacity for using accounting software, the result doesn't reflex this positive association because there was a decrease in the answers' mean from 3.9 for the companies with the high MAPs implementation to 3.4 with the very high implementation.

6.5.2.2.2-Imported accounting experience

The second dimension developed for assessing the AE construct was the imported accounting experience aspect. It was supposed that such an experience can be acquired through two sources: the first is through the domestic accounting graduates who qualified foreign academic and/or professional accounting degrees (e.g., ACPA, CPA and ACCA) especially after the graduation from Syrian universities. The second is the non-Syrian (foreign) accountants who were brought (e.g., via contracts) to work in Syria usually for limited periods; however the term 'foreign accountants' is used to indicate both sources of the exported accounting experience. Three questions were used for assessing this dimension, namely the level of foreign accountants' employment, the extent of their contribution in improving the cost and MA systems, and the reasons behind not tending the responding companies to employing foreign-qualified accountants. It is noteworthy that the first two questions were employed for purpose of the quantitative analysis while only the last was used for the qualitative analysis.

Table 42 reveals that only five (4.6%) of the responding companies announced employing one foreign-qualified accountant (3 companies with CPA and 2 with ACPA⁵² accountants). Moreover, the feedback of these companies about employing such accountants was positive

⁵² These tow initials are: CPA: American Certified Public Accountant and ACPA: Arabic Certified Public Accountant.

where 3 companies strongly agreed and 2 companies just agreed on the important function of foreign accountant in improving the cost and MA practices in their companies.

Table 42: Foreign accountants' employed

Number of foreign accountants employed	Frequency	Valid%	Cumulative%
0 accountant	103	95.4	95.4
1 accountant	5	4.6	100.0
Total	108	100.0	

In terms of the companies not employing foreign accountants, they were asked whether or not they were looking to appoint foreign accountants and if not, what the reasons behind this abstention. The result, however, showed that only 8 (7.8%) of the 103 companies not having the foreign accountants announced their desire to acquire such accountants. Regarding the reasons behind restraining the majority of companies (95 out of 103) from appointing the foreign accountants, table 43 showed that the most frequent reason was that 'there was no need to the foreign accountants' services' by 56 of the 95 companies. They were mainly of the medium size companies in addition to the large companies having up to 350 employees, however this is reasoning given that such companies are often not structured and big enough to utilise the knowledge and experience of the foreign accountant. The next more selected cause (by 37 of the 95 companies) was 'the relatively high salaries usually asked by the foreign accountants', especially by non-Syrian foreign accountants, comparing to their counterparts graduated from Syrian Universities. It is noteworthy that this reason was not chosen by the largest companies, which usually have a financial ability to pay such salaries.

Table 43: The reasons for not employing foreign accountants

Reasons of not looking to FA	No need to foreign accountants			They don't largely improve the cost and MAPs			They ask too high salaries			It is difficult to find them		
	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Frequency	56	39	95	15	80	95	37	58	95	18	77	95
Valid%	58.9	41.1	100.0	15.8	84.2	100.0	38.9	61.1	100.0	18.9	81.1	100.0

The final two reasons were 'the difficulty in locating the foreign accountants' and 'that employing foreign accountant will not improve largely the cost and MA systems' that were selected by 18 and 15 of the 95 companies respectively. The former reason is mainly related to the Syrian accountants with foreign accounting qualifications who usually prefer working

outside the country, mainly in the countries of Arab gulf, attracting by the high salaries offered in such countries comparing to the low or moderate levels of the offered salaries in Syrian labour market. Finally, the latter cause implies that these 15 companies perceive the employment of foreign accountant in their company isn't beneficial matter as it will not make major improvement in their MA systems, in other words, they feel that the benefits from such a project will not go behind its costs (salaries and corresponding expenses).

6.5.2.3- Summary

It can be said that the Syrian PICs are working in an EE that is featured with a medium level of intensity in terms of most (6) of its components except for the price competition which was indicated as having an mean of high level of intensity among the responding companies. It is noteworthy that the finding holds some contrast where although the means of the intensity level on the majority of EE' items was medium, the mean of overall competition level as indicated by the responding companies was at high level. However, this might be attributed to being this question (overall competition) understood by the respondents as a question about the price competition. Concerning the AE if Syrian PICs, the analysis showed that the accounting graduates in Syria have only a moderate capacity to think innovatively (solve problems /suggest new ideas), in cost and MA practices, and finally in respect of dealing with the accounting software. Moreover, the vast majority (97.1%) and the minority (16.5%) of respondents informed that the accounting graduates need to attend computer courses and complementary accounting courses respectively before starting work for business companies. The result indicates the limitation of accounting function' quality in the Syrian business environment, especially that only 4.6% of the respondents informed the employment of one foreign-qualified accounting staff. Additionally, most of the respondents not employing such an accounting staff announced that they are not looking for employing accounting staff with the foreign qualification. According to the information concluded about the EE (business & accounting), it can said that such an environment cannot be considered an adequate incentive for Syrian PICs to invest in high complex costing systems and wide range of MA practices.

6.5.3- The internal contingent factors: descriptive analysis

6.5.3.1- Cost structure in the responding companies

The factor of cost structure has been examined as one of the contingency factors having an influence on the complexity level of costing system. It is measured mainly through the percentage of overhead costs to the total company costs. Table 44 reveals that there are no major differences in the cost structure among the responding companies throughout the three different levels of costing systems' complexity. In detail, the overheads (indirect costs) percentage' mean in the responding companies employing the complex costing systems was little bigger than that of companies with low complex costing systems with only 2.5%.

Table 44: Cost elements mean by costing system classifications

Mean of cost elements	Classifications of Costing System %			Mean in total %
	Non-Complex	Low complex	Complex	
Mean of direct cost	67.4	68.1	65.5	67.7
Mean of indirect cost	32.7	32.0	34.48	32.3

Contrary, the overheads percentage' mean of the companies having non-complex costing systems was higher than that of companies with low complex costing systems with 0.7% (32.7-32.0%) difference. The findings initially indicate the absence of association between the factor of cost structure and the complexity level of costing systems. This is confirmed also by the result of Chi-Square test where Sig. value was .258 >0.05 indicating that the relationship is not statistically significant.

6.5.3.2- Complexity of manufacturing processes in responding companies

The factor of complexity level of manufacturing processes is examined also in terms of its influence only on the complexity level of costing system. Table 45 presents the mean of respondents' answers on each of the two proxy measures used for assessing this factor categorised according to the costing systems complexity' levels. The table 45 shows that the mean value of this factor is 3.2 i.e. the complexity level of manufacturing process among the responding companies is just at the medium level. However, the frequencies tables (appendix F, table 17 & 18) of the two proxy measures showed that 26.9% and 32.4% of the respondents announced having very great and great level of the production lines diversity and products diversity respectively in their companies.

Table 45: Manufacturing processes complexity by costing system' classifications

Mean of the Complexity degree of	Classifications of Costing System			Mean in total
	Non-Complex	Low complex	Complex	
Production lines	2.8	3.4	4.1	3.1
Products	3.0	3.4	4.0	3.2
Total	2.9	3.4	4.0	3.2

Looking at the means values of both the complexity of production lines and products in the responding companies in addition to their means values in total, it can be inferred the existence of gradual increase in these values throughout the three levels of costing systems' complexity. Considering the last row i.e. means values in total, it can be noted that the mean increased from 2.9 (almost medium complexity) in the companies with non-complex costing systems to 3.4 (over medium complexity) in the companies with low complex systems, and finally the mean skipped to 4.0 (great complexity) in the companies with complex costing systems. It can be concluded that there was a degree of positive association between the complexity of costing systems and that of the production lines in the responding companies and this was confirmed as well through the result of Chi-Square test where Sig. value was $.002 < 0.05$ indicating that the relationship is statistically significant. However, the current finding is considered as just an initial idea about sort of the relationship between the two factors where a more advanced analysis is conducted in the next two chapters.

6.5.3.3- Product diversity in responding companies

This factor was examined using two proxy measures; the first (the nature of products customised/standardised) was discussed earlier in the first section in this chapter while the second is presented in this subsection. It measures the variation in the consumption of support departments' overheads by different products in the responding companies. However, the information collected about the first proxy measure is recalled herein to be analysed along with the second proxy measure. The table 46 displays descriptive information about the factor of product diversity and studying its association with the dependent factor i.e. the complexity of costing systems.

Table 46: Product diversity by costing system classifications

Mean of the degree of	Classifications of Costing System			Mean in total
	Non-Complex	Low complex	Complex	
Standardisation/customization of the products	2.7	3.8	4.0	3.3
Variation in the overheads consumption by the products	2.7	3.6	4.2	3.2
Total	2.7	3.7	4.1	3.3

The table 46 reveals the existence of different means values for both the proxy measures and for the product diversity factor in total. Moreover, the frequencies tables (Appendix F table 19 & 20) showed that only 38% of the respondents announced having very great or great variation in the consumption of support department' overheads by their different products while over half of them (51.9%) informed manufacturing highly standardised or standardised by their companies. The finding indicates the existence of various levels of diversity in the products manufactured by the responding companies. Moreover, it can be noted that the values of all means are increasing gradually throughout the three levels of costing systems complexity. In detail, the mean increased from 2.7 (medium diversity) in the companies with non-complex systems to 3.7 (nearly great diversity) in the companies with low complex systems, and finally it jumped to 4.1 (over great diversity) in the companies with complex systems. This implies that the extent of product diversity is positively associated with the complexity level of the costing systems used in the responding companies. This outcome is confirmed as well through Chi-Square test where the Sig. value was $.000 < 0.05$ indicating that the relationship is statistically significant.

6.5.3.4- Top management support in responding companies

Top management support (TMS) is one of the contingent factors hypothesised to influence positively both the research dependent factors; therefore, two cross-tabulation tables are prepared in this sub-section. Table 47 displays the findings through the two proxy measures used for observing the TMS in the responding companies. The first is the support (resources and encouragement) level provided by the companies' directors/owners to the cost and MA systems while the second is the extent to which the companies directors/owners consider the financial manager' recommendations before making final decisions pertaining to the cost and MA systems.

Table 47: Top management support by costing system complexity level

Mean of the extent of	Classifications of Costing System			Mean in total
	Non-Complex	Low complex	Complex	
Directors/owners' Support	2.8	3.3	4.2	3.0
Considering the financial managers' recommendations	2.6	3.5	4.2	3.1
Total	2.7	3.4	4.2	3.1

In total, the respondents revealed that the extent of resources and support provided by their top management for implementing and improving the MAPs was medium (3.0), and the same was concerning the second proxy measure where the respondents showed that their top management considers moderately (3.1) the comments of relevant financial manager in their companies. In other words, it can be said that the support of top management to the cost and MA systems is averagely moderate among the responding companies. However, the table of frequencies (appendix F table 21 & 22) showed that 32.4% and 34.3% announced having great or very great extent of TMS in terms of 'physical support' and 'consideration of middle managers' recommendations' respectively. The second idea can be gained from table 47 is the existence of positive association between the TMS factor and the complexity level of costing system where the extent of TMS increased along with the shift in the level of costing systems' complexity in the responding companies. It was jumped from 2.7 for non-complex to 3.4 for low complex, and finally to 4.2 for complex costing systems, and this was emphasised by the Chi-Square test where the Sig. value was $.000 < 0.05$.

Similar to table 47, Table 48 displays the TMS factor but by the implementation extent of MAPs. It can be inferred also that the TMS factor is positively associated with the implementation extent of MAPs as manifested by the values of means that were jumping in the same direction of the MAPs' implementation shift. In particular, the mean of TMS in the companies with Low level of Maps implementation was 2.7 (nearly medium support), and then it was increased to 3.5 (over medium support), 3.9 (almost great support), and finally to 4.7 (nearly very great support). Finally, this association was stressed through the Chi-Square test that reported Sig. value $.000 < 0.05$.

Table 48: Top management support by MAPs implementation extent

Mean of the extent of	Classifications of MAPs				Mean in total
	Low	Medium	High	Very High	
Directors/owners' Support	2.7	3.5	4.1	4.4	3.0
Considering financial managers' recommendations	2.7	3.4	3.8	5.0	3.1
Total (TMS)	2.7	3.5	3.9	4.7	3.1

6.5.3.5- Organisational culture of responding companies

The concept of organisation culture (OC) was identified in this research as a construct containing 11 items/empirical indicators about the innovation, outcome orientation and dynamism values. It includes the following: 1): willingness to experiment; 2): taking advantage of opportunities; 3): risk taking; 4): not being constrained by many rules; 5): being company competitive; 6): being with good reputation; 7): being results orientated; 8): offering training to staff; 9): membership of professional bodies; 10): following trainings by top managers; and 11): chasing international trade fairs. Accordingly, OC was assessed through examining the existence level of these 11 items in the responding companies. However, using the exploratory factor analysis (the next chapter), the whole 11 OC values are statistically analysed as one factor as they all loaded highly only on one factor. For purpose of the descriptive analysis, the OC was analysed in terms of all its 11 cultural values. Moreover, two cross-tabulation tables (by both the research dependent factors) were prepared in this subsection using the mean figure of each cultural value. The main reason behind these tables was for acquiring information about the initial association between the OC construct and both the complexity level of costing system and the implementation extent of MAPs in the responding companies.

Table 49 shows that the responded companies maintained different levels of the 11 OC' values ranging from (1) 'not at all' to (5) 'very great level'. In detail, three of the 11 OC values, namely, No. 5 'being company competitive', No. 6 'being with good reputation', and No. 11 'chasing international trade fair', were the most common among the responding companies with 16, 22, and 18 companies respectively announced having very great extent of them. Moreover, 33, 41, and 28 companies respectively announced also having great extent of these three values. Moreover, 4 out of the 11 OC' values, i.e. No. 7 'being the company results orientated', No. 10 'following trainings by top managers', No. 2 'taking advantage of

opportunities’, and No. 8 ‘offering training to staff’ were less common among the responding companies with 30, 10, 8, and 7 companies respectively announced maintaining great extent of these four values. Table 49, however, revealed that the frequencies of the remaining 4 OC values (No. 1, 3, 4, and 9) in addition to the latter four values were mainly maintained at the levels from ‘not at all’ to ‘medium extent’ of these values.

Table 49: The different existence level of OC values

OC' values	Frequency of the OC' values levels					Valid Percent (%) of the OC' values levels					Cumulative percent (%) of the OC' values levels				
	1*	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	47	45	13	3	-	43.5	41.7	12.0	2.8	-	43.5	85.2	97.2	100	-
2	11	49	40	8	-	10.2	45.4	37.0	7.4	-	10.2	55.6	92.6	100	-
3	51	48	9	-	-	47.2	44.4	8.3	-	-	47.2	91.7	100	-	-
4	52	45	10	-	1	48.1	41.7	9.3	0.9	-	48.1	89.8	99.1	100	-
5	1	20	38	33	16	0.9	18.5	35.2	30.6	14.8	0.9	19.4	54.6	85.2	100
6	-	6	39	41	22	-	5.6	36.1	38.0	20.4	5.6	41.7	79.6	100	-
7	1	34	42	30	1	0.9	31.5	38.9	27.8	0.9	0.9	32.4	71.3	99.1	100
8	35	39	27	7	-	32.4	36.1	25.0	6.5	-	32.4	68.5	93.5	100	-
9	71	30	7	-	-	65.7	27.8	6.5	-	-	65.7	93.5	100	-	-
10	44	27	27	10	-	40.7	25.0	25.0	9.3	-	40.7	65.7	90.7	100	-
11	5	24	33	28	18	4.6	22.2	30.6	25.9	16.7	4.6	26.9	57.4	83.3	100

* 1: not at all, 2: low extent, 3: medium, 4: great extent, and 5: very great extent.

It can be concluded from the results, that the responded companies featured mainly with the values related to the results orientated culture (values no. 5, 6, and 7) and with a medium to a great extent of the values of the dynamism culture (values no. 8, 10, and 11). Finally, only one out of the innovation culture values i.e. no. 2 ‘taking advantage of opportunities’ was claimed, from medium to great extent, by less than half (48) of the responded companies. However, this is not abnormal given that maintaining such cultural values requires from companies to be in a rather strong financial position in order to meet the needs of the innovative values. In other words, the innovation culture is usually a feature of large and leading companies that allow to their employees to experiment, take fast the available chances for supplying customers with more creative products, have a margin of risk in doing their jobs, and hence they are not usually constraint by many rules. In the current research, the percentage of the large companies having between 351-1000 was not high only 23% moreover, most of them relies, in creating and manufacturing their products, mainly on importing and/or copying new technologies, ideas, and products that have already been innovated in the developed world. Therefore, the lack of the innovation culture values in the current study is justifiable and not surprising.

For more interpretation of these descriptive findings, it is useful to study them in an association with the implementation extent of the cost and MAPs in the responding companies, and this was achieved using two cross tabulation tables. Table 50, which included both the mean of existence extent of each the OC values by the complexity level of costing systems, showed the existence of initial positive association between them. This was asserted through the gradual increase in the values of means of different culture values along with the rise in the level of costing systems' complexity.

Table 50: Organisational culture values mean level by the classification of the costing systems complexity

Mean of the extent of the OC' values	Classifications of Costing System			Mean in total
	Non-Complex	Low complex	Comple x	
1-Willingness to experiment	1.4	1.8	2.4	1.7
2-Taking advantage of opportunities	2.2	2.4	3.2	2.4
3-Risk taking	1.3	1.7	2.2	1.6
4-Not being constrained by many rules	1.3	1.7	2.4	1.6
5-Being company competitive	2.9	3.5	4.5	3.4
6-Being with good reputation	3.5	3.8	4.8	3.7
7-Being results orientated	2.6	3.1	3.8	3.0
8-Offering training to staff	1.7	2.1	3.1	2.1
9-Membership of professional bodies	1.2	1.4	2.2	1.4
10-Following trainings by top managers	1.6	2.2	3.2	2.0
11-Chasing international trade fair	2.7	3.2	4.7	3.3
Total	2.0	2.5	3.3	2.4

The results indicate that the responding companies announced having great to very great extent of the majority of cultural values did declare as well employing the complex level of costing systems. The result, however, is also tested in the next chapter using the statistical analysis to confirm this finding or otherwise.

Like table 50, table 51 was prepared for displaying the association between the OC and the implementation extent of MAPs in the responding companies. Again, this table revealed the existence of positive association between the existence level of each OC value (and in total) and the implementation extent of MAPs in the responding companies. This was recognised through the obvious increase in the mean of each OC value at every increase in the implementation extent of the MAPs, for example, the mean of the cultural value no. 2 indicated by the companies having the low implementation extent of MAPs was 2.2, and then it jumped to 2.9 in the companies employed the medium implementation extent, 3.1 in the

companies with the high extent, and finally to 3.4 in the companies with the very high extent of the MAPs implementation.

Table 51: Organisational culture values mean level by the classification of the MAPs implementation

Mean of the extent of the innovation dimension' variables	Classifications of MAPs implementation				Mean in total
	Low	Medium	High	Very high	
1-Willingness to experiment	1.4	2.2	2.4	2.8	1.7
2-Taking advantage of opportunities	2.2	2.9	3.1	3.4	2.4
3-Risk taking	1.4	1.8	2.2	2.4	1.6
4-Not being constrained by many rules	1.4	2.1	2.4	2.4	1.6
5-Being company competitive	3.2	3.9	4.4	4.6	3.4
6-Being with good reputation	3.4	4.1	4.6	5.0	3.7
7-Being results orientated	2.8	3.2	3.8	4.0	3.0
8-Offering training to staff	1.8	2.5	2.9	3.6	2.1
9-Membership of professional bodies	1.2	1.5	2.1	2.6	1.4
10-Following trainings by top managers	1.7	2.5	3.3	3.4	2.0
11-Chasing international trade fair	3.0	3.8	4.2	5.0	3.3
Total	2.1	2.8	3.2	3.7	2.4

Finally, using the 'mean in total' column in both table 50 & 51 it can be concluded that the means of the OC values ranged from nearly 1 (not at all), e.g. the mean of value No. 9 was 1.4, to nearly 4 (great extent level) of the existence level, e.g. value the mean of the No. 6 was 3.7, moreover only three OC values i.e. No. 6, 5, and 11 were indicated with means over 3 (medium existence level).

6.4.3.6- Summary

The analysis concluded that the support of top management to the cost and MA practices was averagely medium among the responding companies with a mean value 3.1 moreover the percentage of responding companies announced having great or very great extent of the TMS was limited only one third of them. Regarding the organisational cultural values, the study found that the values related to the results orientated culture and to the dynamism culture were mainly the most common among the responding companies while only one value (taking advantage of opportunities) out of the innovation culture values was the most common among them. The information collected about these two internal factors in addition to those about the other three internal factors, namely, the company size, company age, and exports' percentages, (discussed in section one chapter 5); tell modestly that there might be a

large number of the responding companies with complex costing systems and wide range of MA practices.

Regarding the internal factors examined in respect of only the complexity level of costing systems, first, the analysis revealed that the overheads' percentage to the total company costs was high among the responding companies with a mean value 32.3. Second, the complexity degree of manufacturing process among the responding companies was averagely just at the medium level (mean value 3.2) with just under third of the respondents announced having great or very great level of the manufacturing complexity. Third, in terms of the product diversity, although its mean per the whole responding companies was also at the medium level (mean value 3.3), the percentages of companies having great or very great level of product diversity was higher (nearly 50%). Finally, this information in addition to that⁵³ of the factor of 'usages of cost information' (section 6.3.1) imply that broadly speaking the cost accounting systems used by Syrian PICs are not complex however, there might be complex systems being implemented only in the companies (the minority) having very high or high degrees of these four contingent factors.

⁵³ The analysis showed that only under half of the responding companies announced using the cost information for advanced usages, particularly 42.6% for pricing decisions and 49.1% for profitability analysis.

Chapter (7): The Statistical Analysis of the Collected Data

7.1- Introduction

For achieving the third research objective i.e. identifying the contingent and institutional factors having the most significant influence on the complexity level of costing systems and the implementation extent of MAPs in Syrian PICs, this chapter employed two statistical analyses. In this study, there are eighteenth research hypotheses, which are tested initially using the bivariate correlation analysis for studying individually the relationships between the research dependent and independent factors. A complex statistical analysis (multivariate analysis), however, was second employed (section 7.3), for the actual test of these hypotheses.

The examined independent factors (11 variables) included both simple factors (company size, company age, exports percentage, cost structure, and the purpose from cost information) that were measured using one question/item and compound factors (OC, EE, accounting education quality, product diversity, complexity of manufacturing process, and TMS) that were examined through multi proxy measures/items. Therefore, the reliability test was run for each of the research compound factors, to assert that the items of every compound factor are measuring it without an error. Moreover, the exploratory factor analysis (EFA) was used in this study also for validating these compound factors. In other words, the EFA was used to find out whether or not the items of each compound factor can be represented through one latent/unobserved factor as hypothesised earlier in the content validity (section 5.2.5.2).

This chapter is structured as follows: the second section displays the results of both the reliability and validity tests of the research constructs; the third section is detected for testing the research hypotheses using multivariate analysis with reference to the results of bivariate test (available thoroughly in appendix G), and finally the last section is for presenting the final results of the associations test among the research factors holistically.

