

**“Contingent Framework for Management Accounting
Practices in Egyptian Pharmaceutical organizations”**

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Abstract

Recently, contemporary management accounting studies have focused on management accounting techniques or procedures initiated in the industrialized countries, and whether they can be effectively adopted in developing countries. They have explored the factors (both impetus and impediment) that would affect the application of management accounting practices in developing countries? Several studies in different parts of the world have investigated the status of their national management accounting practices, such as the study of Chenhall and Smith (1998a) in Australia, Wijewardena and Zoysa (1999) in Japan, and Drury et al (1993) in the U.K. However, this area of research remains inconclusive and incomplete in relation to the literature of some developing countries such as Egypt. This research attempted to investigate two main questions, firstly; the in-firm internal contingent factors to the adoption of recent management accounting practices, secondly, the effect of adopting recent management accounting practices on the firms' performance, with an application solely on the Egyptian pharmaceutical firms.

The main motivation for undertaking this research is to fill the gap in literature and provide some information that might benefit both academics and practitioners in this field. In addition, investors and future investors might get a clearer picture on the effect of the Egyptian economy's specific characteristics on the development of management accounting practices in manufacturing firms. A thorough review of the literature suggested a contingency perspective as an appropriate theoretical framework for this type of research (Fisher and Govindarajan, 1993; Fisher, 1995a; 1998; Donaldson, 1996; Ittner and Larcker, 2001). Data were collected in this research by using interviews. Interviews were conducted in the 20 largest manufacturing pharmaceutical firms. The data were analyzed both statistically and qualitatively in order to explore the research questions.

The research findings have revealed that some in-firm factors do in fact affect the adoption of recent management accounting practices. Those factors are employee headcount, personnel competency, computerization level, ownership type, expected contribution to firm success, adoption cost justification, implementation time and financial resources required. Moreover, the research findings show that the adoption of recent management accounting practices may improve firms' performance by improving employees' productivity. This study enriches our understanding on how recent management accounting practices can be adopted more effectively and efficiently in developing countries and contributes to bridging the gap in management accounting practices literature.

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Chapter One

Introduction

1.1 Introduction

In the era of globalization, increasing levels of competition intensified the challenge for managers; the management of a company in order to be consciously competitive on the market needs to have objective information about the company's performance. Accordingly, experts have warned that if management accounting needs to maintain its relevance, it should adapt to meet the changing needs of managers. In response to these concerns, a range of new management accounting practices has emerged. The past two decades have witnessed considerable change in managerial accounting practice. From its traditional emphasis on financially oriented decision analysis and budgetary control, managerial accounting has evolved to encompass a more strategic approach that emphasizes the identification, measurement, and management of the key financial and operational drivers of shareholder value. In other words, contemporary management accounting techniques combine both financial and non-financial information and take explicit strategic focus. This can be seen, for example, in the design of activity based costing, contemporary performance measurement systems, and benchmarking techniques (Chenhall and Langfield-Smith, 1998a).

One of the main topics in contemporary management accounting studies is whether the management accounting techniques or procedures initiated in the industrialized countries can be effectively adopted in developing countries, or what are the factors (both impetus and impediment) that would affect the application of management accounting practices in developing countries? Different views exist in the literature regarding this argument; Some researchers contended that the dissemination of Western management experience to developing countries might encounter resistance due to the variances stemming from the social, legal, cultural, and educational systems in the developed and less developed countries (Weinshall, 1977; Child and Bate, 1987; Abrahamson, 1991; Aris and Guillen, 1991; Lin and Yu, 2002). The Han Dan Iron and Steel Company experience on the other hand, demonstrates that management accounting can play a very important part in business management in China or other

developing countries; under the original centralized business administration system, the Company's production and sales, like other state-owned enterprises (SOEs), had long been subject to the compulsory production plans imposed by government authorities. Due to a lack of production initiatives and poor management the company had long suffered from low productivity and poor operating results and had to rely mainly upon governmental subsidies to survive. However, market demands changed dramatically after the Chinese government implemented an austerity program in the late part of 1989 to curb the overhead economy and run-away inflation. With sharp changes in the economic and business conditions, Han Dan Company encountered great difficulties in operation. To resolve its problems, the senior management recognized that it is necessary and imperative for the Company to adopt innovative procedures to overcome the operating difficulties in order to survive and grow under increasing market uncertainty and pressures. The responsibility cost control system at Han Dan Company is a successful experiment of management accounting in China where reforms towards a market-oriented Company are underway. The new cost control system was introduced by the Company as an effort to adopt innovative management and accounting practices to overcome its operating difficulties and meet the new challenges of the emerging markets (Lin and Yu, 2002). However, empirical evidence for successful adoption of management accounting in developing countries is still rare at present (Lin and Yu, 2002). Several studies in different parts of the world have also investigated the status of their national management accounting practices, such as the study of Chenhall and Smith (1998a) in Australia, Wijewardena and Zoysa (1999) in Japan, and Drury et al (1993) in the U.K. These studies have researched the adoption rate, benefits derived and future direction for traditional and advanced management accounting practices. However, this area of research remains unsatisfactory and rare in relation to the literature of some developing countries such as Egypt. (See for example, Wallace, 1990; Anderson and Lanen, 1999; and Luther and Longden, 2001). According to Wallace (1990) research in this area is still a "recent field of study".

Lin and Yu (2002), suggests that this could be due to the relatively underdeveloped status of economic research in developing countries. However, the demands for management-oriented accounting information are increasing following the economic growth in such countries. Nonetheless, certain differences in the application procedures

and techniques for management accounting practices between the industrialized world and developing countries must exist due to the economic, institutional, and cultural differences.

Waweru et al., (2004) also claimed that the period between 1990-2000 was characterized by the opening up of most developing economies, many organizations have been privatized, as most of the protective barriers have been removed, substantially altering the competitive environment in these economies.

Moreover, researches provide evidence that organizations operating in the developing countries which are undergoing transition at the present require quality and timely information, thus they have to change their management accounting systems and practices. Hoque et al., (2001) argue that managers who face high levels of competition require a variety of financial and non-financial information for making organizational decisions.

In Egypt, however, there is no evidence of the adoption of traditional and contemporary management accounting practices in manufacturing organizations, pharmaceutical industry in particular along with the benefits derived from such adoption. Farouk (2005) provided some insights on the diffusion of management accounting practices, specially the recently developed ones, in the Egyptian manufacturing sector of which the pharmaceutical industry, but no studies investigated the benefits derived from the adoption of recent management accounting practices in a mature and successful industry in Egypt like the pharmaceutical industry (see Farouk 2005) or the effect of adopting different management accounting practices, either recent or traditional, on the overall firms' performance. Beside, it is not clear what are the firms' factors and characteristics that enhance the adoption of recent practices in order to cope with the new environmental changes, and global competition. In addition, using the contingency theory as the theoretical framework is a challenge to this study¹.

¹ Find more about the use of contingency theory in the management accounting studies in chapter 3.

The second challenge to be faced is measuring the effect of adopting recent management accounting practices on the Egyptian pharmaceutical firms' performance, if any.

Furthermore, the study examines the implications of the Egyptian environment and culture on the functioning of the pharmaceutical firms in general, and the state of management accounting practices in these firms in particular. Those two issues are rarely presented in the literature of developing countries and not at all tackled in Egypt. Therefore, they are considered the third challenge for this study. The next section presents a background on management accounting in developing countries going through transitional periods such as Egypt.

1.2 Background on Management Accounting Practices in Transitional Economy

The growth of privatization, deregulation, international business, global competition and new information and production technology has changed the world of management accounting. These changes have special implications for transitional and newly industrialized or emerging economics (Jaruga and Ho, 2002).

Few studies, during the last decades have been dedicated to the development of management accounting practices in developing economies (Vamosi, 2003). For example, in Eastern Europe, the study of Vamosi (2000) in Hungary, and Haldma and Laats (2002) in Estonia; few researches are in Asia such as the study of Ghosh and Chan (1997) in Singapore, Anderson and Lanen (1999) and Joshi (2001) in India, Lin and Yu (2002) in China, Sulaiman, Ahmad and Alwi (2004) in four Asian countries, Sulaiman, Ahmad and Alwi (2005) in Malaysia, and Wu, Boateng and Drury (2007) in China, in addition to a study conducted in South Africa by Luther and Longden (2001).

These studies focus on the adoption and development of management accounting practices in respective countries, as well as the expected future emphasis of western management accounting practices in such emerging market economies. The authors also argue that management accounting in transition countries is still in its initial stages of development into a research area. In addition, the above researches endorse some prior

findings related to contingent influencing factors such as the intensity of competition due to globalization, and introduce possible new factors such as changing stakeholder pressures and shortages of qualified accountants. In the same vein, Luther and Longden (2001) promote that management accounting cannot be understood without reference to political, cultural and economic factors, and Wijewardena and De Zoysa (1999) recommend that further researches are needed to examine management accounting practices in several transitional economies.

The use of contingency framework for the analysis of management accounting systems started in the early to mid 1970's. However, since then it has come to dominate the published work on the behavioral and organizational aspects of management accounting. Otley (1980: p. 413) stated, ' The contingency approach to management accounting is based on the premise that there is no universally appropriate accounting system which applies equally to all organizations in all circumstances. Rather, it is suggested that particular features of an appropriate accounting system will depend upon the specific circumstances in which an organization finds itself. Thus, a contingency theory must identify specific aspects of an accounting system which are associated with certain defined circumstances and demonstrate an appropriate matching'. Also, Otley (1980) argued that the justification for adopting a contingency theory of management accounting is that it emerged as a necessary means of interpreting the results of empirical research. He concluded that the relevance of organization theory to management accounting is being increasingly recognized and contingency formulations have been prominent in organization theory. There thus appears to be a prima facie case for the development of a contingency framework for management accounting.

The previous studies are considered contribution to the knowledge of management accounting practices in transitional countries, as well as comparative studies that highlight the similarities and differences in management accounting practices between those economies and western economies, and the ways that justify reasons for differences. Nonetheless, they have not explored the in-firm contingent factors to the adoption of recent practices in those economies. None of these studies have investigated the effect of political, economical and social environment on management accounting practices. Although there is an expanded research of this issue in Anglo-American

countries, and there has been a growing interest in management accounting systems and practices in the developed countries, developing countries lag far behind and the gap in management accounting systems literature in developing countries still exists. This was the main motive for this research.

1.3 Problems of the research

New management accounting practices have emerged in response to changes in manufacturing practices or the competitive position of business in the recent years as mentioned before. These practices such as ABC, throughput accounting, JIT accounting and the emphasis on non-financial performance measures were featured in a range of accounting and management journals (Tayles and Walley, 1997). There is however, less guidance on when to adopt such new techniques, and when to adopt the traditional ones? Under what environmental and internal conditions are such practices appropriate? Is the adoption of these techniques effective to improve or increase performance? And, finally, should these techniques be varied across industry types or the same for all industry types? Moreover, what are the factors that affect the adoption of these practices? Many accounting researchers argue that these questions could be further areas of research investigation (Ittner and Larcker, 2001; Otley, 2001; Shields, 1998; and Tayles and Walley, 1997).

The problems of the research is introduced through the investigation of the state of management accounting practices in pharmaceutical firms in Egypt as it is one of the developing countries which undergo a transitional phase of economy.

Egypt is an important and influencing country among African and Arab states. It has its uniqueness because of its strategic location bordering Africa, Europe, and Asia; which help it to gain a leading role among Middle-Eastern nations. During the 1980s and the thresholds of 1990s, the Egyptian government embarked on an ambitious economic reform program, the main aim of which has been to create a decentralized, market-oriented economy designed to encourage private sector activity in all sectors and reduce the size of public sector through privatization (Road, 1997). These environmental changes affected the operations of organizations in Egypt both directly and indirectly through associated market volatility (Evans et al., 1994).

Many studies explore accounting in Egypt; (Shawky, 1996, Tawfic, 1991, Mahmoud, 1995 and Abd-El bar, 1997). A review of Egyptian accounting literature reveals that there are two main concerns for Egyptian scholars. The first is to show the deficiencies in the Uniform Accounting System to provide useful financial information for the economic reform program (see Shawky, 1996 and Tawfic, 1991), while the second is to propose changes in the system to be more able to meet the needs of economic development efficiently (Abd-El bar, 1997 and Mahmoud, 1995). Yet, all these previous studies are focused and concerned only with financial accounting rather than management accounting.

Mahmoud (1995) argues that accounting in Egypt is a procedural step to be followed and that it should respond to change in order to achieve economic objectives. He adds that the increase in competition urges the need for change and reform in accounting practices to provide better types of information in order to take more accurate investment decisions.

It can be then concluded that there is a need and demand for studies and research on management accounting practices in Egypt, being a country in a transitional period, its current status of adopted management accounting practices within organization and the benefits derived from their applications are not sufficiently examined.

In addition, Egypt's pharmaceutical industry is considered relatively mature with moderate growth rates, as argued by Farouk (2005), that the pharmaceutical sector in Egypt is very successful and promising; she also proved that this sector is an advanced industry sector in Egypt. This conclusion encourages the researcher to consider the Egyptian pharmaceutical industry an appealing industry for this study which is interested in the adoption of recently developed management accounting practices in Egyptian manufacturing organizations. A study, that needs to be applied on an advanced industry sector in order to reach some meaningful results, in a developing country in its transitional phase of economy, like Egypt.

In sum, problems of the research are as follows:

- There is lack of knowledge concerning the current state of management accounting, and their practices in Egypt. It is argued that being a developing country, Egyptian pharmaceutical organizations are slow in adopting recent management accounting practices, and that they rely significantly on traditional ones.
- There is lack of knowledge concerning the contingent factors to the adoption of recent management accounting practices in the context of pharmaceutical firms' in Egypt.
- There is lack of knowledge concerning the effect of adopting recent management accounting practices in Egyptian pharmaceutical firms on the overall firms' performance.
- There is lack of knowledge concerning the implications of the Egyptian environment (political, social, and economic) on the success of pharmaceutical industry and the advancement of pharmaceutical firms' accounting systems.

1.4 Aim of the research

In view of the problems discussed above and the challenges faced, it becomes clear that the aim of the research is to:

'Test the relationship between certain characteristics of manufacturing firms and the adoption of recent management accounting practices, with an application on the pharmaceutical industry. Then test the relationship between the adoption of those recent practices and the firms' performance. Finally the implications of the Egyptian economy on the pharmaceutical industry and the adoption of management accounting innovations are explored'.

1.5 Methodology

This research is based on a relativistic ontology, which holds that reality is a subjective construction of the mind. So what is subjectively experienced as an objective reality

exists only in the observer's mind. Using the semi-structured-in-depth interviews as the main method of collecting the data, reveal some doubt about the realism ontology. Since the response of the interviewees would vary dramatically according to their experiences, beliefs and positions. Consequently, the research is based on a phenomenological epistemology that shows that the social world is essentially relative and can only be understood from the point of view of individuals who are directly involved in the activities under study. In other word the phenomenology is concerned with understanding human behavior form participants own frame of reference.

The research paradigm that is used by the researcher to conduct this study is the Interpretivist paradigm, where the world is viewed as it is but explained according to the researcher consciousness. And this paradigm best matches with the relativistic ontology and phenomenological epistemology. This view is consistent with the researcher's belief that the choice of methodologies should be guided by the problem at hand and the resources that can be brought and the data collection method used to best solve the problem.

1.6 Research Importance

By reviewing the literature of international accounting in developing countries, it becomes obvious that little is known about accounting systems in these countries. Wallace (1990) in his article Accounting Systems in Developing Countries stated:

"Although the literature now has breadth, it has little depth. There is an urgent need for a deeper understanding of accounting systems in developing countries. This need can only be fulfilled by intensive research of those issues peculiar to developing countries." (44)

Based on the previous argument, the importance of this study emerges, as it investigates issues relating to management accounting practices adopted in pharmaceutical firms in Egypt and the benefits derived from such adoption. Moreover, as mentioned before most of the previous studies in developing countries have been directed to financial accounting and just few have been concerned with management accounting, so the area

is still primitive and there is a need for researches to fill the gap that exists in management accounting literature in developing country, and Egypt in particular.

The current research uses a contingency framework to analyze the effect of some in-firm factors on the adoption of recent practices and how the recent practices would in turn affect the firms' performance. It therefore, provides further evidence supporting the use of contingency theory in management accounting researches; the study extends the empirical literature on the contingent relationship between in-firm factors and management accounting practices.

This research provides a tested framework to this contingent relationship between some in-firm factors and recent management accounting practices adoption that can be applied in Egyptian pharmaceutical firms. In addition, a suggested framework, that needs further testing, is presented for further research area.

To sum up, this research has both significant theoretical and practical importance. From a theoretical perspective, this research provides insights into the development of contingency approach to analyze the state of management accounting practices in manufacturing organizations in developing countries. From the practical perspective, the findings of the study should increase the understanding of the factors that might enhance and encourage (or hinder) the adoption of recent management accounting practices in Egyptian pharmaceutical firms to improve (decline) their performance.

1.7 Organization of the Research

This thesis is organized into ten chapters. Following this introduction, chapter two provides an overview of the literature related to the evolution that has occurred in management accounting practices. It also provides a brief review of accounting in developing countries, the diffusion of management accounting practices and the effect of globalization on management accounting in developing countries. This presentation helped the researcher identify why, how, and where management accounting research should take place and change in accounting practices could occur.

Chapter three provides an overview of the literature related to performance measurement systems. The main aim of this chapter is to give a historical feedback about the evolution of performance measurement systems. Moreover, it presents a criticism to the financial measures and a need for non-financial measures. Finally a review of performance evaluation practices in different areas of the world is accomplished, to reach the best measures that can be used to evaluate the firms' performance in this study.

Chapter four reviews the contingency theory as the theoretical framework of this study. It starts with the evolution of this perspective to enhance our understanding with the reasons that supported the emergence of this approach. The chapter assesses the strengths and limitations of the contingency approach and presents different contingency approach framework. It provided the base for the researcher to develop the suitable framework that is able to serve the objective of this study.

Chapter five discusses Egypt as the context of this study. It gives a detailed review of the geographical, demographical, cultural, political, economic and accounting aspects of Egypt. It also shed the light on the pharmaceutical industry in Egypt. The main aim of this chapter is to provide evidence of why Egypt and pharmaceutical industry in particular, were chosen to be the context of this study.

Chapter six introduces the methodology and methods adopted in this research. It provides evidence that supports the chosen methods and justifies the research design. The chapter describes the steps of developing the data collection instruments and how the sample size was determined besides discussing the administration and the conclusions derived from the pilot study conducted. Moreover, hypotheses development process is discussed along with the research variables. Finally a brief of the interview process is presented and the statistical analysis methods followed in analyzing the data are discussed. The main aim of this chapter is to provide a link between the theoretical and the empirical stances of this study.

Chapter seven explains sample characteristics and the statistical analysis of the data. It clarifies how different codes were developed and given to the data to allow for statistical tests. Then a description of different tests used for the analysis such as

descriptive statistics, correlation coefficient and other non-parametric data analysis tests available in the SPSS package. In addition it summarizes the hypotheses testing findings and the limitations of the hypotheses testing study. The main aim of this chapter is to answer the two main research questions concerning the in-firm contingent factors to the adoption of recent management accounting practices in the Egyptian pharmaceutical firms and the effect such adoption would have on the overall firms' performance.

Chapter eight is concerned with the qualitative analysis of the data collected, which is classified for the purpose of this chapter into three general themes; the Egyptian Environment Implications theme, the Accounting Practices theme, and the Performance and Quality Issues theme. Each theme is analyzed through its break down into three sub-sections: points of focus of each theme, comparative tabulation of the respondents' views regarding each theme's point of focus, and finally a set of concluded findings. The aim of this chapter is to enhance and complement the findings of the statistical analysis conducted in chapter seven, and provide more in depth examination of the research questions, in addition to shedding the light on the implications of the Egyptian environment on the pharmaceutical industry success and advancement.

Chapter nine discusses the research (quantitative & qualitative) findings and results. It compares the findings of this research with other previous studies and draws on the relationship that exists between the current research findings and the literature review. Finally it provides a revised framework for this study, in view of both quantitative and qualitative analysis findings.

Chapter ten provides a conclusion of the study. It first, summarizes the current research findings and contributions, which lead to empirical recommendations on both organizational and national level. Then, it determines current research limitations, and provides suggestions for areas of future research drawn with a link to the current research limitations.

Chapter Two

Management Accounting Practices

2.1 Introduction

In the conditions of market economy, new changes in business environment like, advanced technology and intensified competition took place, the management of a company, in order to be consciously competitive on the market, needs to have objective information about the formation and shape of the company's performance, which is documented in financial statements. As a result, an evolution has occurred in managerial accounting research. Empirical studies of budgeting and financial control practices are giving way to research on a variety of new techniques such as activity-based costing, the balanced scorecard, strategic accounting and control systems, and economic value performance measures (Ittner and Larcker, 2001). In order to fill the gap between research and practice, a need arise to develop organizations' accounting systems, especially, cost and management accounting systems (MAS), which could provide adequate information about the main impacts on cost characteristics and companies' performance, especially in developing countries and to investigate the state of management accounting practices in those countries organizations. The past two decades have witnessed considerable change in managerial accounting practice. From its traditional emphasis on financially oriented decision analysis and budgetary control, managerial accounting has evolved to encompass a more strategic approach that emphasizes the identification, measurement, and management of the key financial and operational drivers of shareholder value (see for example, McNair, 1997; Kaplan and Norton, 2000; Al Bhimani, 2002).

Since transition economy is a changing process from the command to market economy and as the Egyptian economy is considered in a transitional phase², this chapter will have the main aim of shedding the light on accounting in developing (third world) countries. The United Nations (2001, p. 3) divide countries into two groups: developed and developing countries. Countries in North America, Europe and the former USSR,

² More details about the Egyptian economy are provided in chapter five.

Japan, Australia and New Zealand, are all categorized as developed countries, whereas all others are regarded as developing countries.

Those countries are not a homogenous group and mostly found in Africa, Asia, Latin America, Eastern Europe, and the Middle East. They are different in terms of Gross National Product (GNP), population, culture, geographical size, access to natural resources and economic and political systems. But they still share common features, as Compared with developed countries; developing countries have, in general, a lower human development index (which measures a country's performance in three areas: education, health and society purchasing power), a lower level of industrialization, a lower level of average income per inhabitant, and a higher level of population growth (United Nations, 2001; Putu et al., 2007)

The chapter will also emphasize the changing role of management accounting in new business environment, and, consequently, the evolution that has taken place in management accounting practices from the 1950s till now, besides a review of the diffusion of management accounting innovations all over the world, especially, developing countries, with an emphasis on the effect of globalization and changes in the global business environment on such economies.

2.2 Accounting in Developing Countries

According to Al-Faisal (1992), the accounting profession in the United Kingdom has influenced the Egyptian accounting profession, which in turn has influenced the accounting profession in Saudi Arabia. This is due to the fact that most of college students in the field of business administration, either studied in Egypt or in colleges of business in Saudi Arabia which positions were filled by Egyptians.

Many researches have been conducted to compare between accounting systems and accounting profession in developing and developed countries. For example, El-Dieb (1993) compared between accounting system and profession in Egypt, United States, and United Kingdom and proposed a framework for improving accounting in Egypt. Although such comparison is useful in identifying similarities and differences, it should be taken into consideration that those countries are different in social, political and

economic environment, and therefore, Egypt is to be noted against these mentioned countries.

Accounting researchers are well aware and agree upon the role which accounting can play in the economic growth and development in developing countries (Enthoven, 1980, 1981, 1983; Briston, 1990; Larson 1993; Belkaoui, 1994). Business management and accounting practices are relatively weak in most developing countries in contrast to those in the industrialized world (Lin and Yu, 2002). The debate is whether to use International Accounting Standards as it is in developed countries or to develop accounting standards that are more suitable to the circumstances of developing countries.

One belief is that different national accounting standards should be harmonized in order to facilitate international business transactions and the growth of the world's capital market (Arpan and Radebaugh, 1995; Muller et al., 1991). The adoption of advanced management accounting practices from the developed countries with necessary adaptation in terms of specific local business conditions will contribute to improving business management significantly and raise the operating efficiency and profitability substantially (Lin and Yu, 2002). There are, nonetheless, certain differences in the application procedures or techniques of management accounting in practice in the industrialized world and the developing countries owing to the varied economic, institutional and cultural settings concerned.

The other belief among accounting researchers is that each country should develop standards that suit its circumstances. They oppose the adoption of International Accounting Standards at their transfer from developed countries to developing countries (Briston, 1978; Perera, 1989, a, b). The argument is that each country has its socio-economic and political system; also there are cultural differences between countries. These differences should lead to differences in the objectives of their accounting systems (Rivera, 1989). Samuels (1990) argues that it is better for developing countries to have their own approach to accounting system design instead of copying accounting systems from developed countries. In the same vein, some researchers contended that the dissemination of Western management experience to developing countries might encounter resistance due to the variances stemmed from the social, legal, cultural, and

educational systems in the developed and developing countries (Weinshall, 1977; Child and Bate, 1987; Abrahamson, 1991; Aris and Guillen, 1991).

Following the view of Lin and Yu (2002), the researcher believes that it is hard for developing countries to develop their own standards and designs of accounting systems, instead, each developing country should adjust the accounting systems developed by more developed countries, to match its economy's special socio-cultural characteristics and specific local business conditions.

Therefore, due to the variances stemmed from the social, legal, cultural, and educational systems in the developed and developing countries (Weinshall, 1977; Child and Bate, 1987; Abrahamson, 1991; Aris and Guillen, 1991), it is expected that management accounting practices adopted in developed countries would differ from those adopted in developing countries even though functioning in the era of globalization and competing in the same global market. In addition, factors affecting changes in management accounting systems would also differ among developed and developing countries. These expected differences increases the need for more researches exploring the state of accounting in different countries, especially developing countries, and investigating the effect of external and internal factors relevant to each economy, which affects the development of its accounting systems in general, and its management accounting systems in particular.

In this direction, Briston (1978, 1990) criticizes the evolution of accounting in Nigeria and Indonesia. He pointed to the impact of colonialism. Those countries adopted accounting principles and systems that meet the needs of the United States and the United Kingdom. In the same vein, Hove (1986) argues for the impact of colonialism on Zimbabwe. The accounting system is imported and it is not appropriate for the country's problems.

Muller et al., (1987) identify some variables that shape accounting development. Examples of those variables are political ties with other countries, legal system, inflation level, the size of complexity of business enterprises, in addition to the education level. He accordingly, identified three accounting clusters; The British-

American model, the Continental model and the South American model. Egypt is considered a part from the continental model together with Japan, Italy and Switzerland.

Perera (1989b) provides another classification for accounting systems based on the impact of culture on accounting. In his opinion Accounting systems are classified to Anglo-American, Continental European and developing countries. According to his view, developing countries are characterized by low degree of professionalism in the accounting sub-culture and as a result there will be little accuracy and adequacy in published accounting information, and a high degree of centralization. This all leads to high government intervention.