7.2 - The validity and reliability tests of the compound factors

7.2.1- Introduction

This section continues in the process of validating the research results, which has started above in section 5.2.5, through conducting the last two steps of this process i.e. the reliability and construct validity tests of the research constructs. It is important to conduct such tests before running any type of the statistical analyses i.e. the bivariate and univariate analyses for testing the associations between the research factors. The significance and the results of these tests are presented throughout the following two sections.

7.2.2- Construct reliability test

The reliability of research constructs' measures is the second step, after the content validity, in the process of validating the research constructs and is considered a prerequisite for the last step i.e. the construct validity (next section). The reliability represents the extent to which the empirical indicators (variables) measure the construct (latent factor) they relates to with error free (Fair et al., 2009); therefore, any findings produced through studies achieved the test of construct reliability can be classified as reliable and consistent results. For assessing the reliability of the measurement instruments, there are several methods recognised in the methodology literature as follows: 1): classical test theory and measurement error, 2): Test-retest method, 3): Alternative forms method, and 4): Cronbach's Alpha coefficient. However, the latter method, which was adopted in the current research, is considered one of the most used methods, in the accounting literature, for assessing the reliability of their constructs (O Leary Kelly and Vokurka, 1998).

The coefficient of Cronbach's Alpha ranging from 0 to 1 shows the degree of correlations among the empirical indicators/items comprising each measure of the research constructs where the higher the correlations among the items, the higher the Alfa coefficient, and this in turn means a higher level of the construct reliability. When the items of one measure are highly correlated, this means that are internally consistent, and this in turn increases the possibility of being the measure reliable. The Cronbach's Alpha of particular measure is an estimate of the average of the correlation coefficients among the whole items containing in this measure. Therefore, if the resulted Cronbach's Alpha is low, this means that there are one or more items inconsistent with the other items. In such a case, the researcher should remove these item/items causing inconsistency (Ho, 2006).

Typically, the coefficient of Cronbach's Alpha is used only for assessing the reliability of measures consisting of multiple Likert-type items. Therefore, the reliability assessment, in the current study, is restricted only to three research constructs namely, the OC, EE, and accounting education quality. The researcher, however, calculated the Cronbach's Alpha as well for assessing the reliability of the research construct measured by two items-based scales, e.g., TMS, complexity of manufacturing processes, and product diversity, and the results were the existence of high internal consistency among the items of these measures.

Although the coefficient of Cronbach's Alpha has been used broadly by researchers, there was no complete agreement⁵⁴ on how much Alpha should be to be considered as an accepted indicator on the internal consistency among the measure items (O Leary Kelly and Vokurka, 1998). The researcher, however, adopted the moderate and most used criterion i.e. the Alpha coefficient should be at least 0.6 for proving the reliability of the research constructs. The results and interpretations of the reliability test of the multiple items measures are presented in the following.

7.2.2.1- Reliability test of the organisational culture construct

The organisational culture (OC) construct was examined, in the current research, as mentioned in the content validity section, using 11 items-based instrument. Using the SPSS V. 16 software, the researcher calculated the Alpha coefficient of this factor and found a great level of the internal consistency among the 11 items measuring this factor. Table 52 shows that the Alpha value was much higher than the adopted criterion (0.6 or higher) at 0.961.

Table 52: The reliability assessment of the organisational culture factor

Organisational Culture items	Correlated item-total correlation	Organisational Culture items	Correlated item-total correlation
Willingness to experiment	.780	Result orientated	.819
Take advantage of opportunities	.806	Training for staff	.877
Risk taking	.836	Professional bodies	.702
Not constrained by many rules	.754	Training for top managers	.879
Being competitive	.880	Cashing international trade fare	.875
Being good reputation	.848	Cronbach's Alpha value	0.961

⁵⁴ The views about the accepted Alpha values were different, for example, Ho (2006) stated that Alpha value should be 0.8 or higher, moreover Leary Kelly and Vokurka (1998) indicated that some researchers argued that Alpha value should be 0.7 or higher, 0.5 or higher for early stages of research, and finally 0.4 or higher) especially for constructs measured by big number of items.

This means that the whole 11 items comprising the OC construct are highly correlated. To confirm the finding, it is worth to look at the value of ‘*correlated item-total correlation*’ of each item, which represents the correlation between every item and the collection of the rest items. Ho (2006) stated that items with a value 0.33 or higher could be retained in the construct’s measure. Notably, all the items values were higher than this criterion i.e. 0.33. In other words, removing/deleting any of the 11 items will reduce the internal consistency (Alpha value) of the OC’ measure.

7.2.2.2- Reliability test of the external environment construct

The EE was measured using previously tested instrument that was adopted largely in the accounting literature from Khandwalla (1977). The collected data showed the reliability of the used measure that contained seven items, and this, however, is consistent with the previous studies used this instrument for measuring the EE factor (e.g., Gordon and Narayanan, 1984 and Anderson and Lanen, 1999). Table 53 shows that the Alpha coefficient of this measure was .864 i.e. higher than the accepted standard at .6 indicating the existence of high level of the correlation among the seven items.

Table 53: The reliability assessment of the external environment factor

External environment items	Correlated item-total correlation	External environment items	Correlated item-total correlation
competition on inputs	.546	technological environment	.648
competition on prices	.573	economic environment	.638
competition on labour	.603	competitors activities	.718
legal constraints	.736	Cronbach’s Alpha value	.864

Moreover, as it is clear in table 53, the *correlated item-total correlation*’ values of the whole seven items were higher than the criterion (0.33 or more), and this again ascertains that the whole seven items can be used together for measuring the EE construct.

7.2.2.3- Reliability test of the accounting education construct

The factor of accounting education, as inferred in the content validity section, was measured using three items-based instrument, therefore this section assesses the internal consistency level among these three items. The coefficient of Cronbach’s Alpha was calculated, and table

54 indicates the existence of high overall correlation among the three items with an accepted Alpha value at 0.651.

Table 54: The reliability assessment of the accounting education factor

Accounting Education	Being graduate innovative	Capacity in cost & MA practices	Capacity in accounting software	Cronbach's Alfa value
Correlated item-total correlation	.321	.561	.537	.651

Moreover, looking at the *correlated item-total correlation*' values of the items in the above table shows that they are higher than the accepted criterion i.e. 0.33, except for the factor of 'being graduates innovative' item that got value almost 0.33. This indicates that it is required, for purpose of producing reliable results, to retain the whole three items for measuring the factor of accounting education quality.

7.2.3- Construct validity test

The last step in the research validation assessment is the construct validity. Although this step is very significant for asserting the validity of research findings, the majority of accounting studies missed this step for validating their constructs. There are few means for conducting the construct validity test, Brahma (2009) mentioned four main methods been used in the management and accounting literature as follows: 1): correlational method, 2): exploratory factor analysis (EFA), 3): MTMM (multi-trait multi-method) analysis, and finally 4): confirmatory factor analysis (CFA).

The second method i.e. the EFA, which has been used greatly in the accounting and management research, was adopted by the researcher for assessing the construct validity. The EFA can be defined as the analysis concerning in identifying the unobserved factor/factors that can represent a set of observed variables (empirical indicators/items) in addition to estimating the variables loadings. The variable loading, however, is an estimation of the association between every variable and the unobserved factor (Pedhazur and Schmelkin, 1991). In other words, the EFA is used for purpose of exploring the possible underlying structure of a group of interrelated variables without imposing any preconceived structure on the result (Byrne, 2010). In terms of the usage of the EFA in the context of construct validity test, it can be used in two situations. First, the EFA can be used when there are few or no

previous studies available about identifying the construct underlying a set of items, for this purpose the EFA can recognise the empirical indicators forming a unidimensional factor. Second, the EFA can be used as well in the case of being the studied constructs are theoretically predefined in the relevant literature; therefore, the function of the EFA is as an assessment of these hypotheses.

Practically, the EFA uses two approaches to rotate factors, namely, orthogonal and oblique rotation. The purpose of rotation is increasing the interpretability of factors through maximizing the loadings of some of their items. The orthogonal rotation⁵⁵ was adopted being the most appropriate to this research. Furthermore, within this approach, there are various methods of rotation; however, Varimax method was adopted being the most used and common among the researchers (Pedhazur and Schmelkin, 1991). In terms of the value of variable loading for which the variable can be considered a significant maker of the latent factor, there was no agreement in the literature about the appropriate loading value. Stevens (1992, cited in Field, 2005), however, inferred a rule of thumb⁵⁶ based on considering the research sample size for determining the most appropriate loading value. Given the sample size in the current research i.e. 108, the accepted loading value for considering the variable as a significant maker of the factors was .512 or more. Finally, regarding the method used for deciding the number of factors to be extracted, the Eigenvalues criterion was used. According to this criterion, only the factors with Eigenvalue of 1 or more are retained for rotation while the others are disregarded (Ho, 2006).

It is worth to mention that EFA is mainly used for validating constructs with at least three empirical indicators (Bryman and Cramer, 2005) therefore the construct validity test is applied in this research only on the constructs measured using three items or more i.e. on the OC, EE, and accounting education quality constructs. These three constructs, which are considered an embodiment of the two usages of the EFA, are validated using the EFA, and the results are presented in the following three subsections.

⁵⁵ For details about the difference between orthogonal and oblique rotation see (Bryman and Cramer, 2005, p. 332).

⁵⁶ The essence of this rule is as follows: a research with a sample size of 50 needs variable loading of .722 or more to be considered a significant variable; for 100 sample size needs loading of .512 of more; for 200 needs loading of .364 of more; for 300 needs loading of .298 or more; for 600 needs loading of .21 of more; and finally for a sample size of 1000 needs loading of .162 of more.

7.2.3.1- Construct validity of the organisational culture construct

This subsection shows whether the whole 11 empirical indicators hypothesised to measure the OC construct in the content validity step (section 5.2.5.2), load highly on one or few latent/unobserved factor. In other words, the focus herein is on assessing the extent to which these 11 items can be represented through one or few latent factors, which account for the maximum amount of variance.

Using Eigenvalues criterion, Table 55 shows that only one factor (out of the 11 OC' variables) can be extracted with Eigenvalue of 8.06, and this means that this retained factor accounts for nearly three quarters (73.28%⁵⁷) of the total variance of the 11 empirical indicators used for measuring the OC construct. This result means that the hypothesised structure of OC factor that was developed in the content validity stage matches the finding of construct validity test. Finally, because only one item/variable was extracted, the solution cannot be calculated.

Table 55: Total variance explained by OC

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Willingness to experiment	8.061	73.284	73.284	8.061	73.284	73.284
Take advantages of opportunities	.774	7.037	80.321			
Risk Taking	.490	4.452	84.773			
Not constrained by many rules	.359	3.260	88.034			
being competitive	.270	2.455	90.489			
Being good reputation	.263	2.395	92.884			
Results orientated	.201	1.825	94.709			
Training for staff	.185	1.680	96.389			
Professional bodies	.164	1.488	97.876			
Training for top managers	.136	1.233	99.110			
Chase of international trade fairs	.098	.890	100.000			

Extraction method: Principal component analysis.

⁵⁷ The total variance of the 11 OC items is the sum of their Eigenvalue i.e. 11, therefore the variance proportion explained by the retained factor can be calculated through dividing its Eigenvalue (8.06) by the total variance (11) and then multiplying the result by 100.

7.2.3.2- Construct validity of the accounting education dimension

Before analysing statistically the first dimension of the accounting environment (AE) construct i.e. the accounting education quality, it is important to assess its validity. The AE factor was measured using three empirical indicators. This subsection shows whether these three items load highly on one factor. Using the Varimax rotation method, table 56 shows that the whole three items measuring the accounting education dimension loaded highly on one factor with Eigenvalue at 1.74 (over 1). This retained factor accounts for 58.04% of the total variance of the three items, and this is what was hypothesised in the content validity step i.e. measuring the AE dimension by using one three items-based instrument. The result of this section states the validity of the used instrument for measuring the accounting education factor. Finally, like the previous subsection, there is no need to rotate the factors because only one item/variable met the Eigenvalue criterion.

Table 56: Total variance explained by accounting education

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Thinking innovatively	1.741	58.044	58.044	1.741	58.044	58.044
Implementing cost and MAPs	.870	28.995	87.039			
Using accounting software	.389	12.961	100.000			

Extraction Method: Principal Component Analysis.

7.2.3.3- Construct validity of the external environment construct

The construct of external environment (EE) was defined in the study using a previously tested instrument consisting of 7 items. The EFA, with Varimax rotation method, was conducted for assessing the validity of this construct according to the collected data. Table 57, however, showed the validity of the used instrument for measuring the EE factor where only one factor was retained to represent the 7 EE empirical indicators with Eigenvalue of 3.89. This, in turn, means that the extracted factor explains over half (55.50%) of the total variance, and this is consistent with the previous literature that used this instrument (Gordon and Narayanan, 1984; Libby and Waterhouse 1996; and Anderson and Lanen, 1999) for measuring the EE construct. Again, the solution cannot be rotated being that only on factor was extracted.

Table 57: Total variance explained by EE

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Inputs competition	3.885	55.495	55.495	3.885	55.495	55.495
Price competition	.999	14.275	69.770			
Labour competition	.671	9.581	79.351			
Technological Environment	.454	6.486	85.837			
Economic Environment	.430	6.140	91.978			
Legal constraints	.304	4.349	96.327			
Competitors market activities	.257	3.673	100.000			

Extraction Method: Principal Component Analysis.

To conclude, the research validation process of the compound constructs asserted, throughout its three steps, the validity of these constructs, in other words the validity of the research findings. This was achieved starting from the stage of content validity conducted through the pilot study, and ending at the construct validity stage assessed through the EFA. The last, stage however, showed that the items of each construct can be presented through only one factor, and this is consistent with what concluded in the content validity stage.

7.3- Testing the research hypotheses: the multivariate analysis

7.3.1- Introduction

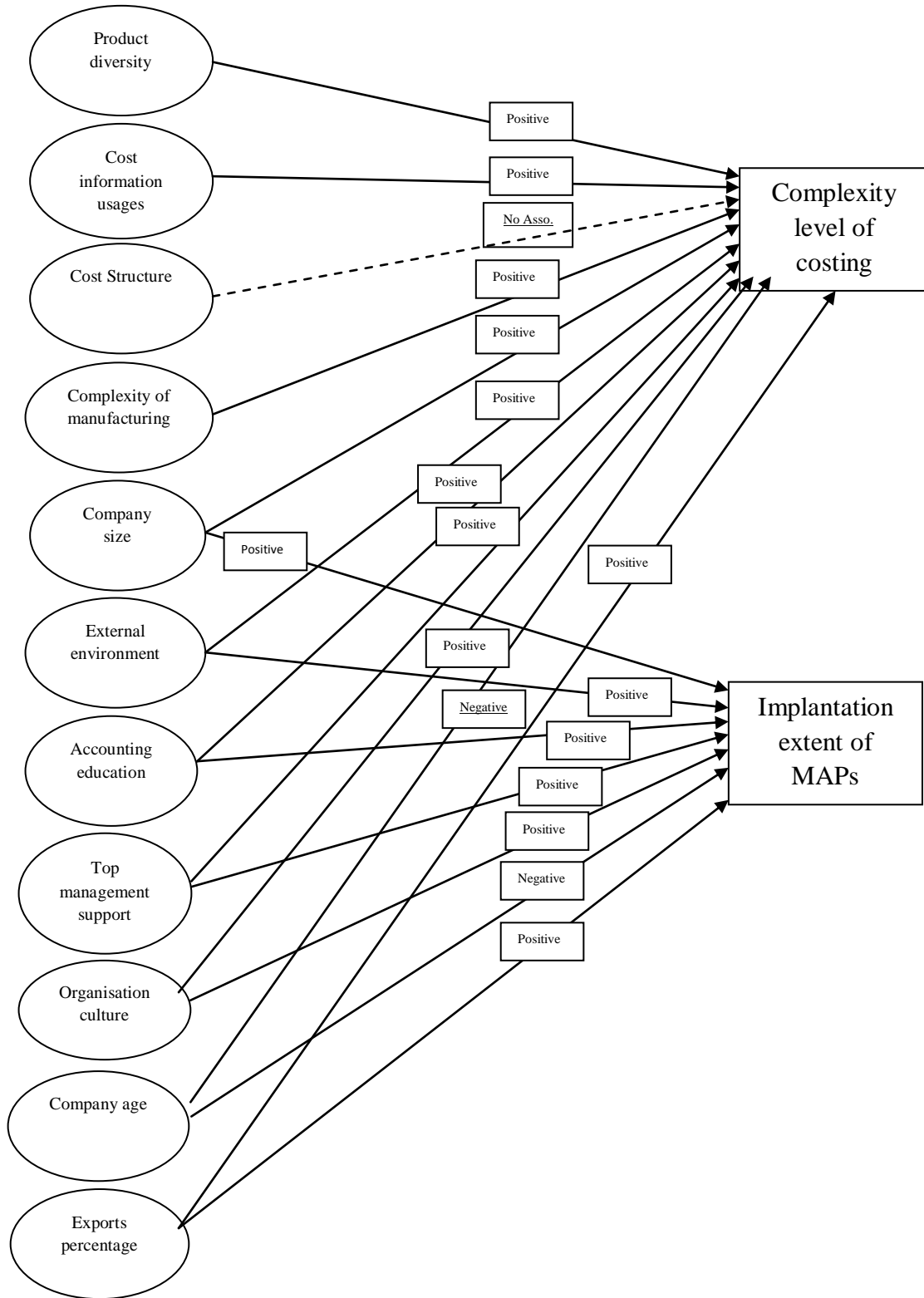
This section presents the results of running the multiple regression test for both the research dependent factors i.e. the complexity level of costing systems and the implementation extent of MAPs. Before displaying these findings, the researcher dedicated the next subsection for summarising the findings of bivariate test, which was mentioned in detail in appendix G.

7.3.2- Bivariate analysis: a summary of findings

The results of the bivariate correlation analysis, mainly using the Kendall's tau coefficient in addition to Pearson coefficient, showed that almost the whole research hypotheses were accepted except for one hypothesis relating to the association with the cost structure, which was rejected. Moreover, all the accepted hypotheses showed positive and significant association with the dependent factors at 1% level of significance except for one hypothesis

relating to the association with the company age factor, which showed a negative association. For more details about the results of testing the research hypotheses, appendix G lists all tables (1–12) of correlation results, however, Figure 8 illustrates and summarises them as follows:

Figure 8: The results of testing the research hypotheses



Dashed arrow: no association

Finally, it is worth to mention that the results obtained in this section are based on the correlation analysis, which is specialised only in assessing the importance' level and direction of the association between two factors. Given this, it is not sufficient, for purpose of testing the research hypotheses, to use only the bivariate correlation analysis, but it is needed to use the regression analysis as well that test the relationship between one dependent factor and a range of influential factors together. Therefore, the next section reports the results of the multiple regression analysis of both the research dependents factors.

7.3.3- Multivariate test

7.3.3.1- Introduction

It is not common among the researchers, especially in the social sciences, to study the variations in the dependent factor only through one independent factor (i.e. using the correlation analysis) (Bryman and Cramer, 1996); therefore, the multiple regression analysis has been used to supplement the results obtained in the previous subsection. The regression analysis concentrates on predicting the value of one factor (called outcome) through the value of another factor (called predictor) providing they are correlated (this is usually tested through the correlation analysis), at this point this is called the linear regression. Thus, the higher the correlation is between the factors, the more perfect is the predicted value (Ho, 2006). Another reason for using the regression analysis for testing the research hypotheses, in addition to telling us about the predictive influence of the predictor, is being able to examine the influences of a set of predictors together on the dependent factor, and at this point, it is called the multiple regression analysis.

Similar to most of the MA studies (e.g., Brown et al., 2004; Baird et al., 2004; Drury and Tayles, 2005; and Hutaibat, 2005), this research used the multiple regression analysis for achieving three purposes. The first is for predicting the value of both research dependent factors from the whole research independent factors together, except for the factor of 'cost structure' that showed no association with the factor of costing system complexity in the correlation test (Leech et al., 2005). The second is for identifying the independent factors best describing the variation in each of the dependent factors, and such factors are those that retained in the resulted multiple regression equation (Field, 2005). Finally, to find out whether each of the research independent factors, which showed a significant association with the dependent factor by the bivariate correlation analysis, is still able to explain the

variation in the dependent variable when the influences of another factor are controlled for (Pallant, 2007). It is important, before running the multiple regression analysis, to address few issues, such as, the type of multiple regression used, measurement scales of the multiple regression factors, and finally the descriptive statistics and normality of these factors. This will be followed with discussing the results of running the multiple regression test between the research independent factors and each of the two dependent factors. Finally, after displaying the resulted two multiple regression models, it is required also to assess their reliability.

7.3.3.2- Types of multiple regression

This subsection debates the different types of multiple regression in order to justify the adopted type in this study. Typically, there are three methods of multiple regression, which are mainly debated within all of the data analysis textbooks (e.g., Field, 2005; Leech et al., 2005; and Ho, 2006) as follows: standard or simultaneous; hierarchical or sequential; and stepwise or statistical. Although only one type of the multiple regression i.e. the stepwise, was used in the current research, it is useful to discuss the other two types in order to justify our selection. Basically, the key difference among these types can be manifested through two issues. The first is related to ‘the treatment of overlapping variability due to correlation of the independent variables’ (Coakes, 2005, P.168), and the second is about the order of inserting the independent factors during running this analysis. The existence of these two differences, however, brings about three types of the multiple regression analysis as follows.

A-Standard Regression: in this type of regression, the whole independent factors are inserted in the model at the same time i.e. there is no priority in the entry. Using this regression is usually accompanied with some risk. Where there is chance that the regression analysis may reveal that one of the research predictors is not influential factor, as it does not participate largely in predicting the dependent factor, in the time that this predictor is significantly associated with the outcome (Ho, 2006).

B-Hierarchical Regression: where the independent factors are inserted in the model not at once but at least twice or more. The priority in the process of factors insertion is usually based on theoretical and experimental considerations. Therefore, the factors known to have a large influence on the dependent factor are entered first in the model and then followed by the other predictors (Field, 2005). Therefore, this type of regression is used usually when the

research predictors are extensively studied in the MA literature and there is rather conclusive statement about its influence on the research outcome.

C-Statistical Regression: is used usually in the exploratory studies when researcher does not have a sufficient background about the predictive contribution of each of the independent factors in the research outcome (Field, 2009). It is based, throughout its three methods i.e. forward, backward and stepwise entry, on statistical criteria for ordering the predictors in the multiple regression equation (Ho, 2006).

Considering the differences between these three types of multiple regression', the next two subsections display the results of the multiple regression analysis using the last type i.e. the stepwise regression being the most appropriate to the current study. This was because the natural of current research is exploratory where there are no previous studies observed the factors influencing any of the research dependent factors in Syria.

7.3.3.3- Scales of the multiple regression factors

For using the multiple regression analysis, there are few conditions. One of them is that the whole factors inserted in the regression model should be measured using an interval measurement scale. In the current research, the factors were as follows: the complexity level of costing system was measured using 15-point ordinal scale; the implementation extent of MAPs was measured using interval scale; the usages of cost information was measured using interval scale; both the company age and cost structure were assessed using ratio scale; and finally the remaining independent factors (8) were measured using 5-point Likert-scale (ordinal variables). In terms of the factors measured using the ordinal scale, it is common in the social studies in general and the accounting literature in special (e.g., Abdel-Maksoud, 2003; Drury and Tayles, 2005; and Hutaibat, 2005) to treat the ordinal (Likert-based) variables as interval data (Saunders et al., 2009). This means that the whole research factors can be classified as continuous data (either interval or ratio) consequently it is possible to test the association among these factors using the multiple regression analysis.