2.3 The diffusion of Management Accounting Practices

There has been always a need for systematic comparative studies (see for example; Clarke et al., 1999; Guilding, Lamminmaki and Drury, 1998; Brewer, 1998; Wijewardena and De Zoysa, 1999; Joshi, 2001; Lamminmaki and Drury, 2001; and Luther and Longden, 2001) covering various aspects of management accounting practices in different countries, in order to be able to highlight the effect of different cultural contexts on the state of management accounting systems in practice.

Walley et al (1994) conducted a study on a sample of 20 manufacturing firms to discover what practices have been adopted and why changes have or have not taken place. The cases raised a number of issues about the potential for the adoption of new accounting systems. Factors such as the ownership of firms and the managerial resistance to change appear to be strong influences. The cases also revealed that most changes have resulted from some form of external pressure, but most reasons for non-adoption appear to come from internal or organizational sources.

Ghosh and Chan (1997) conducted a longitudinal study with a basic objective to find out the state-of-art of management accounting in Singapore context. The study hoped to provide a more in-depth understanding on the following aspects: the development of management accounting and financial control practices in Singapore companies; the relative extent of these practices in multinational companies (MNCs) as opposed to

locally owned companies; and the differences, if any, between companies in various industries with regard to these practices. The study concluded that management accounting practices of the Singapore companies have generally improved as compared to the results of the similar study conducted by Ghosh (1984), and also confirmed that MNCs still enjoy an edge over local/regional companies in their use of management accounting practices.

Other research was conducted in Bangladesh by Alam (1997) who described the overall socio-economic situation in Bangladesh as characterized by uncertainty, resource scarcity, political instability and some tendency towards disorder. The research was conducted in two commercially oriented state-owned enterprises. The findings of the research suggested that in conditions of high uncertainty, budgeting is more oriented towards the management of external relationships with significant institutional actors than with the management of the organization itself.

Chenhall and Langfield-Smith (1998) surveyed the extent to which Australian manufacturing firms have adopted certain traditional and recently developed management accounting practices and emphasized the benefits received from those practices. Newer techniques were more widely adopted than found in prior surveys. But, overall, the rates of adoption of traditional management accounting practices were higher than recently developed techniques. Also they suggested future research to gain a better understanding of the factors that influence differences in the levels of adoption of recently developed management accounting techniques between countries.

Guilding, Lamminmaki and Drury (1998) conducted a comparison between budgeting and standard costing practices used in New Zealand and the United Kingdom. The UK is chosen to be the country against which to benchmark for the similarity in professional academic accounting training and the existence of the established survey and database about UK management accounting practices. The comparison revealed a high degree of consistency. It has been also found that standard costing systems continue to be popular and that the majority of accountants do not envisage abandonment of standard costing and variance analysis. In the case of the few differences that have been observed, it appears that there is greater lag behind prescribed practice amongst New Zealand manufacturers. But still the authors believe that the 90s has seen New Zealand

management accounting practices catching up with those used in large industrialized economies as the UK.

A study is conducted by Brewer (1998) to examine the relationship between national culture and activity-based costing (ABC) systems. The research uses Geert Hofstede's taxonomy of work-related cultural values, and the study is applied to the case of Harris Semiconductor (HS), which has implemented an ABC system at plants located in Malaysia and the United States. The findings indicate that HS's top-down implementation approach coupled with ABCs inherent emphasis on cross-functional team-based work arrangements may have contributed to a higher level of ABC success at HS's plant in Malaysia relative to its U.S. plants.

In the same vein, Wijewardena and De Zoysa (1999) conducted a comparative study on management accounting practices in large manufacturing firms in Australia, as a Western-type economy on one hand, and Japan, influenced by its unique cultural attributes, on the other hand. The results of the study provide some important insights into the differences in management accounting practices of Australian and Japanese manufacturing firms.

Anderson and Lanen (1999) studied the case of India after the liberalization of the Indian economy 1991 using a contingency theory framework. The study provided evidence of changes in management accounting practices associated with shifts in the external environment.

Another study conducted by Clarke et al., (1999) in Ireland reported that the rate of adoption of activity-based costing (ABC) is lower in Ireland than in Anglo-American countries. This is a puzzling finding, putting into consideration that the study was comparing two developed nations that share a common language.

Joshi (2001) conducted the same study as that of Guilding, Lamminmaki and Drury (1998), on Indian manufacturing companies and the results were compared to that of Australia. Most of the practices adopted relate to traditional budgeting and performance evaluation systems. The future emphasis in India is on traditional practices and less on the new techniques, because higher benefits were derived from such techniques. Apart

from some similarities in practices between Indian and Australian firms, statistically significant differences were found in respect to adoption rates, benefits derived, and the focus for future emphasis, both for traditional and newly developed practices. Joshi stated that most of the differences could be attributed to the differences in cultural values.

Another study was conducted by Lamminmaki and Drury (2001) to compare product-costing practices employed by manufacturing companies in the same pair of countries, New Zealand and the United Kingdom. The study overcame the shortcomings that undermined earlier cross-country comparative commentaries on management accounting practices by using the same survey instrument in both countries and controlling for firm-size differences. The study provides further support to the growing evidence of a continuing lag between management accounting theory and practice.

In 2001, Luther and Longden conducted a research into management accounting techniques in South Africa and changes in those techniques, with the results are compared to the case of UK; perceived benefits derived from management accounting techniques in South Africa differ from the U.K. equivalents. The study also shows that some of the factors causing management accounting change in South Africa are different from those at work in the U.K.

Lin and Yu (2002) cast light on effective diffusion of management accounting practices under different social and economic systems by studying the case of Han Dan Iron and Steel Company in the People's Republic of China. The company has adopted a series of management accounting techniques in its cost control system including target costing, responsibility accounting, standard costing, flexible budgeting, internal transfer pricing, behavior motivation, performance evaluation, and variance analysis, to substantially reduce production costs and raise profitability. The Han Dan experience demonstrates that management accounting can play a very important part in business management in China or other developing countries.

A study conducted by Sulaiman, Ahmad and Alwi (2004) examined the extent to which traditional and contemporary management accounting tools are being used in four Asian countries: Singapore, Malaysia, China and India. The evidence reviewed suggests that

the use of contemporary accounting tools is lacking in the four countries. On the other hand, the use of traditional accounting techniques remains strong.

Another study conducted by Sulaiman, Ahmad and Alwi (2005) to provide empirical evidence on the extent to which companies in Malaysia use standard costing, suggested that standard costing is still being used by a large majority of firms. Thus companies in Malaysia, both Japanese and local, perceive that the basic principles of standard costing remain sound.

In the same vein, Ax and Bjørnenak (2005) studied the diffusion of management accounting innovations in Sweden, with a focus namely on the balanced scorecard (BSC). The findings provide evidence of an extremely rapid and effective spread of a management accounting innovation; BSC.

Another study was conducted by Abdel-Kader and Luther (2006) to investigate the management accounting practices in the British food and drinks industry. The survey provides a unique detailed examination of actual management accounting practices. The study provides evidence of a gap between current textbooks and actual practices. Moreover, traditional management accounting is alive and well; however there are indications of likely increased use of information concerning the cost of quality and non-financial measures relating to employees although performance measurement is still very much dominated by financial figures, and analyses of competitors' strengths and weaknesses.

Moreover, a study was conducted by Wu, Boateng and Drury (2007) to consider the adoption, perceived benefits, and expected future emphasis of western management accounting practices in the Chinese emerging market economy. The survey questionnaire was modeled on the questionnaire of the study undertaken by Chenhall and Langfield-Smith (1998) in Australia. The importance of this study stems from the fact that it represents one of the first attempts to examine the adoption, perceived benefits and expected future direction of management accounting practices of state-owned enterprises and Joint Ventures in the Chinese emerging market economy.

Finally, a study was conducted by Kattan, Pike and Tayles (2007), in Palestine. The objectives of this research is to understand the changes in management accounting and control systems (MACS) employed over a period of time and identify changes in these systems as a result of political changes in the surrounding environment. This research is conducted through the use of a case study involving Stone Co. Management accounting practices in Stones co. proved to have changed over the last ten years period. It was apparent that these changes were not much influenced by external environmental uncertainty, on the contrary, affected by internal factors such as; growth in sales and profits, the level of education of both the manager and employees of the accounting department, the ISO certification acquisition, the expansion of operations and the availability of computers. This research extends the contingency theory framework to management accounting practices in less-developed economies.

It can be concluded from the preceding discussion, that a lag still exists between management accounting theory and practice. In addition, it also reminds us the gap in management accounting studies in developing economies, which cannot be understood without reference to the wider political, cultural and economic factors of the countries concerned and in less developed economies this embraces cultures, capital markets, bureaucracies and regulation. Companies operating in those markets are influenced by and need to react to such changes.

In addition the discussion provides a proof on differences in the adoption patterns of recent management accounting practices between nations, which call for more researches covering more countries to examine factors affecting the adoption of innovations, especially, management accounting innovations in developing countries. This way comparative studies between companies in one nation, or across nations can be conducted, in an attempt to fill the gap in the body of knowledge regarding the effect of cultural, political, and socio-economic differences on the adoption of management accounting practices, in addition to gain a better understanding regarding the factors influencing the implementation of advanced management accounting practices and how these are related to organization's characteristics which are in turn affected by the organizations' external environment.

The researcher was, then, interested to investigate the relationship that exists between the implementation of advanced management accounting practices and the organizations' characteristics as well as the effect such practices has on organizations' performance in the context of Egypt, which is an Arab country with different cultural aspects than that of other developing countries studied earlier, and also different than that of Palestine (Kattan et al., 2007) due to the special nature of Palestine, characterized with severe political instability. Therefore, not only enriching the literature with valuable information relating to another part of the world not sufficiently tackled in the literature, but enhancing those Egyptian firms' performance and competitive ability in the globalization era as well.

2.4 The Changing Role of Management Accounting

Based on the researcher knowledge that the present can only be understood in the light of the past, along with his awareness to the relevance of historical understanding to relevant issues, this section will be devoted to present main schools of thought in the area of management accounting history, with the aim of getting an understanding of how the evolution of management accounting took place.

Loft, (1991) in Ashton *et al*: Issues in Management Accounting; explained that the breakthrough in cost accounting, according to the traditional view, came in Britain in the latter part of the nineteenth century. The emergence of cost accounting at this time was closely connected with a major Depression (1873-96), as it suddenly became crucial to the survival of a business to be able to calculate what its products cost to make. According to traditional historians of management accounting, early cost systems tended to be rather unsystematic, and rarely was any attempt made to coordinate them with the financial or commercial books. This early lead which the British had in developing cost accounting was quickly taken over by the United States after 1900. By the second decade of the twentieth century the issue of how to account for waste and scrap was being energetically tackled, and in the 1920s methods of standard costing were perfected.

This traditional line of thinking then evolved to another approach that considers accounting a continuous process of evolution and improvement in order to get better and respond to economic opportunities that is the 'neoclassical' approach to cost accounting history (Parker, 1999; Stewart, 1992). Nevertheless it argues that cost accounts were used as a direct aid to management much earlier than the late nineteenth century. It is then argued that cost accounting practices and techniques comparable to those of the modern period, including cost control and overhead allocation, had been developed much earlier than previously thought. Neoclassicists have based their conclusions on research in business archives as opposed to traditional historians that used as their main source published materials.

On the other hand, they both share the same passive view of cost and management accounting as a set of techniques serving the goals of the organization and adapting as necessary to serve changing business needs. In various ways, the following approaches break down these assumptions by bringing the wider economic and social context into their explanations of how cost and management accounting might have played an active role in shaping organizations themselves.

Chandler (1962, 1977) concluded that modern cost accounting arose in the United States during the mid-nineteenth century because of a coupling of the growing size of organizations and the complexity of production processes, with oligopolistic markets consisting of a few large producers which urged the need of these producers for cost information in order to assess how the different parts of the business were performing and generally try to outwit their rivals. In sum, he believed that the environment caused large companies to follow certain strategies to survive.

Johnson and Kaplan (1987) embraced the same thought of Chandler with a focus on the internal control and efficiency functions of accounting systems. The most important point in their argument is namely that the development of management accounting was important in actually facilitating the growth of large enterprises but it did not develop as a by-product of the growth in size of enterprises. They ascertain that management accounting had a golden age from the late nineteenth century to the early twentieth, but then it has lost its relevance, it must change if American corporations are to survive in competitive world markets. Johnson and Kaplan argue that it was the search for

efficiency which had lead to the development of cost and management accounting practices.

Another historical approach is the labor process approach, it states, as mentioned by Hopper and Armstrong (1991), that the evolution of accounting systems is analyzed as an aspect of overall changes in the pattern of control of the labor process. According to this approach, Hopper and Armstrong reinterprets the events described by Johnson and Kaplan; rather than being due to a continual search for economic efficiency, as being fundamentally associated with the struggle to control labor processes in the factory. Thus, involves considering accountants as well as accounting.

In summary, the previous literature on management accounting approaches can help in understanding how waves of change advance through the economy or other external factors and thus how management accounting takes the form of what we observe at any given point in time, including the present. In addition, studying approaches of management accounting change would provide a better understanding of the modern studies analyzing the changing role of management accounting from different authors' point of views, as presented in the part that follows.

According to Hiromoto (1988), the primary objective of management accounting is to provide decision makers with timely, accurate, and relevant information, reflecting the financial performance of an organization. Traditionally, the main objective of management accounting has been to help organizations plan their future and then to monitor their performance. The emphasis has been on the internal processes, to analyze, investigate, and predict information to assist managerial activities (Al Bhimani, 2002).

According to Neely et al. (1995) the management accounting system has been set and is still functioning based on assumptions that were made more than sixty years ago. Therefore, currently issued financial reports, which are based on Generally Accepted Accounting Principles (GAAP), need to be changed to provide valuable information for those who use these reports.

Management accounting in organizations today has wider and diverse role; from focusing on internal processes towards becoming externally oriented (Al Bhimani,

2002). According to McNair, Lynch, and Cross (1990), new management accountants should benefit from the information revolution. They have to measure the non-financial metrics, provide operation managers with quantified non-financial information as well as control cost and produce current reports about cost behavior for top management.

McNair (1997) also points out that the role of management accounting in the new millennium is oriented towards analysis and value added activities. Management accounting should be a participant and leader in decision-making. In addition, it should be strategically oriented and focused on performance improvement. Kaplan and Norton (2000) also argue that management accounting should be part of the formulation and implementation of strategy.

A survey done by Freedman (1996) studied the importance of the management accounting role as an information and support system. This survey revealed that most respondents believe that management accounting must provide an information resource that contributes to overall strategy implementation

Abdel-Kader and Luther (2006) categorized different management accounting techniques according to the role they can play. And provided five roles management accounting can play: costing, budgeting, performance evaluation, information for decision-making and strategic analysis.

2.5 The Evolution in Management Accounting Practices

Prior to 1950, the primary focus of management accounting practice was cost determination and financial control, through the use of budgeting and cost accounting systems. By the mid-1960s, this focus shifted to the provision of information for management planning and control with the aim of ensuring that resources are obtained and used efficiently and effectively to achieve the organization's objectives. This limits the scope of management accounting responsibilities and focusing primary attention on accounting information (Langfield-Smith, 1997; Otley, 1999; Ittner and Larker, 2001).

Contingency theories expanded the management planning and control framework by articulating some of the contextual or contingent factors influencing the entire organizational control package of accounting and non-accounting information systems, organizational design, and other control mechanisms (Otley, 1980; Brickley et al., 1995; Reid and Smith, 2000; Collins et al., 1997; Haldma and Laats, 2002; and Waweru et al., 2004). These theories contend that there is no universally applicable system of management accounting and control. The choice of appropriate accounting and control techniques depends upon the circumstances surrounding an organization. Among the prominent contingent factors in this literature are the external environment, technology, competitive strategy and mission, business unit and industry characteristics (Fisher, 1995a; Itner and Larcker, 2001). Contingency theorists posit that the competitive environment is a determinant of the form the firms' management accounting practices take and the intensity with which they are used (Anderson and Lanen, 1999).

Beginning in the mid-1980s, management accounting began shifting away from a strict focus on planning and control to emphasize the reduction of waste in business processes. This shift was prompted by the growing adoption of quality management programs, as well as the introduction of accounting techniques such as cost of quality management, activity-based costing, process value analysis, and strategic cost management (Cooper and Kaplan, 1991; Shank and Govindarajan, 1994; Itner and Larcker, 2001).

By the mid-1990s, management accounting entered its fourth stage, with the focus on planning and control and waste reduction, expanding to encompass a more strategic emphasis on the creation of firm value through the identification, measurement, and management of the drivers of customer value, organizational innovation, and shareholder returns. A hallmark of this era is the introduction of a diverse set of new management accounting techniques focused on promoting value creation (Itner and Larcker, 2001). These techniques include the development of balanced scorecards (Kaplan and Norton, 1996), economic value measures (Stewart, 1991), and strategic management accounting systems that provide information concerning the current and expected states of strategic uncertainties (Bromwich, 1990).

To sum up, the rapidly changing and dynamic environment calls for changes in the way organizations operate. Therefore, continuous monitoring of management accounting systems in use is a must to enable organizations to adopt the latest and most appropriate ones. Specifically, a need for changes in management accounting practices allows organizations to implement their new strategies in order to achieve their new objectives in this competitive environment. This was found to greatly contribute to the firm's competitiveness which is becoming of an increasing importance especially to developing countries, due to the elevated competition and to the additional effect globalization brought, which is presented in the next section of this chapter.

2.6 Globalization and Management

Accounting in Developing Countries

A common theme in normative management accounting research is that changes in an organization's external environment may lead to changes in an organization's management accounting system (Atkinson et al., 1997; Nanni, Dixon, & Vollman, 1992). Throughout the 1990s, the growing level of global competition intensified the challenges for managers who need to consider more effective ways of achieving competitive advantage and improving organizational performance. One mean of achieving this is through the adoption of clearly articulated strategies, flexible organizational structures and innovative accounting systems (Baines and Langfield-Smith, 2003). Baines and Langfield-Smith (2003) examined the relationship between the changing competitive environment, and a range of organizational variables as antecedents to management accounting change. The results indicate that an increasingly competitive environment has resulted in an increased focus on differentiation strategies. This, in turn, has influenced changes in organizational design, advanced manufacturing technology and advanced management accounting practices. These three changes have led to a greater reliance on non-financial accounting information which has led to improved organizational performance.

There is evidence from the strategic management literature that firms from developed countries respond differently to the demands of going global than firms from developing

countries. For example, Ataay (2006) found that information technology impacted labor productivity differently in developing countries than it had in developed countries. Elmawazini *et al.* (2005) noted that foreign direct investment impacted productivity growth among businesses to a greater degree in developed countries than it did in developing countries. In a 36 country study, Espiritu (2003) found that the digital divide accounted for a significant difference in economic growth when comparing developed nations and developing nations. Merchant (2005) discovered that international joint venture performance varied among groups that contained partners from developing countries and those that contained partners from developed nations.

A number of major changes have occurred in the late 1980s and the early 1990s, which have major impact on industrial development objectives set by developing countries. Among these major changes are (Goonatilake, Jayawardene and Munasinghe, 1998):

- The Uruguay round of GATT talks and the creation of the World Trade Organization (WTO) have resulted in a global move towards free trade. As a result, local industries face the competition from imports and established export markets became more competitive.
- Under the World Bank Led Structural Adjustment programs, most developing countries have embarked on a program of divesting the former State Owned Enterprises (SOEs). The rapid privatization have affected the industrial sector in developing countries, and in the absence of a vibrant local private sector, many of the former SOEs have been acquired by multinationals.
- The formation of strong economic groupings, such as the European Economic Community (EEC) and the North Atlantic Free Trade Association (NAFTA), has had a major impact on world trade. New norms for trading with these economic groupings are being formulated. The European Community initiated the ISO 9000 and ISO 14000 series of quality and environment norms. The access to these strong economic blocks would depend on the policies and trade norms set up by the economic groupings.

- The liberalization of Central Planning in former command-driven economies in Central and Eastern Europe (CEE), the Former Soviet Union (FSU), as well as in countries such as China and Vietnam, will have a major impact on global trade of industrial goods. The commercialization of large state-owned enterprises (SOEs) in these countries, coupled with their technological capability and relatively low-cost labor, indicates they would make major inroads to markets now enjoyed by some developing country exports.

A study performed by Goonatilake, Jayawardene and Munasinghe (1998) reports on the key observations and recommendations arising from a pilot project executed by the United Nations Industrial Development organization in Sri Lanka, as an example of developing country with a high literacy rate. The project aimed at providing restructuring assistance to ten manufacturing enterprises. The results recommend the utilization of appropriate computer application to enhance industrial competitiveness of enterprises. Also Hyvonen, Jarvinen and Pellinen (2006) indicated that standardized cost accounting software packages may be usefully and successfully used in implementing the changes needed in the management accounting systems of large organizations.

Business management and accounting practices are relatively weak in most developing countries in contrast to those in the industrialized world (Lin and Yu, 2002). Although firms from developing countries are accounting for increasingly larger portions of the global economy in the new millennium, they have not been studied as frequently as their counterparts in developed countries. It is helpful to analyze the factors associated with going global for these new world competitors (sledge, 2007).

As a result, a need emerged to conduct this research, which applies on a developing country, namely Egypt, which is executing an economic reform program, and is facing global competition after the GAAT agreement³. And particularly the pharmaceutical

³ See more details about Egypt's economy and development in chapter five.

industry in an attempt to bridge the gap in developing countries literature concerning management accounting practices and factors that relates to changes in those practices⁴.

2.7 Conclusion

According to the abovementioned, the growing level of global competition intensified the challenges facing managers who need to consider more effective ways of achieving competitive advantage and improving organizational performance. Therefore achieving this would require a change in management accounting practices from traditional practices to innovative practices.

The state of accounting in developing countries, of which "Egypt", has been presented in this chapter with a brief presentation of different management accounting innovations diffusion all over the world, especially in developing, in transition countries.

Management accounting change has become a topic of much debate in recent years; whether management accounting has not changed, has changed, or should change. Any change in an organization system to be approved and put in fact, needs to prove a direct positive effect on organization's performance. Consequently, chapter '4' will present a thorough review of the evolution of performance measurement systems, which is also part of management accounting, to guide the choice of measures to be used in this research, financial or non-financial, that can be find suitable to evaluate the performance of firms under study.

On the other hand, the next chapter is devoted to review the contingency theory literature, being the theoretical base for the framework developed in this study to be tested.

⁴ The choice of the pharmaceutical industry is explained and justified in chapter six.

Chapter Three

Contingency Theory

3.1 Introduction

This chapter reviews the literature related to contingency theory, and explores its suitability for explaining the phenomena and variables related to the development of management accounting practices with a stress on its suitability in developing countries by presenting some contingency-based management accounting studies in developing countries. Strengths and weaknesses of contingency theory are surveyed, and then an illustration of different contingency theory framework is provided, along with a rationalization of the framework adapted for this study and the contingent variables chosen to be tested⁵.

3.2 The Evolution of Contingency Theory

The development of contingency theory may be viewed in terms of its historical evolution. The earliest versions of contingency theory had broad aims for explaining the form of the organization. The earliest work on the subject by Burns and Stalker (1961) emphasized the influence of environmental conditions, such as technological uncertainty on organizational form. They discussed that the structures and practices of an organizational system depend on the way in which the environment becomes relevant to the system. They argued that the utility of the notions of ‘mechanistic’ and ‘organic’ management structures resides largely in their being related as dependent variables to the rate of environmental change. Therefore, firms that operated within a rapidly changing environment, according to Burns and Stalker, shared common attribute “organicness”. In sharp contrast, firms within a stable, predictable environment were described as mechanistic. In the mechanistic structures, the problems and tasks facing the organization as a whole are broken down into individual tasks. Each individual pursues his task as something distinct from the real tasks of the organization as a whole. On the other hand, organic structures adapted to unstable conditions, so problems and

⁵ Hypotheses development is provided in chapter 6, statistical tests results are provided in chapter 7.

requirements for action cannot be broken down and distributed among individual tasks within clearly defined hierarchy. Therefore, individuals have to perform their special tasks in the light of their knowledge of the tasks of the whole firm.

Around the same time, Woodward (1965) emphasized the technology employed by the firm as a key contingent variable. She explored the link between technical complexity and a company's organizational strategies. She believed that there was a kind of relationship between the predictability of processes resulting from the technology adopted by the organization and the organization's structure. Woodward argued that in the future, organic styles of management would be forced upon organizations by technological changes.

In the literature that followed, the list of contingencies was extended to market environment by Lawrence and Lorsch (1967). Their study indicated that the formality of the effective organization's structure was related to the degree of certainty and stability of its market and technological environments. Successful firms operating in relatively dynamic environments tended to be decentralized, while those facing more stable environments were relatively centralized. Lawrence and Lorsch proposed a 'contingency theory' of organization. This theory regards the optimum organization form as contingent on the demands of the organization's environment. In other words, they argued that an organization must establish a fit between its internal structural arrangements and its external environmental demands.

A study conducted by Negandhi and Reimann (1972) aimed at testing the contingency theory of organizations in the context of a developing country; namely India. The results provided further evidence in support of a contingency theory of organizations, but with slight modification. That is, instead of saying that organization effectiveness requires decentralization under dynamic or competitive market conditions and centralization under stable, noncompetitive conditions. They found it more suitable with the industrial climate prevailing in India to suggest that dynamic, competitive market conditions make decentralization more important to organizational effectiveness than do stable non competitive conditions. They explained the difference between their results and that of Burns and Stalker (1961) and Lawrence and Lorsch (1969) by the considerable difference in cultural and industrial environments encountered in their study. Besides

the fact that they considered only the variations in the competitiveness of the organizations' market environment, while the above-mentioned researchers examined differences in both market and technological environments.

Then Luthans and Stewart (1977) formulated 'A General Contingency Theory of Management'. In their opinion, the optimum organization structure is a dependent variable which is functionally determined by the interaction of independent situational, management and performance criteria variable. They defined situational variables as outcomes of the interaction of environmental variables (e.g., human resources, attitudes, group dynamics, raw materials, capital, etc.). Management variables include process, quantitative, and behavioral concepts (e.g., planning, organizing, motivational techniques, leadership styles, decision-making models, etc.). Performance criteria variables result from the interaction of environmental and management variables.