7.3.3.4- Descriptive statistics and normality

It is necessary before conducting the multiple regression test to display a range of statistical figures of both the outcome and predictor factors. Descriptive statistics give a reader an ideal

about the nature of data distribution related to each of these factors. Table 58 lists the main descriptive statistics of all the 13 factors (2 dependent and 11 independent factors).

Table 58: Descriptive statistics of the multiple regression factors

Factors	Descriptive Statistics							
	Mean	St. Deviation	Mini	Max	Skewness	Skewness std. error	Kurtosis	Kurtosis std. error
Complexity level of Costing systems	4.80	1.69	2	8	.15	.33	-.90	.63
Extent of MAPs' implementation	6.22	4.09	2	16	.65	.33	-.91	.63
Company Size	3.75	1.29	2	7	.57	.33	-.08	.63
Product diversity	3.61	.65	2	5	-1.00	.33	.34	.63
Complexity level of Manufacturing process	3.60	.67	2	5	.40	.33	-.03	.63
TMS	3.54	.74	2	5	-.52	.33	-.09	.63
Purposes of costing information	2.44	.73	1	3	-.91	.33	-.53	.63
Exports' percentage	3.00	1.68	1	6	.19	.33	-1.00	.63
OC	2.72	.67	1.5	4.1	-.08	.33	-.82	.63
EE	3.13	.53	2	4.5	.01	.33	-.07	.63
Accounting education	3.30	.49	2.5	4.5	.25	.33	-.45	.63
Company Age	21.93	6.49	11	44	.97	.33	1.24	.63
Costs structure	33.3	4.48	20.0	45.0	-.29	.33	.87	.63

One of the key conditions should be met before running the multiple regression test is to check the normality of data distribution of the multiple regression' factors. The majority of MA researchers who run this test proved only the normality of dependent factor' distribution however, in the current study, the researcher tests all the 13 factors. In this context, few methods were employed for examining the normality, one of them is that called statistical

method. In particular, it works through checking the value of both skewness⁵⁸ and kurtosis statistics of each factor (Pallant, 2007 and Field, 2009). In detail, a factor can be called a perfect normally distributed only when the values of its skewness and kurtosis statistics are zero (Bryman and Cramer, 2005). However, in this context, rules of thumb were suggested by scholars. One of them is that considering a particular factor as a reasonably close to the normal distribution when its skewness and kurtosis values are fallen between -1.0 and $+1.0$. Furthermore, other scholars, such as, Tabachnick and Fidell (2007) were less strict in this term and argued that the value of skewness and kurtosis should be within the range of -2 to $+2$, in order to classify the factor distribution as a normal. Moreover, a more accurate statistical test was developed, which uses also the value of skewness and kurtosis, but for calculating two ratios i.e. skewness to its standard error and kurtosis to its standard error. According to this test, in order to consider a factor a normally distributed, its ratios' figures should be between -2 to $+2$. For example, the ratio related to the factor of complexity level of costing systems is $.45$ ($.15/.33$) for skewness and -1.42 ($-.90/.63$) for kurtosis, consequently we can accept this factor as a normally distributed. The researcher adopted this test for checking the normality of factors, therefore table 59 lists both the ratios calculated for the whole 13 factors.

⁵⁸ Skewness indicates the symmetry of a distribution therefore the mean value of a skewed factor is not in the middle of the distribution. Kurtosis indicates the general shape of the curve of data distribution i.e. the flatness or peakedness of the distribution of data when it compared to the normal distribution (Pallant, 2007).

Table 59: Test of normality of the multiple regression factors

Factors	Test of normality	
	Ratio of skewness to its std. error (1)	Ratio of kurtosis to its std. error (2)
Complexity level of Costing systems	.45	-1.42
Extent of MAPs' implementation	1.96	-1.44
Company Size	1.72	-.13
Product diversity	- 3.00	.54
Complexity level of Manufacturing process	1.21	-.05
TMS	-1.57	-.14
Purposes of costing information	-2.75	-.84
Exports' percentage	.57	-1.58
OC	0.24	-1.30
EE	0.03	0.11
Accounting education	.75	-.71
Company Age	2.93	1.96
Costs structure	.87	1.38

By looking at the values of skewness to its std. error and kurtosis to its std. error per each variable as listed in table 59 above, it can be concluded that all the values were within the accepted guidelines, except for the first ratio of three factors, namely, product diversity, purposes of costing information, and company age. In detail, these three factors deviated slightly from the normal distribution to the left side for the first two factors and to the right side for company age. This means that the majority of multiple regression' factors were within the normal distribution with no considerable deviation from the perfect normality. Concerning the three factors violating the guideline, on one hand, this deviation was only in terms of the skewness where they demonstrated the normality regarding the kurtosis (their ratios were between -2 to +2). On other hand, the skewness values of these three factors as listed in table 58 were within the guideline of the first rule of thumb (-1 to +1). Accordingly, it can be said that the deviation of these three factors from the normality cannot be considered significant; especially that it is very easy, within large sample (30 and more cases), to obtain substantive results from slight deviations from the normal distribution (Field, 2009). Therefore, it can be said that the three factors (product diversity, purposes of costing information, and company age) are approximate to the normal distribution. Finally, given the

discussion above, it can be said that the multiple regression test can be used in this study for testing the 18 hypotheses.

7.3.3.5- The multiple regression analysis of the association with the implementation extent of MAPs

This subsection displays and interprets the result of multiple regression analysis conducted between the implementation extent of MAPs factor and the selected seven contingent factors. The main outcomes of multiple regression equation were the prediction of dependent factor' value and the recognition of the strength and direction of the relationship between this dependent factor and each of the independent factors showed in the equation using the standardised regression coefficients Beta. The outputs were the summary statistics and parameters for each of stepwise multiple regression' steps (5 models) however the concentration will be only on the last model. Before discussing the multiple regression parameters, it is useful to review some of the summary statistics commenting on a fit of the resulted mode.

The fit of regression model

For evaluating the strength of this equation, it is useful to check the R-square value (coefficient of determination) of this model. Table 60 shows that R-square in the last model was 0.796 and this means that the five independent factors shown in the equation explained/accounted for 79.6% of the variance in the dependent factor i.e. the implementation extent of the MAPs.

Table 60: Model summary and ANOVA test on the first multiple regression equation

Model	Model Summary			Change statistics			Durbin-Watson	ANOVA	
	R	R Square	Adjusted R Square	R square change	F change	Sig.		F	Sig.
1	.802a	.644	.640	.644	164.609	.000		164.60	.000 ^a
2	.852b	.726	.720	.082	26.938	.000		119.23	.000 ^b
3	.867c	.751	.743	.025	9.117	.003		89.69	.000 ^c
4	.882d	.779	.768	.027	10.749	.001		77.33	.000 ^d
5	.892e	.796	.785	.018	7.598	.007	2.260	68.02	.000 ^e

a. Predictors: (Constant), company size

b. Predictors: (Constant), company size, OC

c. Predictors: (Constant), company size, OC, Company Age

d. Predictors: (Constant), company size, OC, Company Age, export percentage

e. Predictors: (Constant), company size, OC, Company Age, Export Percentage, accounting education

f. Dependent Variable: MAPs Implementation

To verify the existence of linear relationship between the research outcome and the predictors i.e. R-square = .80, it is helpful to test the hypothesis of no linear association between them. The analysis of variance (ANOVA), however, can be used for this purpose (Ho, 2006). Table 60 revealed that F value is 68.02 with a significance level of .000 (less than .001), therefore, this hypothesis (no linear relationship) can be rejected. To check the ability to generalise the resulted model, it is useful to review the adjusted R square. The less the difference between the R square and adjusted R square is, the more proper the resulted multiple regression model can be generalised to the research population. Table 60 shows that the difference was small (.796 - .785 = .011) and this means that if the model was derived from the population, it would explain only 1.1% less variance in the implementation extent of MAPs (the cross-validity of the resulted model is very good). Additionally, it is helpful to review the figures of change statistics that shows the change in R square value due to inclusion of new independent factors. Model 5 in Table 60 reveals that adding the factor of accounting education quality causes R square to increase by .018, and this change (in the value of variance explained) gives increase to an F- ratio of 7.598 that was significant with Sig. < 0.01. To test that whether there was correlation between the residual terms (errors), the Durbin-Watson was selected. One of the rules used is that any value of the Durbin-Watson between 1 and 3 can be considered acceptable. Table 60 shows that the value of Durbin-Watson is 2.260 therefore it can be said that the assumption of independent error is tenable. Finally, to test whether the resulted model (No. 5) is significantly fitting the data overall, it is useful to review an ANOVA test. It tests the null hypothesis i.e. there is no linear association between the 5 predictors and the research outcome. Table 60 shows that the null hypothesis was rejected with F = 68.02 and Sig. = .000 is less than 0.05, consequently the resulted multiple regression model represents significantly the collected data.

The regression model

To define the multiple regression model of the implementation extent of MAPs, we need to look at the first part in table 61, it shows the non-standardised coefficients (B value) for each independent factor that can be used for formatting the predictive equation as follows:

Implementation extent of MAPs= -4.73 + (1.12 * company size) + (.87 * organisational culture) + (-.08 * company age) + (5.11 * exports percentage) + (1.48 * accounting education quality)

The equation indicates that 5 out of the 7 tested independent factors met the statistical criteria of the stepwise regression and entered in the equation while both the TMS and the EE factors did not meet these criteria. In other words, only 5 out of the seven independent factors, which were inserted in the multiple regression test, were the most influential factors in predicting the research outcome. In terms of the degree and direction of relationship between each independent factor and the outcome, it can be discovered through the B value. The above model shows that the five predictors affect the outcome positively except for the company age that influences negatively. Furthermore, the model reveals that, for example, when the company size increases by one unite (out of the 5 points scales), the implementation extent of MAPs increase by 1.12 unit (21 interval scale). It is worth to mention that this impact of (e.g., company size) on the outcome is correct only when the effects of the remaining four predictors are held constant.

Table 61: Coefficients of the first multiple regression model

Model 5	Non- standardised Coefficients		Standardised Coefficients	T	Sig ·	Collinearity Statistics	
	B	Std Error	Beta			Tolerance	VIF
Constant	-4.73	1.40		-3.38	.00		
Company Size	1.12	.21	.40	5.28	.00	.41	2.45
Organisational Culture	.87	.38	.17	2.29	.02	.44	2.26
Company Age	-.08	.03	-.15	-3.13	.00	.97	1.03
Exports Percentage	.51	.16	.23	3.22	.00	.47	2.13
Accounting Education	1.48	.54	.21	2.76	.01	.40	2.51

* Dependent variable: the implementation extent of the MAPs

For purpose of acquiring comparable and standardised results about the individual contribution of independent factors to predicting the dependent factor, the standardised version of B value (Beta) can be used for this purpose. This is because it is computed using the standard deviation unites rather than the units of different scales used for assessing the outcome and prediction factors. Looking at the Beta value associated with each of the five predictors Table 61, we can order the predictors in descending method in respect of their contribution importance as follows: the company size (.40), the export percentages (.23), accounting education (.21), OC (.17), and finally the company age (-.15). Accordingly for example, when the company size increase by one standard deviation (1.33), the implementation extent of MAPs increases by .40 standard deviation (.40 * 3.71). To find out whether each of the five predictor is making a significant contribution to the multiple regression model, it is helpful to check the t-test and its Sig. associated with every B value.

Table 61 shows that all the Sig. values were less than .05 consequently, the whole five predictors are significant predictors of the implementation extent of MAPs. Additionally from the amount of t-test, it can be seen that the factor of company size has the greatest predictor influence (t-test = 5.28), followed by both company age and exports per chance with almost similar impact.

Table 62: Casewise diagnostics of the first multiple regression model

Case Number	Std. Residual	MAPs Implementation	Predicted Value	Residual
38	2.269	10.00	6.0895	3.91052
75	2.192	10.00	6.2218	3.77825

a. Dependent variable: MAPs implementation

Finally, it is important to find out whether there is any outlier⁵⁹ among the analysed data, and this is usually through checking the value of standardised residual for every case in the data. In detail, the outlier is the case that has a standardised residual higher than 2 or less than -2 (Field, 2009). Usually, it is accepted to have up to 5% of the analysed cases with standardised residual outside the limits (from -2 to 2), fortunately table 62 shows that only 2 cases (cases 38 and 75), i.e. less than the accepted percentage, have standardised residual values outside the limits. This in turn means that the analysed sample is almost outlier free and there are no cases to be investigated, consequently the multiple regression model of the MAPs' implementation level is fairly accurate.

7.3.3.6- The multiple regression analysis of the association with the complexity level of costing systems

The multiple regression analysis between the complexity level of costing system and 10 of the research independent factors (the whole 11 independent factors except for the factor of cost structure that showed no significant association above in the bivariate correlation analysis) was discussed in this subsection. After running the multiple regression test, the researcher got results about the summary statistics and parameters for each of the stepwise multiple regression' steps (6 steps/models herein) however the focus was only on the model No. 6. It is useful to discuss the summary statistics, which comments on a fit of the resulted model to the collected data, first and then reviewing the parameters of resulted multiple regression.

⁵⁹ The outlier is the case that differs significantly from the major trend of the collected data (Field, 2009).

The fit of regression model

For purpose of testing the strength of the multiple regression equation, it is useful to check the value R-square value (coefficient of determination) in the model summary table 63. This table shows that the value of R-square for the last model (NO. 6) was 0.866, and this indicates that the six independent factors shown in the resulted model accounted for 87% of the variance in the dependent factor i.e. the complexity level of costing system.

Table 63: Model summary and ANOVA test on the second multiple regression equation

Model	Model Summary			Change statistics			Durbin - Watson	ANOVA	
	R	R Square	Adjusted R Square	R square change	F change	Sig .		F	Sig.
1	.822 ^a	.675	.670	.675	124.745	.000		124.74	.000 ^a
2	.869 ^b	.756	.748	.081	19.478	.000		91.319	.000 ^b
3	.893 ^c	.797	.787	.042	11.922	.001		76.124	.000 ^c
4	.910 ^d	.827	.815	.030	9.877	.003		68.300	.000 ^d
5	.921 ^e	.849	.835	.021	7.936	.007		62.876	.000 ^e
6	.930 ^f	.866	.851	.017	6.836	.012	1.350	58.996	.000 ^f

a. Predictors: (Constant), TMS

b. Predictors: (Constant), TMS, Export Percentage

c. Predictors: (Constant), TMS, Export Percentage, product diversity

d. Predictors: (Constant), TMS, Export Percentage, product diversity, accounting education

e. Predictors: (Constant), TMS, Export Percentage, product diversity, accounting education, and Company Age²

f. Predictors: (Constant), TMS, Export Percentage, product diversity, accounting education, Company Age, company age.

g. Dependent Variable: complexity of costing systems

To check the ability of generalising the resulted mode to the whole research population, it is helpful to review the adjusted R square value of the model NO. 6. Basically, the less the difference between the R square and adjusted R square values is, the more proper the multiple regression equation can be generalised to the research population. It can be noted from table 63 that this difference was small ($.866 - .851 = .015$), and accordingly it can be said that if the resulted model was acquired from the research population, it would account for 85% (only 1.5% less variance) of the variance in the complexity level of costing systems. In other words, it can be said that the cross-validity of the resulted model is very good. Furthermore, it is useful to discuss the figures of change statistics that shows the change in R square value due to inclusion of new predicators. Model 6 in Table 63 shows that adding the factor of company age causes R square to increase by .017, and this change (in the value of variance explained) gives rise to an F- ratio of 6.84 that was significant with Sig. < 0.01. Another fit test is to test that whether there was correlation between the residual terms (errors), and this is

usually through checking the value of Durbin-Watson analysis. One of the rules used is that any value of the Durbin-Watson between 1 and 3 can be considered acceptable. Table 63 shows that the value of Durbin-Watson is 1.350 therefore it can be said that the assumption of independent error is tenable. Finally, to verify the existence of linear relationship between the research outcome and the predictors i.e. R-square = .87, it is helpful to test the hypothesis of no linear association between them. The analysis of variance (ANOVA), however, can be used for this purpose (Ho, 2006). Table 63 revealed that F value is 59.00 with a significance level of .000 (less than .001), therefore, this hypothesis (no linear relationship) can be rejected.

The regression model

Table 64 defines the multiple regression model of the complexity level of costing system, particularly the first part that shows the non-standardised coefficients (B value) for each predictor that can be used for formatting the predictive equation as follows:

$$\text{The complexity level of costing system} = -1.68 + (.44 * \text{Top management support}) + (.18 * \text{exports percentage}) + (.66 * \text{product diversity}) + (.53 * \text{accounting education quality}) + (-.04 * \text{company age}) + (.30 * \text{company size})$$

The above model shows that 6 out of the 10 tested independent factors met the statistical criteria of the stepwise regression and stayed in the equation. It is noteworthy that although the bivariate correlation analysis (in the previous section) reported that each of the EE, OC, complexity of manufacturing process, and purposes of cost information, has a significant association with the complexity of costing system, the multiple regression analysis herein reported that they do not have such an association. In terms of the degree of natural of association between each predictor and the outcome, it can be discovered through the B value. The resulted equation shows that five predictors have influenced the outcome positively and only one factor, namely the company age, affected negatively. This means that, for example, when the company size increases by one unite (out of the 5 points scales), the complexity level of costing system increases by .30 units (15-point ordinal scale). However, the impact of every predictor on the outcome is true only when the effects of the remaining five predictors are held constant.

Table 64: Coefficients table of the second multiple regression model

Model 6	Non- standardised Coefficients		Standardised Coefficients	T	Sig ·	Collinearity Statistics	
	B	Std Error	Beta			Tolerance	VIF
Constant	-1.68	.82		-2.04	.04		
Top management support	.44	.21	.20	2.09	.04	.27	3.71
Exports percentage	.18	.07	.177	2.43	.02	.46	2.17
Product diversity	.66	.20	.255	3.25	.00	.40	2.52
Accounting education	.53	.25	.161	2.15	.03	.44	2.27
Company age	-.04	.01	-.157	-3.06	.00	.93	1.08
Company size	.30	.12	.234	2.61	.01	.31	3.27

* Dependent variable: the implementation extent of the MAPs

However, for purpose of acquiring standardised information about the individual contribution of independent factors to predicting the outcome, the standardised version of B value (Beta) is usually used by researchers for this purpose. This is because it is calculated using the standard deviation unites rather than the units of different instruments used for assessing the dependent and independent factors. Using the Beta value associated with each of the six predictors in Table 64, the six predictors can be ordered in descending method in terms of the significance of their contribution as follows: the product diversity (.255), company size (.234), TMS (.200), exports percentage (.177), accounting education (.161), and finally company age (.157). Accordingly for example, when the company size increase by one standard deviation (1.33), the complexity level of costing system increases by .23 standard deviation (.23 * 1.73). To find out whether each of the six predictors is making a significant contribution to the multiple regression equation, we can check the t-test and its Sig. associated with every B value. Table 64 shows that all the Sig. values were less than .05 consequently the whole six independent factors can be considered significant predictors of the complexity level of costing system. Moreover according to the amount of t-test, it can be seen that the factor of product diversity has the greatest predictor influence (t-test = 3.25), followed by the company age (t-test = 3.06).

Finally, the last step in the multiple regression analysis is to check whether there is any outlier (defined above) among the analysed data, and this is usually discovered by reviewing the value of standardised residual for every case in the data. The outlier is the case with a standardised residual higher than 2 or less than -2 (Field, 2009). Usually, it is accepted to have up to 5% of the analysed cases with standardised residual outside the limits (from -2 to 2), fortunately none of the cases studied in this multiple regression analysis have standardised

residual values that are outside the allowed limits. This in turn means that the analysed sample is almost outlier free and there is no need to investigate any of the studied cases, consequently the multiple regression model of the complexity level of costing system is fairly accurate.

7.3.3.7- Reliability of multiple regression model

7.3.3.7.1- Size of the research sample

The size of collected data is considered one of the key factors used for asserting the reliability of the resulted multiple regression model. In the available literature, there are no conclusive rules for determining the adequate sample size; alternatively there are a few of what are called 'rules of thumb' that help researchers in setting the size of their samples e.g., 10 cases or 15 cases of the research population for every independent factor in the research (Field, 2005). The researcher did not adopt any of these rules; alternatively, he uses the principle developed by Miles and Shevlin (2001, cited in Field, 2005, P.173). For determining the sufficient size of sample, Shevlin (2001) depends on, in addition to the number of research predictors; the size of effect⁶⁰, a researcher expects to find it between the research predictors and the outcome. The rule distinguishes between three categories, and one of them was a study with a large effect (i.e. the correlation coefficients between the dependent factor and every independent factor is 0.5 or higher) and up to 20 independent factors, requires only a sample size of 80 or more for producing reliable results.

Reviewing the values of correlation coefficients between the dependent and independent factors as reported earlier (section 7.3) shows that the whole correlation coefficients were higher than 0.5 except for two correlation coefficients, between the company age and both the complexity level of costing system and the implementation extent of MAPs factors, which were -0.345 and -0.211 respectively. Moreover, the numbers of the independent factors for the two regression models were 7 and 10 (less than 20 factors), and this means that the size of collected data i.e. 108 cases was sufficient for asserting the reliability of the two produced multiple regression equations.

⁶⁰ The most common analysis used for measuring the size of effect between two factors is the correlation coefficient (R) (field, 2005) as follows: small effect (r = .10) this means the effect explain only 1% of the outcome; medium effect (r = .30) this means the effect explain 9% of the outcome; and finally large effect (r = .50) this means the effect explain 25% of the outcome.

7.3.3.7.2 - Multi-collinearity issue

Another issue in the process of testing the reliability of resulted multiple regression model is the multi-collinearity problem. It is vital to check whether there is multi-collinearity among the independent factors in the resulted predictive equation. Multi-collinearity problem simply takes place once it is discovered the existence of strong relationship between two or more of these independent factors. Although each coefficient in the multiple regression equation represents the unique contribution of its factor to the dependent factor (Bryman and Cramer, 2005), the existence of association between two or more predictors is not benign as it brings about in reducing the reliability of multiple regression equation. Ho (2006, P.248) stated that the existence of multi-collinearity problem causes to:

'Overlap or sharing of predictive power, and this may lead to the paradoxical effect, whereby the regression model fits the data well, but none of the predictor variables has a significant impact in predicting the dependent variable'.

This means that within the multi-collinearity problem, the productive power of one independent factor, in the multiple regression model, will be reduced by the extent of its association with the other independent factors.

In terms of diagnosing this problem, the MA and statistical analysis literature show that mainly there are three methods for detecting the multi-collinearity issue. The **first** is through checking the correlation matrix among the independent factors shown in the resulted multiple regression equation. If it is noticed the existence of any significant association between these independent factors, this means that there is a multi-collinearity problem (Saunders et al., 2009). It is noteworthy that it was agreed by the majority of MA researchers to consider a correlation coefficient value exceeding 0.8 as an indicator of the multi-collinearity problem. The **second** is by checking the figure of the VIF (variance inflation factor) value that can be calculated usually during running the multiple regression analysis in SPSS software. Commonly, the VIF value less than 10 means that multi-collinearity is not a problem in the multiple regression model. Finally, the last method is by reviewing the tolerance figure that represents the variance percentage in the independent factor that cannot be explained by the other independent factors (Ho, 2006). The Tolerance figure can be requested also using the SPSS software, and in fact it is calculated through the following simple equation: $1/VIF$. Therefore, the value of tolerance that is less than 0.1 indicates the existence of multi-collinearity problem (Field, 2005).