This view was criticized by Longenecker and Pringle (1978). They believe that theory construction requires careful- not chaotic- selection of variables, in which the selection process is based upon well defined, clearly specified criteria. And the basic building blocks of the General Contingency Theory of Management are an almost infinite set of ill-defined variables which are posited to interact or intersect to produce system performance. They argue that a theoretical structure is not simply a listing and crude classification of variables, but a statement of the form of the relationship among the variables. So simply stating that situational, management, and performance criteria variables interact to produce system performance does not indicate anything meaningful about the nature of the relationship among these variables. As a result, they believe that Luthans and Stewart (1977) have begun construction of a "classificational schema", which divides the universe of elements into homogeneous groups, but such schemata should not be confused with theoretical structures. They also stated that the term "contingency" implies that the structures and practices of an organizational system depend on the way in which the environment becomes relevant to the system, while the reverse situation – the system working on the environment – is usually not considered because the working division between independent and dependent variables would be jeopardized.

Gordon and Miller (1976) argued that the management accounting system is the most essential feature of the organization, and treat it as an 'objectification' of the organization, in the sense that it provides a coherent picture of what the organization looks like. They then show, using a flowchart, how the management accounting system can both influence and be influenced by contingencies. As a consequence, three different types of firm were identified. The first is the 'adaptive'. It functions in a dynamic environment, which requires decision making to be dynamic, and operates in a decentralized fashion. The second is the 'running blind'. This type of firm also functions in a dynamic environment, but is run on a more intuitive basis. Its decision making is entrepreneurial in character, and its organizational structure is centralized. The third is described as 'stagnant'. Its environment is stable and its decision making is conservative, involving little analysis. Its organizational structure is strongly centralized.

Bruns and Waterhouse (1975) discovered budgeting practice to be governed by organizational autonomy, management centralization and business uncertainty. These were thought to depend on how the principal activities were structured within the firm.

In the work of Hayes (1977), as mentioned in Reid and Smith (2000), the way in which management accounting practices varied across organizational sub-units was discussed. He concluded that three contingent variables were the main determinants of the management accounting system. These were: sub-unit interdependence (e.g. R&D intensity); dynamism of environment (e.g. marketing intensity); and work method specification (e.g. production intensity). This study represents a shift in the uses of the contingency theory; which earlier, had the broader aim of explaining the organization itself, to a contingency theory of management accounting with the limited aim of explaining how particular circumstances shape the form of the management accounting system

Otley (1980) argued that in the late 1960s and early 1970s accounting academics realized that the organizational context of an accounting system was of fundamental importance to its effectiveness. He stated that, previously, accounting systems had been designed on the implicit assumption that the classical theory of organizations was an adequate representation of the circumstances in which they were used. Although

behavioral research had been progressing prior to 1960s, it had focused upon the impact of accounting information on individuals rather than the organization as a whole. He points out that the field of accounting was tentatively developing contingency ideas and realizing the importance of organization structure.

Prominent contingent variables, as stated by Fisher (1995a) and Ittner and Larcker (2001), are the external environment (e.g., simple vs. complex; static vs. dynamic); technology (e.g., job shop to mass production; production interdependencies; automation); competitive strategy and mission (e.g., low cost vs. innovation); business unit and industry characteristics (e.g., size, diversification, firm structure, regulation); and knowledge and observability factors (e.g., knowledge of the transformation process; outcome observability; behavior observability).

Reid and Smith (2000) suggested that the contemporary contingency theory of management accounting has the limited aim of explaining how particular circumstances (that is, contingencies) shape the form of the management accounting system. A thought that differs from the earliest versions of contingency theory, discussed above, which had a broader aims of explaining the form of the organization itself. They tested in their study four hypotheses which arise from the contingency theory of management accounting. These tests were applied on a sample of new Scottish micro firms. The outcomes of the four tests of hypotheses are each, in their own ways, supportive of the aspects of the theory. The main limitation suggested is that the scope of the contingency theory of management accounting may be somewhat reduced when one moves from a large firm to a small firms context.

3.3 Contingency-Based Management Accounting Studies in Developing Countries

Numerous prior studies in management accounting and control systems are contingency theory based. Few of such studies, however, have been conducted in developing countries. The following is a review of research studies conducted in the context of developing countries.

Collins et al. (1997) investigated the relationship between business strategy and budgetary usage, given the perceived crisis in Latin America. Latin America is characterized by a high level of environmental turbulence. The question of the research was very specific to the crisis situation where the authors tried to investigate the effect of the crisis on strategy and on the budgetary process.

Other research was conducted in Bangladesh by Alam (1997) who described the overall socio-economic situation in Bangladesh as characterized by uncertainty, resource scarcity, political instability and some tendency towards disorder. The research was conducted in two commercially oriented state-owned enterprises. The findings of the research suggested that in conditions of high uncertainty, budgeting is more oriented towards the management of external relationships with significant institutional actors than with the management of the organization itself.

A study conducted by Anderson and Lanen (1999) on India studied how the liberalization of the Indian economy in 1991 affected the range of management accounting practices in 14 firms using a contingency theory framework. The study extends the empirical literature on the contingent relationship between external competition and management accounting practices. Differences in management accounting practices in 1996 are examined in relation to firms' experience in and exposure to world markets prior to liberalization. They found evidence of changes in management accounting practices associated with shifts in the external environment.

Luther and Longden (2001), in their research focusing on management accounting techniques in South Africa and changes in those techniques, based on responses to questionnaires administered in both South Africa and the UK, suggested that the well-established contingency theory is concerned with the relationships between exogenous and firm-specific factors, which in turn influence competitive strategy, the intervening variable of organizational structure and, ultimately, performance. The management accounting of an organization is seen to be both one element of organizational structure and a consequence of the chosen structure. Their findings suggest that benefits derived from management accounting techniques in South Africa have increased over the period 1996-2002 and, secondly, the forces of change and the benefits derived from management accounting systems differ between the two countries. Their findings lend

support to Hopper (2000) that management accounting cannot be understood without reference to political, cultural and economic factors important in countries with less homogenous cultures, weaker capital markets and less-effective bureaucracies and regulation.

Consequently, they developed a model principally concerned with the relationship between, on the one hand, exogenous factors such as competition, environmental uncertainty and national culture and changes in these factors and, on the other, management accounting practices, in the particular context of South Africa, as an example of a developing society undergoing rapid change. Endogenous, firm-specific factors were less central to their study, though still present. The research endorses some prior findings relating to contingent influencing factors such as the intensity of competition and volatility of environment, and introduces possible new factors, such as changing stakeholder pressures and shortages of qualified accountants. It also introduces new debate about which specific management accounting techniques are particularly influenced by the changed external environmental variables identified in the study.

Another study focusing on developments in management accounting in developing countries was that of Haldma and Laats (2002) which examined the management accounting practices of Estonian manufacturing companies and explored the main impacts on them within a contingency theory framework. Estonia, as an example of former socialist countries, regained independence in 1991. The research on the one hand confirmed earlier findings related to the contingent factors that influence management accounting and on the other, identified possible new factors, such as, for example, the legal accounting environment and shortage of properly qualified accountants. The finding of the study shed the light on the development of management accounting in a developing society presently undergoing rapid changes. This study is principally concerned with Endogenous, firm-specific factors, to management accounting practices, unlike the study performed by Luther and Longden (2001), which was principally concerned with exogenous factors to management accounting practices. The framework presented by Haldma and Laats (2002) is discussed in the next section of this chapter.

Another research was that conducted in South Africa by Waweru et al. (2004) based on case study findings. Their research used a contingency theory framework within four retail companies to understand the process of management accounting change and to explore rationale for change within those companies. The findings indicated considerable change in management accounting and control systems (MACS) within four case studies. Their research suggested that recent environmental changes in the South African economy arising from reform policy and global competition largely facilitated the management accounting change processes within the four participating organizations.

Finally, a study was conducted by Kattan, Pike and Tayles (2007), in Palestine. The objectives of this research is to understand the changes in management accounting and control systems (MACS) employed over a period of time and identify changes in these systems as a result of political changes in the surrounding environment. This research is conducted through the use of a case study involving Stone Co. Management accounting practices in Stones co. proved to have changed over the last ten years period. The research findings suggested that changes were not much influenced by external environmental uncertainty, on the contrary, provided more support to the effect of internal factors such as; growth in sales and profits, the level of education of both the manager and employees of the accounting department, the ISO certification acquisition, the expansion of operations and the availability of computers; on the changes. This research extends the contingency theory framework to management accounting practices in less-developed economies, Arab countries in particular, with a more emphasis on in-firm factors rather than the exogenous factors.

3.4 Contingency Theory Strengths

Some of the main contingency theory's advantages could be summarized in the following points:

1. Contingency theory covers up some of the ambiguities and contradictory findings and results that exist in the universalistic approach (Otley, 1980)
2. Contingency theory has provided considerable inspiration to managerial accounting researchers through an elaboration of the basic theme that tight

control systems should be used in centralized organizations faced with simple technology and stable task environments. Whereas, loose control systems should be used in decentralized organizations, presumably faced with dynamic, complex task environments (Covaleski and Dirsmith, 1996). In other words, as Rayburn and Rayburn (1991) stated that contingency theory identifies optimal forms of control under different operating conditions and attempts to explain how organizational control procedures operate. In general, contingency structure may provide a more holistic approach to the design of management accounting systems.

3. Organizations can be regarded as open systems, not closed systems, which mean that they import energy, information and other survival requirements from its environment. In turn, they export some products or services into the environment. Thus, the conditions of environmental uncertainty that influence the measurability of an activity are of high importance to be measured and examined, which contingency theory's framework suggests and takes into account (Rayburn and Rayburn, 1991).
4. A contingency theory of management accounting has a great deal of appeal. It is in accord with practical wisdom and appears to afford a potential explanation for the bewildering variety of variables concerning management control systems in practice. In addition, the relevance of contingency theory to management accounting is being increasingly recognized and different formulations have been prominent in organization theory. Contingency theory's interpretations and the development of a contingency framework depend on well-defined variables addressed in the study, in order to explain how management control system is affected by various contingencies and how it is integrated into its wider context of organizational control mechanisms (Otley, 1980).
5. Contingency approach emphasizes that contingencies must fit in a specific manner to achieve the optimal performance for the organization. Therefore, it has the capacity for reorganizing, accepting and adjusting to new contingencies, whatever the type of company and its operating circumstances (Child, 1975).

3.5 Contingency theory criticisms

Longenecker and Pringle (1978) criticized General Contingency Theory by stating, 'the theoretical structure is not simply a listing and crude classification of variables, but a statement of the form of the relationship among these variable. Therefore, simply stating that situational, management, and performance criteria variables interact to produce system performance does not indicate anything meaningful about the nature of the relationship among these variables' (p. 681). They also stated that the term 'contingency' implies that the structures and practices of an organizational system depend on the way in which the environment becomes relevant to the system, while the reverse situation –the system is working on the environment– is usually not considered because the wording division between independent and dependent variables would be jeopardized. This unilateral influence process is the weak link in contingency theory. In the same vein, Otley (1980) argued that the variables used as contingent variables to explain their effect on the use and design of managerial accounting systems are ill-defined and measured, and were not comparable across earlier accounting studies, thus yielding conflicted results.

Child (1996) (in Donaldson, 1996) stated that contingency theory assembles its theories by finding strong statistical links between variables, and in particular variables from chosen organizations' contexts and variables from different forms of management existing in those organizations. He argued that statistical correlations of themselves do not simply lead to theory, because theory can only satisfactorily be produced, if there is an understanding of the processes that underlie. For example, the construction of both the contexts in which an organization works and of the management form it adopts. He strongly argues that human agency plays a significant part in both helping to shape and alter an organization's context and contingent variables, and in shaping the chosen management form of the organization. Donaldson (1996) stated that contingency theory has also been attacked by the organizational systematic approach, which argues that each niche industry / organization will have its own correlations and that generalization of the link between context and management form cannot be made across these niches.

Whilst having these mentioned criticisms, the argument of contingency theory that there is a best fit for each organization depending on the contingent factors would seem to

have sufficient validity and applicability to form the basis of giving technique clear guidance to reach the suitable performance measurement⁶. As Donaldson (2000) stated that organizations possess many internal characteristics, such as their structures, their human resource management systems and their performance measurement systems. He points out that the contingency theory of organizations holds that the organizational characteristics need to fit the level of the contingency variables of the organization for that organization to have high performance because misfit leads to lower organizational performance than fit. He added that each time an organization changes its strategy, technology, or other contingent variables; it may need to make adaptive changes to some organizational characteristic such as its performance measurement system. Therefore, the organization will need to make these adaptive changes recurrently in order to regain fit each time it changes the level of one of its contingency variables. Only by making such adaptive changes and moving into fit can the organization perform at a high level and continue growing because, conceptually, organizational performance is determined by how far the organization attains its goals, which is usually monitored by the performance measures.

3.6 The Contingency Approach Frameworks

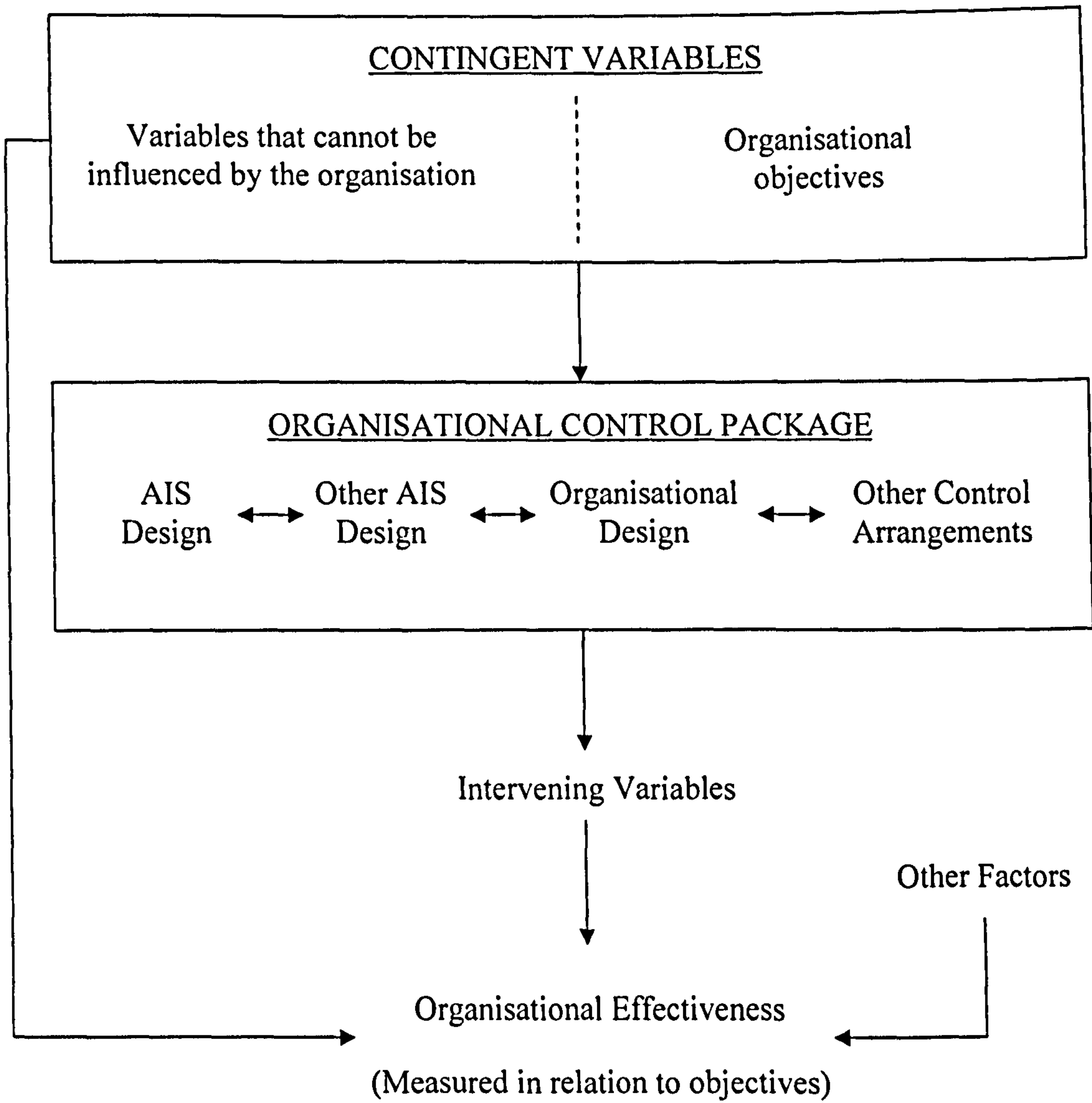
The contingency approach to management accounting is based on the premise that there is no universally appropriate accounting system applying equally to all organizations in all circumstances. Rather it is suggested that the particular features of an appropriate accounting system will depend upon the specific circumstances in which an organization finds itself. How effective the design of an accounting system depends on its ability to adapt to changes in external circumstances and internal factors (Haldma and Laats, 2002; Ittner and Larcker, 2001).

Many authors have suggested frameworks in their studies that capture many of the linkages highlighted in both management control and contingency theories, which would enhance understanding of the relationship between contingent variables and the management control system. Figures (3.1); (3.2) and (3.3), illustrate representative

⁶ See for example, Luthans and Stewart (1978) who discussed the reality or illusion of the General Contingency Theory of management, in response to Longenecker and Pringle's critique (1978).

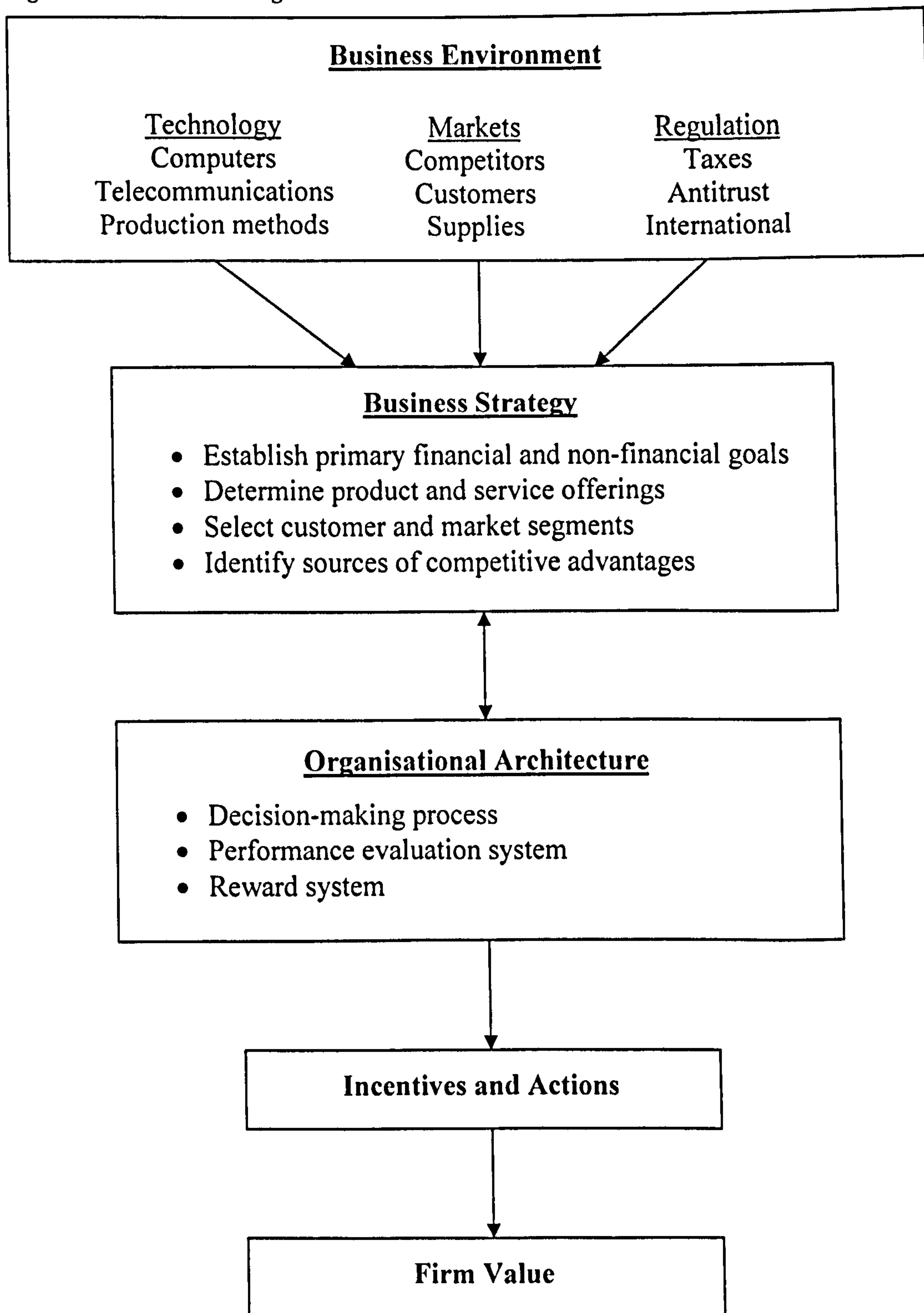
economic and contingency frameworks developed by Otley (1980) and Brickley et al. (1995) and Haldama and Laats (2002) respectively. The framework of Otley (1980) explains how contingent variables impact on the management control technique either through those that are related to organizational objectives, or those beyond organization's control (see Fig. 3.1). Brickley et al. (1995) framework suggest that firm's organizational architecture, including the assignment of decision rights to employees, is directly influenced by the firm's financial goals and business strategy, which in turn is influenced by several contingent variables within the business environment (see Fig. 3.2). On the other hand, Haldma and laats (2002) divide the contingencies into two general groups: external and internal factors. External factors indicate the features of external environment at the level of business and accounting. Environmental factors impact both on the internal characteristics of an organization and its management accounting practice. Internal contingencies are determined as organizational aspects, technology and strategy. The effectiveness of performance measurement and evaluation depends on the internal factors and the management accounting practice. Additionally, feedback from the effectiveness of performance measurement and evaluation of the management accounting practice can be considered (see fig. 3.3)

Figure 3.1: A Contingency Theory Framework



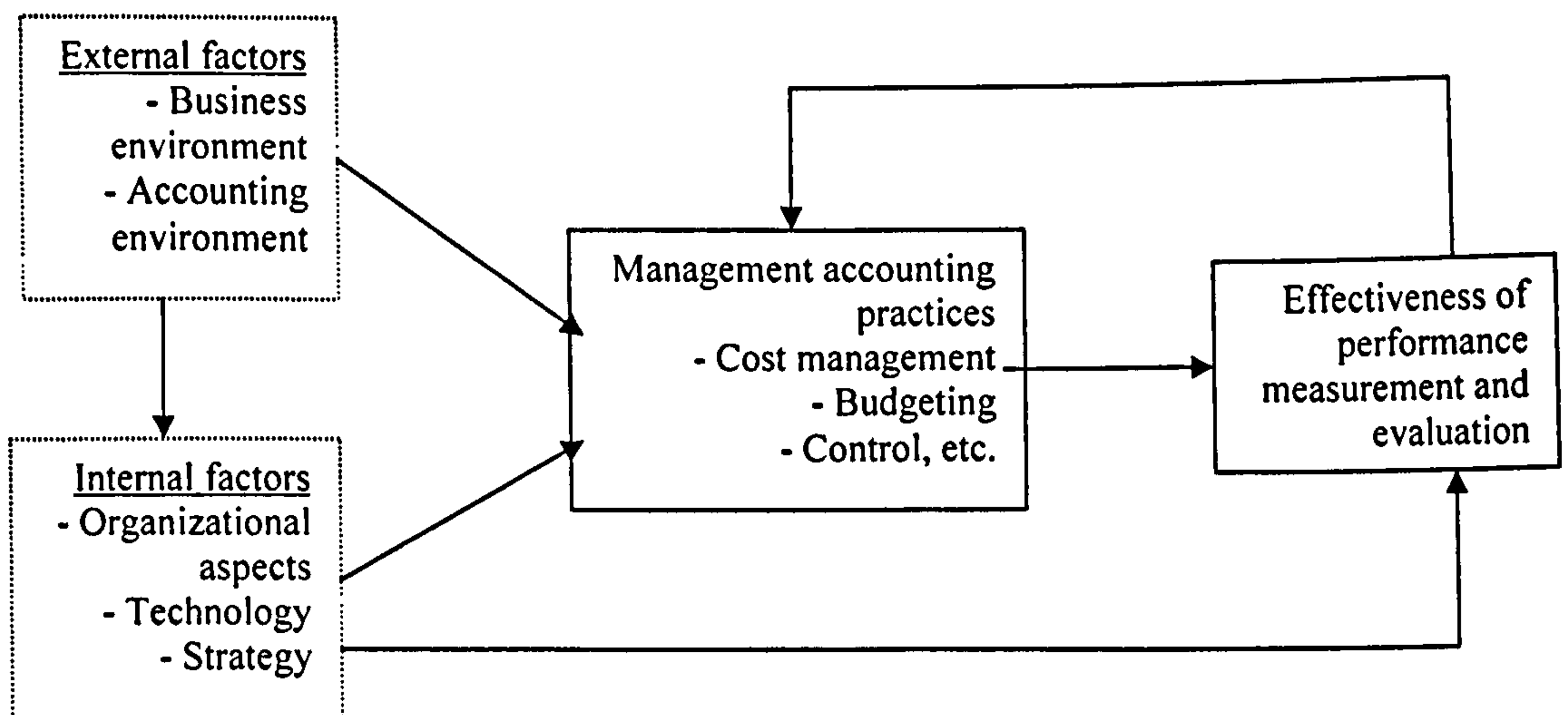
Source: Otley (1980)

Figure 3.2: A Model of Organisational Architecture



Source: Brickley *et al.* (1995)

Figure 3.3: Theoretical framework of the contingency approach



Source: Haldma and Laats (2002)

As an adaptation of these models, the researcher is developing a framework for this study, to apply on the Egyptian pharmaceutical industry. This research theoretical framework cannot be considered exhaustive, since the researcher is unable to identify and include all the factors suggested by the previously illustrated models, instead, the researcher focuses on the in-firm contingent factors only to the adoption of recent management accounting practices, external factors are beyond the purpose of this study. This choice was directed mainly by preceding studies in the developing countries, such as Haldma and Laats (2002) in Estonia; they found some evidence that changes in cost and management accounting practices are associated with shifts in the business and accounting environment as external contingencies, and with those of technology and organizational aspects as internal contingencies. Walley et al (1994) studied the primary reasons for the adoption or non-adoption of new accounting methods. Although they were convinced that external environment was an important influence in such an issue, they also revealed in their study that it is interesting to note that most changes have resulted from some forms of external pressure, but most of reasons for non-adoption appear to come from internal or organizational sources. And mainly the study conducted by Kattan, Pike and Tayles (2007), in Palestine, being a developing, Arab Country in the Middle East area, therefore the closest to the Egyptian environment, the context of the study. This research concluded that internal factors such as; growth in sales and

profits, the level of education of both the manager and employees of the accounting department, the ISO certification acquisition, the expansion of operations and the availability of computers are more likely to affect the changes in management accounting and control systems than the external environmental uncertainty factor.

Therefore, in this study, the researcher will develop a contingency theory based framework⁷ as an adaptation from the other previously presented models, focusing only on the in-firm factors expected to affect changes in management accounting practices which in turn are expected to affect the overall firm performance. Not that the external environment effect is not important or does not exist, but to focus only on the internal contingent effect as suggested by Kattan et al. (2007), and also due to the relatively equal effect it has on the firms under study, as the study is applied on one sector; the Egyptian pharmaceutical industry, as a result, firms under study are functioning in the same political environment, under same regulations, culture and socio-economic factors, and facing same competitive forces. Consequently, differences between firms would be more likely attributable to in-firm factors.

3.7 Conclusion

Through a thorough review of contingency theory literature, it was revealed that the field of accounting was tentatively developing contingency ideas. Different management accounting studies conducted in developing countries used the contingency approach as their theoretical framework (Collins et al., 1997; Alam, 1997; Anderson and Lanen, 1999; Luther and Longden, 2001; Haldma and Laats, 2002; Waweru et al., 2004; and Kattan, Pike and Tayles, 2007). This thorough review was of great help to the researcher as it enabled him to adapt a contingency theory based framework that will be presented in chapter six, inspired from preceding researches in developing countries but adjusted to suit the Egyptian pharmaceutical industry, and the main purpose of this study⁸. The framework is testing the contingent effect of some in-firm factors on the adoption of recent management accounting practices, and the effect of such adoption on the overall firm performance. Next chapter is concerned with firms'

⁷The research framework and factors to be tested are shown in details in chapter 6.

⁸ As enlightened in chapter one.

performance evaluation measures, in order to decide on the most appropriate measures to be considered in the research framework.

Chapter Four

Performance Measurements

4.1 Introduction

The choice of measures to guide and evaluate the performance of business units is one of the most critical challenges facing organizations (Ittner and Larcker, 1998a). Performance evaluation is an important function of management accounting practices (Emmanuel et al., 1990). since management accounting has had a primary function in developing performance measures to assist managers in planning and controlling their organizations. Traditionally, these measures have been internal, aggregate metrics of financial performance. Managers from other functions such as operations, marketing and human resource management have sought to develop measures of greater relevance to their areas of management (Chenhall and Langfield-Smith, 2007). The purpose of this chapter is to provide a brief review of the development of performance measures from the sixteenth century till now, then, shed the light on different criticisms directed to financial measures and the need to integrate financial with non-financial measures of performance. Finally, an exploration of different performance evaluation measures adopted by European firms, their counterparts in the United States and Australia, as well as the measures prevailing in different developing countries will take place. After discussing the importance of mixing financial and non-financial measures to evaluate performance, and after presenting the actual uses of different performance measures in different nations, the researcher is then able to identify the measures that will be used to evaluate the performance of pharmaceutical firms under study as part of the research problem.

4.2 The Evolution of Performance Measurement Systems

Based on the researcher awareness of the relevance of historical understanding to relevant issues, this section will be devoted to provide a brief review of the development of performance from the sixteenth century until now. Parker and Yamey (1994) and Zan (2004) stated that the development of accounting practices in the 16th and the 17th

centuries was limited to the spread of double entry book-keeping; then the closing of the book for the mercantile business and afterward some other kind of businesses.

According to Zan's (2004), by the end of the sixteenth century till the mid of the seventeenth century, there were very simple accounting innovations in managerial measures of control. These measures had begun to appear in relation to materials and components such as the measurement of work-in-progress that was not developed only for ships as a whole but for key components as well. By the end of the eighteenth century, accounting in Britain was influenced by the Scottish. Mephram (1988a; 1988b) stated that the Italian method of bookkeeping had moved across Europe to Holland, and then to Scotland, where most of practitioners and academics received it with enthusiasm. Hunter (1972) argued that the Scottish education system was quite advanced, compared to the contemporary systems in England and North America.

However, Pollard (1965), Hudson (1977), Fleischman and Tyson (1993) point out that business entrepreneurs in the eighteenth century were attentive to only one aspect of performance measures, which was profits because profit margins were so substantial. Mephram (1988a; 1988b) argued that the European merchants in the eighteenth century who were interested mainly in profits whether to measure their divisions or voyages performance developed a financial measure such as 'Rate of Return'. Then, the use of this performance measure was prevailing in the European agricultural enterprises and mining as an effective performance measure.

According to Parker and Yamey (1994) and Zan (2004) the real revolution in the costing and other management accounting practices were seen emerging in the 19th century. Pollard (1965) stated that the end of the eighteenth century, many London merchant organizations were large, integrated, multi-unit, and dispersed internationally. He argued that with these new organizations, sub-units were managed explicitly, and accounting shifted from audit or stewardship to management control. These emerging management accounting practices evolved because of practical needs and the innovating attitudes of the organizations concerned.

In the same vein, Chandler (1966; 1977) explained that, in the mid nineteenth century, American managers of transportation and communication organizations first developed

the performance measurement activities such as coordinating and monitoring the performance. Managers invented new managerial control tools that ensure the appropriate running of trains and communication lines as well as the flow of funds from the employees in different sites. He also stated that the need for these tools was urgent to control the very large regions these railway lines were covering in the United States.

Moreover, Chandler (1977) stated that the traditional accounting histories suggest that the era of Frederick W. Taylor in late nineteenth century saw the emergence of modern management practices. Johnson and Kaplan (1987) stated that managers, like Taylor, developed new scientific methods depending on time and motion studies, as he developed systematic production and inventory controls to help him in determining overhead costs in order to relate such costs to fluctuations in volume. Taylor, alongside with other scholars, developed a number of effective concepts that relate to cost accounting and affect performance measurement systems; for example, operating ratio, unit costs, standard costs, and burden. By no doubt, these concepts helped in evaluating functional managers' performance and guided the organization's overall performance.

On the contrary, Spraakman and Margret (2005) argued that management accounting practices were transferred from London counting houses to the British North American fur trade during the late eighteenth and early nineteenth centuries. They stated that this transfer involved a set of practices that was more effective for implementing the strategy being pursued at the time than the set used with the previous strategy.

Johnson and Kaplan (1987) argued that recent management accounting practices developed as a rational business response to opportunities involving new technologies and markets. Moreover, they emphasize efficiency improvement as a means of explaining accounting change. Fleischman and Parker (1990) similarly conclude that the profit-motivated behavior of entrepreneurs was a significant driving force in management accounting practices developments.

However, Hofstede (1968) claimed that the first industrial use of budgetary control was in the USA during the 1920s and the Du Pont example clearly predated this. Moreover, Chandler (1962) argued that the early twentieth century witnessed the emergence of complex structures of firms. Companies like Du Pont, Sears Roebuck and General

Motors diversified in the 1920s and they discovered that sophisticated management accounting systems were pivotal for the co-ordination of multi-divisional organizations.

In the same vein, Johnson (1983) point out that general Motors' performance evaluation system was guided, mainly, by financial measures. Therefore, all the divisional managers were under pressure to meet their financial targets, which in turn improved the operational performance. As mentioned earlier, the role of businessmen and entrepreneurs in developing recent accounting concepts cannot be denied. Kaplan (1984) argued that General Motors accounting departments have developed many of the management accounting techniques that are still used in the current modern enterprises. Examples of these management accounting techniques developed by General Motors to enhance its financial position are budgeting, flexible budgeting and target Return on investment (ROI) amongst others. In addition, he also indicated that the incentive system applied in General Motors was very effective, in terms of rewarding different administrative levels that contributed to the outstanding performance of the company. This incentive system was designed to monitor some specific financial performance targets that, if met, would help in determining and then rewarding the performance of each individual in the company.

Kaplan (1984) also stated that after the Second World War, management accounting control began to flourish again, especially some financial concepts such as the Residual Income (RI). He said that whilst residual income roots can be traced to the early years of the 20th century, it appeared recently to flourish as an analytical technique and as a solution to the ROI drawbacks.

Wilcox and Bourne (2003) stated that, although, the use of budgetary planning and control spread widely, it came under criticism from the late 1970s onwards. According to Otley (2003) during the 1960s and 1970s the route to organizational control was seen to be in vertical integration and divisionalization, in the 1990s this reversed into outsourcing, business process re-engineering and value chain management. Thus, the control problem, which was initially seen as a primarily internal matter, has been transformed into having to deal with the connections between enterprises linked in a business process or value chain.

As a result, from the mid 1980s onwards there were several criticisms made of the traditional financial performance measurement techniques such as lacking strategic focus, encouraging short-termism, driving inappropriate behavior such as budgetary slack, encouraging local rather than organizational optimization and not being externally focused (see for example: Hopwood, 1974a; Kaplan, 1983; 1984; Millar and Vollmann, 1985; Johnson and Kaplan, 1987; Hiromoto, 1988; Kaplan and Norton, 1992; MacArthur, 1996). Furthermore, high environmental uncertainty, increasing competition, technological developments, improvement initiatives, changing organizational roles and changing external demands provided other motivations for organizations to change their traditional financial performance measurement techniques (Nanni et al., 1990; 1992; Otley, 1994; Vaivio, 1999).

Otley (1994) stated that it would be a mistake to concentrate on performance measurement mechanisms that depend on financial control such as budgeting. But an integration of both financial and non-financial mechanisms, which is aligned with organizational strategy, is required such as the balanced scorecard, introduced by Kaplan and Norton (1992). In addition, an increasing trend among companies became to disclose some non-financial performance measures in their financial reports and disclosures. Fornell et al., (1996) investigated the possible consequences of releasing customer satisfaction indicators on a company's stock market price. They concluded that disclosing non-financial performance measures provided effective information that was not available under the traditional financial performance measurement techniques.

In the same vein, Ittner and Larcker (1998a) studied the relevance of a published customer satisfaction measure that represents an aggregation of customers' responses to 15 questions related to overall customer satisfaction, confirmation of expectations, and comparison to ideal. They find this measure to be positively related to market value, and that this relation varies by industry.

4.3 Criticism of Financial Measures and the Need for Non-Financial Measures

Many organizations used to traditionally rely only on financial measures for indicators of the firms' success and performance. However, the literature presented many discussions relating to the importance of incorporating non-financial measures along with the financial ones to establish a balance that provides the performance indicators needed for evaluation in different situations.

In their influential book, *Relevance Lost*, Johnson and Kaplan (1987) outlined the limitations of short-term financial measures and argued the case for relying more on non-financial measures. They claimed that the role of short-term financial measures had been undermined by rapid changes in technology, shortened product life cycles and innovations in production operations (Johnson and Kaplan, 1987, 254-255). They proposed that a selection of non-financial indicators should be employed, based on the organization's strategy, and include measures of manufacturing, marketing and research and development. For example, they proposed that companies that focused on improving product design and process flexibility should measure the total number of parts per products and the percentage of common versus unique parts, while those that focus their strategy on quality should measure scrap, rework, defect rates, customer complaints and warranty calls (Johnson and Kaplan, 1987, 256-257).

Kaplan (1982) and Waller (1988) stated that once managers learn that information being provided for planning, decision-making, and coordination, will also be used to evaluate their performance, an incentive is created for them to distort or bias the information in ways that will make their performance measure more favorable. This is because when managers are aware that the private information they communicate is used in standard setting and subsequent performance evaluation, potentially they have an incentive to bias their communication to allow a relatively easy standard to be set.

Another criticism of budgets, as a financial measure of performance is today's dynamic business environment, which, caused the central role of budgeting as a financial control technique to decline (Binersely, 1996). It has been argued by Eccles and Pyburn (1992) and Goulian and Mersereau (2000) that most financial measures have an internal rather

than an external focus. This view was also supported by Chenhall and Langfield-Smith (2007) who stated that although budgetary systems have provided a basis to examine how effective organizations are in meeting standard costs and overall financial targets, these measures have tended to be highly aggregated, focused on the internal operations of the business and backward looking. In the same vein, Bunce et al. (1995) pointed out that traditional management tools were devised for relatively stable environments dominated by producers. He added that the traditional budgeting process would thus correspond to an old-fashioned conception of management that is function-oriented. Amaratunga et al. (2001) argued that companies that work in this dynamic environment are searching for ways to incorporate non financial-measures, such as quality management, customer retention, research and development, and innovation, into their regular performance measurement system in order to better adapt with the current turbulent environment.

But despite all the criticisms having been made, financial measures are still essential to assess performance in any company. Simons et al. (2000) point out that financial measures help the organization to transmit its strategies among employees because strategies need to be translated into accounting numbers to evaluate their ability to create value. Prendergast (2000) stated that some techniques such as the balanced scorecard have a financial section. This stressed the importance of incorporating financial with non-financial measures. This view was supported by Govindarajan (2000) who stated that, traditionally, performance measurement has focused on financial measures, such as sales turnover, profit, debt and return on investment. However, relying solely on these financial measures is inadequate because these measures encourage short-term actions that may not be in the company's long-term interests. Also, Otley (2001) and Said et al. (2003) pointed out that companies have to shift from treating financial figures as the foundation for performance measurement to treating them as one element in a broader set of measures. Financial measures alone are not enough as suggested by Kaplan and Norton (1996), since the information age environment for both manufacturing and service organizations requires new capabilities for competitive success. Examples of improvement initiatives adopted are:

- Total quality management

- Just-in-time (JIT) production and distribution systems
- Time-based competition
- Lean production/lean enterprise
- Building customer-focused organizations
- Activity-based cost management
- Employee empowerment
- Reengineering

These breakthroughs in performance require major change and part of this change should be in the performance measurement and management systems. They require integrated measures derived from strategy (financial, customer, internal-business process and learning and growth perspectives). (Kaplan and Norton, 1996)

Examples of the contemporary performance measurement techniques that suggest a balanced use of financial and non-financial performance measures are: the dashboard, also sometimes called instrument panel or, in French terms, Tableau de Bord (Roberts, 1995; Lebas, 1996; Epstein and Manzoni, 1997); the Performance Pyramid (Lynch and Cross, 1991); the Balanced Scorecard (Kaplan and Norton, 1992); the performance prism (Neely et al., 2002); and the value chain scoreboard (Lev, 2001). Undoubtedly, the Balance Scorecard, which focuses on different dimensions of performance, is one of the most popular techniques. Kaplan and Norton (1996a) argued that the Balanced Scorecard attempts to give a holistic view of the organization by simultaneously looking at the four important perspectives of the Balanced Scorecard: Financial perspective, customer perspective, Internal business processes perspective, and Learning and growth perspective. They claimed that the balanced scorecard is a comprehensive performance summary that complements financial measures with operational measures, which are the drivers of future financial performance.

Atkinson et al. (1997) argue that the balanced scorecard may be regarded as one of the most significant developments in management accounting that represents a threat to the old style of budgeting and controlling. The idea is that in the balanced scorecard companies should plan and monitor not just bottom-line profit or earnings per share figures, but the overall progress of the company in a balanced way.

Benefits that should be realized by any company that successfully implement the balanced scorecard are having a better management understanding of the linkages between specific organizational decisions and actions, and the chosen strategic goals; redefining the relationships with customers; reengineering of fundamental business processes; and the emergence of a new corporate culture emphasizing team effort among organizational functions to implement the firm's strategy (Salterio and Webb, 2003).

The importance of non-financial measures has been highlighted in previous studies, for example, Barsky and Bremser (1999) gave an example of Microsoft Corporation as a knowledge-based company. This company applies customer and innovation measures beside financial ones. The market value of Microsoft Corporation exceeded \$200 billion. Although, the firm shows very few 'productive' assets on its balance sheet and its largest asset as of September, 30, 1998 was \$13 billion of cash, the long-run value of Microsoft is based on its intellectual capital resources and its continued innovation ability, which could not be reflected by the financial measures. Thus, it can be said that there is a growing importance of non-financial measures as the global economy continue to shift away from physical capital towards a knowledge-based economy, and manufacturing shifts away from traditional mass production towards modern production.

In addition, a study conducted by Abdel-Maksoud and Dugdale (2005) revealed that non-financial measures are now extensively employed in UK manufacturing companies with most of the measures listed used by more than 80% of the responding companies. Where measures are used, they are generally considered to be important. Moreover, the first three measures relate directly to customers, while the next four relate to process efficiency and cost control; there are measures of efficiency, defect and scrap levels and absenteeism in most firms and these measures are important. It is therefore, concluded that firms are to balance the use of financial and non-financial measures.

4.4 Non-Financial performance Measures

Criticisms

Many authors have criticized non-financial measures for different reasons, for example, Kaplan (1983) and Massella (1994) argue that non-financial measures lack completeness. They stated that these measures are related to specific competitive dimensions such as customer satisfaction, which is difficult to aggregate into a single overall measure. A dilemma is being raised between focusing on a small number of non-financial measures, which might cause losing the global view of the firm, and focusing on a large set of indicators, which become more difficult to be handled and be understood by employees.

Medori et al., (1995), Rangone (1996), Shaw and Ridgeway (1997) stated that the non-financial measures are too many and varied, which raises a problem of selecting the proper set of measures that suits the company. They stated that the problem of using non-financial measures is mainly associated with comparability across companies and time. Anecdotal evidence indicates that non-financial performance measures voluntarily disclosed by corporations vary across companies and over time (Eccles et al., 2001; Upton, 2001; Hodder et al., 2001). Such non-comparability reduces the likely value of non-financial performance measures and may lead investors to focus primarily on financial measures for assessing performance.

The preceding discussion reveals the importance of including both financial and non-financial measures in firms' performance measurement systems. Financial measures are still essential to assess performance and to translate strategies into accounting figures to employees to evaluate their ability to create value (Simons et al., 2000), but these measures encourage short-term actions that may not be in the company's long-term interests (Govindarajan, 2000), therefore, it can be said that financial measures alone are not enough (Kaplan and Norton, 1996), they need to be treated as one element in the performance measurement not the foundation for evaluation (Otley, 2001; Said et al., 2003). On the other hand, non-financial measures cannot be used solely; it has been criticized for lacking completeness (Kaplan, 1983; and Massella, 1994), and their use

being associated with non-comparability problem (Medori *et al.*, 1995; Rangone, 1996; Shaw and Ridgeway, 1997; Eccles *et al.*, 2001; Upton, 2001; Hodder *et al.*, 2001).

Accordingly, since in this study, the effect of adopting recent management accounting practices on the overall firms' performance is investigated, the researcher decided to use both financial and non-financial measures to test this relationship. To decide on such measures, a review of the common measures used in the literature is presented in the coming section.

4.5 Performance Evaluation Practices

Accounting and management models should be studied in the context and environment in which they are supposed to operate (Hopwood, 1983). If accounting is shaped by the environment, then one would expect differences emerging in the adoption of the various management accounting tools by companies in different countries. For example, financial measures are of primary importance in many European countries (Chenhall and Smith, 1998a). A study conducted in the UK on the use of performance measures by board members and executives in 77 manufacturing firms revealed that financial measures, such as financial return and working capital, dominate (Drury *et al.*, 1993). Another study in the UK reported that high benefits are received from budgeting, but at the same time non-financial measures ranked fourth out of 30 in importance, which suggests that these measures are not seen as inconsistent with the high rankings given to budgetary measures (Dugdale, 1994). Also, cost based performance criteria are considered very important in Belgium as well as financial performance measures which continue to dominate, but at the same time non financial-measures received increased attention (Bruggreman *et al.*, 1996) and Denmark (Israelsen *et al.*, 1996); budgetary measures based on standard costing are used widely in Germany (Scherer, 1996); and financial accounting based measures, such as ROI and profit, dominate performance evaluation in the Netherlands (Groot, 1996).

A study was conducted in Sweden by Ax and Bjornenak (2005) to look at the communication, diffusion and transformation of the balanced scorecard in Sweden from a supply side perspective. According to Kald and Nilsson (2000), as mentioned in this study, 27% of the companies included in the survey had already implemented the

balanced scorecard, and if the companies expecting to have the balanced scorecard within 2 years are included, the share rises to 61%. Considering that the balanced scorecard was only introduced in 1992, this must be seen as an extremely rapid and effective spread of a management accounting innovation. Ax and Bjornenak (2005) focuses on the way the balanced scorecard concept has been communicated in Sweden. The empirical findings of the study show that the original balanced scorecard presented by Kaplan and Norton has been supplemented with other administrative innovations and adapted to the existing business culture to form a potentially more attractive set of elements.

In the United States of America, a survey by McKinnon and Burns (1992) finds that managers rated budgets compared to actual sales, profit and income as important performance measures out of the list of 96 financial and non-financial measures. On the other hand, product quality and defects, delivery performance, schedule attainment, and output per hour are other non-financial measures used by companies (Sinha, 1990)

In Australia, budget variances are used by 93% of responds for setting goals and evaluating performance (Joye and Blayney, 1990). Other studies conducted in Australia show that variance analysis, return on investment and operating profit are the most used performance evaluation measures but at the same time provided evidence that non-financial measures such as measures of throughput, set-ups, working conditions, balance scorecard, customer satisfaction, employees' attitudes, team performance and qualitative measures are becoming important among Australian firms (Dean et al., 1991; Chenhall and Smith, 1996).

Other studies conducted in developing countries revealed less reliance on non-financial measures; for example, in Singapore a study conducted by Ghosh et al. (1996), provided evidence that 56% of companies in Singapore use ROI for performance measurement. Same results found in South Africa (Luther and Longden, 2001). Also in India, a study conducted by Joshi (2001) revealed that 100% of the Indian organizations adopt ROI, and 100% adopt budget variance analysis, while less reliance is put on non financial-measures. Anderson and Lanen (1999) demonstrate that in India productivity is the single most common non-financial measure used by the respondents.

Not too many studies were concerned with the best performance measures in manufacturing firms in developing countries; therefore, the literature survey had to be complemented by a pilot study⁹ to explore the most commonly used performance measures in the Egyptian pharmaceutical firms in particular; as they are the context of the study. Accordingly, the researcher selected one financial measure; sales growth rate, and another that is non-financial; employee productivity, as a measure of efficiency, to test the effect of the adoption of recent management accounting practices on the overall success of the firm. The mix of financial and non-financial measure is inspired by the literature, while the choice of particularly; sales growth and employees' productivity resulted from the focus group discussion¹⁰, both associated with the researcher belief that these measures are to present general indications and not necessarily establish a performance measurement system.

4.6 Conclusion

Through a thorough review of performance measures literature, the evolution in performance measures has been discussed with a special stress on the growing need to rely more on non-financial measures in addition to the traditionally used financial measures. This chapter along with the two preceding chapters; covering the evolution in management accounting practices and the role of the contingency theory approach in management accounting studies, provide the basis for formulating the problem of this research and the development of the research framework. Those chapters also assist in the preliminary identification of the variables that most suits the Egyptian environment, particularly the pharmaceutical industry, and should be included in the framework to test the effect they have on the adoption of recent management accounting practices. Those variables are: firm size, computerization level, human resources development and education, the acquisition of ISO certification and firms' ownership type due to its influence on the firms' strategies. In view of that, the suitable methodology to best investigate this problem is discussed in chapter 6 and a pilot study is conducted to confirm the variables of the study.

⁹ See chapter 6 section (6.7).

¹⁰ Find details of the focus group sessions in chapter 6 section (6.7.4).

The next chapter is devoted to shed the light on Egypt; its cultural background, its political economy as well as providing a market summary of the Egyptian pharmaceutical sector; the context of the study, in order to help the researcher explain¹¹ the reasons behind the choice of the Egyptian pharmaceutical sector.

¹¹ This explanation is provided in chapter 6.

Chapter Five

Egypt, the Context of the Study

5.1 Introduction

This chapter aims to highlight the characteristics of the Egyptian society and environment due to the researcher belief in the importance of the role it plays in affecting the organizations working in Egypt as well as the whole economy. The relationship between political, cultural and economical circumstances is emphasized so that it gives the reader an idea about the environment and circumstances under which firms in Egypt operate. Also a brief description of the evolution of accounting systems in Egypt as well as the pharmaceutical industry in Egypt is provided to familiarize the reader with the industry and its characteristics, as pharmaceutical industry presents the population for this study, in addition to providing the reasoning for choosing the pharmaceutical industry to be the industry of interest in this study.

The chapter consists of 8 sections of different literature about Egypt as follows:

- The first section gives some geographical and demographical information about Egypt to highlight Egypt's importance;
- The second section explores Egyptian culture as an important factor to be studied;
- The third section focuses on the political evolution and how the political system developed in Egypt, as well as the Egyptian political economy and how the governmental reforms are driving or restraining policies;
- The fourth section briefly describes the status of the Egyptian economy as summarized in the latest release of the Index of economic freedom (2007), with the most recent facts about its economic indicators.
- The fifth section briefly describes the Industrial Modernization Program (IMP) and the role it plays in upgrading enterprises in Egypt in period from 1997 till 2002;

- The sixth section focuses on accounting practices in Egypt and reviews the historical changes in accounting in order to know how these practices developed in the society;
- The seventh section describes briefly the pharmaceutical industry in Egypt to highlight the importance of studying this industry;
- Finally the eighth section provides a summary that briefly explains why the pharmaceutical industry in Egypt was chosen as the context of this study.

5.2 Geographical and Demographical Information

Egypt is located at the corner of north-east Africa; it has boundaries with three countries. Natural boundaries comprise significant lengths of coastline with the Mediterranean Sea, Gulf of Suez, Gulf of Aqaba, and Red Sea. The geographical location is significant for trade, as Egypt has this access to both the Mediterranean and Red Sea.

Egypt became a republic in 1952 and its official name is the Arab Republic of Egypt (ARE). The capital is Cairo. The currency is the Egyptian pound. Its population exceeds 76 million in 2004. It spreads over an area of 386,000 square miles. The Egyptian population is clustered on 4 percent of the total area, which is mainly in the delta and a narrow strip along the Nile valley and the northern coast (Hatem, 1994). These regions are among the worlds most densely populated; with an average of over 1,540 persons per square kilometer.

The Egyptians are a fairly homogenous people for Hamitic origin originally from northern and north-eastern Africa and the Canary Islands, including the Berbers of North Africa; the Fulas, Tuaregs and Tibbus of the Sudan. Mediterranean and Arab influences appear in the north, and there is some mixing in the south with the Nubians of Northern Sudan. Ethnic minorities include a small number of Bedouin Arab in the eastern and western deserts and in the Sinai, Berbers to the west, Nubians along the upper Nile, as well as Greeks, Armenians and Europeans such as French and Italians.

Most Egyptians practice Sunni Islam, while Coptic Christianity is the major non-Islamic religion practices. Arabic is the official language, but English and French are also widely spoken by the educated classes (Egypt Review, 2003).

Egypt has the second largest economy in the Middle East after Saudi Arabia. Living standards are low relative to East Med¹² peers, with per capita gross domestic product (GDP) of US\$1261.6 in 2004, less than half the East Med average (Egypt Business Forecast Report, 2006).

The following table summarizes some key economic indicators of the Egyptian economy till year 2010.