Table 65: Correlation matrix of the independent factors of the first multiple regression

		(1)	(2)	(3)	(4)	(5)
Pearson correlation	(1)	1.000	-.024	-.025	-.108	-.116
	(2)	-.024	1.000	.669	.604	.694
	(3)	-.025	.669	1.000	.630	.586
	(4)	-.108	.604	.630	1.000	.689
	(5)	-.116	.694	.586	.689	1.000
Sig. (1-tailed)	(1)	.	.410	.406	.152	.133
	(2)	.410	.	.000	.000	.000
	(3)	.406	.000	.	.000	.000
	(4)	.152	.000	.000	.	.000
	(5)	.133	.000	.000	.000	.

(1): company age, (2) company size, (3) export percentage, (4) OC, and (5) accounting education.

The first method, i.e. the correlation matrix among the independent factors, was used initially for checking the multi-collinearity' problem in both the multiple regression equations. The first matrix table 65 showed that there was no significant association between any of the five independent factors in the MAPs multiple regression equation as the whole correlation coefficients values were less than 0.8. Therefore, it can be said that there was no a multi-collinearity problem in the multiple regression equation of the implantation extent of MAPs factor. By looking at the second matrix table 66 among the independent factors in the equation of the complexity level of costing systems, it can be noted that the whole correlation coefficients values were less than 0.8. This again indicates that the multi-collinearity problem is not existed in the multiple regression equation of the complexity level of costing system.

Table 66: Correlation matrix of the independent factors of the second multiple regression Equation

		(1)	(2)	(3)	(4)	(5)	(6)
Pearson correlation	(1)	1.000	-.150	-.180	-.144	-.224	-.238
	(2)	-.150	1.000	.672	.793	.656	.693
	(3)	-.180	.672	1.000	.753	.616	.591
	(4)	-.144	.793	.753	1.000	.659	.658
	(5)	-.224	.656	.616	.659	1.000	.630
	(6)	-.238	.693	.591	.658	.630	1.000
Sig. (1-tailed)	(1)	.	.122	.081	.132	.040	.031
	(2)	.122	.	.000	.000	.000	.000
	(3)	.081	.000	.	.000	.000	.000
	(4)	.132	.000	.000	.	.000	.000
	(5)	.040	.000	.000	.000	.	.000
	(6)	.031	.000	.000	.000	.000	.

(1) Company age, (2) Company size, (3) Product diversity, (6) Accounting education, (4) TMS, and (5) Exports percentage.

However, for confirming the findings (the non-existence of multi-collinearity), the other two methods i.e. the VIF and tolerance figure were used for checking the multi-collinearity problem in both the multiple regression equations. By going back to the Tables 61 & 64 above, it can be found that both the values of VIF and Tolerance figures for the whole independent factors were less than 10 and more than 0.1 respectively. Therefore, it can be said again that the multi-collinearity is not a problem in the two multiple regression models.

To conclude, the three methods were used for investigating the multi-collinearity problem, and all have showed that the resulted multiple regression models are free from traces of multi-collinearity problem. Therefore, it can be said that both models are reliable for predicting the values of dependent factors and identifying the independent factors having the greatest influence on these dependent factors.

7.3.4- Summary

After discussing the different statistical tests used in this study, this sub-section focuses on presenting the findings related to the research hypotheses. Using the bivariate correlation analysis (Appendix G), it was concluded the existence of significant associations between both the research dependent factors and independent factors individually except for one factor. In particular, it was the factor of cost structure, which showed no association with the complexity level of costing system. The stepwise multiple regression analysis was next used for identifying the independent factors having the greatest influence on both the research dependent factors. The result was a generation of two models, i.e., one for each dependent factor i.e. one for the complexity level of costing system and another for the implementation extent of MAPs. The two models contained 6 and 5 independent factors respectively as the most significant factors in predicting the research dependent factors. In terms of the factors that did not appear in the models, namely, TMS and EE factors for the implementation extent of MAPs' model and OC, complexity of manufacturing process, EE, and the purposes of cost information factors for the complexity level of costing systems' model, it cannot be called as not influential factors. Alternatively, it can be said that they have an impact on the dependent factors, as asserted in appendix G, but their influence were weakened and became not significant due to the increasing ascendancy of other influential factors (those appeared in the multiple regression equations) in Syrian context. The results of multiple regression analysis can be summarised as follows:

- The independent factors having the greatest influence on **the complexity level of costing system** ordered in descending way are: (1) the product diversity, (2) company size, (3) TMS, (4) exports percentage, (5) accounting education quality, and finally (6) company age.

- The independent factors having the greatest influence on **the implementation extent of MAPs** ordered in descending way are: (1) the company size, (2) the export percentages, (3) accounting education, (4) OC, and finally (5) the company age.

According to these findings, the researcher identifies the research hypotheses that were accepted and rejected as follows.

7.3.4.1- The hypotheses about the complexity level of costing system

A): the accepted hypotheses

H1-2: There is a positive association between the AE factor and the complexity level of costing systems. (**Accepted**)

H1-3: There is a positive association between the company size and the complexity level of costing systems. (**Accepted**)

H1-5: There is a positive association between the TMS and the complexity level of costing systems. (**Accepted**)

H1-6: There is an association between the percentage of company exports and the complexity level of costing systems. (**Accepted** with a positive association)

H1-7: There is an association between the company age and the complexity level of costing systems. (**Accepted** with a negative association)

H1-9: There is an association between the product diversity and the complexity level of costing systems. (**Accepted** with a positive association)

B): the rejected hypotheses

H1-1: There is a positive association between the uncertainty level of EE and the complexity level of costing system. (**Rejected**)

H1-4: There is a positive association between the organisational culture and the complexity level of costing systems. (**Rejected**)

H1-8: There is a positive association between the complexity of manufacturing process and the complexity level of costing systems. (**Rejected**)

H1-10: There is an association between the purposes of cost information and the complexity level of a costing system. (**Rejected**)

H1-11: There is an association between the cost structure and the complexity level of costing systems. (**Rejected**)

7.3.4.2- The hypotheses about the implementation extent of MAPs

A): the accepted hypotheses

H2-2: There is a positive association between the AE factor and the implementation extent of MAPs. (**Accepted**)

H2-3: There is a positive association between the company size and the implementation extent of MAPs. (**Accepted**)

H2-4: There is a positive association between the corporate culture (creativity) and the implementation extent of MAPs. (**Accepted**)

H2-6: There is an association between the percentage of company exports and the implementation extent of MAPs. (**Accepted** with a positive association)

H2-7: There is an association between the company age and the implementation extent of MAPs. (**Accepted** with a negative association)

B): the rejected hypotheses

H2-1: There is a positive association between the uncertainty level of EE and the implementation extent of MAPs.

H2-5: There is a positive association between the TMS and the implementation extent of MAPs.

Chapter (8): Findings, Comparison, and Discussion

8.1- Introduction

After analysing the data collected from 108 PICs based in Syria, this chapter summarises the findings and compares them with the previous relevant studies. Accordingly, this chapter is structured as follows: the second section presents information about the demography of respondents and features of responding companies, the third section displays and discusses the state of costing systems, the fourth section details the implementation' state of the surveyed MAPs, the fifth section comprehensively discusses the implementation and significance level of costing and MA practices together, and finally the sixth section identifies the contingent factors having the most significant influence on cost and MAPs.

8.2- The demography of respondents and responding companies

8.2.1-The demographical characteristics of respondents

The collected data showed that majority of respondents were appropriate individuals to complete the research questionnaire. This was reflected clearly through the specialisations (83.3% held accounting based qualification) and their positions (almost 90% were financial managers and accountants). Additionally, the qualifications and working years of the respondents were various and included a wide range of degrees and service in their companies.

8.2.2-The features of responding companies

The analysis showed that the observed companies were mainly large 58.3% versus 41.7% medium companies moreover the companies' ages were diversified (from 9 to 46 years old) consequently with longevity in the field they operate. In terms of the size and quality of the accounting function in the responding companies, on one hand the number of accounting staff working in the responding companies extended from 1 to 9 accountants with a mean of 4 staff moreover the majority (90.5%) of these staff were accounting specialists. On the other hand, the quality level of the accounting function was judged acceptable with almost one third (32.3%) holding postgraduate degrees (including accounting professional qualifications) and half of the accounting staff held bachelor degrees. Thus, responding companies in their

accounting function reflected their preference to employ only individuals with accounting specialisations and adequate qualification. Finally, regarding the MA function, the results reflected the interest of responding companies in the cost and MA information to the extent that 10.2% of them had a MA department and 62% employed MA accountants. Moreover, most of the responding companies (76.9%) operated special accounting software for the MA function.

Concerning the EE of responding companies, first, the findings showed that the competition and uncertainty levels in its seven components were at medium level except for that of price competition which was at a high level. However, almost half of the responding companies were exposed to the intensity of international competition with 48.2% exporting their products with these percentages ranging from 11% to 50% of their total sales. Second, the AE surrounding the responding companies was featured identifying a limitation of accounting graduates capacity. This was in respect of their abilities for thinking innovatively, implementing cost and MA practices, and dealing with accounting software. Moreover, the analysis showed the existence of limited employment (4.6%) of accountants with foreign qualifications additionally most of the companies not employing such a staff announced that they are not looking for employing accounting staff with such qualifications.

Regarding the internal environment of companies, first, the support given by top management for cost and MA practices was at a medium level with a mean of 3.1. One third of companies however announced significant support by top management. Second for organisational cultural values, the study found that results orientated approach and dynamic culture values were the most common among the responding companies while one value (taking advantage of opportunities) out of the innovation culture values was the most common. Third, all companies had a high percentage of indirect costs with a mean of 32.3% of total company costs. Fourth, the complexity level of manufacturing process in the responding companies was at medium level (mean of 3.2) with just under third of the respondents having a great or very great level of manufacturing complexity. Fifth, around half of the responding companies announced producing diversified products with nearly half (45.4%) manufacturing over 20 products, 51.9% producing mainly standardised products, and 38% stated that their products are varied and greatly different in terms of the consumption of overheads. Finally, under half of the responding companies announced using cost information for advanced purposes, particularly 42.6% for pricing decisions and 49.1% for profitability analysis.

8.3- The state of costing system in Syrian PICs: a comparison

This section discusses the research findings about the state of cost accounting systems used in Syrian PICs and their complexity level (section 6.3). Moreover, it compares them with the state of costing systems in developed and LDCs as reviewed in section 3.5. For purpose of this comparison, the researcher first summarises the features of costing systems used in the responding companies in table 67, and then compares them with those used in the main developed and LDCs studies.

Table 67: State of costing systems in Syrian PICs

The State of Costing System			
Research Context	108 Syrian PICs	Variable& AC	NA
Direct costing usage	24.1%	Single vs. multiple allocation rates	51.6 vs. 48.38%
Variable costing usage	18.5%	1-5 vs. over 5 cost pools	62.9 vs. 37.1%
AC usage	57.4%	The most used cost drivers	Experience-based (74.2%), direct labour hour (46.8%), & direct machine hour (32.3%).
ABC usage	0.0%	Average direct& indirect costs	67.7 vs. 32.3%

It can be concluded from the above table that although the average of overhead costs stated by the responding companies was not low (32.3%), over one third of them (42.6%) do not assign their overheads to cost objects. In particular, they indicated using the most simplistic costing systems i.e. direct and variable costing systems (24.1% and 18.5% respectively). In terms of the companies assigning their overheads (57.4%), all of these announced using traditional AC systems for calculating their cost information - none of the companies declared using the ABC system. Regarding the complexity level of the AC systems used the analysis showed that it was limited with only a maximum of 3 different cost drivers having been used. The majority (62.9%) of traditional costing users have used up to 5 cost pools in the overheads allocation process. In detail, over half of the user companies (51.6 %) have used only a single cost driver (18.7% of them⁶¹ used a blanket overhead rate⁶²) for allocating

⁶¹ The percentage of responding companies that announced using the blanket overhead rate was 9.7% of the total responding companies (108).

the costs of cost pools to cost objects, and the remaining users (48.4%) have used only 2 to 3 cost drivers. The number of cost pools used in the first stage of the overheads allocation process was also limited with the majority of users (62.9%) having used only from 1 to 5 cost pools, and the minority (37.1%) have employed up to 20 cost pools for overheads allocation. Finally, the most used cost driver (by 74.2% of the companies) was the driver based on company' experience, and this means that the majority of Syrian PICs do not use even volume-based cost driver (e.g., direct labour and direct machine hours), alternatively, they are using non-scientific drivers based on their own experience. However, 46.8% of the AC user companies have used the direct labour hour and 32.3% of them used the direct machine hour as the overheads cost drivers. Concerning the ABC systems, none of the responding informed using them; additionally none of the responding companies stated they were considering the adoption/implementation of this system or that they had used them before. Finally, it is obvious that none of the traditional costing users have used cause-and-effect allocation bases; alternatively all of them have used so-called arbitrary bases for overheads allocation process.

After summarising the state of costing system used in Syrian PICs, the researcher compares it with the most recent studies in developed and LDCs countries, as shown in table 68, in order to highlight the differences and similarities between this study finding and others in developed and LDCs.

⁶² This term is used when a company used only one overheads allocation rate for the whole company i.e. traditional costing system base on one allocation rate and one cost pool (Drury, 2001).

Table 68: Comparing the state of costing systems in the current research with those in developed & LDCs

Costing systems implemented/ adopted	Less developed countries				Developed countries		
	Szychta (2002)	Haldma and Laats (2002)	Hutaibat (2005)	Current study	Cinquini et al. (1999)	Lamminmaki and Drury 2001	Al-Omiri and Drury (2007)
Research context	60 Polish companies	Estonia manufacturing companies	103 Jordanian manufacturing companies	108 Syrian PICs	132 Italian companies	62 New Zealand companies	176 UK companies
Variable/direct costing	NA*	39%	NA	42.6%	25%	0.0%	23%
Full/ AC	75%	55%	100%	57.4%	75%	100%	35%
Multiple costing systems	15% Absorption and direct costing	6% Full and variable costing	NA	NA	NA	0.0%	NA
Single vs. multiple allocation bases	24% vs. 76%	50% (up to 2) vs. 70% (up to 4 bases)	61% vs. 30% (up to 4 bases)	51.6% vs. 48.4% (up to 3 bases)	100% multiple bases	52% vs. 48%	27% vs. 73% (up to over 10 bases)
Type of overheads allocation bases most used	68.5% direct labour	Direct labour cost 42%, sales volume 38%, direct labour house 28%, and direct material 26%.	Number of units produced 75.9%, direct material cost 28.6%, direct machine hours 15.8%, direct labour cost/hours 12.8%.	Experience-based 74.2%, direct labour hour 46.8%, & direct machine hour 32.3%.	78% direct labour hours, 45% machine hours & 44% direct materials.	Direct labour 84%, machine hours 53%, units of outputs 47%, & direct material 44%	NA
Average of direct & indirect costs	66.5% & 33.5%	NA	NA	67.7 vs. 32.3%	60% & 40%	79% & 21%	69.1% & 30.9%
Modern costing systems	NA	7% users	NA	0.0%	ABC: 10% users & 13.5% adopters	ABC: 12% usage intention & 5% introduce it	ABC: 29% adopters

* 10% of the companies used the standard costing system.

Using the content of the above table, the researcher arranges the comparisons through the following items.

The implementation of variable/direct costing system: table 68 shows that the implementation degree of this system in Syrian PICs was slightly higher than those in the reviewed LDCs. In particular, it was used by 42.6% of the responding companies vs. 39% in Estonia while none of the companies in both Jordan and Poland announced using the variable costing system as a sole costing system. In developed countries, the variable costing system was used also but at lower rates, namely, 25% and 23% of companies in Italy and UK respectively a sole costing system while none of the New Zealand companies indicated using this system. Finally, It can be said that the variable/direct costing systems are still being used in developed and LDCs, particularly by the small size companies, moreover their relatively high implementation by

Syrian PICs implies a lack of Syrian PICs' concern, especially medium size, about the accuracy of their cost systems considering the reported average rate of overheads 32%.

The implementation of AC system: it can be noted that this system was more in use than the variable/direct costing systems in both developed and LDCs. In this research, over half of the responding companies (57.4%) declared using this system, and this is consistent with both the developed (usage rates from 35% in UK to 100% in New Zealand) and LDCs (usage rates from 55% in Estonia to 100% in Jordan). It is noteworthy to mention that the AC' use level in UK was relatively the lowest, and this might be on expenses of the adoption of ABC that was relatively high at 29%.

The implementation of multiple costing systems: sometimes companies maintain two costing systems to meet different needs, e.g., one system for financial reporting (measuring profit and evaluating the inventory) and another for decision making. In table 68, it can be noted that only two studies announced employing more than one costing system, namely, absorption and variable costing systems. However, the rates were limited, only 15% in Poland and 6% in Estonia. It is worth to mention that few older studies reviewed above (section 3.5.3) reported such a use, e.g., the Bjorenak' study (1997b) concluded that 93% of the responded companies in Norway used both variable and AC systems together, and Drury and Tayles (2000) reported that 9% of the responding companies in the UK maintained two costing systems.

The complexity level of AC system: it can be concluded from the above table that the percentages of companies using a single overheads allocation base were low in developed countries comparing to those in LDCs. In the LDCs' studies, the rates were 50% and over and this is consistent with the current study finding, except for Szychta' study (2002) that stated a relatively low use, only 24% of the responding companies. Concerning the maximum number of multiple allocation bases used, the current study showed also consistency with those in LDCs (up to 3 bases vs. up to 4 bases). In developed countries, only two studies informed using a single allocation base, and the percentages were also not low, in particular 52% of the responding companies in Lamminmaki and Drury' study (2001) in New Zealand and 27% in Al-Omiri and Drury (2007) study in UK. In terms of the type of bases used for the overheads allocation, table 68 reveals that almost all the studies in developed and LDCs used the volume-based cost drivers, and particularly the direct labour costs/hours as the most popular cost driver among the reviewed studies. However, the current study showed some inconsistency in this context when reported that the majority of responding companies used

what they called it experience-based bases, and this might be attributed to the limitation of these companies' knowledge of the implementation of costing systems.

Finally, the state of modern costing systems, particularly the ABC system: from table 68, it can be noted that none of the studies conducted in LDCs reported the implementation of ABC system, except for the study conducted in Estonia by Haldma and Laats (2002) that found that 7% of the responding companies were using the ABC system. This indicates the existence of consistency between the current research and the LDCs' studies. In the developed world, the ABC system was relatively more popular where three of studies reviewed in table 68 reported either ABC usage (10% in Italy and 5% in New Zealand) or adoption (29% in UK and 13.5% in Italy). It is worth to remind that the majority of studies reviewed in the current research are not dedicated to studying ABC systems. Alternatively, by a quick review to the ABC literature, higher implementation/adoption rates of the ABC systems can be found, mainly in developed countries. For example, Gosselin (1997) study in Canada found that nearly half of the responding companies (48%) announced adopting the ABC; 64% of them implemented it while the remained adopters (36%) did not implement the ABC.

8.4- The state of MA practices in Syrian PICs: a comparison

In addition to studying the state and complexity level of costing system, the researcher examined the state of a set of MAPs, namely, Budgeting, standard costing, performance measurement, and some modern MA practices, in Syrian PICs. Analysing the data collected from 108 companies revealed the following facts about theses MAPs, which are presented in descending order according to its implementation extent among the responding companies.

8.4.1- Performance measurement practices

These MAPs were the most popular among the responding companies where over three quarters (86.1%) of them announced using such practices for evaluating their performance. Out of the eight (5 traditional and 3 modern) performance measurement practices examined in this research, the sales and net profit were used all users. These were followed by four practices, namely, product quality (30.1%), variance analysis⁶³ (28%), return on investment (15.1%), and customer satisfaction (11.8%). None of the respondents announced using either the residual income or meeting budgets practices. Moreover, almost all of the users indicated

⁶³ The variance here is related to the difference resulted from comparing the standard costs with the actual costs.

that the 6 used practices were very significant for them. It can be said that the majority of Syrian PICs have tended to use only basic practices (sales and profit) for measuring their performance, and the minority have employed a set of more advanced financial and non-financial practices. It is noteworthy that all the latter were used mainly by large companies. However, according to the research context, the findings are not surprising being that only large companies in Syria contain different divisions that require using relatively more advanced financial practices (return on investment and variance analysis) for measuring their performance. Such companies produce a wide range of outputs and have a large number of customers requiring the use of non-financial practices for maintaining long-term profits and their success. Finally, regarding the use of the residual income practice, the result was not astonishing given such a modern MA practice is still being reported as not popular particularly in LDCs (Joshi, 2001 and Hutaibat, 2005 studies); while concerning the meeting budgets practices, this might be attributed to the limitation of the budgeting system implementation observed in this study. Table 69 compares the current findings with the most relevant studies reviewed above in the literature review chapter especially those conducted in LDCs.

Table 69: Comparing the state of performance measurement in the current research with those in LDCs

The state of performance measurement	Joshi (2001) Adoption %	El-Ebaishi et al. (2003)	Hutaibat (2005) Usage %	Nimtrakoon (2009) Adoption %	The current research Usage%
Research context	60 Indian companies	121 Saudi companies	103 Jordanian Companies	135 Thai organisations	108 Syrian companies
Performance measurement practices	100 to 43% for 6 financial & 88 to 22% for 6 non-financial practices	21% variance analysis, 58% cost centres, 37% revenue centres, & 27% profit centres.	91 to 74% for 7 financial & 56 to 1.5% for 6 non-financial practices	96 to 74% for 7 financial & 87 to 67% for 5 non-financial practices	100 to 28% for 4 financial & 30 to 12% for 2 non-financial practices

It can be noted from the above table that the current research reported, similar to previous research, implementing both the financial and non-financial instruments for measuring performance in Syrian PICs. However, the number of used practices was limited (6 practices) comparing to the other relevant studies that showed the adoption/usage of a wider range of performance measurement practices (except for El-Ebaishi et al., 2003). In detail, 12 practices were used in India, 13 practices in Jordan, 12 in Thailand, and finally only 4

practices in Saudi Arabia. This limited implementation might be attributed to being that Syrian PICs are still not large and structured enough to utilise the employment of such MA practices. Furthermore, table 70 displays a comparison between this research and previous LDCs studies in terms of the implementation extent of the eight practices surveyed in this research.

Table 70: Comparing the implementation extent of performance measurement practices examined in the current research with those in LDCs

The state of performance measurement	The current research Usage%	Joshi (2001) Adoption %	Hutaibat (2005) Usage %	Nimtrakoon (2009) Adoption %
Sales	100	NA	91	NA
Net profit	100	100	NA	83.7
Return on investment	15.1	100	45.9	91.9
Residual income	0.0	43	6.8	74.1
Variances analysis	28.0	100	42.1	92.6
Meeting budgets	0.0	NA	73.7	NA
customer satisfaction	11.8	80	78.2	86.7
Product quality	30.1	NA	75.9	NA

From the above table, it can be concluded that the majority of Syrian PICs have used only a limited number of performance measurement practices comparing to other countries that showed a higher implementation level of these eight practices, especially comparing to the less developed neighbour country, i.e., Jordan. In detail, most of the difference in the implementation degree is related to the following practices, residual income, meeting budgets, and customer satisfaction.