Table 5.1a: Economic Indicators

	2001	2002	2003	2004
Real GDP growth %	6.6	3.2	3.2	4.2
Nominal GDP US\$	96.9	88.0	78.8	92.4
Nominal GDP EGP	358.7	378.9	417.5	485.0
Population (millions)	69.1	70.5	71.9	73.2
GDP per capita, US\$	1402.2	1248.5	1095.1	1261.6

Table 5.1b: Economic Indicators (continued)

	2005f	2006f	2007f	2008f	2009f	2010f
Real GDP growth %	4.9	5.5	4.6	4.7	4.7	4.7
Nominal GDP US\$	101.5	111.3	120.5	134.9	151.1	166.1
Nominal GDP EGP	558.0	623.3	674.8	741.9	815.7	896.8
Population (millions)	74.5	75.9	77.3	78.6	80.1	81.5
GDP per capita, US\$	1361.0	1466.8	1559.9	1715.4	1886.9	2037.8

f= BMI forecast. Fiscal year is July-June (2000=July 1999 - June 2000).

Sources: Central Bank of Egypt. BMI.

¹² Mediterranean Sea countries

5.3 Cultural Background

Hofstede (1991) defines culture as the collective programming of the mind which distinguishes the members of one society from another, in which those members with or without having contact have something in common. Adler and Jelinek (1986, p.74) prescribed culture as "a set of taken-for-granted assumptions, expectations, or rules for being in the world. A paradigm, map, frame of reference, interpretive schema, or shared understanding". Erez and Earley (1993) summarized culture as the set of characteristics common to a particular group of people.

Hofstede (1991) argue that developing countries in general, and Arab countries in specific, have been shown a level of homogeneity in cultural, legal, and religious terms. He distinguishes between nations and societies. He suggests that the concept of common culture is more applicable to societies than to nations. On the organization level, many researchers state that organization of the business enterprise, as well as its members practices, occur within a cultural context (Gibson, 1994; Parnell and Crandall, 2003). Hofstede (1991) stated that a unique culture exists whenever a group of people share distinctive beliefs, norm and customs. Accordingly, Hofstede (1984) employed four cultural constructs that can be defined as follows:

Individualism: a preference for a loosely knit framework in society where individuals take care of themselves and their immediate family only. Its opposite, collectivism, is a preference for a tightly knit social framework.

Power distance: the extent to which society's members accept that power in institutions and organizations is distributed unequally. People in large-power-distance countries accept a hierarchical order in which everyone has a place needing no further justification.

Uncertainty avoidance: degree to which society's members feel uncomfortable with uncertainty and ambiguity. Strong uncertainty avoidance societies maintain rigid codes of belief and behavior and are intolerant of deviant ideas and behaviors.

Masculinity: preference for achievement, heroism, assertiveness and material success.

In respect to the cultural aspects in Egypt, as an example of the Islamic developing countries, it has portrayed as highly masculine and uncertainty avoidant with a large power distance and a low individualism or collectivist perspective on life. Gray (1998) argued that a country whose culture is characterized by high uncertainty avoidance, large power distance, and low individualism would be expected to have a secretive, conservative, and based upon statutory control accounting system, with little professional judgment exercised by accountants.

Egypt evolved a redistributive social, political and economic system, which remained prevalent for most of its long history. The social, political and economic domains were coordinated by a powerful bureaucracy in which accounting played a major role. Ancient Egyptians have long been recognized by Egyptologists to have developed an obsession with bureaucratic detail. The Egyptian society had been described as a well developed bureaucratic system which reveals and shares a specific human trait, in which a deep satisfaction is achieved in devising routines for measuring, inspecting, checking, and thus as far as possible controlling functions (Ezzamel, 1997).

Humphreys (1996) acknowledges that religion is a major source of cultural perspective within any society that creates a similar culture. Abdel-Magid (1981) states that Islam is a religion that provides for an integrated way of life. He argues that the environment of accounting in Islamic countries would be characterized by political, social, and economic forces different from the forces found in the Western business environment.

Islam is the major religion in the Middle East, and almost 94 percent of the Egyptian population is Muslim (Safi, 2001). Sisck (1992) discusses that in the political culture of Egypt, state and religion cannot be separated either from a social and cultural point of view, or form a legal one, as Islam is the state religion. Saeed et al. (2001) emphasized that Islamic teachings are deeply rooted in the principles of equity and justice in business practices and offer a framework that creates values and elevates the standard of living of all parties involved in the exchange, while adhering to these principles and guidelines.

In summary, the national culture of the Egyptian society, which stems from the common ancient history, Islam as the dominant religion, and a common language amongst many

other similarities, is coherent. For this study and among the pharmaceutical companies' sample, cultural effect is highlighted since the sample includes national and multi-national firms. Any difference in management accounting practices between the two categories is partially due to cultural differences which affects management practices, besides, cultural effect on the pharmaceutical industry in general regardless of the firms' ownership type is highlighted mainly in the qualitative analysis part of this study; chapter 8.

5.4 The Egyptian political economy

Egypt has passed through different economic policies since the Revolution 1952, passing through the Open Door Policy 1974, and the Economic Reform Program since the late 1990 and the privatization program. Hassabelnaby et al. (2003) defined three distinctive political evolution stages in Egypt; the first stage of nationalization and dictatorship (1961-1973), then the tendencies towards liberalization and democracy (1974-1985), and finally, the stage of government economic and political reforms (1986-1997).

Following the revolution in July 1952, the project of President Nasser was to nationalize all major industrial, financial and commercial business, whether foreign or Egyptian, to become the foundation of a vast state sector (Mahjoub 1990).

By the year 1963, state ownership had extended not only to all public utilities, transport, construction; larger industries, departmental stores and hotels, but also the export-import trade and selling of major crops were taken over by the state (Hopwood 1982).

After the 1973 war, President Sadat adopted a quite different philosophy for the Egyptian economy; The Open Door Policy. The main reason for this dramatic change was because the Egyptian economy appeared to be on the edge of collapsing due to the inefficiency and un-profitability of state-owned enterprises. The aim of the new economic strategy was to accelerate the economic growth as well as modernizing the Egyptian economy.

By the early 1980s, the Egyptian economy had benefited significantly from the “open door policy” in terms of rate of growth, but on the other hand it had become heavily dependent on foreign aid (Road 1997). The foreign debt put Egypt in the front rank of third world debtor nations. Its debt-service ratio was one of the highest among all developing countries (Lloyds Bank 1986).

By the end of 1990, under Mubarak presidency, Egypt was obliged to turn to the International Monetary Fund (IMF) for help and was successful in concluding an economic reform program.

The key elements of this program were as follows (see Ash 1993, Youssef 1996 and Road 1997):

- Reduce the size of the public sector through privatization.
- End controls over investment and eliminate most tariffs on imports.
- Sell manufactures at market prices.
- Raise energy and transport prices to realistic levels.
- Reduce consumer subsidies and target them towards the poorest group.
- Deregulate private investment and encourage private sector activity in all sectors including financial services.

The main aim of the economic reform program has been to create a decentralized market-oriented economy deigned to encourage private sector activity in all sectors and to reduce the size of public sector through privatization (Road, 1997).

In the meantime, the new agreement with the World Bank and the International Monetary Fund asked the Egyptian government to introduce several measures immediately, including (Middle East Executive Report 1992):

- Removing ceilings on interest rates.
- Freeing up exchange rates.
- Introducing a new sales tax.

Table 5.2: Some economic indicators under the economic reform program period

Description	1990/91	1997/98
Total external debt	US \$ 49.2 billion	US \$ 26.6 billion
Total external debt as a percentage of GDP	151%	37.7%
Real interest rate	(6%)	5%
Inflation rate	23.6%	4.1%
Budget deficit as a percentage of GDP	18.2%	0.06%

Source: Central Bank of Egypt, The Egyptian Cabinet Information and Decision Support Center (Cairo: CBE and IDSC, various issues, 1992-1998)

Under the government's strategy for divestment of public sector holdings, two approaches have been taken. The first is sales of shares through the stock market, and the second is sales of a strategic stake of shares to anchor investors through public auction (McKinney 1996). Besides these two approaches, liquidation of companies has been taken place for those companies that suffer from a huge debt burden and cannot adjust anymore.

On the other hand, the Egyptian government announced that the state-owned enterprises would be classified into three categories:

- Strategic companies that are vital for the Egyptian society and cannot be sold to the private sector, in turn, these kinds of companies are not going to be privatized.
- Less strategic companies that are still important to the Egyptian society and the majority of their capital should still be in the government's hand. This kind of companies is going to be privatized up to 40 per cent only and the rest will be in the government's hand.
- Other companies are going to be fully privatized (Al-Ahram 1994).

Egypt is still at the beginning of the road. The gap between exports and imports is still too high, in turn; the trade balance is still suffering from a huge deficit. The level of exports increased under the economic reform program period, but as well, the level of

imports increased by a rate more than the increase in exports. As a result, the balance of trade deteriorated from L.E. 6.62 billion in 90/91 to L.E. 9.8 billion in 97/98 (United Nations 1996, The Egyptian Cabinet Information and Decision Support Center 1998b).

Coping with the era of globalization the Ministry of Foreign Trade in Egypt has signed many agreements lately (www.moft.gov.eg ; www.wto.org):

1. **The COMESA:** Egypt joined The Common Market for East & South Africa “COMESA” agreement in May 1998. COMESA agreement consists of 20 countries and is considered to be a new step closer to the African Economic Community.
2. **Egypt – EU Partnership Agreement:** Egypt started negotiations with European Union (EU) for concluding a partnership agreement in 1995. Its initial signature was made on January, 26th 2001 in preparation for the final signature that was affected on June, 25th 2001. According to the Agreement, a free trade agreement (FTA) will be established during a 12-year transitional period, from the date the Agreement enters into force. During the third year both parties will decide upon the procedures - to be implemented on the following year - to further liberalize their trade in agricultural products, maritime products and processed agricultural products. The Agreement permits Egypt to take certain exceptional measures for specific periods during the transitional stage, if and when certain domestic industries face a threat as a result of liberalization of imports of similar goods from the EU. The Agreement includes implementation of WTO and GATT regulations against anti-dumping, subsidy and safeguard measures. The Agreement allows each party to enjoy Most Favorite Nation treatment from the other party in trading services. The Agreement aims at increasing the flow of foreign capital, expertise and technology to Egypt.
3. **The QIZ agreement:** The Government of the Arab Republic of Egypt and the Government of the State of Israel (hereinafter "the Parties") noting the 25th Anniversary of the signing of the Peace Agreement between the Parties and desiring to promote economic and trade relations for the benefit of the Parties have agreed to conclude this protocol. In recognition of the requirements in

Section 9 of the United States-Israel Free Trade Area Implementation Act of 1985, as amended, and Proclamation No. 6955 of the President of the United States of America, hereinafter "the legislation and proclamation" and on the recommendation of the private sector of the Parties have agreed to the creation of the Qualifying Industrial Zones (hereinafter the "QIZ"), and request the Government of the United States to designate them as "Qualifying Industrial Zones" under the legislation and proclamation.

4. Free and Preferential Trade agreements between Egypt and the Arab countries:

- Tariff and Trade Agreement between Egypt and Libya (signed on 3 December 1990).
- Trade Agreement between Egypt and Syria (signed in 19 July 1991).
- Trade Agreement between Egypt and Tunisian Government (signed on 5 March 1998).
- Free Trade Agreement between Egypt and Moroccans Government (signed on 27 May 1998).
- The Executive program to support trade between Egypt and Lebanon (signed on 1 January 1999).
- The Executive program to support trade between Egypt and Jordan (signed on 10 December 1998).
- The Executive protocol to establish Free Trade Area between Egypt and Iraq (signed on 18 January 2001).

5. GATT & WTO: Egypt was a GATT contracting member since May 9th 1970. When the WTO replaced GATT, on January 1st 1995, Egypt became a WTO member.

5.5 Egyptian Economic Freedom¹³

5.5.1 Index of Economic Freedom

The Index of Economic Freedom is a simple average of 10 individual freedoms, each of which is vital to the development of personal and national prosperity. As the first comprehensive study of economic freedom ever published, the 1995 Index of Economic Freedom defined a method by which economic freedom could be rated and ranked in such vastly different places as Hong Kong and North Korea. It did so by identifying 10 measurable freedoms for each country that in concert seem to matter most for the creation of wealth. Some of these freedoms are international in nature, measuring the extent of an economy's openness to investment or trade. Most are internal in nature, assessing the liberty of individuals to use their labor or finances without restraint. Since 1995, the Index has grown and improved; other, similar studies have added to the effort. Each cross-country study offers a unique and profound contribution that has helped to shape the world being measured.

5.5.2 Defining Economic Freedom

Economic freedom is that part of freedom that is concerned with the material autonomy of the individual in relation to the state and other organized groups. An individual is economically free who can fully control his or her labor and property. This economic component of human liberty is related to—and perhaps a necessary condition for—political freedom, but it is also valuable as an end in itself. The authors of the Index perceive economic freedom as a positive concept, recognizing that its traditional definition as an absence of government coercion or constraint must also include a sense of liberty as distinct from anarchy. Governments are instituted to create basic protections against the ravages of nature, so that positive economic rights such as property and contract are given social as well as individual defense against the destructive tendencies of others. The definition of economic freedom therefore encompasses all liberties and rights of production, distribution, or consumption of goods and services. The highest form of economic freedom provides an absolute right of

¹³ All data mentioned in this section are supplied from the "Index of Economic Freedom 2007".

property ownership, fully realized freedoms of movement for labor, capital, and goods, and an absolute absence of coercion or constraint of economic liberty beyond the extent necessary for citizens to protect and maintain liberty itself. In other words, individuals are free to work, produce, consume, and invest in any way they please, and that freedom is both protected by the state and unconstrained by the state. All government action involves coercion. Some minimal coercion is necessary for the citizens of a community or nation to defend themselves, promote the evolution of civil society, and enjoy the fruits of their labor. This Lockean idea is embodied in the U.S. Constitution. For example, citizens are taxed to provide revenue for the protection of person and property as well as for a common defense. Most political theorists also accept that certain goods—what economists call “public goods”—can be supplied more conveniently by government than through private means. Of particular interest are those economic freedoms that are also public goods, such as the maintenance of a police force to protect property rights, a monetary authority to maintain a sound currency, and an impartial judiciary to enforce contracts among parties. When government coercion rises beyond the minimal level, however, it becomes corrosive to freedom—and the first freedom affected is economic freedom. Logically, an expansion of state power requires enforcement and therefore funding, which is extracted from the people. Exactly where that line is crossed is open to reasoned debate (index of economic freedom, 2007).

5.5.3 The Ten Economic Freedom

Overall economic freedom, defined by multiple rights and liberties, can be quantified as an index of less abstract components that can be measured for each country. Those components are briefly discussed as follows:

- **Business freedom** is the ability to create, operate, and close an enterprise quickly and easily. Burdensome, redundant regulatory rules are the most harmful barriers to business freedom.
- **Trade freedom** is a composite measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services.
- **Monetary freedom** combines a measure of price stability with an assessment of price controls. Both inflation and price controls distort

market activity. Price stability without microeconomic intervention is the ideal state for the free market.

- **Freedom from government** is defined to include all government expenditures—including consumption and transfers—and state-owned enterprises. Ideally, the state will provide only true public goods, with an absolute minimum of expenditure.
- **Fiscal freedom** is a measure of the burden of government from the revenue side. It includes both the tax burden in terms of the top tax rate on income (individual and corporate separately) and the overall amount of tax revenue as portion of GDP.
- **Property rights freedom** is an assessment of the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state.
- **Investment freedom** is an assessment of the free flow of capital, especially foreign capital.
- **Financial freedom** is a measure of banking security as well as independence from government control. State ownership of banks and other financial institutions such as insurer and capital markets is an inefficient burden, and political favoritism has no place in a free capital market.
- **Freedom from corruption** is based on quantitative data that assess the perception of corruption in the business environment, including levels of governmental legal, judicial, and administrative corruption.
- **Labor freedom** is a composite measure of the ability of workers and businesses to interact without restriction by the state.

In the Index of Economic Freedom, all 10 factors are equally weighted in order not to bias the overall score toward any one factor or policy direction.

5.5.4 Egypt Status

Latest Quick Facts: Egypt population accounts for 72.6 million, GDP (PPP) is equal to \$305.9 billion (4.1 % growth in 2004; 3.9 % 5-year comparative annual growth and \$4,211 per capita). The Egyptian unemployment rate and inflation rate are equal to

10.0%, and 11.3% respectively. The FDI (net inflow) equals \$1.1 billion. Regarding the official development assistance, the multilateral is equal to \$349 million and the bilateral \$1.6 billion (of which 58% from the United States). Egypt external debt amounts to \$30.3 billion. The exports amount to \$26.5 billion; primarily crude oil and petroleum products, textiles, metal products and chemicals. On the other hand, imports amount to \$26.9 billion; primarily machinery and equipment, food, chemicals, wood products and fuels.

BACKGROUND: Egypt is the most populous Arab country and a major force in Middle Eastern affairs. Although President Hosni Mubarak's government has undertaken incremental reforms to liberalize the socialist economic system that has hampered economic growth since the 1950s, the government until recently has emphasized such social policies as maintaining the payment of subsidies on food, energy, and other key commodities. Economic reform has become a higher priority under Prime Minister Ahmed Nazif, a technocrat who has placed liberal reformers in key positions. In 2005, the government reduced personal and corporate tax rates, cut energy subsidies, and privatized several enterprises.

EGYPT'S ECONOMY is 53.2 percent free, according to 2007 assessment, which makes it the world's 127th freest economy. Its overall score is 1 percentage point higher than last year, partially reflecting new methodological detail. Egypt country is ranked 13th out of 17 countries in the Middle East/North Africa region, and its overall score is slightly lower than the regional average. Egypt's economy scores well in a few of the 10 factors of economic freedom; Fiscal freedom is rated highly, and its freedom from government and monetary freedom also score reasonably well. The top income and corporate tax rates are impressively low, and government tax revenue relative to GDP is not high. Total government expenditures are moderately low, although Egypt receives a significant part of its income from state-owned businesses. Egypt could improve in several areas, however. Business freedom, financial freedom, property rights, and corruption are all serious problems. Licensing, operating, or closing a business is difficult and heavily regulated by an intrusive bureaucracy. Fairly high tariff rates and non-tariff barriers impede trade and foreign investment alike. Corruption is rampant, and the fair adjudication of property rights cannot be guaranteed.

Shedding the light on the Egyptian economic freedom is found by the researcher to be of great importance for this study. This is mainly because the progress achieved on any of the ten economic freedoms would for sure affect the overall business and manufacturing environment and would make it an attractive one for expansion, improvement and development. As a result, the Egyptian manufacturing sector in general, and the pharmaceutical industry in particular are considered a good choice by the researcher to be the area of focus for this research, as the development of the economic freedom in Egypt would generally improve firms' performance and encourage the development of management practices and methods accordingly to cope with the globalization era.

EGYPT'S TEN ECONOMIC FREEDOMS

BUSINESS FREEDOM — 39.9%

Starting a business takes an average of 19 days, compared to the world average of 48 days. Entrepreneurship should be easier for maximum job creation. Both obtaining a business license and closing a business are very difficult. The government has established a “one-stop-shop” for investment procedures and has moved to revamp the regulatory environment in recent years, but bureaucracy still remains meddlesome. The overall freedom to start, operate, and close a business is seriously limited by the national regulatory environment.

TRADE FREEDOM — 52.2%

Egypt's weighted average tariff rate was 13.9 percent in 2002. Non-tariff barriers include import restrictions and import bans, burdensome and non-transparent sanitary and phytosanitary measures, and cumbersome regulatory and customs procedures. Customs corruption also adds to the cost of trade. Consequently, an additional 20 percent is deducted from Egypt's trade freedom score to account for these non-tariff barriers.

FISCAL FREEDOM — 93.6%

Egypt has implemented cuts in personal income and corporate tax rates since June 2005. Both the top income tax rate and the top corporate tax rate are 20 percent. Other taxes include a value-added tax (VAT) and a property tax. In the most recent year, overall tax revenue as a percentage of GDP was 12.8 percent.

FREEDOM FROM GOVERNMENT — 73.6%

Total government expenditures in Egypt, including consumption and transfer payments, are moderate. In the most recent year, government spending equaled 26.7 percent of GDP, and the government received 29.4 percent of its total revenues from state-owned enterprises and government ownership of property. The government has been pushing forward the sale of non-strategic and smaller companies.

MONETARY FREEDOM — 69%

Inflation in Egypt is relatively high, averaging 6.4 percent between 2003 and 2005. Relatively high and unstable prices explain most of the monetary freedom score. The government controls prices for some basic foods, energy (including fuel), transport, and medicine. It also implements subsidies for basic food items, sugar and pharmaceuticals, and public transportation. In general, the massive size of the public sector limits the private sector's ability to set market prices. Consequently, an additional 15 percent is deducted from Egypt's monetary freedom score to adjust for measures that distort domestic prices.

INVESTMENT FREEDOM — 50%

In theory, automatic approval should be granted to most investment projects; in practice, all projects must pass through a review process to gain legal status and qualify for incentives. Foreign investment in Sinai, military products, and tobacco requires approval from the relevant ministries. Foreign ownership of areas designated as agricultural lands (in the Nile Valley, Delta, and Oases), except for desert reclamation projects, is prohibited. Both residents and non-residents may hold foreign exchange

accounts. There are no restrictions on payments and transfers. The Capital Market Authority must approve bond issues.

FINANCIAL FREEDOM — 30%

Egypt's financial sector is characterized by a strong state presence. In 2005, 52 banks were licensed, including 41 Egyptian financial institutions and 11 foreign banks. The four large state-owned banks controlled about 50 percent of banking sector assets in 2004. The smallest state bank was approved for sale in 2006, and the government has sold its shares in some private banks. Non-performing loans are a significant problem, and new banks face significant constraints. There were 21 insurance companies in 2004, including four state-owned firms that dominate the sector and another state-owned reinsurance company. Foreign ownership of insurance companies and banks is permitted. Capital markets are large for the region.

PROPERTY RIGHTS — 40%

The government sometimes circumvents the independence of the judiciary by using fast-track military courts. On average, it takes six years to decide commercial cases, and appeal procedures can extend court cases beyond 15 years. Nevertheless, local contractual arrangements are generally secure. Islamic law (Sharia) is officially the main inspiration for legislation, but the Napoleonic Code exerts a significant influence. Judicial procedures tend to be protracted, costly, and subject to political pressure.

FREEDOM FROM CORRUPTION — 34%

Corruption is perceived as significant. Egypt ranks 70th out of 158 countries in Transparency International's Corruption Perceptions Index for 2005.

LABOR FREEDOM — 49.8%

The government has made gradual progress toward a more competitive and flexible labor market, adopting a new labor code in recent years. However, the labor market still operates under restrictive employment regulations that hinder employment and productivity growth. The non-salary cost of employing a worker can be high, and

dismissing a redundant employee is costly. There are rigid restrictions on increasing or contracting working hours.

Due to the state of freedom of the Egyptian economy along with being part of many international business agreements to be able to face severe competition in the era of globalization, as mentioned in section (5.4) above, an upgrading of the Egyptian Industry was needed in order to qualify it to compete within the International arena. As a result, the agreement of The Industrial Modernization Program (IMP) was signed between The European Union & the Ministry of Industry & Technological Development.

5.6 The Industrial Modernization Program (IMP)

The Industrial Modernization Program is a comprehensive program that builds upon the results achieved by other less-ambitious programs such as the Private Sector Development Program (PSDP) which was implemented in cooperation with the European Union as a pilot program for enterprise upgrading during the period from 1997 till 2002. The IMP also takes advantage of the experiences gained by other programs undertaken by the Federation of Egyptian Industries, Business associations and the Ministry of Industry and Technological Development as well as the experiences of other countries that implemented similar programs.

In order, to ensure the required flexibility and expedite implementation of the program, an organizational structure characterized by efficiency as well as flexibility in implementation has been adopted. The structure is formed of the Industrial Modernization Center the Industrial Modernization Council and the Advisory Board. The Industrial Modernization Center is an autonomous Organization given the financial and administrative flexibility for sound and rapid execution of its set Programs. The Industrial Modernization Council, which effectively reflects stakeholders from both government and private sector provides the strategies and guidelines as well as approve the annual work plan and budget of the Industrial Modernization Center. The Advisory Board provides advice to the Council on drafts of the annual work plan and budget of

the Industrial Modernization Center, added to other proposals or submissions to the Council. In an effort to ensure the maximum output possible from the Industrial Modernization Center's services, the location of the Center was chosen to be within the premises of the Federation of Egyptian Industries. This decision aimed at bringing together the supplier of services and the main beneficiaries of these services in one building.

5.6.1 IMP Strategic Vision

The overall strategic vision is to help industrial enterprises to modernize their companies so that they become internationally competitive on a sustainable basis.

5.6.2 Mission

The IMP is actively involved in working with companies, including SMEs, to raise their global competitiveness, focusing on developing their export orientation. This is achieved through integration and cooperation with beneficiaries and partners (such as Technology Centers, Business Associations, R&D Institutions, Governmental Institutions, etc...). The IMP through its delivery of interrelated business support activities can help companies to upgrade their operations and improve their ability to compete effectively and efficiently both in local and foreign markets. As a key part of this process, companies can be helped to develop their export potential and meet international challenges.

5.7 Development of Egyptian accounting systems

Egypt has always been recognized as a leader among its neighbor countries. It is an influential country in the Middle East and in Africa (Zarban 2002).

Accounting in Egypt has a long history due to its dissemination in ancient Egypt since 1552 B.C. According to Ezzamel (1997) accounting had played a constitutive role in the ancient Egyptian society. But the aim of this section is to review the development of Egyptian Accounting systems in its modern history.

Historically, Egyptians had made the choice to adopt the French Napoleonic Code, which can be traced back to the French occupation (1798-1805), as a basis of governance in preference to the system employed by their colonial supervisors, the British, but the actual accounting practices were mixed by both British and French rules (David and Brierly, 1985).

During the late 1950s and the beginning of 1960s, as a result of Nationalization programs, the Government controlled and operated more than 300 companies. It controlled all aspects of economic activities and state ownership extended to most private enterprises (El-Henawy, 1986)

In 1966 the Presidential Decree No. 4723 was issued, stating that the uniform accounting system was to be established and obligatory applied in all public sector companies (El-Saban, 1993 p.91). The nationalization program and the creation of central accounting administration resulted in a substantial reduction in the amount of work available for private sector accountants. As a result the number of professional accounting firms was greatly reduced (Briston and El-Ashkar, 1984).

By the beginning of 1970s, with the establishment of liberalization policies, the government recognized the need to change its policies and decrease its intervention (Zarban, 2002). This resulted in changes in the accounting systems during the late 1970s and the beginning of 1980s. Various accounting conferences has taking place, in which debate was generated about the need to change the Uniform Accounting system and to consider the adoption of international accounting systems as a way to help the harmonization of accounting (Hopwood,2002). Renshall, 1981, considers the conferences organized by Egyptian accountants a landmark in the development of Egyptian accounting profession.

During 1980s and by the beginning of 1990s, a decentralized, market-oriented economy has been created as a result of the embracement of the economic reform program (Road, 1997). The implementation of the economic reform program by the Egyptian government asked for improvement in accounting in order to play a role in advancing the rate of economic development. The organization of the accounting profession in Egypt is weak as compared with that of developed countries; it needs some foundations

such as independence, stability and organization in order to achieve the objectives of the economic reform program (Mahmoud, 1995).

In 1996, a new standard setting board was established with the aim of issuing Egyptian financial accounting standards that conform to international accounting standards after taking the Egyptian environmental factors into consideration (Abd-El-Salam, 1999). Three events contributed to the introduction of financial accounting standards to Egypt. First the formation of the Egyptian Institute of Accountants and Auditors, second the collapse of Islamic investment companies that were allowed to collect huge amounts of money from the public and promised high return without making any substantial investments. They were not under any kind of supervision and the absence of standards on which their financial statements were prepared created a need for regulating private enterprise accounting in Egypt. The third event that contributed to the introduction of Egyptian accounting standards was the re-emergence of capital markets. The government has taken several steps to support this action. The capital market authority was established to supervise and organize the market. The improvement in accounting regulations and introduction of standards were crucial to the improvement of the mechanism of the capital market (Zarban, 2002).

Concerning the impact of privatization on accounting practices, Hassabelnaby et al. (2003) pointed out that privatization may impact the accounting practices in the developing countries environment. Government and state-control banks often provide capital to State Corporation. For these corporations to be privatized, stockholders will mainly provide the capital. The accounting practices' requirements for the external environment are different from those required for government. Therefore, stockholders tend to require a more sophisticated level of control than that required by the government, stressing the need for effective performance measurement techniques that satisfy shareholders.

A number of researcher such as Nair and Frank (1980), Cooke and Wallace (1990), and Salter (1998) provide evidence on the importance of the economic environment for accounting practices' development, particularly in developing countries. The current study attempts to enrich our understanding of how management accounting practices are influenced in Egyptian firms and the role management accounting can play in

improving firms' performance. In addition, it contributes and fills the gap in management accounting literature about such practices in the developing countries.

5.8 Egypt's pharmaceutical Sector¹⁴:

In 1950, the pharmaceuticals industry in Egypt consisted of about 50 small national producers of drugs. Leading multinationals supplied 10% share of the local market. In 1960s, three foreign firms, namely Hoechst, Pfizer and Swiss Pharma, had established joint venture operations. By 1970, following nationalization, 11 local producers contributed 90% of the domestic market. In the 1990s a more liberal policy opened up the market to foreign and domestic newcomers and by 1996, the industry had 9 multinationals, 8 private and 11 public sector companies, employing about 60,000 people. Some of the highlights of the sector include:

- The private sector controls over three-quarters of the local market;
- The five largest pharmaceutical companies control about one-third of the market;
- There are eight multinational corporations operating in the industry, which account for over one-third of total private sector sales;
- Egypt is the largest producer and consumer of pharmaceuticals in the MENA (Middle East and North Africa) region;
- The US plays an active role in the industry through its contribution to investment and imports;
- Europe supplies the majority of Egypt's pharmaceutical imports; and
- Exports comprise about 6% of pharmaceutical production.

5.8.1 Market summary

Pharmaceutical companies in Egypt fall into three categories: public sector companies that are subsidiaries of the Holding Company for Pharmaceuticals, private sector companies, and multinational companies. Most multinationals are active on the Egyptian market. Not all, however, have a direct manufacturing presence, with many

¹⁴ All information in this section is provided by Egypt Pharmaceuticals & Healthcare Report.

importing drugs or licensing production to local manufacturers. Multinational companies supply about 65% of the market through direct local manufacturing or through licensing agreements.

The pharmaceutical market in Egypt was valued at about US\$2.2bn in 2005. It is the second-largest market in the region, after Turkey, and has about 74 pharmaceutical factories. There are around 30 drug makers in the country. The Egyptian drug industry is drug formulation rather than research-based. Egypt is the largest producer and consumer of pharmaceuticals in the Middle East and North Africa (MENA) region, because of its large population. The main growth drivers for pharmaceuticals in Egypt are the young and expanding population and GDP growth.

Low wages in Egypt is one of the benefits available to pharmaceutical production in the country. At less than 15% of production costs, intermediates account for about 50%, wages are extremely competitive in what is essentially a labor and technology intensive industry. Another major asset of the pharmaceuticals industry is the large pool of highly trained doctors, pharmacists, engineers and skilled technicians whose experience in the sector has given Egyptian pharmaceutical products a distinguished reputation in the entire region.

5.8.2 Regulatory Regime

The main regulatory authority in Egypt is the Ministry of Public Health (MoPH). The principal regulatory department within the MoHP is the Drug Information Centre (EDIC). Furthermore, the MoHP includes government bodies such as Central Administration of Pharmaceutical Affairs (CAPA), which provides license to commence manufacturing; Drug Planning and Policy Centre (DPPC), which is responsible for product registration and pricing; and National Organization for Drug Control and Research (NODCAR), which helps in conducting physical, microbiological, and pharmacological and bioavailability testing.

Registering a new drug in Egypt can be highly complex and fraught with bureaucratic barriers, involving many committees and review applications. Introduction of TRIPS (Trade-Related Aspects of Intellectual Property Rights) compliant legislation and the drug pricing system in the country are the major areas of concern for the government,

local producers as well as the multinationals. Although modernization of the sector is under way, the regulatory environment still represents a hurdle for foreign companies. Furthermore, the depreciation of the Egyptian pound against the US dollar has proved to be a market barrier to importers.

5.8.3 Pricing & Reimbursement Issues

Egypt maintains a price control system that does not allow price increases to compensate for inflation. Also, many regulations regarding manufacturing and registration are opaque and vague. According to foreign pharmaceutical companies based in Egypt, prices are tied to an old foreign-exchange rate and the authorities are not making adequate effort to control the production of generic medicines based on their products. The process requires the pharmaceutical firms to file a list of their expenses, which includes cost of raw material, overheads, production cost, sales cost and desired profit margin. The data are reviewed by the pricing committee and either approved or rejected. If rejected, the company representatives should negotiate the price with the committee.

The government sets and occasionally changes prices for pharmaceutical products that are considered critical. One of the leading challenges for the drug maker is the pricing policy, which has reportedly failed to keep up with the rising costs of imported raw materials. Furthermore, due to the lack of price increases, pharmaceutical firms had had high input costs. Currently, pharmaceutical prices remain controlled, although the government has decontrolled prices of other industrial products. Drug prices in Egypt are among the lowest in the region due to the government's control over pricing policies. A further reason for the low prices is the strong local pharmaceutical industry, which produces generic drugs at a fraction of the cost of imported brands. In summary, given its location and large population, if Egypt were to adopt a modern patent law and market-based pricing, it could become a regional centre for multinational pharmaceutical production.

5.8.4 Market Developments

Drug market growth is expected to continue, with the market forecast to reach US\$2.4bn at retail prices by 2007. In the same period, the prescription market is

expected to reach US\$2bn. Further more, sales in the over the counter (OTC) healthcare market are expected to remain at about US\$400mn in 2007. The generics market is likely to reach US\$400mn in 2007, accounting for 17% of the market. Exports are expected to increase due to the modernization of the sector, although the pricing restrictions have reduced the capacity of many companies to compete internationally. Egypt drug makers export to 45 countries mainly in the MENA region but increasingly also in Eastern Europe, the former Soviet Union and the European Union (EU).

The question is whether changes in managerial accounting practices are keeping pace with the changes in manufacturing environment. Or can we achieve the desired development with the traditional costing systems applied since the revolution 1952?

5.9 Conclusion

Since Egypt is the context of this study, a brief description of the Egyptian demographics, culture, political background, and economic environment is provided in this chapter to inform readers of relevant facts surrounding the Egyptian environment and affecting Egyptian business activities.

This study is participating in the process to fulfill the gap in management accounting literature concerning the developing countries, namely Egypt. The empirical research reported in this study is conducted in Egyptian pharmaceutical industry; the accumulation of the data of this type should help in developing the management accounting systems of the Egyptian organizations.

Next chapter is covering the research methodology employed with an elaboration on the reasons to choose Egyptian pharmaceutical industry to be the research field for this study.

Chapter Six

Research Methodology and Methods

6.1 Introduction

This chapter presents the methodology that is undertaken to reach results. It describes the research design and how it links to the research problem and theoretical framework reviewed in previous chapters. Research Methodology, including philosophy, research approaches, methods, and research problem is identified to carry out the pilot study demonstrated in this chapter. In addition, the population of the research is determined and the research sample is identified from the population along with a justification of both. Data collection method that best suits the research circumstances and enables the researcher to examine the research debate within the contingency theory framework is also discussed in this chapter.

Finally, the chapter addresses research dependent and independent variables suggested from the broad literature along with the findings of the pilot study, as a step forward to formulate the research hypothesis and the suggested research framework is presented for analysis in the following chapters.

6.2 Research Methodology

Burrell and Morgan (1979) claimed that methodology refers to the methods and steps used to conduct research. While according to Sekaran (2003), Methodology comprises the strategy or plan of action, it is the research design that shapes choices and the use of particular methods, and links them to the desired outcomes.

This study mainly seeks to investigate the in-firm contingent factors, to the adoption of recently developed management accounting practices in the Egyptian pharmaceutical firms and if the adoption of such practices has an effect on the overall firm performance. The contingency theory framework is chosen to address the research problem along with choosing the right methodology and methods. Any methodological position consists of three elements; ontology, epistemology and research paradigm. The research methodological position is discussed in the following section.

6.2.1 Research Ontology

Goles and Hirschheim (2000) stated that Ontology refers to the nature of the world around us; in particular, that slice of reality which the scientist chooses to address. They suggested two extreme positions; realism, which postulates that the universe is comprised of objectively given, immutable objects and structures that exist independent of the observer's appreciation of them. And the other extreme is relativism or instrumentalism, which holds that reality, is a subjective construction of the mind. So what is subjectively experienced as an objective reality exists only in the observer's mind.

In this research, using the semi-structured-in-depth interviews as the main method of collecting the data, reveal some doubt about the realism ontology. Since the response of the interviewees would vary dramatically according to their experiences, beliefs and positions; therefore, it is considered that this research more likely moves towards relativism because of the methodology followed.

6.2.2 Research Epistemology

An epistemological issue is concerned with the question of what is regarded as acceptable knowledge in a discipline, in other word, the nature of knowledge. Burrell and Morgan (1979) defined epistemology through two streams of knowledge; positivistic and anti-positivistic. The positivistic approach explains and predicts what happens in the social world by searching for regularities and causal relationships between its constituent elements. On the other hand, the anti-positivistic approach shows that the social world is essentially relative and can only be understood from the point of view of individuals who are directly involved in the activities under study.

The positivist tradition is based on the significance of observations of the external reality (Thorpe and Lowe, 1996) and is considered as the best way of investigating human and social behavior. According to Hussey and Hussey (1997), laws in positivist approach are considered as the basis of explanation, which establishes the causal relationships among variables being studied and links them to develop theory allowing the prediction to occur. On the other hand, the phenomenology is concerned with understanding human behavior form participants own frame of reference, and they add

that this new paradigm is associated with interpretative sociology, social constructionism, naturalistic inquiry, and qualitative research methods.

Although there are some difficulties in using phenomenology due to the great deal of time and the resources needed to collect data, the difficulty to analyze and interpret data, and the difficulties of controlling the qualitative research or its progress and even its end-point (Sarantakos, 1993). In addition, contingency theory lays claim to being strongly positivist in sociological terms as stated by Donaldson (1996). But this study due to the nature of semi-structured interviews, as the main source of data collection, and due to its relativism ontology it will be using phenomenological epistemology.

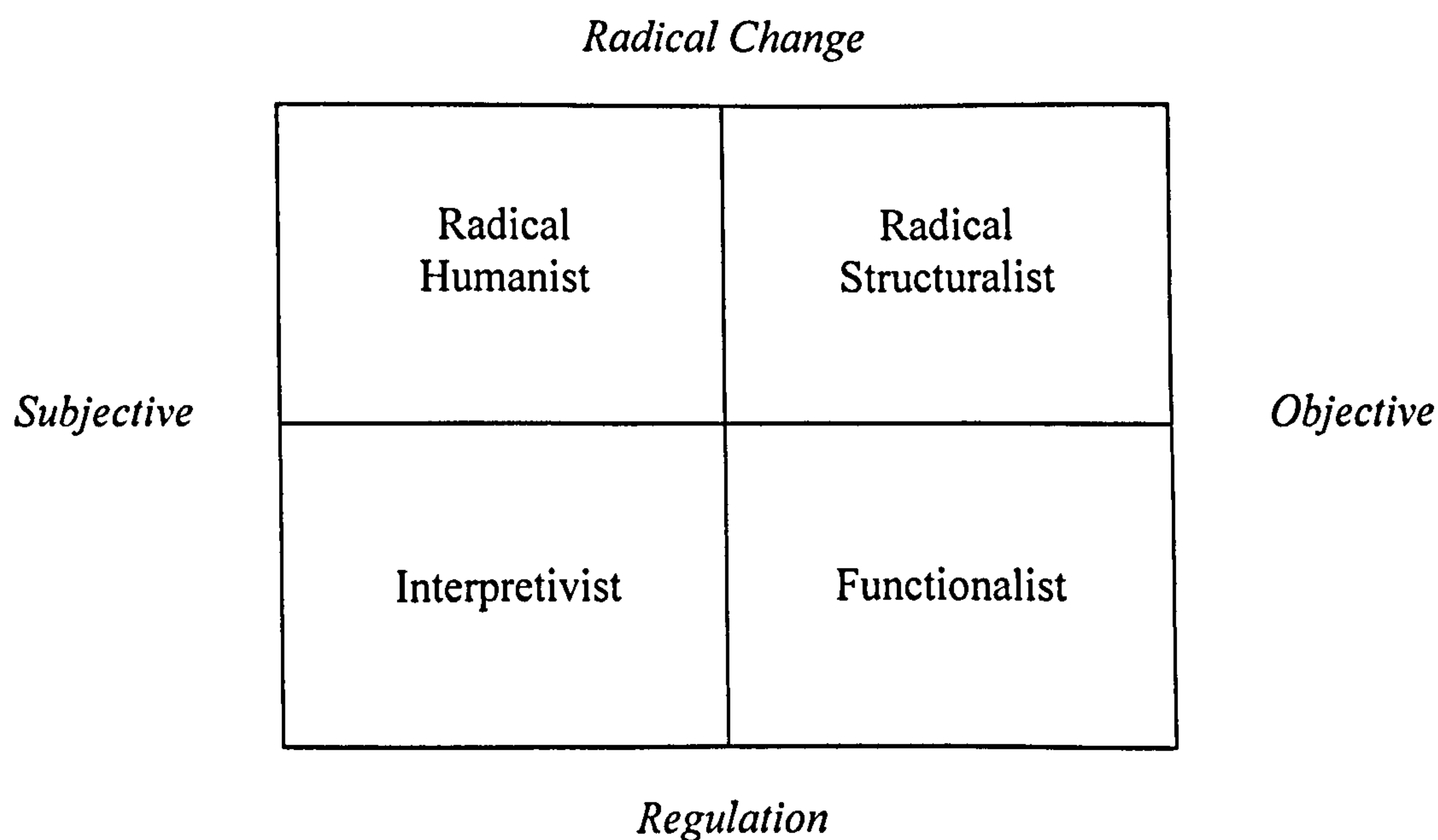
6.2.3 Research Paradigms

Four different research paradigms were introduced by Burrell and Morgan (1979): functionalism, interpretivism, radical structuralism, and radical humanism (see figure 6.1). Each of the four paradigms has fundamentally different assumptions concerning the nature of social science and the nature of society.

Burrell and Morgan (1979), and Goleb and Hirschheim (2000) differentiated between the four paradigms as follows: functionalist paradigm is concerned with providing explanations of the status quo, social order, social integration, consensus, need satisfaction, and rational choice. It depends on the idea of a real ontology where the social world is separated from the researcher; the interpretivist paradigm seeks explanation within the realm of individual consciousness and subjectivity, and within the frame of reference of the perspective, so it can be said that this paradigm perceives the world as it is but explains it within the researcher's consciousness; the radical structuralist paradigm has a view of society and organizations, which emphasizes the need to overthrow or transcend the limitations placed on existing social and organizational arrangements by assuming that contemporary society is characterized by conflicts and contradictions that generate some radical change through political and economic crises and revolutions; the radical humanist paradigm seeks radical change, emancipation, and potentiality. It stresses the role that different social and organizational forces play in understanding change. It simply assumes that the

consciousness of the researcher is dominated by ideological superstructures with which he/she interacts, therefore, seeks ways to overcome them.

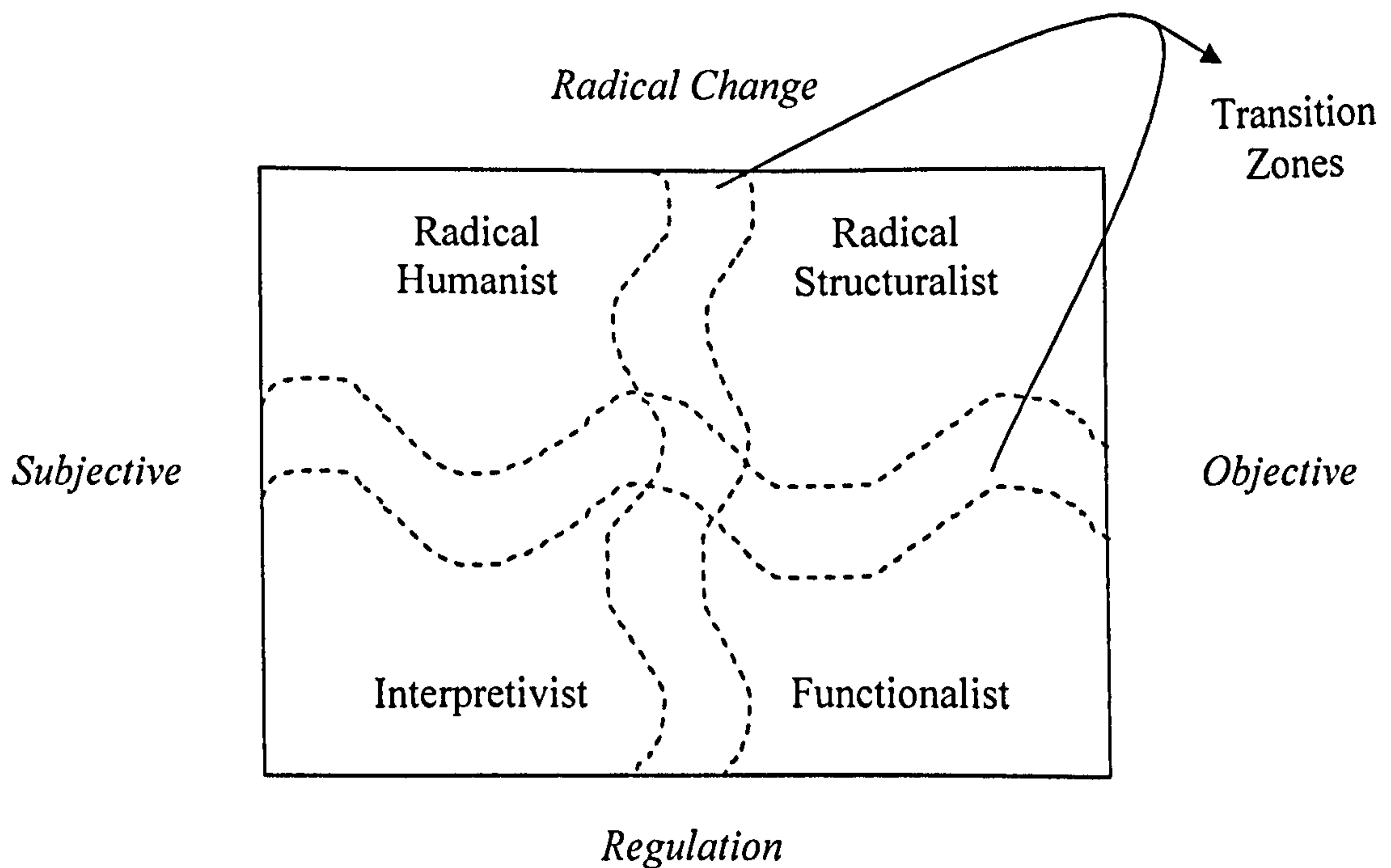
Figure 6.1: Burrell and Morgan's four paradigms



Source: Burrell and Morgan (1997)

Fox (1966) have advocated pluralism as a more realistic approach to organization control. In the same vein, Gioia and Pitre (1990) argue that the characterization of paradigms as separate and mutually exclusive domains may have been overstated. In their opinion, it is very difficult, if not impossible, to establish exactly where one paradigm leaves off and another begins. Therefore, they posit the existence of transition zones, or intermediate regions with blurred and shifting lines of demarcation, see Figure 6.2. They argue that pluralism could bridge between these zones.

Figure 6.2: Burrell and Morgan's Four Paradigms with Transition Zones



Source: Gioia and Pitre (1990)

Jackson (1999) argues that we need to employ a meta-methodology whereby the advantages of different methodologies can be employed to manage complex problems.

The research paradigm that is used by the researcher to conduct this study is the Interpretivist paradigm, where the world is viewed as it is but explained according to the researcher consciousness. And this paradigm best matches with the relativistic ontology and phenomenological epistemology. This view is consistent with the researcher's belief that the choice of methodologies should be guided by the problem at hand and the resources that can be brought and the data collection method used to best solve the problem.

6.3 Research Methods

Mingers and Brocklesby (1997) define the term "method" as the most confusing term, because it is sometimes used to refer to the whole methodology followed by the research, and sometimes to mean a particular technique, and can thus be defined as an organized, systematic, data-based, critical, objective, scientific inquiry or investigation into a specific problem, undertaken with the purpose of finding answers or solutions to

it. In essence, research provides the needed information that guides people to make informed decisions to successfully deal with problems. The information provided could be the result of a careful analysis of data gathered firsthand or of data that are already available (in company, industry, archives, etc.). Data can be quantitative (as generally gathered through structured questions) or qualitative (as generated from the broad answers to specific questions in interviews, or from responses to open-ended questions in a questionnaire, or through observation, or from already available information gathered from various sources).

In this research, it is used to mean a specific technique, which is a specific activity that has a clear and well-defined purpose within the context of a methodology. In simple words, how the data will be collected and analyzed in the research.

There are two main research approaches which are the inductive approach and the deductive approach. Induction refers to "the process by which conclusions are drawn from direct observation of empirical evidence" (Sekaran, 2003). These conclusions are then fed into the development of theory. Such research is not hypotheses-driven; instead, theory is generated and built through the analysis of, and interaction with, the empirical data. The researcher looks for patterns in the data and, in particular, relationships between variables. Generalizations in this type of research are sought from specific to other, wider context, as opposed to deductive research strategies. This type of research and theory is usually, but not exclusively, associated with the interpretivist research tradition and qualitative research strategies.

Deductive theory and research, on the other hand, is a type of strategy in which theory informs research at the outset and hypotheses dictate what evidence the researcher looks for. Data are then collected to confirm or falsify the hypotheses. Deductive theories, in contrast to inductive theories, arrive at their conclusions by applying reasons to a given set of premises (Sekaran, 2003).

In other words, deduction is the process by which we arrive at a reasoned conclusion by logical generalization of a known fact. Induction, on the other hand, is a process where we observe certain phenomena and on this basis arrive at conclusion. In other words, in

induction we logically establish a general proposition based on observed facts (Grix, 2004).

The next tables demonstrate the procedure and the writing structure for each.

Table 6.1: Deductive Research Procedure

Deductive procedure for research	Deductive structure for writing					
<p>The research tests a theory</p> <p>↓</p> <p>Hypothesis or research questions are derived from the theory</p> <p>↓</p> <p>Concepts and variables are operationalized</p> <p>↓</p> <p>An instrument is used to measure the variables in the theory</p> <p>↓</p> <p>Verification of the hypothesis</p>	<table border="1"> <tr> <td>Introduction: theory and thesis statement.</td> </tr> <tr> <td>Key questions from the theory and thesis. particular illustration and examples given to show the reason for the questions</td> </tr> <tr> <td>Definition of key concepts: discussion. Elimination of possible alternatives: discussion.</td> </tr> <tr> <td>Data-collection technique employed. Specific of data: discussion</td> </tr> <tr> <td>Findings related to hypothesis and theory: discussion</td> </tr> </table>	Introduction: theory and thesis statement.	Key questions from the theory and thesis. particular illustration and examples given to show the reason for the questions	Definition of key concepts: discussion. Elimination of possible alternatives: discussion.	Data-collection technique employed. Specific of data: discussion	Findings related to hypothesis and theory: discussion
Introduction: theory and thesis statement.						
Key questions from the theory and thesis. particular illustration and examples given to show the reason for the questions						
Definition of key concepts: discussion. Elimination of possible alternatives: discussion.						
Data-collection technique employed. Specific of data: discussion						
Findings related to hypothesis and theory: discussion						

Table 6.2: Inductive Research Procedure

Inductive procedure for research	Inductive structure for writing					
<p>Researcher gathers information and data</p> <p>↓</p> <p>Questions are asked about the phenomenon</p> <p>↓</p> <p>The data is classified and placed into categories</p> <p>↓</p> <p>Patterns are looked for in the data and potential theories are proposed</p> <p>↓</p> <p>Theories are tested and developed and patterns compared with other patterns and theories</p>	<table border="1"> <tr> <td>Introduction: particular examples given.</td> </tr> <tr> <td>Tentative interpretation on relationships between examples posed as questions</td> </tr> <tr> <td>More examples given and classified according to questions. Statements developed and reiterated.</td> </tr> <tr> <td>More examples given and classified to test degree of fit and usefulness of categories. Statements developed further and reiterated.</td> </tr> <tr> <td>Main conclusion on patterns and suggestion of plausible theory to account for the relationships in the pattern.</td> </tr> </table>	Introduction: particular examples given.	Tentative interpretation on relationships between examples posed as questions	More examples given and classified according to questions. Statements developed and reiterated.	More examples given and classified to test degree of fit and usefulness of categories. Statements developed further and reiterated.	Main conclusion on patterns and suggestion of plausible theory to account for the relationships in the pattern.
Introduction: particular examples given.						
Tentative interpretation on relationships between examples posed as questions						
More examples given and classified according to questions. Statements developed and reiterated.						
More examples given and classified to test degree of fit and usefulness of categories. Statements developed further and reiterated.						
Main conclusion on patterns and suggestion of plausible theory to account for the relationships in the pattern.						