8.4.2-Standard costing system

The standard costing practices were the second most popular practice among Syrian PICs with 43% of the responding companies using them. The most established cost standards among these companies were direct material quantity (43%), direct labour hours (39%), direct labour wages (14%), and direct material price (9%). Two users (2%) announced establishing standards for variable overhead costs while none used standards for fixed overheads. It is noteworthy that nearly all of the users reported these standards as very significant for them. Regarding the method followed for establishing cost standards, almost two-thirds (69.6%) of the users implemented the average of historical records while the

others (30.4%) used engineering studies. Finally, in respect of the types of cost standards, the analysis revealed that currently attainable standards were the most used among the users at 58.7% and this was followed by basic standards at 41.3%. Finally, unsurprisingly, none of the users used ideal cost standards.

Table 71 compares these findings with those of relevant studies and shows the existence of large consistency among them, except for the Hutaibat’ study (2005) in Jordan, which showed a limited use of standard costing by approximately 26% of the responding companies. The result reflects the concern of LDCs in controlling their different activities and costs, and this is consistent with the main interest of companies’ management in LDCs i.e. cost reduction rather than long-term planning systems (Hopper et al., 2009). In terms of the Jordanian study, the researcher attributed this low implementation to reasons related to the influence of governmental budgeting system on the private companies to the extent that make them more familiar with budgeting systems (see next table 73).

Table 71: Comparing the state of standard costing system in this research with that in LDCs

The state of standard costing	The current research %	El-Ebaishi et al. (2003) %	Hutaibat (2005) %	Ibrahim (2007) %
Implementation rate	43	57	26	44.4
Methods used for setting the standards	70 historical records & 30 engineering studies	NA	49 historical records	69 historical records& 56 engineering studies
Type of standards	59 current attainable & 41 basic standards	79current attainable& 16 ideal standards	29 current attainable, 20 basic, & 3 ideal standards	62.5 current attainable& 37.5 basic standards

Regarding the method used in the LDCs for setting cost standards, table 71 shows that the historical records was the most popular method among the reviewed studies. Engineering methods were used also but at relatively lower rates. This again implies that the majority of companies in LDCs tend to employ less efficient method for setting their cost standards given the historical records may contain inefficient past performance (Drury, 2008). To give more context on the implementation of standard costing system in Syria, Table 72 compares in detail the current research with the earlier study conducted by Ibrahim (2007).

Table 72: Comparing the state of standard costing in this research with that reported by Ibrahim (2007)

The state of standard costing	The current research use%	Ibrahim (2007) use%
Direct material quantity standard	43	44.4
Direct labour hours standard	39	21
Direct labour wages standard	14	4
Direct material price standard	9	15
Variable overhead costs standard	2	0.0
Fixed overhead costs standard	0.0	0.0
Methods used for setting the standards	70% historical records & 30% engineering studies	69% historical records & 56% engineering studies
Type of standards	59% current attainable & 41% basic standards	62.5% current attainable & 37.5% basic standards

It can be noted from the above table, that both the current findings and those of the earlier study by Ibrahim (2007) are highly consistent. It is worth to mention that although the governmental imposition of standard costing system on state-owned companies (the respondents of Ibrahim' study), they informed only low implementation levels of this system comparing to the current levels reported by the private companies not subject to such imposition . For example, both the direct labour hours and direct labour wages standards were implemented in the current research with higher levels than those in Ibrahim (2007). Table 72 also shows the existence of consistency between the two studies concerning the methods and types of cost standards. Finally, it can be said that this similarity in the findings is expected given that the standard costing systems are being taught as a main module in Syrian universities, which are considered the main source of accountants in Syria.

8.4.3-Budgeting systems

The analysis showed that a relatively limited number of responding companies (22%) indicated using budgets extensively for planning their activities, and all of them were large size companies. Moreover, table 73 shows that only a limited number of the users reported preparing budgets for all their different activities. In detail, budgets for sales, production, direct material purchasing, and cash activities were the most prepared among the responding companies at the following percentages 22% (or 100% of the users), 22%, 16%, and 15% respectively. Contrary, very limited number of the users prepared budgets for both direct labour and overheads (6% and 1% respectively). Concerning the significance level of these budgets, almost all of users stated these budgets as very significant for them. Finally, most of

the budgeting system users (87.5%) i.e. 19% of the responding companies, prepared their budgets using the incremental budgeting method while the remaining users (12.5%) used flexible budgeting.

This limited rate of budgeting' implementation might be attributed to a lack of expertise and financial capacity needed for implementing such MA practice among Syrian PICs, particularly those of medium size. Moreover, they might perceive that the potential benefits of this system do not justify its cost. However, this finding per se can be considered one of the research reflections that need to be studied further.

Table 73: Comparing the state of budgeting system in this research with that in LDCs

The state of budgeting system	The current research %	El-Ebaishi et al. (2003) %	Hutaibat (2005) %	Szychta (2002) %
Sales budget	22	75	70	80
Production budget	22	77	64	80
Direct material budget	16	68	60	80
Direct labour budget	6	58	30	17
Overheads budget	1	61	32	17
Cash budget	15	76	63	80
Master budget	0.0	74	62	80
Incremental budgeting	87.5	NA	62	46
Flexible budgeting	12.5	NA	35	44
Activity based budgeting	0.0	NA	4	NA

The percentages were calculated per the whole responding companies

Table 73 compares the current results with those by the relevant studies and shows that there is a big difference in the implementation rates of budgeting system, especially comparing to the Hutaibat' study in Jordan that reported higher implementation rates for every reviewed budget. However, there is consistency in respect of the budgeting method as both studies stated that incremental budgeting was the most used method, but this was not the case in Szychta's study (2002) that reported incremental and flexible budgeting methods as almost equally used. The result indicates that only small rate (all large size) of Syrian PICs have utilised this type of MA practices, and this implies that the non-users companies either do not recognise its benefits to their performance, or they do not want to employ it due to several reasons speculated above (e.g., lack of expertise and no need).

8.4.4- Modern management accounting practices

Table 74 shows that the modern MAPs were not popular among Syrian PICs except for the TQM system that was used by 14% of the respondents and JIT system implemented by only one company. All the users were confined to the largest companies, and this is consistent with features of the majority of companies using such MA systems. Several reasons may stand behind this very limited implementation, for example, lack of Syrian PICs' experience and financial capacity required to apply such advanced MAPs in addition to being that the majority of local accountants are not adequately qualified or trained to adopt and implement such systems. In particular, the accounting syllabus in Syrian Universities does not teach in detail such MA systems. Moreover, another reason might be that the size and number of business activities of the majority of Syrian PICs do not often justify the implementation of such advanced MAPs.

Table 74: Comparing the state of modern MAPs in this research with those in LDCs

The modern MAPS	The current research %	Joshi (2001) %	Hutaibat (2005) %	Nimtrakoon (2009) %
Total Quality Management (TQM)	14	NA	52	NA
Activity based management (ABM)	0.0	13	4.5	68
JIT	1	NA	7	NA
TC	0.0	35	13.5	73
Life-cycle costing	0.0	45	4	73

It can be noted from the above table that although advanced MAPs have been only introduced relatively late in the majority of LDCs, e.g., China, India, and Thailand, the implementation levels are relatively high. This implies that LDCs have recognised the significance and benefits of these practices. It is noteworthy that LDCs have benefited greatly from the former experience of developed countries in the implementation of such practices. Finally, table 74 shows that the current implementation extent of modern MAPs is very limited comparing to those in LDCs, therefore it is recommended to MA researchers to examine these practices and the factors influencing their implementation degree in Syria using in-depth research methods, e.g., interviews and case studies.

8.4.6- Summary

To conclude, this research reveals that Syrian PICs have tended to implement more traditional MAPs than the recently developed/modern MAPs. Furthermore, regarding the former, the implementation extent of different traditional MAPs was limited even here and did not include the full range of surveyed practices. In detail, although the implementation extent of performance measurement practices was the highest among the responding companies (86.1% reported using them), the use was limited to the basic practices (e.g., sales, profit, and variance analysis). The standard costing system was the second in terms of the implementation extent as it was used by 43% of the respondents, and again not all its users indicated controlling all their cost elements. Alternatively, the focus was on establishing standards for direct material quantities and direct labour hours. In terms of the establishment methods and types of used cost standards, the average of historical records and current attainable cost standard were the most dominant. The budgeting system was the least used traditional practice in this research (22% of the respondents), moreover not all its users have prepared budgets for all their activities where the concentration was mainly placed on planning the sales, production, direct material purchasing, and cash activities. The researcher also examined the method used for preparing the different budgets and found that incremental budgeting was the most used (by 87.5%). Finally, the researcher observed some of the modern MA practices and discovered only very low and limited implementation level of these practices, namely TQM (14%) and JIT (1%).

8.5- The implementation and significance level of cost and management accounting practices

This section summarises the implementation and significance extent of the whole cost and MA practices (32) observed throughout the questionnaire survey, which was answered by 108 Syrian PICs. Table 75 lists the whole observed practices.

Table 75: The cost and MA practices observed in the research

The Observed Management Accounting Practices	
Direct costing system	Variable overheads standard
Variable costing system	Fixed overheads standard
Traditional (absorption) costing system	Performance evaluation relied on Sales figure
ABC systems	Performance evaluation relied on Profits figure
Sales budgets	Performance evaluation relied on return on investment
Production budget	Performance evaluation relied on Residual income
Direct material usage/purchase budget	Performance evaluation relied on Meeting the budgets
Direct labour budget	Performance evaluation relied on variance analysis
Factory overheads budget	Profitability analysis
Cash budget	Performance evaluation relied on customer satisfaction
Master budget	Performance evaluation relied on Product quality
Activity based budgeting (ABB)	Total Quality Management (TQM) system
Direct material quantity standard	JIT system
Direct material price standard	TC system
Direct labour hours standard	Life-cycle costing
Direct labour wages standard	Activity Based Management (ABM) system

Given that the current study was applied in one of the LDCs and according to the initial exploratory study, the majority (21 out of 32) of the observed practices were from the traditional MA practices. The respondents were asked throughout several questions to indicate whether they are using any of these cost and MA practices in their companies and to state the level to which they are significant for them; therefore, this section concentrates on discussing only the implementation extent and significance level of the MA practices being used by the responding companies. Table 76 lists the cost and MA practices reported as being used by the responding companies and orders and ranks them according to the percentage of their implementation among the user companies. Moreover, table 77 lists the used cost and MA practices and also ranks them but according to the mean of their significance level in the responding companies.

Table 76: The implementation of cost and MA practices

Management Accounting Practices	Rank	Percentage	No. Of users
Performance evaluation relied on Sales amount	1	83.3	93
Performance evaluation relied on Profits amount	1	83.3	93
Traditional (absorption) cost system	2	58.3	62
Profitability analysis	3	49.1	53
Direct material quantity standard	4	42.6	46
Performance evaluation relied on product quality	5	25.9	28
Direct costing system	6	24.1	26
Performance evaluation relied on variance analysis	6	24.1	26
Sales budgets	7	22.2	24
Production budget	7	22.2	24
Variable costing system	8	18.5	20
Direct material usage/purchase budget	9	15.7	17
Cash budget	10	14.8	16
Performance evaluation relied on return on investment	11	13.0	14
Direct labour wages standard	12	13.9	15
Total Quality Management (TQM) system	12	13.9	15
Direct labour hours standard	13	11.1	42
Performance evaluation relied on customer satisfaction	14	10.2	11
Direct material price standard	15	9.3	10
Direct labour budget	16	5.6	6
Variable overheads standard	17	1.9	2
Factory overheads budget	18	0.9	1
JIT system	18	0.9	1

It can be noted from table 76 & 77 that only 23 out of the 32 surveyed practices have been confirmed as being used by the responding companies. To discuss the findings, the researcher divided the cost and MA practices shown in both tables into two sets. These were according to the rank of their implementation and significance level respectively among the user companies, namely, high implementation and low implementation sets and highly significant and low significant sets.

Looking at table 76, the high implementation set contained the practices having top seven ranking i.e. ten practices were included in the first set, and the low implementation set included thirteen practices ranking from 8 to 18. The usage of the first set ranged from 83.3% to 22.2% of the responding companies while the usage of the second set ranged from 18.5% to 0.9% of the responding companies. Concerning the table 77, the highly significant set contained 10 practices having the highest significance among the responding companies with an average of significance extending from 5.00 to 4.85, and the low significant set included

the remaining 13 practices with a significance average extending from 4.83 to 4.00. It is noteworthy that the least significance level given for the MAPs was 4 (above average significant), and this indicate that nearly all the MAPs used by Syrian PICs are of high importance for them. For purpose of discussing the implementation and significance level of cost and MA practices, the researcher discussed the findings in terms of traditional and modern MAPs.

Table 77: The significance level of cost and MA practices

Management Accounting Practices	Rank	Mean of Significance	No. Of users
Sales budgets	1	5.00	24
Production budget	1	5.00	24
Direct material quantity standard	1	5.00	46
Total Quality Management (TQM)	1	5.00	15
JIT	1	5.00	1
Performance evaluation relied on sales amount	2	4.99	93
Performance evaluation relied on profits amount	3	4.96	93
Direct material usage/purchase budget	4	4.94	17
Traditional (absorption) costing	5	4.89	62
Profitability analysis	6	4.85	53
Direct labour hours standard	7	4.83	42
Cash budget	8	4.81	16
Variable costing system	9	4.80	20
Direct costing system	10	4.77	26
Performance evaluation relied on variance analysis	11	4.58	26
Variable overheads standard	12	4.50	2
Performance evaluation relied on product quality	13	4.36	28
Direct labour wages standard	14	4.27	15
Direct material price standard	15	4.20	10
Performance evaluation relied on return on investment	16	4.14	14
Performance evaluation relied on customer satisfaction	17	4.00	11
Direct labour budget	17	4.00	6
Factory overheads budget	17	4.00	

Regarding the traditional MAPs, the majority (8 out of 10) of practices contained in the first set were traditional cost and MA practices namely, performance evaluation relied on sales amount and performance evaluation relied on profits amount (rank 1), traditional (absorption) cost system (rank 2), profitability analysis (rank 3), direct material quantity standard (rank 4), direct costing system and performance evaluation relied on variance analysis (rank 6), sales budget and production budget (rank 7). This indicates that the traditional MAPs are the most

commonly used among Syrian PICs despite the stream of criticism of these practices reported by MA studies. It is noteworthy that these eight traditional practices are related to traditional planning and controlling systems, performance measurement system based on financial instruments, and traditional costing system. This can be attributed to being the research being applied in Syria where the main concern of company management is on planning and controlling the costs of company rather than building up the value of company (Nimtrakoon, 2009). This result was confirmed also through surveying the significance level of each MA practice as displayed in table 77. It can be noted from this table that the majority (7 practices) of MAPs contained in the highly significant set were traditional MAPs moreover 6 out of them were from the high implementation practices set.

Again, most of the cost and MA practices (10) contained in the low implementation set were from the traditional type, namely, variable costing system (rank 8), direct material usage/purchase budget (rank 9), cash budget (rank 10), performance evaluation relied on return on investment (rank 11), direct labour wages standard (rank 12), direct labour wages standard (rank 12), direct labour hours standard (rank 13), direct material price standard (rank 15), direct labour budget (rank 16), variable overheads standard (rank 17), factory overheads budget (rank 18). Additionally, 8 out of these 10 practices were indicated as having a low significance level by the responding companies (they are included in the low significance set). However, this give support to the fact that the traditional MAPs are the most commonly in use among the Syrian companies.

Regarding modern MAPs, only five (out of the 12 modern practices surveyed in this study) were announced as being used by the responding companies. Two practices out of them were contained in the high implementation set, namely, profitability analysis (rank 3) and performance evaluation relying on product quality (rank 5). However, only the former was indicated as having a high significance level among the responding companies (rank 6) while the latter was among the low significance set (rank 13). This reflects the concern of Syrian PICs in analysing their profitability according to different objects such as, customers, products, cities, and sales points and their interest in the quality of their outputs. The remaining three modern practices were included in the low implementation set, namely, TQM system (rank 12), performance evaluation relying on customer satisfaction (rank 14), and JIT system (rank 18). It is noteworthy that the TQM and JIT systems were indicated as having a high significance level among the user companies, and this means that the Syrian PICs perceive the importance and benefit of these two practices but they do not implement them

yet because of some reason. It is noteworthy that all the users of TQM, performance evaluation relied on customer satisfaction, and JIT practices were of large size companies. This implies that the low implementation rate of these practices might be related to them being very advanced practices, particularly the JIT system, and this requires a company to have adequate experience, expertise and high fund to implementing them.

Finally, concerning the cost and MA practices that were announced as being not used by the responding companies (9 practices), the majority of them, namely, the ABC system, activity-based budgeting system, performance evaluation relied on residual income, ABM system, TC system, and life-cycle costing systems, were modern MAPs, and three practices namely, master budget, fixed overheads standard, and performance evaluation relied on meeting the budgets were of traditional practices. This confirms that the traditional MAPs are relatively the most common among the responding companies.

To conclude, the research findings demonstrate limited implementation of modern MAPs among Syrian PICs, in contrast to more traditional MAPs, which dominant. This does not, however, contradict previous MA studies conducted in developed and LDCs, which have stated that traditional MAPs are still the most popular among companies, for examples, Drury et al. (1993); Chenhall and Langfield-Smith (1998a); Guilding et al.(1998), and Adler et al.(2000). This thesis is thus supportive of existing findings.

8.6- The contingent and institutional factors influencing cost and MA practices

This section discusses the results of testing the research hypotheses related to the contingent and institutional factors influencing the research dependent factors (the complexity level of the costing system and the implementation extent of MAPs). Moreover, in this section, the researcher compares between these findings and the findings of MA literature to show whether the current research has confirmed or otherwise the previous studies in respect of every factor. Because two dependent factors were examined this research, this section was presented through three subsections. The first presents the association with the complexity level of the costing system while the second discusses the association with the implementation extent of MAPs, and finally, the third compares between the current results and those reported by the most relevant MA studies in developed and LDCs.

8.6.1- The contingent and institutional factors influencing the complexity level of costing systems

One of the research objectives was the observation of an association between the complexity level of costing system used by Syrian PICs and 11 (internal and external) contingent and institutional factors. For achieving this objective, the researcher employed two types of statistical analyses i.e. the first was through using correlation analysis, and the second was by employing multiple regression analysis. Before conducting the statistical analyses, the researcher employed the exploratory factor analysis for confirming the validity of research constructs. The correlation test showed that every contingent factor is associated significantly with the complexity level of the costing system except for one factor namely, the 'cost structure' that revealed no association with the dependent factor. The second analysis was used then for testing the association between the whole contingent and institutional factors and the complexity level of costing system. It was found that only 6 out of the 11 independent factors have the most significant impact on the extent to which the costing systems are complex and they accounted for 87% of the variation in the dependent factor. These six factors were as follows: TMS, exports percentage, product diversity, accounting education quality, company age, and company size. Table 78 presents the whole examined 11 contingent factors ordered (in descending order) according to the strength of their influence on the dependent factor.

Table 78: The contingent factors having significant influence on the complexity level of costing system

The contingent factors	Strength of association	Direction of association
<i>Product diversity</i>	.255	Positive
<i>Company size</i>	.234	Positive
<i>Top management support</i>	.200	Positive
<i>Exports percentage</i>	.177	Positive
<i>Accounting education quality</i>	.161	Positive
<i>Company age</i>	-.157	Negative
External environment	No significant association	NA
Complexity of manufacturing process	No significant association	NA
Cost structure*	No significant association	NA
Organisational culture	No significant association	NA
Cost information purposes	No significant association	NA

Only the factors in Italic are the significantly influential factors on the dependent factor.

* It was found that the factor of cost structure is not significantly influential factor through the correlation test.

As was mentioned earlier (section 7.3.3.6), the research results in respect of few independent factors (e.g., EE and OC), were inconsistent with the majority of MA literature, which asserted the significant influence of such factors on the design and complexity of costing systems. However, this contrast might be attributed to the study context i.e. Syrian business environment, which is featured with unique characteristics that make it distinctive from the contexts of other studies. For example, despite the gradual liberalisation of Syrian market by government, it seems that Syrian PICs are still not affected greatly by the pressure of international competition.

8.6.2- The contingent and institutional factors influencing the implementation extent of MAPs

The researcher observed the factors having the most significant influence on the extent to which Syrian PICs implement MA practices. The independent factors examined in this context were only 7 factors out of the 11 examined in the previous sub-section. Like the previous test, the researcher used first the bivariate correlation analysis and found that the whole seven factors are significantly associated with the dependent factor. Multiple regression analysis was then conducted between these seven influential factors and the dependent factor to find out which of them have the most significant impact on the implementation extent of MAPs. Table 79 displays the result of this test and asserts that only five out of the seven factors were the most influential factors on the implementation extent of MAPs, and they were responsible for approximately 80% of its variance.

Table 79: Contingent factors significantly influencing the implementation extent of MAPs

The influential contingent factors	The strength of association	The direction of association
<i>Company Size</i>	.40	Positive
<i>Exports Percentage</i>	.23	Positive
<i>Accounting Education quality</i>	.21	Positive
<i>Organisational Culture</i>	.17	Positive
<i>Company Age</i>	-.15	Negative
External environment	No significant association	NA
Top management support	No significant association	NA

Only the factors in Italic are the significantly influential factors on the dependent factor.

It can be noted from the above table that the five contingent factors were different in terms of the degree of their influence on the dependent factor where the most influential factor was the company size while least influential factor was the company age. Additionally, like the

previous sub-section, only the factor of company age was associated negatively with the implementation extent of MAPs. It is noteworthy that although most of the MA studies asserted the significant influence of both the EE and TMS factors on the implementation of MAPs, they do not have such an influence in the current research study. This might be attributed to the lack of top managers' concern in the implementation of MA practices in addition to being that the Syrian market is still protected against the international competition. For further details, however, the next subsection compares between the findings and the relevant MA studies in terms of every hypothesis tested in this study.

8.6.3- The state of contingent and institutional factors: a comparison

This sub-section compares between the research findings and those of previous studies in respect of every contingent and institutional factor studied in this research moreover, it comments on the comparisons individually. For this purpose, the researcher conducts two main comparisons the first is concerned with the factors influencing the complexity level of costing system, and the second is linked to the factors examined in context of the implementation extent of MAPs. Therefore, Table 80 & 81 present the outcomes of these comparisons that in turn confirmed or otherwise the dominant statement regarding the degree and direction of the influence of every contingent factor. It is worth to recall what was mentioned in the literature review chapter how that for some of the studied independent factors, there was consensus about the degree and direction of their influence on the cost and MA practices while there were no such consensus regarding the other contingent factors. Therefore throughout the following two tables, the terms 'confirm' and 'inconsistent' were used when the research findings agreed or disagreed respectively with the available consensus about the particular factor. Moreover, the term 'confirm a part of the literature' was used also in the case of absence of consensus about the degree of association between the contingent factor and MA practices. Finally, it is worth to mention that some of the reviewed studies were included in both tables while others were shown only in one table. This was because the former examined both the cost and MA practices together while the latter concentrated only on observing either the costing systems or the MAPs.

8.6.3.1- Discussion of the factors influencing the complexity of costing systems

Table 80 compares between the research findings and the relevant literature about the influences of 11 contingent factors on the complexity level of costing system. It can be noted

that nearly half of the comparisons (5 out of 11) indicated the confirmation of the relevant literature, 4 comparisons revealed confirming a part of the relevant literature, and finally only 2 comparisons reported inconsistency with the relevant MA literature. It is useful, therefore, to discuss the last two cases i.e. 4 comparisons with a limited consistency and 2 comparisons with a full inconsistency with the relevant literature.

Table 80: Comparison between the research findings and the relevant literature concerning the factors influencing costing system complexity

Contingent factors influencing the costing systems	Relevant studies	Dominant direction	Confirm/ otherwise
Product diversity	Nguyen and Brooks (1997); Bjornenak (1997a); Giacobbe (1998); Brown et al. (2004); Krumwiede (1998); Drury and Tayles (2000); Abernathy et al. (2001); Waldron and Everett (2004); and Isa and Thye (2006).	No dominant direction	Confirm part of the literature
Company size	Drury and Tayles (2000); Bjornenak (1997a); Booth and Giacobbe (1998); Krumwiede (1998); Baird et al. (2004);	Positive significant association	Confirm
Top management support	Shields (1995); Foster and Swenson (1997); McGowan and Klammer (1997); Krumwiede (1998); Anderson and Young (1999); Innes and Mitchell (1995 & 2000); Arnaboldi and Lapsley (2005); Chenhall (2004); Fortin (2007); Alnamri (1993); Hutaibat (2005); and Liu and Pan (2007).	Positive significant association	Confirm
Exports percentage	Bjornenak (1997a); Malmi (1999); and Hutaibat (2005);	No association	Confirm a part of the literature
Accounting education	Clarke et al. (1999) and Haldma and Laats (2002)	Significant positive association	Confirm
Company age	Alnamri (1993); Firth (1996); Al- Taweel (2001); and Hutaibat (2005)	No association	Inconsistent
External environment	Bjornenak (1997a); Drury and Tayles (2000), Szychta (2002); and Al-Omiri and Drury (2007).	Significant positive association	Inconsistent
Complexity of manufacturing process	Krumwiede (1998); Haldma and Laats (2002); Waldron and Everett (2004); Isa and Thye (2006); and Abdel Kader and Luther (2008).	No dominant direction	Confirm a part of the literature
Cost structure	Bjornenak (1997a); Booth and Giacobbe (1998); Drury et al. (1993); Drury and Tayles (2000); Al-Omiri and Drury (2007); Nguyen and Brooks (1997); Brown et al.'s (2004); Waldron and Everett (2004); and Thye (2006).	No Significant association	Confirm
Organisational culture	Baird et al. (2004) and Liu and Pan (2007).	Significant positive association	Inconsistent
Cost information usages	Mitchell (1995); Drury and Tayles (2000); Chenhall (2004); and Schoute (2009).	No association	Confirm

1- The factor of external environment: as was mentioned earlier the majority of MA studies have stated clearly the great influence of this factor on the implementation of cost and MA practices, therefore the finding of this study can be called as inconsistent. However, it is still supported by some studies (e.g., Bjornenak, 1997a and O'Connor et al., 2004), which reported this factor as not a significantly influential factor. However, using the correlation and cross-tabulation analyses, this study found a positive association between the uncertainty level of EE components and the implementation of cost and MAPs. This contrast, with the multiple regression analysis findings, can be attributed to the characteristics of Syrian business environment that featured with medium and low levels of uncertainty and competition regarding every element of the EE. In particular, table 37 (section 6.5.2.1) revealed that only the average of price competition was at a high level (mean of 4) while the means of the remaining six EE' components were ranged from low (2) to medium (3) level. It is noteworthy that the multiple regression analysis revealed contrary the existence of significant positive association between the exports percentage and both research dependent factors. The exports percentage, which was examined mainly by the MA researchers as one of the EE' items, was studied in the current research as a stand-alone factor. This separation was for purpose of collecting information about the influences of domestic competition and international competition (represented through the exports percentage in each company) individually.

2- The factor of organisational culture: although the multiple regression analysis showed that the cultural values of responded companies greatly affected their implementation extent to the different MAPs, this was not the case regarding the complexity level of their costing systems, which were not greatly influenced by the cultural values. Therefore, it can be said that the research results are consistent with the MA literature in terms of the MAPs' implementation factor, but it is not so regarding the costing system complexity. For example, the study of Baird et al. (2004) asserted that the company's culture greatly influences the adoption extent of activity management practices (including activity analysis, activity cost analysis, and ABC) in Australia. To interpret the findings, it is useful to review the two cross-tabulation tables 51 and 50, i.e., the OC by MAPs implementation and the OC by costing system complexity respectively. On the one hand, table 51 showed that the implementation of a 'high' and a 'very high' extent of MAPs was declared only by the responded companies confirming having either a great and a very great extents of the 11 cultural values, which are related to innovation, results orientated, and dynamism. On the other hand, table 50 revealed

that using the 'low complex' and 'complex' levels of costing system was not reported only by the companies having the great and very great extents of the 11 cultural values, but also by those with the medium extent of such culture values. This implies that the employment of a costing system with a high level of complexity was more needed and fundamental⁶⁴ among the responded companies than the implementation of a high extent of MAPs (e.g., the budgeting, standard costing, and performance measurement techniques). Finally, it is noteworthy that although both the cross tabulation and correlation analyses revealed the existence of a significant positive association between the OC and the complexity level of costing system, the multiple regression test did not report such an association. This means that the six significant factors that appeared in the costing systems multiple regression model, namely the product diversity, company size, TMS, exports percentage, accounting education quality, and company age, were in ascendancy over the OC factor regarding its influence on the complexity level of the costing system.

3- The complexity level of manufacturing process: the multiple regression analysis found that this factor does not have a significant influence on the costing system's complexity level. It is worth to mention that the previous studies about this factor were inconsistent regarding the significance level of its association with the implementation of costing system. It can be said, therefore, that the research finding is consistent with a part of the MA literature (e.g., Haldma and Laats 2002 and Isa and Thy 2006), that asserted the absence of a significant association between the complexity level of manufacturing process and the complexity of costing system. Moreover, table 45 (section 6.5.3.2) showed that the mean of complexity level of both production lines and product was almost at medium level. It is noteworthy that both the cross-tabulation and correlation analyses showed the existence of a positive association between these two factors. This implies that controlling for the other examined independent factors, the increase in the complexity of manufacturing process is associated with an increase in the complexity level of the costing system used. However, when the other ascendancy factors (appeared in the multiple regression model) are considered, such an increase becomes an adequate for driving the increase in the complexity level of costing system.

4- The factor of product diversity: although cost accounting scholars (e.g., Copper, 1988) asserted that the diversity of company products is one of the main reasons behind the irrelevance of traditional costing systems, a part of the MA literature reported contrary the

⁶⁴ This is consistent with walker (2009) who stated that the costing system is very essential for any organisation as it is considered the basis of the financial information system inside the organisation and is used for many purposes e.g., pricing decisions by managers, controlling company costs per unit or department etc., and activities planning.

absence of such an association between these two factors (e.g., Drury and Tayles, 2000 and Isa and Thye, 2006). However, the current finding is consistent with, Abernathy et al., 2001 and Waldron and Everett, 2004, who asserted the existence of a significant positive association between the product diversity and costing system implementation. This means that only Syrian PICs, which produce a wide range of standardised products that are considerably varied in terms of their consumption of support departments' costs, implemented complex costing systems with a high number of cost pools and drivers.

5- The factor of company age: Although almost all the reviewed MA studies concluded an absence of a strong relationship between the implementation of cost and MA systems and the age of company, this study reported differently the existence of a significant negative association between these factors. However, this is consistent with a few studies, e.g., Al-Taweel, 2001; O'Connor et al., 2004; and Tillema, 2005, who reported the significant influence of company age on the cost and MA practices. The result is not surprising given the limitation of MA studies about this factor moreover, it might be attributed to an idea of that old Syrian PICs have their own MA systems that became with passing time embedded and this makes PICs reject any attempt to update their MA systems. Finally, it can be said that both research hypotheses related to company age are accepted, and this indicates that the older the Syrian PICs, the more reluctant they are to change their MA systems. That is company age breeds inertia.

6- The factor of exports percentage: as mentioned earlier, this factor was examined as a stand-alone factor in the current study although most of the previous studies examined it as one of the EE's components. The multiple regression analysis reported this factor as one of the most influential factors, and this is consistent with a part of the limited MA literature (e.g., Malmi, 1999) about this factor that stated the existence of positive association with the adoption of ABC system. The finding indicates that only Syrian PICs announced exporting their products implemented costing systems with a high level of complexity. They might tend to do that to provide their management with accurate costing information required to making correct and on time decisions, which are considered necessary to survive among international organisations. The exports percentage implication for this thesis is that the competitive world requires competitive management accounting practices.

8.6.3.2- Discussion of the factors influencing the implementation extent of MA practices

The researcher also compares between the results and the previous studies in respect of the factors affecting the implementation extent of MAPs. Table 81 shows that there are four cases that need to be discussed, namely three cases of inconsistencies, i.e., with EE, TMS, and exports percentage, and one case of ‘confirm a part of relevant literature’ (company age). It is noteworthy that this sub-section discusses only two cases as the case of EE and company age have been discussed in the previous sub-section.

Table 81: Comparison between the research findings and the relevant literature concerning the factors influencing MAPs implementation

Contingent factors influencing the MAPs	Relevant studies	Dominant direction	Confirm/ otherwise
Company size	Puxty and Lyall (1989); Libby and Waterhouse (1996); Alebaishi (1998); Waldron and Everett (2004); Isa and Thye (2006); Williams and Seaman (2001).	Significant positive association	Confirm
Top management support	Alnamri (1993) and Hutaibat (2005)	Significant positive association	Inconsistent
Exports percentage	Hutaibat (2005)	No association	Inconsistent
Accounting education quality	Xu (2003) and Haldma and Laats (2002)	Significant positive association	Confirm
Company age	Alnamri (1993); Firth (1996); Al-Taweel(2001); O'Connor et al. (2004); Tillema (2005); Hutaibat (2005); and Tillema (2005).	No dominant direction	Confirm a part of the literature
External environment	Libby and Waterhouse (1996); Firth (1996); Williams and Seaman (2001); Szychta (2002); Abdel-Maksoud et al. (2005); O'Connor et al. (2004); Isa and Thye (2006); Kattan et al. (2007); and Abdel Kader and Luther (2008).	Significant positive association	Inconsistent
Organisational culture	Dent (1991); Goddard (1997a); Bhimani (2003); Henri (2006);	Significant positive association	confirm

1- The factor of top management support: Although the multiple regression analysis found that the TMS as a significantly influential factor in predicting the complexity level of costing systems, the same analysis revealed a contrary result but in respect of the implementation

extent of MAPs. This can be attributed to the lack of responding companies' attention to the implementation of MAPs. In particular, while the majority (61.3%) of the MAPs' users reported implementing only low level (2-4 practices) of MAPs, the minority (33.9%) of AC' users implemented non-complex level (counterpart to low level of MAPs' implementation) of costing systems. Moreover, only 5.38% of the MAPs users declared using the very high level of MAPs implementation while 37.1% of companies used the complex level of costing systems. Therefore, it can be said that the high level of TMS declared by some of the responding companies was concentrated mainly on supporting their costing systems rather than on the MAPs implementation.

2- The factor of exports percentage: like Hutaibat' study (2005), the researcher hypothesised the existence of an association between this factor and the implementation extent of MAPs. Unlike the Hutaibat' study, the multiple regression analysis reported the existence of significant positive association between the two factors thus achieving consistency between the findings of this thesis. This result can be returned to the idea of that Syrian PICs exporting their products are more developed and innovated than those marketing their products only internally. This innovation can be reflected in their different activities including the implementation of MAPs. However, this is justifiable given that the exporting companies need to offer products with competitive characteristics (e.g., low price, high quality, and after sale services) that in turn require these companies to employ a range of MAPs that help in planning their activities, controlling their costs and evaluation the performance of their different divisions and departments.

Finally, it can be said that although there were some inconsistencies cases throughout the above two tables (80 & 81), this is not abnormal due to several reasons, such as, using various instruments by different researchers for measuring both the dependent and independent factors in addition to a difference of studies' context where each environment has its own variables. This, however, is considered one of the disadvantages of CT as discussed previously in the literature review chapter.

8.7- Conclusion

After analysing the collected data, it can be said that the majority of respondents were appropriate individuals to complete the research questionnaire moreover; the features of responded companies were consistent with the research objectives. The research outcome can

be seen thus as reliable. In terms of the research aims, the results revealed that Syrian PICs used mainly traditional costing systems and MAPs to calculate products cost and to plan, control, and evaluate their activities. This was partly consistent with the previous studies, especially those conducted in similar contexts although additional findings were added to that existing literature. Regarding the contingent and institutional factors influencing the implementation of cost and MAPs, the results were various by which is meant that the study confirms, adds, and contradicts the previous studies carried out in the area. For example, there was some inconsistency with the MA literature concerning the influence of both EE and TMS. However, this was justified in detail above, broadly by the idiosyncratic nature of the Syrian business environment. Finally, it is worth to remind that this research is exploratory, and therefore its findings are mainly useful as a basis for developing 'rich' future case studies on Syrian private industrial companies.

Chapter (9): Summary, Contribution, and Limitations

9.1- Introduction

This chapter summarises the results of this research related to the state of cost and MA practices in Syrian PICs and the different factors influencing significantly their complexity and implementation level. The chapter addresses also the originality and the contributions of this study to the body of knowledge moreover it presents a reflection on that research. Finally, both the research limitations and recommendations are discussed in this chapter.

9.2- Summary of the research findings

The study empirically examined medium and large size PICs in Syria for understanding the current state of cost and MA practices used by these companies. Moreover, the researcher identified the contingent and institutional factors having the most significant influence on the complexity level of those costing systems and the implementation extent of MA practices. The researcher analysed the collected data (from 108 cases) descriptively and statistically using SPSS software and obtained the various results summarised in this chapter.

The analysis revealed that the surveyed Syrian PICs were both medium and large size companies with different ages (from 9 to 46 years old) moreover, they were working in an environment featuring a medium level of competition and uncertainty except for that of the price competition which was at high level. However, almost half of the responding companies were being exposed to the intensity of international competition through exporting part of their outputs, and this is consistent with the fact of limitation of an innovation culture value among Syrian PICs where the majority of exporting companies (77%) announced exporting only between 1%-30% of their total sales. The responding companies showed a concern with MA information for business purposes reflected mainly through employing MA accountants and investing in MA software. However, the analysis revealed that only one third of the responding companies informed having great or very great extent of TMS towards their cost and MA systems. Additionally the result showed the limitation of accounting graduates capacities in addition to the very limited employment of foreign qualified accountants.

Regarding the contingent and institutional factors studied in respect of the complexity level of costing system, the analysis reported the high rates of indirect costs and the high level of product diversity informed by at least half of the responding companies. Moreover, the

complexity level of manufacturing process was at medium level for two thirds of the responding companies, and finally just under half of the responding companies announced using cost information for advanced usages i.e. pricing and profitability analysis. In the context of these four factors in addition to the other contextual factors mentioned above, the analysis reported the limitation of complexity level of costing systems being used in Syrian PICs. In detail, only 57.4% of the responding companies indicated assigning their overheads to their cost objects while the remaining (42.6%) revealed using the direct and variable costing systems. Moreover, all the former used the traditional AC system while none of them employed an ABC system for calculating the costs of products. Concerning the complexity level of the AC systems used, the findings revealed that it was limited with only a maximum of 3 different cost drivers and up to 20 cost pools were used in the overheads allocation process.

Regarding the implementation extent of MA practices, the findings showed that 86.1% of the responding companies used 6 different practices (4 financial and 2 non-financial) for evaluating their performance and almost all of them were reported as very significant to their business. The standard costing system was the next most used MA practices where the research showed that nearly half of the responding companies announced establishing cost standards for six different cost elements moreover nearly all of the users reported these standards as very significant for them. Additionally, half of the users employed historical records while one quarter used the engineering studies to establish their cost standards. The majority of user companies (58.7%) used the currently attainable standard while the minority (41.3%) used the more basic cost standards. This shows an inability to drive down costs to improve efficiency if such systems accept too easily achievable standards. In terms of the implementation of budgeting systems, almost quarter of the responding companies declared preparing budgets for six different activities, and almost all of the users stated these budgets as very significant for them. Regarding the budgeting methods, the findings showed that 87.5% used incremental budgeting while only 12.5% announced using flexible budgeting for preparing their budgets. Finally, only 14% of the respondents indicated using the TQM system and only one company reported using the JIT system.

In terms of the research hypotheses related to the complexity level of costing systems, the multivariate analysis showed that only 6 out of the 11 assumed hypotheses were accepted while the remaining five hypotheses were rejected (for discussion see section 8.6.1). In particular, the accepted hypotheses were those related to the following contingent and

institutional factors: product diversity, company size, TMS, exports percentage, accounting education quality, and company age. Concerning the research hypotheses pertaining to the implementation extent of MA practices, there were seven and tested also using the multivariate analysis. Five of them were accepted, namely those related to, company size, exports' percentage, accounting education, and finally company age while the remaining two were rejected. This means that 7 out of 18 tested hypotheses were rejected. It is worth to mention that few of the rejected hypotheses, particularly those related to EE, OC, and TMS, were reported as an accepted by the majority of previous MA studies, which stated the significant influence of such factors on the implementation of MA systems. However, a comprehensive discussion about this inconsistency was presented previously in section 8.6.

9.3- Originality and Contribution of the research

9.3.1- Originality of the research

The only standard used for distinguishing the PhD thesis from other degrees of research is its originality and the contribution to the body of knowledge (Collis and Hussey, 2009). Many research text-books (e.g., Collis and Hussey, 2009 and so on) have discussed and listed the cases in which the study can be classified as an original part of research adding a new understanding to the body of knowledge. According to these scholars, the researcher highlights in this section the original contribution made by the current research, which was reflected through several ideas as follows:

- **Research originalities through the research topic:** All the previous MA researchers who studied the cost accounting systems being used by the organisations in their research either concentrated only on observing their complexity level among user companies or examined their implementation extent in addition to a range of other traditional and/or modern MA practices together as one dependent factor. As an alternative, the current study conducted both these types of research in one study i.e. the first research objective was surveying the complexity level of costing systems and the contingent factors influencing this level, and the second objective was examining the implementation extent of MAPs and the contingent factors affecting this extent. Moreover like the previous studies (e.g., Adler et al., 2000; Guilding et al. 2000; Joshi, 2001 Nimtrakoon, 2009), the researcher presented the information gained about the implementation and significance extent of both the cost practices and MA

practices together using two tables i.e. one ranking the implementation extent and another ranking the significance extent of these practices.

- **Research originality through the literature review:** This research can be considered as making an original contribution to the MA knowledge through the literature review chapters (chapter 3, 4, and 8) (for details, section 3.1). This was because, first, these chapters summarised the relevant cost and MA studies conducted in both developed and LDCs, and second they provide readers with useful comparisons between these reviewed studies in a critical way. In particular, chapter 3 provide a contribution through reviewing and making comparisons between the relevant studies about the state of cost and MA practices used in developed countries (comparison 1) and those used in LDCs (comparison 2). Chapter 4 contributes through discussing and comparing the relevant MA studies in terms of every contingent and institutional factors were observed in this study. Finally, chapter 8 displayed several comparisons between the research findings and those of the main relevant studies (in developed and LDCs), and this was in respect of the stat of each cost and MA practices surveyed in this study and regarding every contingent and institutional factors examined in this research.

- **Research originality through the contingent factors:** One of the research objectives was to identify the contingent and institutional factors having the most significant influence on both the dependent factors. Like the previous studies, the majority of the factors examined in this research were adopted from the literature in order to confirm or otherwise the dominant statements about them. However, the researcher contributed to the contingency- and institutional-based MA literature by expanding their model, particularly in LDCs, through developing a new institutional factor namely, the construct of 'AE' (including two dimensions 'accounting education quality' and 'imported accounting experience'), and adapting two contingent factors namely the 'TMS' and the 'OC' factors.

- **Research originality through the empirical study:** In fact, one of the main incentives that pushed the researcher to carry out this research was the absence of previous studies about the state of cost and MA practices implementation in Syria, particularly in Syrian privately owned industrial companies (PICs). Actually, after reviewing the relevant available MA literature, the research discovered the limitation⁶⁵and the scarcity of such types of studies in

⁶⁵ For examples, the study of Al Taweel (2001) about the adoption of accounting information technology and the factors that influence them in privately and state-owned Syrian companies and the research of Ibrahim (2007) regarding the implementation of standard costing system within the publicly-owned companies and factor affecting the implementation level.

Syria. Virtually, no research has been conducted about cost and MA practices used in Syria and their association with the different contingent factors. Therefore, the current research can be considered an original contribution to the MA literature in LDCs in general and in Syria specifically. Moreover, although the researcher structured the main research method of this study i.e. the survey questionnaire, based on the previous studies, all the questions used were adapted and rephrased in order to make them more relevant to the research context.

Finally, it can be said that the current study is considered an original piece of MA knowledge from which at least two potential papers can be extracted and published⁶⁶. Especially, that as paper has been drawn from the thesis for purpose of conference, and it was accepted to be presented in this conference. Moreover, the chair conference has shown his appreciation of the research topic, objectives, and the preliminary findings presented (Hamdan et al., 2010).

9.3.2- Contribution of the research

This research is considered a contribution to the mainstream of MA literature in general and that of LDCs in particular. Moreover, it holds a special significance to the MA researchers in Syria.

The study can be described as the first in Syria that surveys the state of cost and MA practices used in private manufacturing companies. Therefore, it can be used as an overview and background for further MA studies particularly in the Syrian private sector. In other words, this study will probably contribute in encouraging MA researchers to conduct different MA studies, consequently, gaining a wider perception to the MA practices used in Syria. Moreover, this study identified the different factors influencing the complexity level of costing systems and the implementation extent of MAPs in Syria, especially; to what extent culture and accounting environment factors influence the design of cost and MA systems. In this context, this study responds to recent calls by MA scholars (e.g., Hopper et al., 2009) for better understanding to the cultural values of LDCs, which in turn helps in a proper adaption to the imported MA systems before implementing them in such countries.

This research responds to the calls made by the accounting scholars (Tillema, 2005 and Gerdin, 2005) for more contingency-based MA studies. Accordingly, the findings of this study help in enriching the MA literature, particularly that of LDCs, that is still suffering

⁶⁶The researcher has already started working on a paper to be published in one of the management accounting journal.

from a limitation of MA studies, except for China. Moreover, such results are useful for existing and intending MA researchers in LDCs given that the majority of these countries share to some extent several features, e.g., values of traditional cultures, need for outsourcing funding, and ideologies (Hopper et al., 2009). In terms of the contextual factors, the current study is considered also an expansion to the body of MA research through observing newly developed institutional factor (AE) and adapting existing contingent factors (OC and TMS) consequently giving a better understanding to the reasons behind the variations in the implementation of cost and MA systems in LDCs.

Finally, the study is also vital to the mainstream of MA literature through what have reported from up-to-date results about the impacts of several contextual factors, which are not unique to LDCs, e.g., company size, complexity of manufacturing process, EE, and OC.