Source: Sekaran, Uma (2003).

This research, although interpretivist research, but is mainly guided by the contingency theory in management accounting framework, which enabled the researcher to develop

some research hypotheses, as shown later in the chapter, therefore it can be considered more like a deductive approach for the research.

This research is designed in multiple case studies with “semi-structured-in-depth interviews” as the main method of data collection. Statistical testing of a series of hypotheses, developed later in this chapter, along with qualitative analysis is to be performed in this study to better address the research problem and provide more meaningful findings.

Qualitative researchers are usually criticized that their research is too subjective, or the number of cases in study is too small. Qualitative inquiry, moreover, has a short history in the social work research and therefore social work researchers may need to strongly defend the validity of their qualitative research (Sarantakos, 1993). On the other hand, qualitative analysis results in more meaningful and in depth results and conclusions when technical information is needed.

Davila (2000), presented some cases based on interviews, to understand how project managers use management control systems, in order to inform the subsequent statistical testing of a series of hypotheses relating to the nature of management control systems in new product development. Another positivistic field study was that conducted by Malina and Selto (2001), which researched the balanced scorecard for the distribution function of a US manufacturing company relying entirely on analysis of interviews. The paper referred to balanced scorecards and their effectiveness as objective realities, rather than context dependent constructs. They carried out a series of semi-structured interviews, and then analyzed them in order to statistically test various hypotheses concerning the nature of the balanced scorecard in their case organization.

Denzin (1978) identified two distinct forms of triangulation, namely: "the within-method" and the "between-method". The former involves the use of multiple techniques to build and interpret a single data set and is essentially a means of cross checking internal validity, whilst the latter uses multiple techniques to study the same phenomenon, e.g. the use of survey data and case studies, and is means of controlling external validity. According to Scapens (1990), the process of collecting multiple sources of evidence on a particular issue is known as triangulation.

The two forms of triangulation are followed in this study; the use of a secondary source of data, as shown later in section (6.5.1.2) of this chapter, allowed for triangulation of data. When data provided by a manager did not agree with the data published in the "Kompass Egypt" or the industrial modernization center (IMC) annual report, the differences were explored until the reason for this divergence was fully understood. Besides, the use of qualitative analysis along with statistical analysis to analyze the data collected through the semi-structured in-depth interviews allowed for within method triangulation, by using two different techniques to analyze and interpret the data collected through the same source.

6.4 Problem Definition

The problem of this research is double phased. The first phase is concerned with the firms' internal contingent factors to the adoption of recently developed management accounting practices when functioning in a developing country. The second phase is concerned with the effect of such adoption of recently developed practices on the overall firms' performance. Implications of the Egyptian economy on the pharmaceutical industry are also investigated.

The first phase of the problem tests the relationship between certain characteristics of manufacturing firms and the adoption of advanced accounting practices. The second phase tests the relationship between the adoption of these accounting practices and the performance of the firms. Finally the implications of the Egyptian economy on the pharmaceutical industry and the adoption of management accounting innovations are explored.

6.5 Data Collection

Based on the research problem identified in the preceding section, the research has two main questions to answer; firstly, do some firms' characteristics have an effect on the adoption of recently developed management accounting practices in Egyptian Pharmaceutical firms? Secondly, does the adoption of recently developed management accounting practices improve the firms' performance? In order for the researcher to

collect the suitable data needed to answer those questions, he had to identify six main areas that need to be explored inside the firms under study. Those 6 areas are:

- Demography of the firms in consideration
- Special characteristics of the Egyptian economy as an example of a developing country
- The pharmaceutical industry and the implications of the Egyptian environment on it
- Management accounting practices
- Quality assurance systems
- Performance measures

6.5.1 Sources of Data Gathered

Data can be obtained from primary or secondary sources. Primary data refers to information obtained firsthand by the researcher on the variables of interest for the specific purpose of the study. Secondary data refer to information gathered from sources already existing (Sekaran, 2003).

Some examples of sources primary data are individuals, focus groups, panels of respondents specially set up by the researcher and from whom opinions may be sought on specific issues from time to time, or some unobtrusive sources. The internet could also serve as a primary data source when questionnaires are administrated over it. Data can also be obtained from secondary sources such as company records or government publications.

6.5.1.1 Primary data sources:

1. **Focus group:** consist typically of 8 to 10 members with a moderator leading the discussions for about 2 hours on a particular topic, concept, or product. Members are generally chosen on the basis of their expertise in the topic on which information is sought. The focus sessions are aimed at obtaining respondents' impressions, interpretations, and opinions, as the member talk about the event, concept, product or service. With a focus group the researcher

will be interested in such things as how people respond to each other's views and build up a view out of the interaction that takes place within the group (Bryman, 2001).

2. **Panels:** like focus group, it is another source of primary information for research purpose. Whereas focus groups meet for a one time session, panels (of members) meet more than once. In cases where the effects of certain interventions or changes are to be studied over a period of time, panel studies are very useful.
3. **Unobtrusive:** originate from a primary source that does not involve people.

6.5.1.2 Secondary data sources:

Secondary data are indispensable for most organizational researches. Secondary data refer to information gathered by someone other than the researcher conducting the study or research. Such data can be internal or external to the organization and accessed through the internet or perusal of recorded or published information. Secondary data can be used, among other things, for forecasting sales by constructing models based on past sales (Sekaran, 2003).

There are several sources of secondary data including books, government publications of economic indicators, census data, statistical abstracts, databases and annual reports.

The advantage of seeking secondary data sources is saving in time and costs of acquiring information. However, secondary data as the sole source of information has the drawback of becoming obsolete, and not meeting the specific needs of the particular situation or setting (Sekaran, 2003).

The two types of data are collected in this study:

The primary data, which consists of all data related to all variables of the study (dependent and independent), and is collected via focus group, in the pilot study part of this research, along with semi-structured-in depth interviews, as the main source of data collection in this study, in order to gain a wider view and to arrive at a more readily generalized conclusions. A copy of the protocol (interview guide) used by the researcher for the interviews with financial managers is available in the appendices.

The secondary data, which consists of demographic data of the Egyptian Pharmaceutical firms forming the population of the study. These data are collected from Kompass Egypt (2004)¹⁵ for firms registered in the stock exchange market, also, from Egypt Pharmaceuticals & Healthcare Report (2006), from the Industrial Modernization Center (IMC)¹⁶, and the index of economic freedom (2007).

6.5.2 Methods of data collection

The methods chosen for a research project are inextricably linked to the research questions posed and to the sources of data collected. A lot of research methods can be used such as interviews, questionnaires, observation techniques, documentary analysis, archival technique, discourse analysis and print media (Grix, 2004).

Interview technique: the interview is a very popular method among researches. According to Grix (2004), there are four types of interview technique: structured; semi-structured; unstructured and group interviews.

Structured interviews: it is the most rigorous and the least flexible in the way it is set up. predetermined questions are put to the interviewee in a specific order and the responses are logged (either by recording electronically or by note-taking).the same processes repeated with a number of other interviewees and the results or findings can be compared with one another, categorized according to specific questions, and aggregated statistically. Usually, interviews are carried out by the researcher, face-to-face with his interviewee. However, the structured technique can be also carried out via e-mail or by telephone (kumar 1999). It is useful when the researcher has a clearly specified set of research questions that are to be investigated; the structured interview is designed to answer these questions (Bryman, 2001). The main advantages of structured interviews are to achieve a high degree of standardization or uniformity and ease of comparability. In addition, the researcher needs fewer interviewing skills than are necessary in the unstructured interviews. On the other hand, the major disadvantage of this type is the

¹⁵ Database issued by Hermes (EFG), which is a famous financial analyst corporation providing financial services in Egypt.

¹⁶ An autonomous Organization that is responsible for providing regular reports about the firms in the Egyptian market including some statistics about the annual sales, market share and growth.

missing of the opportunity of discovering important information, owing to the inflexible nature of this type of interview.

Semi-structured and *unstructured interviews* are one step down from the structured interview. According to Sekaran (2003), the main purpose of the unstructured interview is to explore and probe into the several factors in the situation that might be central to the broad problem area. More clearly, the interviewer have in mind a number of questions that wished to put to interviewees, but which do not need to follow any specific, predetermined order. This type allows a certain degree of flexibility and allows for the pursuit of unexpected lines of enquiry during the interview. This technique can be helpful at the very beginning of a research, as unstructured sessions can open up avenues of investigation, including informal discussions, previously unthought-of. However, the answers and data gathered from such sessions are not comparable, as the content of each interview is likely to be very different, as there may be just a single question that the interviewer asks and the interviewee is then allowed to respond freely, with the interviewer simply responding to points that seem worthy of being followed up. Unstructured interviewing tends to be very similar in character to a conversation (Bryman, 2001). On the other hand, in a semi-structured interview, the researcher has a list of questions or fairly specific topics to be covered, often referred to as an interview guide, but the interviewee has a great deal of leeway in how to reply. Questions may not follow on exactly in the way outlined on the schedule. Questions that are not included in the guide may be asked as the interviewer picks up on things said by the interviewees. But, by and large, all of the questions will be asked and a similar wording will be used from interviewee to interviewee. To sum up, in both cases; unstructured and semi-structured, the interview process is flexible (Bryman, 2001).

Questionnaire: we can consider questionnaire as a list of questions sent to specific individuals, who then respond. The questions should follow each other in a logical order (kumar, 1999). According to Sekaran (2003), a questionnaire is a pre-formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives. Questionnaires are an efficient data collection mechanism when researcher knows exactly what is required and how to measure the variables of interest. Questionnaires have many forms and types:

Open-Ended versus Closed Questions: Open-ended questions allow respondents to answer them in any way they choose. On the other hand, closed questions would ask the respondent to make choices among a set of alternatives given to the researcher. Closed questions help the respondents to make quick decisions to choose among the several alternatives before them. They also help the researcher to code the information easily for subsequent analysis. We can consider nominal, ordinal, Likert and ratio scale as closed questions.

Positively and Negatively Worded Questions: instead of phrasing all questions positively, it is better to include sometimes negatively worded questions. This will reduce respondent to mechanically circle the points toward one end of the scale.

Double-barreled Questions: a question that lends itself to different possible responses to its subparts. Such questions should be reduced and two or more questions asked instead. This type of questions would confuse the respondents.

Ambiguous Questions: even questions that are not double-barreled might be ambiguously worded and the respondent may not be sure what exactly they mean. An example of such question is **Recall-dependent Questions:** some questions might require respondents to recall experiences from the past that are hazy in their memory. Answer to such questions might have bias. **Leading Questions:** questions should not be phrased in such a way that they lead the respondents to give the responses that the researcher would like or want them to give. **Loaded questions:** another type of bias in questions occurs when they are phrased in an emotionally charged manner.

Observation technique: observation is in which one senses that certain changes are occurring, or that some new behaviors, attitudes, and feelings are surfacing in one's environment. Whereas interviews and questionnaires elicit responses from the subjects, it is possible to gather data without asking questions of respondents. People can be observed in their natural work environment or in the lab setting, and their activities and behaviors or other items of interest can be noted and recorded (Sekaran, 2003). There are two types of observation technique; first, participant, here, the researcher enters the organization or the research setting, and becomes a part of the work team (Sekaran, 2003). Second, Non-participant observation which usually involves a passive role for

the researcher, who does not directly influence events, but observes interaction, which, is assumed, is unaffected by the researcher's presence (Grix, 2004).

Documentary analysis: documentary evidence comes in all shapes and sizes, ranging from official and private documents to personal letters or memos. To some extent all these engage with specific texts or documents (Bell, 1993).

The archival technique: archives vary a great deal across a wide range of different source materials. The main aim of using this type of method is to bring dead documents alive to shed light on specific events, personalities or policies. This is achieved by introducing them to a wider readership (Grix, 2004).

Discourse analysis: this type of analysis uses special software packages to deduce and changes in language use by examining, electronically, a database or storing millions of words (Hoffman and Knowles, 1999).

Print media: especially newspaper articles and reports are a popular source in researcher's projects. They can be a useful complement to interviews and statistics. If the researcher undertaking an historical study, newspaper reports can give a feel for the views and opinions of the printed press, or wider opinions they represented at that time (Grix, 2004).

Focus group and *semi-structured interviews* are the main sources of data collection in this study. Using a focus group is valuable in supplying the researcher with useful information regarding the pharmaceutical industry in Egypt, in general, and the management accounting practices adopted by Egyptian pharmaceutical firms, in specific, as limited number of research investigating this issue exists. As a result the researcher will be able to fine tune the research problem, identify the research independent variables, formulate the research hypotheses, and design the interview guide. On the other hand, the semi-structured in-depth face-to-face interviews are essential to provide the researcher with more profound and insightful information regarding the problem under investigation, and to allow both quantitative and qualitative analysis to end with determining the in-firm contingent factors to the adoption of recent management accounting practices and how this affects the overall firms' performance.

As well as discussing the implications of the Egyptian economy on the pharmaceutical firms' performance.

The next table is showing the advantages and disadvantages of the two types of data collection mode through interviews:

Table 6.1: modes of data collection through interviews

Mode of data collection	Advantages	Disadvantages
Personal or face-to-face Interviews	<ul style="list-style-type: none"> -Can establish rapport motivate respondents. -Can clarify the questions, clear doubts, add new questions. -Can read nonverbal cues. -Can use visual aids to clarify points. -Rich data can be obtained. 	<ul style="list-style-type: none"> -Takes personal time. -Costs more when a wide geographic region is covered. -Respondents may be concerned about confidentiality of information given. -Interviews need to be trained. -Can introduce interviewer biases. -Respondents can terminate the interview at any time.
Telephone Interviews	<ul style="list-style-type: none"> -Less costly and speedier than personal interviews. -Can reach a wide geographic area. -Greater anonymity than personal interviews. 	<ul style="list-style-type: none"> -Nonverbal cues cannot be read. -Interviews will have to be kept short. -Obsolete telephone numbers could be contacted, and unlisted ones omitted from the sample

Source: Sekaran, 2003.

As a result personal face-to face interviews is found more suitable for this research due to the technicality of the information needed and the importance of getting interviewees to elaborate to obtain richer data, specially that this area is not previously tackled in other studies in Egypt. Besides, firms under study are only 20 firms, mainly located in Cairo and Alexandria, where the distance between the two cities is only 200 K.M. and the researcher already lives in Alexandria.

6.5.3 Why Semi-Structured Interview?

The interview is chosen as the main source of data collection for many reasons;

First, the number of drug maker firms in Egypt is only 30 firms, as shown in chapter five, with only 20 representing more than 80% of the market.

Due to the small sample size the interview is considered a suitable technique for data collection although statistical testing is conducted.

Second, by conducting interviews, the researcher would overcome potential methodological problems associated with surveys, in which the accuracy of responses must be questioned due to possible misunderstanding of definitions of concepts and the honesty and realism of responses (Walley *et al.*, 1994). Therefore being in a better position during the interview to clarify doubts and answer any inquiries the interviewees may have, thus, ensuring that the responses are properly understood and answered.

Moreover, many ideas can also be brought to the surface during the interviews (Sekaran, 2003).

Finally, in a country like Egypt that lacks the basic research infrastructure, the response rate to a questionnaire would be very low, and the data collected through one-to-one interviews would be more reliable than mailed questionnaires.

6.6 Population and Sample Size

6.6.1 Population

Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate (Sekaran, 2003). The population in this study is all pharmaceutical firms in Egypt with manufacturing facilities.

6.6.1.1 Why Egyptian Pharmaceutical firms?

Business management and accounting practices are relatively weak in most developing countries in contrast to those in the industrialized world (Lin and Yu, 2002). Although firms from developing countries are accounting for increasingly larger portions of the global economy in the new millennium, they have not been studied as frequently as their counterparts in developed countries. It is helpful to analyze the factors associated with going global for these new world competitors (sledge, 2007).

In the last few years, Egypt, as an example of developing, Arab country, has faced several economic and political changes, like economic reform program, privatization, and re-establishment of capital market, as described in more details in chapter five. These changes are associated with dramatic changes in forging organization

characteristics, structures, and processes. Therefore, studying the "inside the firm" contingent factors to changes in management accounting systems in the Egyptian manufacturing firms, would add to the body of knowledge in this area; the state of management accounting practices and evolution in developing countries.

According to Sledge (2007), there is much evidence that firms from developing nations are making significant inroads into the global economy, as indicated by Fortune Magazine's Global 500, which ranks the largest corporations in the world by revenues. In 1990, no firms from the developing world were listed in any of the world's top business listings. Yet in 2005, a record 9 firms from developing countries were in the Fortune Global 100 and 57 were listed in the Fortune Global 500. This makes nearly 1 in 10 firms from the developing world a part of this elite list. The ranking shows that in 2005, revenues of the firms from the 10 largest developing economies totaled \$1,631.5 billion; approximately 10% of firm revenues from the 10 largest developed economies, which amounted to \$16,073.7 billion. Additional verification of the increasing market power of firms from developing countries comes in the form of frequent references in business textbooks and the popular press (Sledge, 2007). This fact increased the need for more research investigating the factors affecting the development and adoption of recent management accounting practices in firms from developing countries.

According to Farouk (2005), Egyptian manufacturing organizations still retain and believe in the benefits derived from using traditional practices, and they fit well for their unstable economy. In her cross sectional analysis, of management accounting practices adopted in Egyptian manufacturing organizations and how these practices relates to organizations' performance, the pharmaceutical industry sector was ranked the highest performing industry at a percentage of 91%, followed by the building materials, refractory and cement sectors, then the food and beverage sector, and at the end the gas and mining sector. As for the remaining sectors, they show low percentages of high performing firms.

Due to the diversified nature of different industries in different environments, that may dictate or limit the choice of such systems; the author has chosen to focus on the pharmaceutical industry in Egypt as a base describing a mature type of industry that is governed by strict health regulations in all countries.

Egypt's pharmaceutical industry is considered relatively mature with moderate growth rates, as shown with figures in chapter five. And as concluded by Farouk (2005), that the pharmaceutical sector in Egypt is very successful and promising, she also proved that this sector is an advanced industry sector in Egypt. This conclusion put the Egyptian pharmaceutical industry as an appealing industry for this study which is interested in contingent factors to the adoption of recently developed management accounting practices in Egyptian manufacturing organizations. A study, that needs to be applied on an advanced industry sector in order to reach some meaningful results.

6.6.2 Sample

A sample is a subset of the population, it comprises some selected members. In other words, some, but not all, elements of the population would form the sample (Sekaran, 2003). By studying the sample, the researcher should be able to draw conclusions that would be generalized to the population of interest. Although in this research the population represents only 30 firms, but still the use of sampling was found to be more practical and time saving specially that personal, face-to-face interview is the main source of the study data collection. In addition to the fact that some of the firms are too small in size and still new in the business to be considered in this study, as will be shown in more details later in this chapter.

6.6.2.1 Sampling techniques

According to Sekaran (2003), there are two major types of sampling designs: probability and non-probability sampling. In probability sampling, the elements in the population have some known chance or probability of being selected as sample subjects. In non-probability sampling, the elements do not have a known or predetermined chance of being selected as subjects. Probability sampling designs are used when the representative ness of the sample is of importance in the interests of wider generalizability. When time or other factors, rather than generalizability, become critical, non-probability sampling is generally used.

6.6.2.2 Probability sampling

Simple random sampling: in this type every element in the population has a known and equal chance of being selected as a subject. This sampling design has the least bias and offers the most generalizability. However, this sampling process could become weighty and expensive; in addition an entirely updated listing of the population may not always be available.

Complex probability sampling: as an alternative to the simple random sampling design, several complex probability sampling (restricted probability) designs can be used. These probability sampling procedures offer a viable, and sometimes more efficient alternative to the unrestricted design. Efficiency is improved in that more information can be obtained for a given sample size using some of the complex probability sampling procedures than the simple random sampling design. The five most common complex probability sampling designs are

1. systematic sampling
2. stratified random sampling
3. cluster sampling
4. area sampling
5. double sampling

The systematic sampling design involves drawing every n^{th} element in the population starting with a randomly chosen element between 1 and n . While sampling helps to estimate population parameters, there may be identifiable subgroups of elements within the population that may be expected to have different parameters on a variable of interest to the researcher. Stratified random sampling, as its name implies, involves a process of stratification or segregation, followed by random selection of subjects from each stratum. The population is first divided into mutually exclusive groups that are relevant, appropriate and meaningful in the context of the research. Then, a simple random sample is selected from each stratum. Group or chunks of elements that, ideally, would have heterogeneity among the members within each group are chosen for study

in cluster sampling. This is contrast to choosing some elements from the population as in simple random sampling, or stratifying and then choosing members from the strata as in stratified random sampling, or choosing every n^{th} element in the population as in systematic sampling. When several groups with intra group heterogeneity and inter group homogeneity are found, then a random sampling of the clusters or groups can ideally be done and information gathered from each of the members in the randomly chosen clusters. The unit costs of cluster sampling are much lower than those of other probability sampling designs of simple or stratified random sampling or systematic sampling. However, cluster sampling exposes itself to greater biases and is the least generalizable of all probability sampling designs because the conditions of intra cluster heterogeneity and inter cluster homogeneity are often not met.

The area sampling design constitutes geographical clusters. That is, when the research pertains to populations within identifiable geographical areas such as countries, city blocks, or particular boundaries within a locality, are sampling can be done. Thus, area sampling is a form of cluster sampling within an area. Area sampling is less expensive than most other probability sampling designs, and it is not dependent on a population frame. A city map showing the blocks of the city would be adequate information to allow a researcher to take a sample of the blocks and obtain data from the residents therein. A sampling design where initially a sample is used in a study to collect some preliminary information of interest, and later a sub-sample of this primary sample is used to examine the matter in more details, is called double sampling.

6.6.2.3 Non-probability sampling

Two main types of non-probability are Convenience sampling and Purposive (judgment) sampling. Convenience sampling refers to the collection of information from members of the population who are conveniently available to provide it.

Judgment sampling on the other hand, involves the choice of subjects who are most advantageously placed or in the best position to provide the information required. It is the only viable sampling method for obtaining the type of information that is required from very specific pockets of people who alone possess the needed facts and can give the information sought.

The sample for this study is mainly based on non-probability, purposive sampling, where the top twenty pharmaceutical firms operating in Egypt, as measured by their annual sales figures, are chosen to be the sample to be interviewed in this study. Reasons behind this choice are shown below.

Egypt's pharmaceutical industry is comprised of a total of 30 pharmaceutical companies till the end of 2006 (Egypt pharmaceutical and healthcare report, 2006). 20 major firms were selected from among the 30 pharmaceutical firms in Egypt. This sample is a good representation of the pharmaceutical industry in Egypt because they are the most effective and largest (determined by the sales value of each company), as the other unconsidered companies are too small to fit in the investigation with the other 20 selected firms. Table (6.1) shows a quick comparison among the 30 firms with respect to the amount of their annual sales. This means that the investigation in this study is based on a sample that is more than 50% of the entire population where the selected sample represents 89.58% of the total sales of pharmaceutical firms in Egypt and this is considered a good sample size to represent the population. As the remaining 10 firms are relatively too small and not significant to the entire population therefore interviewing the rest 10 would be a waste of time for the researcher since the whole 10 does not exceed 10% of the whole population total annual sales. It is then clear that the size of the not interviewed firms is relatively too small to be included in the study.

Table 6.2: The 30 drug-makers' annual sales

LE Sales Y/2005 Rank	LE Sales Y/2005 Top 20	LE Sales Y/2005 Last 10	The whole population
1	549,042,296	115,271,000	
2	507,280,900	97,685,900	
3	461,245,304	57,210,400	
4	399,998,300	44,309,700	
5	356,488,300	43,738,300	
6	344,156,300	41,221,500	
7	311,540,300	34,730,400	
8	294,826,300	27,854,200	
9	209,409,100	14,860,500	
10	155,679,500	9,275,900	
11	76,487,500		
12	76,075,000		
13	75,435,800		
14	64,936,200		
15	61,747,800		
16	59,984,400		
17	56,004,500		
18	52,999,600		
19	44,730,000		
20	21,328,800		
Total	4,179,396,200	486,157,800	4,665,554,000
Percentages to whole population	0.89579	0.10421	

In order to fine tune the research problem, formulate the hypotheses to be tested, identify the research dependent and independent variables, and formulate the interview guide to be used in the interview process, a pilot study is conducted to assist the researcher in deciding the factors that need to be considered in the study, that best fits the Egyptian pharmaceutical environment.

6.7 The Pilot Study

A focus group is needed to identify the major variables of the problem that need to be tested from the practitioners' point of view. Along with what is found in the literature, this assisted in fine tuning the research problem and in the formation of the interview guide and finalizing the research hypotheses along with the dependent and independent variables.

6.7.1 Focus Group Definition and Selection

As presented earlier in chapter five and a preceding section in this chapter, 30 pharmaceutical firms are established in Egypt. And only 20 firms are chosen to be the sample of this study. From these firms, 6 major companies were invited to form the discussion group; since there are three types of firms in Egypt: State owned, privately owned, and multinationals, it is important to have each type represented in the selected group; therefore, the choice was made such that two are state-owned, two are privately owned, and two are multinationals. The two state-owned and two privately owned firms represent one newly established firm (within the past 5 years) and one older firm (established more than 5 years ago). The two multinational firms are chosen such that one is American and the other is European so that a better representation of different environments of the mother company is considered. However, only one state-owned company was present in the planned meeting, but, since all state owned firms apply similar systems and are administered similarly as imposed by the holding company, one was a good representation of the rest. Finally, the focus group included the representatives of 5 firms.

Since most of the discussion is intended to cover financial issues, the financial managers of these companies were invited. One of the firms' financial managers was also accompanied by the human resources manager.

6.7.2 Meeting Setup

A meeting was scheduled on Saturday at 10:00 AM, which is a weekend day in Egypt for most companies to provide a non-interrupted space of time for the discussion. The meeting was held in the main meeting room of the College of Management and Technology of the Arab Academy for Science, Technology and Maritime Transport, where the researcher is a faculty member.

The room was equipped with a data show and a computer connected to the net to provide the participants with a quick access to additional data or information when needed. The meeting was assembled on a U-shaped table to stimulate the interactive discussion required. A desk and a computer were located in the back of the room, facing the open end of the U-shaped meeting table where a professional clerk was to use for

note taking. This setup was meant to enable the note taker to not only record the detailed minutes of the meeting, but to also indicate a reference to the speaking person.

Refreshments and light snacks were provided on a side table for the participants to use during the meeting that was planned to last for 2 to 3 hours.

The researcher was to be seated on the table facing the front of the room to facilitate the use of the initial power point presentation and further access to the computer when needed.

6.7.3 Administration of the Meeting

A general presentation was provided by the researcher at the beginning of the meeting welcoming the participants and identifying the process to be followed to insure maximum productivity and achievement of the objectives intended.