9.4- Reflections on the research

The current study showed that although the mean of overheads percentages reported by the responding companies was relatively high (around 32%), they informed using either the variable/direct costing system (42.6%) or the AC systems (57.4%) with a limited level of complexity. This implies that the management of Syrian PICs are using inaccurate cost information for making their decisions and this might be further compounded by, for example, using historical standards. Moreover, although nearly half of the responding companies informed exporting from 11 to 50% of their sales, they implemented only limited levels of different MAPs, which were mainly of the traditional practices in addition to very limited implementation of modern practices. According to these findings, Syrian PICs, especially medium size, need to update and improve their cost and MA practices in order to compete or even survive in the Syrian business environment been gradually liberalised by the government and the international market to which they export their products.

In terms of the AE in Syria, on one hand, the majority of respondents indicated that accounting graduates need to attend courses in computer techniques, especially in the accounting software, before starting work for the private sector. This in turn reflects the necessity of teaching accounting students in Syrian universities such courses throughout their academic semesters to improve their capacities and consequently the accounting profession in Syria. On the other hand, although very limited percentage (4.6%) of the responding companies announced using accountants with foreign qualifications, all of them were agreed

and strongly agreed on that the employment of such accountants helped on improving the cost and MA practices in their company. This in turn highlights the importance of establishing accounting institutes in Syria specialised in teaching and granting such foreign accounting certificates. While not raised by respondents in this research, companies may not have fully recognised the importance of developing critical and analytical skills in students so that such graduates can improve the business through advising what the figures and computer print outs mean.

This research is considered an important record about the cost and MA practices and factors influencing their implementation for several governmental and non-governmental entities in Syria. For example, it can be used by accounting bodies (e.g., Syrian Association of Chartered Accountants and accounting software providers), academic institutions, and the relevant ministries, for better planning to their schemes. Furthermore, it can be utilised by practitioners (professional accountants and managers) for adapting/designing MA systems most appropriate for their needs rather than just adopting such systems from developed countries.

Finally, the outputs of this study are considered beneficial implications for MA scholars in both developed and LDCs. Particularly, the results pertaining to the contingent and institutional factors, which confirmed/refuted the existing studies in respect of some factors and opened new research avenues regarding the new and adapted factors.

9.5- Limitations and recommendations of research

Although the researcher has attempted to make the current study as complete as possible, there are inevitably still some limitations that were out of the researcher' control. This section is dedicated for detailing the main limitations in the current research, which can be considered per se as recommendations for further studies.

Although the main objective of this study was exploring the state of cost and MA practices being used in medium and large size Syrian PICs and identifying the factors influencing them, the researcher could not (due to cost and time considerations⁶⁷) survey the whole research population (1210 companies) located throughout the geographical areas or Syria. Alternatively, the researcher employed the most appropriate sampling techniques i.e. the

⁶⁷ For more details about the sample size and sampling techniques, please refer to section 5.3.1.1 in chapter 4.

cluster sampling for choosing the research sample. Although the selected sampling technique enabled the researcher to select a sample that was the most representative to the research population, the researcher recommends surveying the whole research population (using several researchers) to further studies in this context.

Although there were no many contrasts answers in the received copies of questionnaires, and all of them were clarified through telephone calls with the particular respondents, it is recommended conducting interviews with the largest responded companies for purpose of collecting some additional answers about the findings of questionnaire survey. However, the researcher attempted to conduct such interviews where several telephones calls and emails have been sent to the respondents, but unfortunately, none of them has accepted participation in such an interview. This was not surprising because Syria as the reader will be aware has suffered recently from extreme uprising and demonstrations, which were followed by military actions in the country and is effectively in a state of civil war. Setting aside personnel issues with these actions all these extraordinary circumstances have affected greatly the economic and social activities in Syria. Therefore, considering that the current study is exploratory, the researcher recommends conducting further MA studies using more in-depth research methods (e.g., case studies and unstructured and semi-structured interviews) for purpose of collecting answers about 'why' and 'how' questions, e.g., why Syrian PICs are not using or planning to employ the ABC system when normality returns.

As was mentioned in the findings chapter, the researcher employed exploratory factor analysis (EFA) for purpose of validating the research constructs. Although many researchers have used EFA, its usage is associated with a number of limitations, e.g., it only describes the correlations between the variables without making any causal inferences from relationships and it is incapable to correct or assess the measurement errors that may exist. Structure equation modelling (SEM), specifically the confirmatory factor analysis (CFA), could be beneficially used by the future studies as it is considered one of the modern statistical practices that overcomes the limitations of EFA mentioned above. Using the SEM enables the researcher to confirm (rather than explore) the association between the variables, examine the associations among all the variables (observed and unobserved), and finally it is inferential statistical technique (Byrne, 2010). This research was, however, exploratory and as such, this justifies the more limited use of EFA.

The current research addressed only medium and large size private manufacturing companies in Syria. Therefore, further studies can address both the private small size manufacturing companies and all private non-manufacturing companies with different sizes in Syria for acknowledging the cost and MA practices they use. Furthermore, another avenue of research could be the state-owned manufacturing companies operating in Syria for identifying the set of cost and MAPs used and comparing them with the current research findings.

The researcher has examined the influences of a wide range of contingent factors, which were selected carefully relying on the literature review and the initial exploratory study, on two dependent factors. There are, however, other contingent factors that may have implications on the research dependent Factors, but they were not included in the current study for time and relevance considerations. It is recommended in any future studies to consider observing the influences of any new potential factors, such as, the competitive strategy, industrial sector, and company ownership on the implementation of cost and MA practices.

For achieving the research objects, the researcher adopted the selection approach of contingency fit by which only the relationship between the cost and MA systems and the contingent factors was tested. Therefore it is encouraged in any future studies to adopt alternatively the interaction approach by which researcher can also examines the influence of this relationship on the company performance.

Although this research reported useful information featured with some detail about the state of a wide range of cost and MA practices, it was mainly an exploratory study aimed at exploring as many as possible of the practices. It is encouraged for further researcher to consider studying each type of MA practice individually and in depth, for example, surveying the extent to which companies in Syria are using the planning, controlling, or performance measurement practices.

Due to the time consideration, the current study was cross-sectional-based empirical research that was applied within a limited period. Future researchers could be utilised from a longitudinal perspective either by repeating the current research after a period of time (e.g., 5 years) or through conducting new longitudinal MA research. Such a type of study is able to identify the changes in the cost and MA implementation level over time and the factors causing these changes.

9.6- Conclusion

The current study has achieved its objectives in that this thesis has explored in detail, for the first time, the development of cost and MAPs in Syrian PICs. It is thus seen as making an original contribution to advancing MA knowledge. Furthermore, it has also responded to the calls by various academics identified throughout the thesis to expand the number of such studies to LDCs like Syria. By combining the objectives of the research with these calls, it also supports a view that not only is such a study original but also makes a significant contribution to the MA literature. In this context, there are inevitable limitations which would apply to any Ph.D. study. Specifically, however, the unique limitation which applies here, but which was clearly beyond the control of the researcher, was the serious internal conflict in Syria, which broke out during the course of the research. This affected the ability of the researcher to carry through with the extensive research interviews originally planned. Nevertheless, as shown in the detail of the thesis the findings add to the MA literature both supporting it and through questioning that existing literature in a number of areas inevitably adding to its content. Finally, this study is considered important for MA researchers through providing them with useful information about the cost and MA practices used in Syrian PICs and the contingent factors influencing their complexity and implementation. Finally, the study has identified a number of important areas for further exploration and development by such researchers to pursue through further studies.

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Appendixes

Appendix A: The Questionnaire cover letter



Department of Accounting, Finance & Information Management

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Pontypridd

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Telephone: 01443 480480

Dear participant

My name is Mohammed Hamdan, a PhD research student in the department of accounting, finance & information management at the University of Glamorgan in the UK. The attached questionnaire examines the current state of management and cost accounting systems in Syrian manufacturing companies and is considered the main empirical tool for my research. This study is sponsored by Damascus University.

The primary objective of this research is to discover and examine the complexity level of costing systems and the extent of implementation of management accounting practices in Syrian private manufacturing companies. Moreover, this research aims at discovering and determining the contingent factors that may have influenced the design and implementation of these systems and will attempt to measure the impact of each factor identified.

The results of this research should enable Syrian companies to identify currently used cost and management accounting practices and the factors affecting them within their organisations. It is also anticipated that this study will have much wider implications on the academic and professional level in Syria and, indeed, for the Syrian economy. This questionnaire while representing the main empirical study of this research may be followed up by interviews to a selected number of companies.

I must emphasise the responses received to this questionnaire will be completely confidential and any information gathered will be used anonymously. I confirm am happy to supply a summary of this study for both you and your company's benefit.

Finally, I would like to thank you in advance for your co-operation in this project and appreciate your valuable time. If you have any questions or inquiries, please feel free to contact me at any of methods provided below.

Home address in Syria:

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Thank for your cooperation

Appendix B: Letter from the PhD research supervisor

Prof. Hugh Coombs



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To Whom It May concern

Dear Participant

Subject: Mohammed Hamdan

The above individual is a research student with the Glamorgan Business School. He is undertaking a PhD project on the development of Management Accounting in Syria for his dissertation.

The main objective of his project is to identify those factors which effect the changing role and function of management accounting in Syria in a variety of organisations in a time of significant economic change.

The results of this work should enable the variety of organisations selected to identify those factors affecting management accounting processes and procedures within their organisations and to take appropriate action on those items within their control. It is also anticipated that this study will have much wider implications for monitoring and improving performance in other areas of management accounting which will ultimately go beyond the internal processes of individual organisations in Syria. The questionnaires and interviews he is undertaking are a pilot study which will be followed up by more detailed research at a later date with a variety of parties.


As regards this study, he has selected your organisation as one of his pilot sample. We, therefore, hope that your organisation could kindly provide him with the information requested. **All information obtained will be strictly used for the purposes of the research and remain entirely confidential.**

Mohammed will also provide a summary of his results to those who respond on a confidential basis at an appropriate time.

Finally, we appreciate your time and co-operation and thank you very much for taking part in this potentially very exciting project.

If you have any comments please email them directly to Mohammed on his email address:-
mhamdan@glam.ac.uk

Yours sincerely


Professor H. M. Coombs
B.Sc., M.Phil., Ph.D., CPFA.



Appendix C: Research Questionnaire

Part one: General questions:

Section one: questions about you:

1.1- What is your position in the company?

- | | | | |
|--------------------|--------------------------|------------------------------|--------------------------|
| Financial Manager | <input type="checkbox"/> | Financial Manager Assistant | <input type="checkbox"/> |
| Production manager | <input type="checkbox"/> | Production Manager Assistant | <input type="checkbox"/> |
| Accountant | <input type="checkbox"/> | Senior Manager | <input type="checkbox"/> |
| Director/owner | <input type="checkbox"/> | Other, please specify..... | <input type="checkbox"/> |

.....

1.2- What is your qualification?

- | | | | |
|--|--------------------------|-------------------------------|--------------------------|
| Bachelor's degree | <input type="checkbox"/> | Postgraduate Diploma's degree | <input type="checkbox"/> |
| Master degree | <input type="checkbox"/> | PhD degree | <input type="checkbox"/> |
| Other qualification, please specify..... | | | <input type="checkbox"/> |

1.3- Type (specialisation) of your qualification?

- | | | | |
|------------|--------------------------|---------------------------|--------------------------|
| Accounting | <input type="checkbox"/> | business administration | <input type="checkbox"/> |
| Economics | <input type="checkbox"/> | finance and banking | <input type="checkbox"/> |
| Statistics | <input type="checkbox"/> | other please specify..... | <input type="checkbox"/> |

.....

1.4- How many years have you being worked in this company?

- | | | | | | |
|------------|--------------------------|--------------------|--------------------------|------------|--------------------------|
| 0-5 years | <input type="checkbox"/> | 6-10 years | <input type="checkbox"/> | 11-15 year | <input type="checkbox"/> |
| 16-20 year | <input type="checkbox"/> | More than 20 years | <input type="checkbox"/> | | |

Section two: questions about your company:

1.5- Which year approximately was your company founded?

1.6- How many different products does your company normally manufacture?

- | | | | | | |
|-------------------|--------------------------|----------------|--------------------------|-----------------|--------------------------|
| 1-5 products | <input type="checkbox"/> | 6-10 products | <input type="checkbox"/> | 11-20 products | <input type="checkbox"/> |
| 21-40 products | <input type="checkbox"/> | 41-70 products | <input type="checkbox"/> | 71-110 products | <input type="checkbox"/> |
| Over 110 products | <input type="checkbox"/> | | | | |

1.7- How many employees are working in your company?

- | | | | |
|--------------------|--------------------------|--------------------------|--------------------------|
| 1-50 employees | <input type="checkbox"/> | 51-150 employees | <input type="checkbox"/> |
| 151-250 employees | <input type="checkbox"/> | 251-350 employees | <input type="checkbox"/> |
| 351-500 employees | <input type="checkbox"/> | 501-700 employees | <input type="checkbox"/> |
| 701-1000 employees | <input type="checkbox"/> | More than 1000 employees | <input type="checkbox"/> |

1.8- Please indicate the degree of standardisation/customization of the products manufactured by your company.

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------|
| Highly Standardised | | | | | highly customised |
| 5 | 4 | 3 | 2 | 1 | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

1.9- Please indicate the category most representing the average percentage of your company's exports to total sales?

- | | | | |
|-----------------------|--------------------------|------------------------------|--------------------------|
| 1-10% of total sales | <input type="checkbox"/> | 11-20% of total sales | <input type="checkbox"/> |
| 21-30% of total sales | <input type="checkbox"/> | 31-40% of total sales | <input type="checkbox"/> |
| 41-50% of total sales | <input type="checkbox"/> | 51-60% of total sales | <input type="checkbox"/> |
| 61-70% of total sales | <input type="checkbox"/> | more than 70% of total sales | <input type="checkbox"/> |

1.10- Does your company have cost/management accounting department or section?

- | | | | |
|---------------------------|--------------------------|----|--------------------------|
| Yes (go to question 1.12) | <input type="checkbox"/> | No | <input type="checkbox"/> |
|---------------------------|--------------------------|----|--------------------------|

1.11- If your answer to the previous question is ‘No’, dose your company have accounting staff producing cost and management information?

Yes No

1.12- Does you company use special computer software for cost/management accounting practices?

Yes No

1.13 - Please list the number of staff in accounting department in your company (including yourself) according to their academic specialisation:

Specialisation	Number of Employees
Employees holding an accounting specialisation	
Employees holding a relevant specialisation e.g. Business administration, economy, statistics and finance and banking.	
Employees holding other specialisation, please specify	
Total number	

1.14- Please, list the number of staff in accounting department in your company (including yourself) according to their academic and professional degrees.

Qualifications	Number of Employees
Employees with PhD degree	
Employees under training or holding the qualification of Syrian Certified Accountants (SCA).	
Employees with master degree	
Employees with high-diploma degree	
Employees with bachelor degree	
Employees with institute certificate or Commercial secondary school degree	
Total number	

Part two: Questions concerning the state of costing systems:

Section one: Questions about the complexity level of costing system:

2.1- Please indicate the purposes for which the cost information are used in your company: (tick more than one option if needed)

- For stock valuation and profit measurement
- For pricing decisions
- For profitability analysis*
- For making other decisions,

Please specify.....

* This includes the periodic profitability analysis of products, activities, customers, and sale points.

2.2- Does your costing system assign overhead (indirect) costs to the cost objects?

Yes (go to question 4) No

2.3- If your answer to the previous question is "No", there are two types of costing systems, first: **Direct Cost System** that traces only direct costs to cost objects; second: **Variable Cost System** that traces, in addition to direct costs, the variable part of indirect costs (overheads) to cost objects. What costing system is your company using? And what is its significance level? (Please answer this question then go to question 2.8 in section two).

Costing System	Usage		Extent of significance				
	Yes	No	Very significant 5	Significant 4	Averagely significant 3	Slightly significant 2	Not Significant 1
Direct costing							
Variable costing							
Other system, please specify							

2.4- If your answer to the question ‘2.2’ is "yes", what costing system is your company using? and what is its significance level?

Full costing System	Usage		Extent of significance				
	Yes	No	Very significant 5	Significant 4	Averagely significant 3	Slightly significant 2	Not Significant 1
Traditional (absorption) costing							
Activity-based costing (ABC)							
Other system, please specify							

2.5- Please, tick below approximately how many different cost pools or activity centres (production and support centres) are used in your company for assigning overheads to your cost object.

Cost pool: 1 2-3 4-5 6-10 11-20 21-30 31-50 over 50

2.6- Please, tick below approximately how many different allocations bases/cost drivers are used in the second stage of the two-stage technique for allocating overheads to your cost object.

Cost driver: 1 2 3 4 5 6 7 over 7

2.7- Please, indicate to what extent your company uses each of the following allocations bases/cost drivers for assigning overheads to your cost object.

<u>Cost Bases/Drivers</u>	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Often</u>	<u>Always</u>
Direct labour hour/cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct machine hour/cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct material cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ABC system-based cost drivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please specify	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

.....

Section two: Questions about the activity-based costing system (ABC):

2.8- Has your company considered recently adopting/using the activity-based costing system to assign overheads to cost objects?

Yes No (go to question 2.10)

2.9- If your answer to the previous question is ‘yes’, answer this question then go to part three, Since how many years has your company started considering adopting/using the Activity-based costing system?

1-2 year 3-4 year
 5-6 year 7-8 year
 Over 8 year

2.10- Did your company adopt/use the activity-based costing system before and then stop using it?

Yes No

Part three: Questions about the management accounting practices (MAPs):

3.1- Does your company use budgeting techniques?

Yes No (go to question 3.4)

3.2- If your answer to the previous question is ‘yes’, please indicate the usage state and significance level of each of the following budgets in your company.

Budgets	Usage		Extent of significance				
	Yes	No	Very significant 5	Significant 4	Averagely significant 3	Slightly significant 2	Not Significant 1
Sales budgets							
Production budget							
Direct material usage/purchase							
Direct labour budget							
Factory overheads							
Cash budget							
Master budget							

3.3- Please indicate the method used in your company for preparing budgets.

- Incremental/conventional budgeting Flexible budget
 Activity-based budgeting (ABB) other budgets, please specify

3.4- Does your company use standard costing systems?

- Yes No (go to question 3.7)

3.5- If your answer to the previous question is ‘yes’, please indicate the usage state and significance level of each of the following cost standards in your company.

Cost standards	Usage		Extent of significance				
	Yes	No	Very significant 5	Significant 4	Averagely significant 3	Slightly significant 2	Not Significant 1
Direct material quantity standard							
Direct material price standard							
Direct labour hours standard							
Direct labour wages standard							
Variable overheads standard							
Fixed overheads standard							

3.6- Please, indicate the features (establishment method & standard type) of cost standards most used in your company.

Establishment method: (Tick only one option)

Historical records-based standards engineering studies-based standards

Standards type: (Tick only one option)

Basic standards current attainable standards

Ideal standards other standards, please specify below

.....

3.7- Does your company use performance measurement techniques?

Yes No (go to question 3.9)

3.8- If you answer to the previous question is 'yes', please indicate the usage state and significance level of each of the following practices in your company.

Budgets	Usage		Extent of significance				
	Yes	No	Very significant 5	Significant 4	Averagely significant 3	Slightly significant 2	Not Significant 1
Sales							
profits							
Return on investment							
Residual income							
Product quality							
Customer satisfaction							
variance analysis*							
Meeting the budgets							
Other practices, please specify							

* The difference between the standard costs and actual costs.

3.9- Please, complete the following table by ticking whether your company is using each of the modern management accounting practices, and the significance level for each of them.

Modern MA practices	Usage		Extent of significance				
	Yes	No	Very significant 5	Significant 4	Averagely significant 3	Slightly significant 2	Not Significant 1
Total Quality Management (TQM)							
Activity-Based Management (ABM)							
Activity-based budgeting (ABB)							
Profitability analysis							
JIT							
TC							
Life-cycle costing							
Meeting the budgets							
Other, please specify.....							

Part four: Questions about the research contingent (influential) factors.

Section one: questions about the external contingent factors.

4.1- Please, indicate the level of competition in general for the main products of your company.

Very high	high	medium	low	very low
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.2- Please, indicate the level of competition on each of the following in your industry.

- Bidding for purchases of inputs/suppliers

Very high	high	medium	low	very low
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Price competition

Very high	high	medium	low	very low
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Competition for manpower

Very high	high	medium	low	very low
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.3- Please indicate the level of dynamism of the external environment (technological and economic) facing your company during the last five years.

- Technological environment.

Very high (Changing fast)				very low (Changing slowly)
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Economic environment (e.g., recession)

Very high (Changing fast)					very low (Changing slowly)
5	4	3	2	1	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.4- Please, indicate the level of proliferation of legal constraints surrounding your firm have during the past 5 years.

Very high					very low
5	4	3	2	1	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Legal constraints: e.g., changes in governmental policies, laws and legislations.

4.5- Please, indicate the predictability level about different activities of your competitors during the past five years?

Very high					very low
5	4	3	2	1	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.6- Please give your opinion about the following statement, accounting graduates have a capacity to work and think innovatively (solve problems /suggest new ideas) or are just bookkeepers.

Work innovatively					book-keeper
5	4	3	2	1	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.7- Can accounting graduates work independently after graduation or they need more training?

Work independently (go to question 4.9) <input type="checkbox"/>	need training/courses <input type="checkbox"/>
--	--

4.8- If your answer to the previous question is ‘need training’, what type of training (courses)? (Tick more than one option if required)

Further accounting courses Accounting software

Other courses please specify.....

4.9- Please, indicate your satisfaction with the knowledge capacity of accounting graduates for the cost and management accounting practices?

Extremely Satisfied	satisfied	medium	not satisfied	extremely not satisfied
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.10- Please, indicate your satisfaction with the capacity of accounting graduates for accounting software?

Extremely Satisfied	satisfied	medium	not satisfied	extremely not satisfied
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.11- How many accountants does your company have under training/holding foreign accounting certificates (professional/academic) e.g. ACPA, AICPA, ACCA, CMA and CIMA?

0	1 accountant	2 accountants	3 accountants	more than 3 Accountants
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials

ACPA: Arabic Certified Public Accountant

CPA: American Certified Public Accountant

ACCA: British Certified Public Accountant

CMA: American Certified Management Accountant

CIMA: British Certified Management Accountant

Other, please specify.....

4.12- If your answer to the previous question is '1 or more', please answer this question then skip to question '4.15 in section two'. Do you think a presence of such foreign-qualified accountants in your company helps in improving/updating your company management accounting systems?

Strongly Agree	agree	neutral	disagree	strongly disagree
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.13- If your answer to the question '4.11' is '0', does your company look to appoint/acquire accountants holding foreign certificates/qualifications?

Yes No

4.14- If you answer to the previous question is 'No', please indicate the reasons behind not employing such accountants.

- Your company does not need to employ such foreign accounting skills
- Accountants holding foreign qualifications do not largely help in improving your MA systems
- Accountants holding foreign qualifications usually ask too high salaries
- It is difficult to find accountants holding foreign qualifications*
- Other reasons please specify.....

* This often happens as most of domestic accountants holding good qualifications especially foreign certificates look to work outside where there are better wages and incentives.

Section two: questions about the internal contingent factors.

4.15- Please, provide an approximate percentage (using whole numbers) below for each cost item in your company.

<u>Cost item</u>	<u>Percentage</u>
- Material that can be directly traced to the cost object.
- Labour that can be directly traced to the cost object.
- Overhead costs that cannot be directly traced to the cost object, e.g., manufacturing energy to operate machines, machines' depreciation.

4.16- Give your opinion about how diverse* are the product lines in your company.

Greatly diverse					very little diverse
5	4	3	2		1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

* The diversity herein relates to a number of processing stages (e.g. design, production, assembly and so on) in each product line. For example, if your company has many product lines where few of them consist of a large number of processing stages, others with a medium number of stages, and finally other production lines with a small number of stages, in this situation you would choose the option 4 or 5.

4.17- Indicate your opinion how similar/different (concerning design, manufacturing, assembling, and distribution requirements) are the products in your company.

Greatly different					greatly similar
5	4	3	2		1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

4.18- Indicate the extent to which the different products in your company are different in terms of the consumption of support department' overheads (indirect costs).

Very great extent					very low variation
5	4	3	2		1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

4.19- Usually, the financial manager works/coordinates with directors (owners) to develop the cost/management accounting practices of company, to what extent directors (owners) in your company consider the financial manager' recommendations before making any final decision about the cost/management accounting practices.

Very great extent	great extent	medium	low extent	very low extent
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.20- Indicate the extent to which management and cost accounting practices receive strong active support (adequate resources and encouragement) from directors (owners) of your company.

Very great extent	great extent	medium	low extent	very low extent
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.21- Indicate the extent to which your company values a willingness to experiment.

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.22- To what extent can your company be classified as being quick to take advantage of opportunities presented through new ideas?

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.23- To what extent can your company be classified as a risk taking*?

Very great extent	great extent	medium	low extent	not at all
-------------------	--------------	--------	------------	------------

5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* freedom to try things and fail, acceptance of mistakes, no punishments for failure, allow discussion of "dumb" ideas, challenge the status quo, willingness not to focus on the short term, expectation that innovation is part of your job, and drive to improve.

4.24- Indicate the extent to which employees in your company are not constrained by many rules.

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.25- To what extent can your company be classified as being competitive/outward looking?

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.26- To what extent can your company be classified as having a good reputation?

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.27- To what extent can your company be classified as being results oriented?

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.28- To what extent does your company provide training to staff?

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.29- How many professional bodies is your company a member of?

Non	one body	two bodies	three bodies	more than 3 bodies
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.30- Indicate the extent to which the top managers/owners follow training courses.

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.31- Indicate the extent to which the top managers/owners chase international professional exhibitions (trade fairs).

Very great extent	great extent	medium	low extent	not at all
5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.32- Write down any other comments you would like to make.

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4.33- Would you like to have a copy of the study findings?

Yes No

4.34- Could you please accept participation in a further interview regarding this study?

Yes No

Thanks for your cooperation

Appendix D: Content analysis of the data collected in the discussion part of semi-structured interviews

Comments on the Costing Systems

The researcher asks the financial accountants questions about the usage and importance of cost information in decision-making. Over half of the interviewees (4 out of 7) agreed that the cost information is not very important for decisions making in their companies where their top managers make most of decisions such as, stop/continuing product, product mix, customers selection according to their profitability, profitability of sale points and so on, mainly basing on their experience and subjective judgement and not on any cost information or reports.

‘Although my top manager sometimes asks me to bring some cost reports for review, he almost always makes most of the company’s decisions according to his experience and subjective estimates’

(Interviewee No.1)

‘Throughout my experience in the accounting profession, including my current job, I have never seen a top manager use cost information for making any company decisions except those concerning price’

(Interviewee No.3)

The interviewees stated that the main purpose of cost information is for product pricing and sometimes for extracting some ratios for measuring the company performance.

‘Regarding products pricing, always our products are priced based on both the cost information and prices of similar products in our markets’

(Interviewee No.2)

‘We use the cost information sometimes for measuring the performance of some divisions, especially to measure sales and return on investment’

(Interviewee No.2)

Suggestions about MAPs

Two out of five interviewees who announced using standard costing system stated that their companies are following different approaches for setting cost standards i.e. experience-based cost standards.

'We determine the cost standards based on our comprehensive experience and on the needs of production and the cost of inputs'

(Interviewee No.2)

Based on this suggestion, the researcher finds that it is useful to insert this suggestion i.e. experience-based cost standards as an option in the final copy of questionnaire.

Comments on the feasibility of examining the current contingent factors

Four interviewees from PICs in addition to the chartered accountant asserted the relevance of the identified contingent factors to the costing and MA practices in Syrian PICs. For example, the chartered accountant said that all of the factors have an influence on the design and implementation of MAPs; concerning the factor of 'imported accounting experiences', it is relevant but not very important because the accounting educational centres, which provide foreign accounting certificates, are still limited in Syria.

'Yes, these factors are very much related to the design of costing systems and management accounting techniques in Syrian companies especially the factor of accounting education'

(The Chartered Accountant)

'My opinion is that these factors are very important for evaluating the cost accounting system not only in our company but also in any other Syrian companies'

(Financial manager No. 4)

Furthermore, these four financial managers and the chartered accountant commenting on the factor of national culture as follows:

'I do not think that our national culture is considered as influential factor on MAPs in companies since each company has its own customs and culture that influence it to adopt the specific MAPs used'

(Financial manager No. 1)

'It is possible that national culture influences the accounting systems, but this influence is slight and could not extend to impact on the design and implementation of accounting practices'

(Financial manager No. 2)

According to the above comments and based on a discussion between the researcher and his PhD supervisor *Prof. Coombs*, the factor of national culture is replaced by the factor of organisational culture to be studied in the full PhD thesis.

Suggestions for examining new contingent factors

The researcher asked the interviewees to suggest any new factors they think that might have an influence on the design of costing systems and the extent of implementation of MAPs.

Regarding costing systems, over half of the interviewees (3 PICs, the chartered accountant, and 4 academics) suggested that the purposes for which costing system is employed is considered a key factor influencing the complexity level of costing systems.

Many Syrian PMCs usually employ the costing system just for stock evaluation and profit measurement; regarding the pricing decisions, they usually examine the prices of similar products in their market and then set the prices based on their findings'

(The Chartered Accountant)

'Generally most Syrian companies simple use the costing system basically for stock valuation with the exception for some big companies. These large companies working in the pharmaceutical and textile industries use cost information for more advanced functions such as profitability analysis and pricing decisions'

(Academics No.1)

'We sometimes use cost information for pricing decisions, but mostly our top managers in setting such prices base decisions on their experience and practical knowledge'

(Financial manager No. 1)

'In this company we use cost information not only for stock valuation purpose, but also for other functions such as the pricing of products and performance measurement; in my previous job, cost information was used only for stock valuation and profit measurement'

(Financial manager No. 2)

According to the above suggestions, the researcher finds it rational to study the factor of 'the purposes for which cost information is produced' in this PhD research.

Finally, half of all the interviewees (four PICs, the chartered accountant, and two academics) emphasised the significance of factor of top management support for the implementation of cost and MA practices in Syrian PICs.

'Top managers or sometimes owners of the company have the final decision in their company regarding any suggestion for developing or adopting new accounting systems'

(The Chartered Accountant)

'My current manager is well qualified and uses the cost information for making company decisions, moreover he welcomes any suggestions for improving the accounting processes; however this does not always happen as in my previous job, my top manager was not open-minded and preferred to keep us we were'

(Financial manager No. 2)

In consistent with these suggestions and after reviewing the relevant literature, the researcher adds the factor 'top management support' to the range of contextual factors will be observed in the PhD study.

Comments on the Accounting Education:

This section analyses the comments of accounting academics about the state of accounting education in Syrian Universities. The researcher asked the academics whether they develop in their students a capacity to think critically and analytically in their courses. Over half of the academics (4) stated that they do not that while two academics claimed doing that. The researcher asked the former four academics about the reasons behind not teaching their

students by this way. They replied that the current education system does not enable them to do so.

'It is difficult to teach our students to think critically because of issues relating to time and students number considerations and even the available syllabuses do not fit such a way of teaching'

(Accounting academic No.2)

The researcher asked the academics to describe the level of teaching they provide to students regarding the modern MA systems such as, TQM, ABC, TC, and JIT. All the academics stated teaching such systems, but it was only teaching a basic introduction about these systems, except for the ABC system, which was taught with more details and practical examples.

'For me, I teach my students the ABC system properly including definitions, concepts, and practical examples, regarding the other modern management accounting techniques. I just give my student only a limited idea'

(Accounting academic No.1)

Appendix E: The researcher guidance to conducting planned semi-structures interview

Q1- Does your company use no formal costing system for calculating the cost of cost objects?

Q2- If yes, could you please tell what is the average of its implementation level? and whether you use this non formal costing system as a sole system or together with another formal system?

Q3- The findings showed that although the average of overheads percentage (to the total company costs) was high (around 32%), 42.6% of the responding companies announced not assigning their overheads to the cost objects. What is your opinion about the reasons behind this contrast? Do you think that such companies do not consider totally the indirect costs in the process of calculating the cost of their outputs? Or they consider these costs but using non-formal costing system (e.g., using their experience)?

Q4- The findings revealed the limitation of complexity level of costing systems used by the companies assigning their overheads to cost objects moreover, both the experience-based and direct labour hours were the most used cost drivers amongst the companies. What is your opinion about this limitation given that most of the observed contingent factors (e.g., product diversity, price competition, complexity of manufacturing process, and cost structure) were conducive to the implementation of higher complexity level of costing systems?

Q5- Relating to the previous question, the findings reported that none of the responded companies (even those five companies informed employing foreign-qualified accountant) used the ABC system. In your opinion what are the main reasons behind this result.

Q6- The findings showed the limitation of implementation extent of MAPs especially regarding the budgeting systems and modern MAPs. What is your opinion about this limitation given that the majority of observed contingent factors (e.g., company size, price competition, and exports percentage) were conducive to the implementation of such MAPs.

Q7- Except for the 11 contingent factors examined in this study, do you think that there are other factors that might have influence on both the complexity level of costing system and the implementation extent of MAPs in Syrian private manufacturing companies.

Appendix F: Tables 1 to 24

Table 1: Respondent position

Respondents Positions	Frequency	Valid Percent	Cumulative Percent
Financial Manager	35	32.4	32.4
Accountant	62	57.4	89.8
Financial manager assistant	3	2.8	92.6
Production manager	1	0.9	93.5
Director/owner	7	6.5	100.0
Total	108	100.0	

Table 2: Respondent qualifications

Respondents qualifications	Frequency	Valid Percent	Cumulative Percent
Bachelor's degree	51	47.2	47.2
Postgraduate Diploma's degree	26	24.1	71.3
Master degree	7	6.5	77.8
professional qualifications	20	18.5	96.3
Other qualifications	4	3.7	100.0
Total	108	100.0	

Table 3: Respondent specialisations

Respondents specialisations	Frequency	Valid Percent
Accounting	90	83.3
Business administration	3	2.8
Economics	1	0.9
Finance and banking	7	6.5
Other specialisations	7	6.5
Total	108	100.0

Table 4: Respondent working years

Respondents working years	Frequency	Valid Percent	Cumulative Percent
0-5 years	15	13.9	13.9
6-10 years	33	30.6	44.4
11-15 year	37	34.3	78.7
16-20 year	16	14.8	93.5
More than 20 years	7	6.5	100.0
Total	108	100.0	

Table 5: Number of products produced by responding companies

Responding companies' products number	Frequency	Valid Percent	Cumulative Percent
6-10 products	24	22.2	22.2
11-20 products	35	32.4	54.6
21-40 products	27	25.0	79.6
41-70 products	16	14.8	94.4
71-110 products	6	5.6	100.0
Total	108	100.0	

Table 6: Descriptive figures of responding companies' age

Mean	Median	Mode	Std. Deviation	Minimum	Maximum
21.9	22.5	15.0	7.6	9.00	46.00

Table 7: Companies age

Companies age in years	Frequency	Valid Percent	Cumulative Percent
9	4	3.7	3.7
10	3	2.8	6.5
11	1	0.9	7.4
13	1	0.9	8.3
14	10	9.3	17.6
15	16	14.8	32.4
18	2	1.9	34.3
20	4	3.7	38.0
21	6	5.6	43.5
22	10	9.3	52.8
23	8	7.4	60.2
24	11	10.2	70.4
25	7	6.5	76.9
27	4	3.7	80.6
28	3	2.8	83.3
30	2	1.9	85.2
31	3	2.8	88.0
32	5	4.6	92.6
34	1	0.9	93.5
36	1	0.9	94.4
37	2	1.9	96.3
38	2	1.9	98.1
42	1	0.9	99.1
46	1	0.9	100.0
Total	108	100.0	

Table 8: Export percentage by company size

Exports' percentage to total sales %	Employees number							Total (%)	Cumulative percentage
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000		
1-10	0	0	2	0	0	0	0	2 (3.8)	3.8
11-20	1	1	9	4	3	0	1	19 (36.5)	40.4
21-30	0	2	7	5	3	2	0	19 (36.5)	76.9
31-40	0	0	3	4	0	2	1	10 (19.2)	96.2
41-50	1	0	0	0	1	0	0	2 (3.8)	100.0
Total	2	3	21	13	7	4	2	52 (100)	

Table 9: Having MA department by company size

Having MA department	Employees number							Total (%)
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Having	0	0	0	2	4	3	2	11 (10.2)
Not having	12	33	31	16	4	1	0	97 (89.8)
Total	12	33	31	18	8	4	2	108 (100)

Table 10: Having Management Accountant by company size

Management Accountant	Employees number						Total (%)
	1-50	51-150	151-250	251-350	351-500	501-700	
Having	2	20	27	13	4	1	67 (69*)
Not having	10	13	4	3	0	0	30 (31)
Total	12	33	31	16	4	1	97 (100)

* Or 62% of the total respondents (108).

Table 11: Having accounting software by company size

Computer Software	Employees number							Total (%)
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
Having	4	22	25	18	8	4	2	83 (23.2%)
Not having	8	11	6	0	0	0	0	25 (76.8%)
Total	12	33	31	18	8	4	2	108

Table 12: Number of accounting-specialised and total accounting staff in responding companies

Total number of accounting staff in each company	Frequency	Valid percent	Cumulative percent	Number of accounting-specialised staff in each company	Frequency	Valid percent	Cumulative percent
1	2	1.9	1.9	1	12	11.1	11.1
2	30	27.8	29.6	2	29	26.9	38.0
3	31	28.7	58.3	3	30	27.8	65.7
4	18	16.7	75.0	4	18	16.7	82.4
5	14	13.0	88.0	5	7	6.5	88.9
6	6	5.6	93.5	6	5	4.6	93.5
7	3	2.8	96.3	7	4	3.7	97.2
8	3	2.8	99.1	8	2	1.9	99.1
9	1	0.9	100.0	9	1	0.9	100.0
Total	108	100		Total	108	100	

The total number of accounting staff, 387, was calculated through the sum of multiplying the frequency by number of total accounting staff in each company in table (12) i.e. $2 \times 1 + 30 \times 2 + 31 \times 3 + \dots = 387$ staff, and the same method was applied for calculating the total number of accounting specialised staff 350 staff .

Table 13: Number of accountants by company size

Total accountants	Employees number							Total
	1-50	51-150	151-250	251-350	351-500	501-700	701-1000	
1 accountant	2	0	0	0	0	0	0	2
2 accountant	10	18	2	0	0	0	0	30
3 accountant	0	15	13	3	0	0	0	31
4 accountant	0	0	13	5	0	0	0	18
5 accountant	0	0	3	7	4	0	0	14
6 accountant	0	0	0	2	4	0	0	6
7 accountant	0	0	0	1	0	2	0	3
8 accountant	0	0	0	0	0	2	1	3
9 accountant	0	0	0	0	0	0	1	1
Total	12	33	31	18	8	4	2	108

Table 14: Number of relevant specialised accountants by company size

Relevant specialised staff	Employees number						Total
	1-50	51-150	151-250	251-350	351-500	501-700	
1 Staff	2	6	14	6	2	1	31
Total	2	6	14	6	2	1	31

Table 15: Bachelor degree of accounting staff in responding companies

Bachelor degree	Frequency	Valid percent	Cumulative percent	SCA	Frequency	Valid percent	Cumulative percent
1	37	37.4	37.4	1	41	100	100
2	38	38.4	75.8	Total	41	100	
3	16	16.2	91.9				
4	6	6.1	98.0	Master degree	Frequency	Valid percent	Cumulative percent
5	2	2.0	100.0	1	20	100	100
Total	99	100.0		Total	20	100	

For calculation: the sum of multiplying the frequency by the number of accounting staff in each qualification degree for instance, the number of bachelor-qualified staff was computed from table (15) as follows $37 \times 1 + 38 \times 2 + 16 \times 3 + 6 \times 4 + 5 \times 2 = 195$ bachelor qualified staff.

Table 16: High diploma and institution & lower qualifications in responding companies

High diploma	Frequency	Valid percent	Cumulative percent	Inst & lower*	Frequency	Valid percent	Cumulative percent
1	62	98.4	98.4	1	65	98.5	98.5
2	1	1.6	100.0	2	1	1.5	100.0
Total				Total		100.0	

*this includes institution (college) and high school degrees.

Table 17: Production lines diversity level

Diversity level	Frequency	Valid Percent	Cumulative Percent
Slightly diverse	9	8.3	8.3
2	15	13.9	22.2
3	55	50.9	73.1
4	19	17.6	90.7
Greatly diverse	10	9.3	100.0
Total	108	100.0	

Table 18: Products diversity Level

Diversity level	Frequency	Valid Percent	Cumulative Percent
Greatly similar	1	0.9	0.9
2	21	19.4	20.4
3	51	47.2	67.6
4	30	27.8	95.4
Greatly different	5	4.6	100.0
Total	108	100.0	

Table 19: Variation of overheads consumption

Variation extent	Frequency	Valid Percent	Cumulative Percent
2	22	20.4	20.4
3	45	41.7	62.0
4	37	34.3	96.3
Very great	4	3.7	100.0
Total	108	100.0	

Table 20: Standardisation/Customization of Production nature

Production nature	Frequency	Valid Percent	Cumulative Percent
Highly customised	4	3.7	3.7
2	20	18.5	22.2
3	28	25.9	48.1
4	53	49.1	97.2
Highly Standardised	3	2.8	100.0
Total	108	100.0	

Table 21: Level of op management support to costing & MA systems

Support level	Frequency	Valid Percent	Cumulative Percent
Very low extent	9	8.3	8.3
2	26	24.1	32.4
3	38	35.2	67.6
4	30	27.8	95.4
Very great extent	5	4.6	100.0
Total	108	100.0	

Table 22: Consideration level of middle managers' recommendations by top management

Consideration level	Frequency	Valid Percent	Cumulative Percent
Very low extent	11	10.2	10.2
2	21	19.4	29.6
3	39	36.1	65.7
4	26	24.1	89.8
Very great extent	11	10.2	100.0
Total	108	100.0	

Table 23: Cost pools number by company size crosstabulation

Cost pools number	Employees Number						Total
	51-150	151-250	250-350	351-500	501-700	701-1000	
1	6	0	0	0	0	0	6
2	9	4	2	0	0	0	15
3	0	8	8	2	0	0	18
4	0	4	7	4	1	0	16
5	0	0	0	2	3	2	7
Total	15	16	17	8	4	2	62

Table 24: Cost drivers number by company size crosstabulation

Cost drivers number	Employees Number						Total
	51-150	151-250	250-350	351-500	501-700	701-1000	
1	15	10	5	2	0	0	32
2	0	6	12	5	1	1	25
3	0	0	0	1	3	1	5
Total	15	16	17	8	4	2	62

Appendix G: Bivariate analysis (tables 1 to 12)

This appendix displays briefly the results of testing the relationship between each of the dependent factors and each of the independent factors individually using the bivariate correlation analysis. In this chapter, the findings were displayed using two sections; the first presents the results of testing the relationship between each dependent factor and the independent factors, which were hypothesised to have a positive association with the dependent factor (one-tailed correlation test). The second section, presents also the results of testing the relationship with each of the independent factors but that were hypothesised to have an association with the dependent factors (two-tailed correlation test). It is noteworthy that four factors (product diversity, purposes from the cost information, complexity of manufacturing process, and cost structure) out of the whole independent factors (eleventh) were tested with one dependent factor, namely, the complexity level of costing system. For determining the type of correlation coefficient most appropriate for testing the research hypothesis, we should check the type⁶⁸ of both dependent and independent variables and their distribution (Field, 2009). Accordingly, it was found that the non-parametric correlation, namely a Kendall's tau, is the most appropriate for testing the whole research hypotheses except for testing the association between company age and the implementation extent of MAPs that was assessed using the Pearson coefficient.

1- Factors positively associated with the research dependent factors

Table 1: The results of Kendall's tau correlation test between the external environment and the research dependent factors

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.60**	.00
Implementation extent of MAPs	0.58**	.00

** Correlation is significant at the 0.01 level (one-tailed)

Table 2: The results of Kendall's tau correlation test between accounting education and the research dependent factors

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.64**	.000
Implementation extent of MAPs	0.67**	.000

** Correlation is significant at the 0.01 level (One-tailed)

⁶⁸ For example, the Pearson coefficient is used for instance when the tested two factors are interval or ratio scaled, and either the Spearman or Kendall' tau coefficients is used in the case of ranked or ordered factors (Ho, 2006).

Table 3: The results of Kendall's tau correlation test between company size and the research dependent factors

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.72**	.000
Implementation extent of MAPs	0.69**	.000

** Correlation is significant at the 0.01 level (One-tailed)

Table 4: The results of Kendall's tau correlation test between OC and the research dependent factors

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.64**	.000
Implementation extent of MAPs	0.57**	.000

** Correlation is significant at the 0.01 level (One-tailed)

Table 5: The results of Kendall's tau correlation test between top management support and the research dependent factors

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.75**	.000
Implementation extent of MAPs	0.62**	.000

** Correlation is significant at the 0.01 level (One-tailed)

Table 6: The results of Kendall's tau correlation test between the complexity of manufacturing processes and the complexity of costing systems

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.61**	.000

** Correlation is significant at the 0.01 level (One-tailed)

2- Factors associated with the research dependent factors

Table 7: The results of Kendall's tau correlation test between exports percentage and the research dependent factors

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.65**	.000
Implementation extent of MAPs	0.59**	.000

** Correlation is significant at the 0.01 level (Two-tailed)

Table 8: The results of Pearson correlation test between company age and the implementation extent of MAPs

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Implementation extent of MAPs	-0.21*	.04

* Correlation is significant at the 0.05 level (two-tailed)

Table 9: The results of Kendall's tau correlation test between company age and the research dependent factors

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	-0.26**	.001

** Correlation is significant at the 0.01 level (two-tailed)

Table 10: The results of Kendall's tau correlation test between product diversity and the complexity of costing systems

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.866**	.000

** Correlation is significant at the 0.01 level (Two-tailed)

Table 11: The results of Kendall's tau correlation test between the purposes of cost information and the complexity of costing systems

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.63**	.000

** Correlation is significant at the 0.01 level (Two-tailed)

Table 12: The results of Pearson correlation test between the cost structure and the complexity of costing systems

Dependents Factors	Correlation Coefficient	Sig. (Two-tailed)
Complexity level of costing systems	0.15	.242

Correlation is not significant Sig. > .05