The initial introduction was followed by a power-point presentation to introduce the research topic, the purpose of the study, and its objectives. This was followed by a precise description of the process to be followed in the discussion explaining how it will be moderated, so that each participant may contribute positively. Topics were to be presented to the participants to be discussed openly under the control and steering of the researcher to enhance the needed outcome of the discussion of each topic. That is, the discussion is intended to be moderated, topic-based, and open.

The introductory presentation included an agreement on the definition of the terminology that might be used in the discussion, to avoid any misinterpretations or misunderstanding among participants.

6.7.4 Focus Group Meeting Sessions

The researcher grouped the points of interest drawn from the problem definition and the previously identified main areas of investigation (section 6.5) under three main broad topics of discussion for ease of presentation. This was found to provide better focused attention to the points of discussion under consideration and allowed the researcher to better provide the analysis and conclusions for the use it is intended for. Accordingly, the meeting was designed in three sessions.

The first session covers the topic of “The Nature of Pharmaceutical Industry in Egypt”. The second session covers the topic of “Accounting Techniques”. The last session covers the topic of “Performance Evaluation Measures and Processes”. The following sections provide a brief discussion of each session separately followed by the researcher’s concluded comments.

6.7.4.1 Session I: Pharmaceutical Industry in Egypt

Brief of the Discussion

The discussion started with an opening comment made by the researcher on the questionable effect of what signifies the Egyptian economy to firms functioning in Egypt. Varying remarks and debates were provided and exchanged among the participants who focused on the instable and fast changing environment that creates serious threats and challenges for businesses operating in Egypt.

However, private investment firms’ representatives stated that these threats are diminishing with the new government that passed new regulations to ease the effect of such challenges and threats. They further indicated that this is why new large private investments are increasingly appearing in all different industries in Egypt, and specifically in the pharmaceutical industry which used to belong mainly to state owned and multinationals firms.

On the other hand, multinational firms’ representatives indicated that the size and strength of their supporting mother company protect these investments from threats and provides them with a powerful set of procedures that allowed them to survive in any harsh environment. In particular, one of the representatives of the multinational firms said:

“Egypt is relatively politically stable, as compared to other Middle East and African countries, which provides for a competitive geographical advantage, while for the other features of the Egyptian economy, we find Egypt attractive in terms of the economically feasible labor cost.”

The state firm representative added that the characteristics of the social environment in Egypt also contribute to the success of the pharmaceutical industry due to the increased demand of their products. He concluded, by explaining the effect of the increased diseases along with the low life standards in dense populated areas on the continuously increasing demand for medications and pharmaceutical products. A representative of one of the participating private investment firms agreed and added that the high rate of literacy contributes greatly to lack of general public awareness that promotes these diseases and magnifies the problem.

A general discussion followed in agreement of the above by all participants, and further added that this also results in a noticeable booming industry with newly introduced companies sharing a market of very large annual sales.

However, this also resulted in an increasing high competitive environment. This was agreed upon by all participants from the three different types of firms. The moderator accordingly asked the participants to comment on measures taken to face such severe competition. The state owned firm representative stated:

“Our products are relatively cheap, so we are definitely competing with price”

He also added that the ISO certification that most of the state owned firms acquired in the 90s became nowadays a strong competitive weapon especially in the international markets. This was also approved by the private investment firms. Accordingly, the moderator directed a question to the participants wondering if the ISO certification was only acquired for competitive considerations. A private investment firm representative indicated that it is in fact, but in addition to other issues like the impact it has on the organization of internal operations and processes. On the other hand, multinational firm representatives didn't approve this view, as they indicated that they don't have ISO certification, yet they are highly competitive. They explained that they achieve their competitive edge with the brand names and high quality products they are offering in the market, besides, the mother company organizes their internal operations. One of the multinational firms' representatives concluded sarcastically:

“Acquiring ISO is a waste of money”

He further explained that global quality assurance standards are imposed on the pharmaceutical industry; therefore, there is no need for the ISO certification.

Researcher’s Conclusions

- All participants agreed that the pharmaceutical industry in Egypt is booming with an increased competition and large annual sales figures.
- Multinational companies find that the Egyptian market is a promising environment due to the relatively economically feasible cost of labor. In addition the geographical location of Egypt in the Middle East, along with its relative political stability, makes it an attractive commercial center.
- The industry in Egypt is closely supervised and protected by strong governmental regulations through the Ministry of Health. These regulations govern procedures like registering a newly introduced product and pricing process. This is in addition to the global quality standards that have to be met by all firms in the industry.
- Most firms applied and were awarded the ISO certificate (International Standardization Organization) with the exception of the multinational firms that have adopted different quality assurance programs followed by the mother company.
- The ISO certificate was shown to have provided state and private investment firms with two main advantages:
 - A marketing tool to gain competitive advantage locally and internationally (regionally).
 - Meeting the ISO certificate requirements forces the organization to develop and follow a set of well defined tasks and procedures that enhance the overall internal operations, which paves the way for development.
- The Egyptian economy was recognized to represent many threats due to the instability and fast changing environment. However, due to the new

government lead by the current prime minister, who passed new ordinances and investment policies and regulations that provided additional protection and coverage. This is what provided the safe and stable environment to encourage local investors to establish large organizations. The size and strength of the multinational, allowed them to function in all conditions, and this is why they existed in the market prior to the privately owned companies.

- The large population provided a good promising market for this industry.
- The spread of diseases due to the high level of pollution, low education level, and poverty, contributed to the success of this industry in Egypt.

6.7.4.2 Session II: Accounting Techniques

Brief of the Discussion

The second session started with a brief introduction of the point of focus for this session. A list of most commonly used accounting techniques extracted from the literature was already prepared by the researcher and a copy was distributed to each participant. (See for example: Chenhall and Langfield-Smith, 1998; and Farouk, 2005). This list comprises management accounting practices relating to either performance evaluation or planning, where the most recently developed techniques relates to those which are strategically focused. Performance evaluation practices are either financial measures, mainly traditional techniques, such as budgeting for controlling costs; return on investment; budget variance analysis and divisional profit, or non-financial measures, more recent techniques, such as balanced scorecards; customer satisfaction; employee attitudes; team performance and ongoing supplier evaluations. These items are the type of measures that may emphasize and be used to monitor areas of strategic importance (Lynch and Cross, 1992; and Chenhall and Langfield-Smith, 1998). Whereas, planning practices range from traditional techniques such as, budgeting for planning financial position; budgeting for planning cash flows; and budgeting to plan day-to-day operations, to strategically-focused techniques such as, total quality management; just-in-time; and flexible manufacturing systems (Bromwich and Bhimani, 1994; Chenhall and Langfield-Smith, 1998). In addition to a range of recently-developed techniques that are used for the purpose of linking operations to the

company's strategies and objectives. Those techniques include activity-based costing, value chain analysis, target costing, product life cycle analysis, shareholder value analysis and benchmarking (Chenhall and Langfield-Smith, 1998). This list is shown in the following table:

Table 6.3: Management accounting practices used in the study

Management accounting practices list	
Capital budgeting tools	Performance evaluation ongoing supplier evaluation
Budgeting for planning cash flows	Cost-volume-profit analysis
Budgeting to plan day to day operation	Performance evaluation cash flow return on investment
Budgeting for controlling costs	Benchmarking of product characteristics
Performance evaluation ROI	Strategic plans developed with budgets
Performance evaluation budget variance analysis	Budgeting for compensating managers
Budgeting to coordinate activities across business units	Benchmarking within the wider organization
Benchmarking of operational processes	Absorption costing
Performance evaluation non-financial measures	Activity based budgeting
Benchmarking of strategic priorities	Benchmarking with outside organizations
Benchmarking of management processes	Variable costing
Formal strategic planning	Strategic planning separate from budgets
Long-range forecasting	Product life cycle analysis
Performance evaluation divisional profit	Activity based management
Performance evaluation controllable profit	Shareholder value analysis
Product profitability analysis	Performance evaluation residual income
Performance evaluation balanced scorecard	Activity based costing
Performance evaluation customer satisfaction	Operations research techniques
Performance evaluation employee attitudes	Value chain analysis
Performance evaluation team performance	Target costing
Performance evaluation qualitative measures	

Participants were given enough time to take a look at it. The moderator then opened the discussion by asking the participants to comment on whether or not the techniques in the list are commonly used in Egypt.

Only multinational firms' representatives were very much in agreement of most of the techniques in use. However, the private investment firms indicated that some of these practices are actually in use, and mentioned other practices that are under evaluation, such as balanced scorecard and activity based costing. While, State owned firm representative provided a significantly shorter list of techniques in use, where some other techniques has been recommended by his firm and other state owned firms to the holding company for evaluation and the rest he wasn't aware of.

The participants agreed that the common practices among the five firms can be considered the traditional ones. So the moderator asked about the rest of the list if it would then be considered contemporary practices. This started a debate on what is considered recent and what is not. Some of the participants considered techniques that they just heard about as recent or techniques that were just introduced to the firms, and practices applied long ago in most all firms are considered traditional. While one of the multinational firms' representatives stated that some techniques are relatively recent but applied in firms already few years ago, or may be considered for application but not adopted yet. Other participants agreed with him that management accounting techniques can't be classified into just traditional; applied long ago, and recent; relatively new in the business environment. As a result, the discussion converged into a consensus to classify the list into three categories: traditional, moderate, and recent practices. This classification is consistent to great extent to that of the literature (Chenhall and Langfield-Smith, 1998). This classification is shown in the following table:

Table 6.4: Management accounting practices categorization

Traditional practices	Moderate practices	Recent practices
Capital budgeting tools	Budgeting for coordinating activities across business units	Benchmarking of strategic priorities
Budgeting for planning cash	Benchmarking of	Benchmarking of

flows	operational processes	management processes
Budgeting to plan day to day operation	Performance evaluation non-financial measures	Formal strategic planning
Budgeting for controlling costs	Performance evaluation customer satisfaction	Long-range forecasting
Performance evaluation ROI	Performance evaluation employee attitude	Product profitability analysis
Performance evaluation budget variance analysis	Performance evaluation qualitative measures	Performance evaluation balanced scorecard
Performance evaluation divisional profit	Performance evaluation on going supplier evaluation	Performance evaluation team performance
Cost-volume profit analysis	Budgeting for compensating managers	Strategic plans developed with budgets
Performance evaluation cash flow return on investment	Benchmarking with outside organizations	Benchmarking within the wider organization
Absorption costing	Performance evaluation residual income	Activity based budgeting
Variable costing	Activity based costing	Strategic planning separate from budgets
	Performance evaluation controllable profit	Product life cycle analysis
	Benchmarking product characteristics	Activity based management
		Shareholder value analysis
		Operations research techniques
		Value chain analysis
		Target costing

According to this agreed upon classification, multinational firms representatives indicated that this means they are the ones that are using most of the recently developed techniques. At this comment, the state owned firm representative added annoyingly:

“The long procedures that are to be followed for an approval from the holding company, slows the adoption of recent techniques. In addition, not all recently developed techniques are beneficial and thus cannot be cost justifiable”

At this final comment, the other participants agreed that of course the recently developed techniques are not necessarily beneficial nor cost justifiable. A multinational firm representative added that it all depends on the special and unique needs of each firm. A private investment firm representative provided additional considerations that need to be noted, namely, the importance of the firm’s overall readiness to any proposed development or change. The moderator requested a more precise description of what is meant by “readiness”. The financial resources availability, human resource capabilities and required training or recruitments, and computerization of the accounting system which is a pre-requisite to many recently developed practices’ adoption, were the main variables mentioned by different participants identifying “firms’ readiness”.

A representative of one of the multinational firms agreed on the above list of requirements, but clearly stated that the financial resources although a factor to be considered, but it’s not a constraint because of the financial support provided by the mother company. Both representatives of the private investment firms agreed and explained that they too are well supported by the Industry Modernization Program (IMP)¹⁷. The state-owned firm representative added that the holding company will also

¹⁷ The Industrial Modernization Program is a comprehensive program that builds upon the results achieved by other less-ambitious programs such as the Private Sector Development Program (PSDP) which was implemented in cooperation with the European Union as a pilot program for enterprise upgrading during the period from 1997 till 2002. A detailed discussion of IMP is presented in Chapter 5.

provide them with the required funds, but only when the cost for change is fully justified.

On computerization, the state firm representative commented that most state owned firms have started recently to computerize their accounting systems, following a plan set by the holding company, to be able to exercise control over all of its subsidiaries. Therefore, all state owned firms are not yet fully computerized. However, the manual accounting system will continue to function in parallel. A multinational firm's representative clarified that this is what is in effect in all companies functioning in Egypt to fit some governmental regulations, such as taxation and pricing purposes.

Researcher's Conclusions

- The identified list of accounting practices discussed by the participants, matched to a great extent the list of accounting practices surveyed in the literature.
- Participants agreed on a classification of the list of management accounting practices into three categories that are to be used by the researcher during the study to evaluate the state of management accounting practices in the sample firms. The three categories are:
 - Traditional
 - Moderate
 - Recent
- The common use of traditional practices among all three types of firms' participants triggers the importance to further investigate the importance of such techniques.
- They commented that recent techniques are important, but not all will contribute to the success of the firm and therefore the cost of their introduction cannot be always justified.
- Multinational firms are adopting the highest number of recent practices. Some of these practices are also being adopted by private investment firms. On the other hand, the adoption of recent practices in state-owned firms is much less than the other two types, because any major change takes a relatively long

period of time due to the needed approval of the holding company, which explains why state-owned firms are behind the other two types, from the point of view of their representatives.

- All agreed that computerization, as opposed to manual systems; facilitate the adoption of most recent accounting practices.
- Computerization is introduced in all firms but state-owned are still not fully computerized, however, they are in the process of completing the computerization of the entire system.
- It was found that the manual system is still running in parallel to the computerized system due to local governmental regulations that require the development of a manual reporting system.
- State-owned firms are all in the same level of computerization because computerization and use of accounting packages was imposed by the holding company to enable control over all the subsidiaries.
- Financial resources were not found among the discussed constraints that limit the use of computerized systems nor the adoption of recently developed accounting techniques.
- It was agreed by all participants that human resource development is a prerequisite and an important requirement to any adoption of advanced techniques to cope with these techniques in a way that ensures its successful implementation.
- External regulations imposed by the regulatory system of Egypt are imposed on all firms, therefore, it will not be considered as a factor. Some traditionally generated reports are compulsory for taxation purposes. On the other hand, the ministry of health requires the use of certain forms and methods to govern the pricing process.

6.7.4.3 Session III: Performance Measures and Processes

Brief of the Discussion

The moderator opened the discussion by presenting a brief list of different financial and non-financial performance measures collected from the literature and requested the participants to comment on the usefulness of such measures in their firms.

A multinational firm representative mentioned a list of varying performance measures that are used to serve different needs in different situations, such as, unit's profitability to evaluate the performance of its manager, and product's profitability, to evaluate the contribution of a given product to the firm's profitability. A representative from one of the private investment firms also explained that in addition to these measures, some important non-financial measures are needed especially in evaluating the performance of the personnel, like the need to evaluate the relationship between the medical representatives and the customers, or the need to establish an indication of the efficiency of the employees. The rest of the participants agreed that a mix between financial and non-financial measures is a must to properly evaluate firms' performance. However, a multinational firm representative mentioned that although customer relationship marketing is essential for the success of the firm, but most of the marketing issues are nowadays passed to specialized agencies that are more aware of the special characteristics of each market.

A private investment firm representative also provided a discussion on the importance of employees' efficiency to avoid the severe effect of inefficient operations on the overall firm's progress and success. He then added that this especially important in developing countries given the known characteristics of these countries of high unemployment rates and low productivity measures.

The moderator then commented that the mentioned measures are to evaluate specific areas in a firm, and asked about the commonly used measures of a firm's overall success. A private investment firm representative indicated:

"If we're talking about the overall firm performance, then we have to consider the firm's market share as calculated by their annual sales' figures"

The state-owned firm representative noted here that pharmaceutical firms all over the world are ranked according to their total annual sales' figures. A multinational firm representative added that ranking based on sales' figures is done locally, in each country's market, and globally among multinational firms. The state-owned firm

representative added that a firm's success is not only measured in terms of how it ranks among other competing companies, but also in how a year's sales' figures compare to the previous years' figures. A private investment representative commented:

“Of course, annual sales' growth rate is an important indicator of the firms' ongoing success”

The participants agreed that these measures are crucial indicators of a firm's success. A multinational firm representative commented that other measurements of performance are also of importance. He mentioned return on investment (ROI) as an example of such important measures. The discussion revealed that ROI is also used by almost all of the firms. A debate on the importance of different financial and non-financial measures took place but not to the extent of providing a focal point of agreement or an added especially relative importance to additional measures. Accordingly, the moderator concluded the discussion on performance measures.

Researcher's Conclusions

- The mix between financial and non-financial measures of performance is found to be of a great importance.
- Pharmaceutical firms are ranked locally and globally according to their annual sales' figures.
- Sales growth rate is an important indicator of firms' success.
- Most firms passed some marketing functions to specialized agencies.
- Employees' efficiency is of special importance due to its contribution to firms' success; therefore, it must be measured and used as an indicator of the overall firm's performance, especially in a developing country like Egypt.

The focus group conducted presented in the preceding section, along with the literature survey conducted, assisted the researcher in deciding on the research variables, in finalizing the hypotheses formulation, and in designing the interview guide that will be

used by the researcher in the semi-structured interviews conducted, which is the main source of data collection used in this research.

6.8 Research Hypotheses

Research hypotheses represent the expectations on the relationships between the variables of the study when translated literally (Sekaran, 2003).

The first phase of the research problem of this study, which is concerned with the firms' internal contingent factors to the adoption of recently developed management accounting practices in the Egyptian pharmaceutical industry, can be investigated by developing the following hypothesis:

H₁: There is a relationship between firms' characteristics and the management accounting practices adopted by the firm.

To test this hypothesis, five firms' characteristics are chosen¹⁸ by the researcher, inspired by preceding work in this area as found in the literature, along with the focus group discussion and conclusions as shown earlier in this chapter, to be tested for their expected contingent effect on the adoption of recent management accounting practices. Those characteristics are: firm size; human resources development plan; level of computerization; ISO certificate acquisition; and firm ownership type. In order to test the relationship between each of those mentioned variables and the adoption of recent management accounting practices, the following sub-hypotheses are developed:

H_{1.1} The larger the firm size, the more recently developed management accounting practices it adopts.

H_{1.2} Firms with better human resources (HR) development plans are adopting more recently developed management accounting practices.

¹⁸ Reasoning behind the choice is provided in details in section (6.8.2).

H_{1.3} Firms with higher computerization level adopt more recently developed management accounting practices.

H_{1.4} Firms with ISO certification adopt more recently developed management accounting practices.

H_{1.5} There is a relationship between the firms' ownership type and the adoption of more recently developed management accounting practices.

The second phase of the research problem, which is concerned with the relationship between the adoptions of recently developed management accounting practices and the overall firms' performance, is investigated by developing the following hypothesis that best represents such relationship:

H₂: There is a relationship between the adoption of recent management accounting practices and the overall firms' performance.

In order to test this relationship, there must be a measure or more of the overall firms' performance. Two measures, one financial; average annual sales growth and the other non-financial; employee productivity, are chosen by the researcher to represent Egyptian pharmaceutical firms' performance. This choice is based mainly on the suggested performance measures in the focus group conducted and summarized earlier in this chapter, in addition to the support for the usefulness of these two measures from the literature¹⁹. Accordingly, the following two sub-hypotheses are developed:

H_{2.1} Firms adopting recently developed management accounting practices have higher average sales growth rate.

H_{2.2} Firms adopting recently developed management accounting practices have better employee productivity.

¹⁹ More details about the two financial measures used in the research are provided in section (6.8.2) of this chapter.

6.8.1 Framework Design

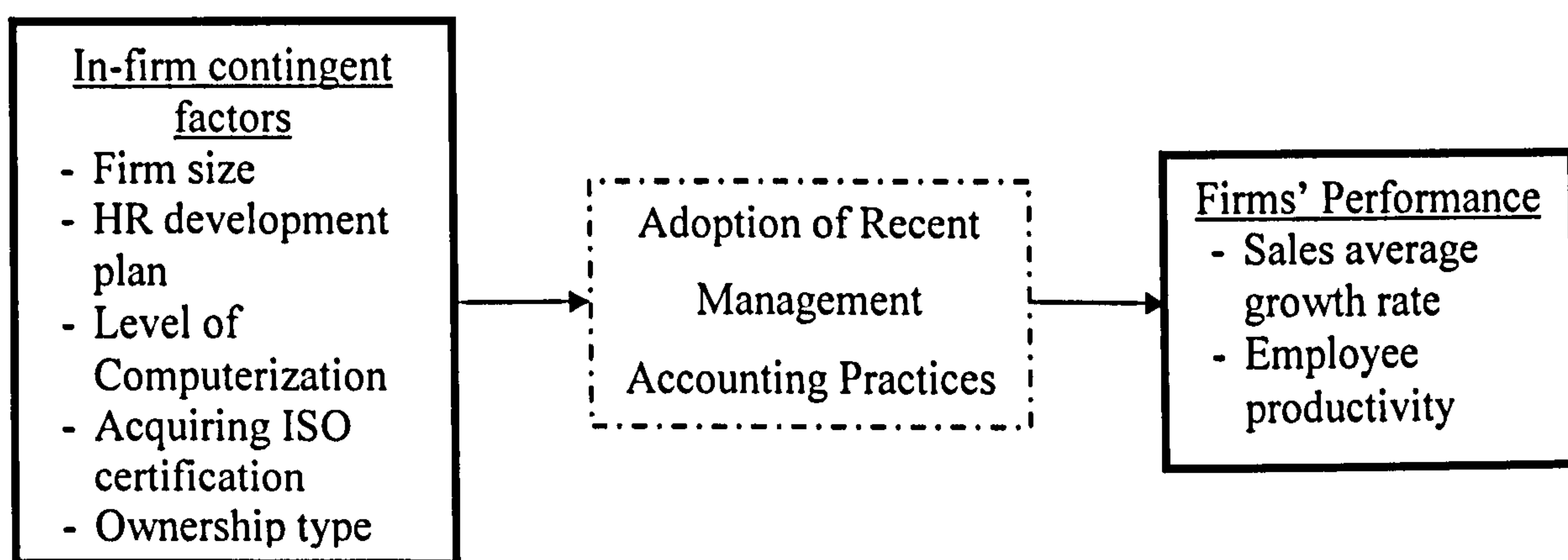
Inspired by the work of Haldma and Lääts (2002), along with the findings of the focus group, and the formulation of the research hypotheses, the research framework (Figure 6.3) is developed. The researcher is interested in this study in the internal factors (in-firm factors) that can have an effect on the adoption of more recently developed management accounting practices, and if such practices would affect the overall firms' performance.

Khandwalla (1977) argued that the so-called contingency theorists, like systems theorists, give a great deal of weight to the interface between the organization and its environment. Organizational effectiveness is, therefore, dependent on a matching between the type of technology, environmental volatility, the size of the organization and the features of the organizational structure and its information system. Many studies covered external contingent factors, such as environmental uncertainties (Waterhouse and Tiessen, 1978; Otley, 1980; Hirst, 1981; Govindarajan, 1984; Jauch and Kraft, 1986; Mathews and Scott, 1995); competition (Khandwalla, 1972; 1973; Langfield-Smith, 1997; Donaldson, 2000; Nahm and Vonderembse, 2002). However, this study is conducted in Egypt; an Arab developing country located in the Middle-East area, where environmental uncertainty stems from political fluctuations (Kattan et al., 2007). In addition the study is conducted on pharmaceutical firms operating at the present time, where relatively stable political environment persist. Therefore, internal firms' characteristics are expected to be more influencing on the different levels of adoption of recently developed management accounting techniques in the sample firms. While the effect of changes in the external environment is, somewhat, neutralized, since all firms under study work in the same political environment, under same cultural believes in the society, and facing same competitive environment. In a longitudinal study, investigating the changes in the adoption of recent management accounting practices over a period of time involving considerable political, and consequently, environmental changes, the effect of the external environment on the adoption of recent management accounting practices would have been considered, as being more significant in such case. Moreover, in the study conducted by Kattan et al. (2007), which was concerned with the determination of the effect that external factors have on the design and implementation

of management accounting systems in a developing economy, namely, Palestine; an also Arab developing economy in the Middle-East area, thus, relatively similar to the Egyptian culture, it was apparent that changes in management accounting control systems were not much influenced by external environment uncertainty, on the other hand, some important factors that led to change in management accounting control systems were identified such as; the ISO certification, the expansion of the operations, the availability of computers, the experience of the owner manager and the level of education of both the manager and employees of the accounting department.

Accordingly, it has been concluded that the decision to go for more recently developed management accounting practices in firms from developing countries would more likely be affected by the in-firm, internal factors. Therefore, only internal factors are considered for the purpose of this study as represented in the study framework that follows:

Figure 6.3: Framework of the study



This framework is an adaptation of previous frameworks used in studies conducted in the field of management accounting systems (see for example; Otley, 1980; Bhimani, 1993; Selto et al., 1995; Chenhall, 2003; Haldma and Lääts, 2002; and El-Gendy, 2004). All these studies claimed that contingency theory is the suitable framework to management accounting studies.

6.8.2 Research Variables

6.8.2.1 Firm size

In the literature that deals with the contingency perspective, size is seen as one of the elements of the organizations context that has been investigated as decisive for organizational structure (Franco-Santos and Bourne, 2005). Research has shown that size is one of the main factors in predicting organizational control strategies (Child, 1973). Kapuge and Smith (2007) conducted a study that focused on the implementation of management accounting innovations, namely total quality management (TQM), among apparel companies in a developing country; Sri Lanka, to determine the impact on business strategy, management practices and performance reporting. Difference in size between TQM and non-TQM apparel companies indicated that the TQM companies were significantly larger than non-TQM companies.

There is also considerable evidence from the literature, that adoption rates of recently-developed management accounting practices (particularly activity-based costing) are much higher in larger firms (Drury and Tayles, 1994; Innes and Mitchell, 1995; Bjornenak, 1997). Another study conducted by Chenhall and Langfield-Smith (1998) to identify the extent to which Australian manufacturing firms have adopted certain traditional and recently developed management accounting practices, provided evidence that the majority of large Australian firms have adopted a range of management accounting techniques that emphasize non-financial information, and take a more strategic focus.

Joshi (2001) conducted a case study in India, to examine the management accounting practices in a sample of 60 large and medium size manufacturing companies. Size is found to have an influential factor in the adoption of the newly developed practices.

A reason for these findings is found in organizational theory researches; it is well established that increased organizational size leads to an increased complexity of tasks; this will lead to extensive differentiation, as a consequence, to respond to increased difficulties of integration, more sophisticated integrative mechanisms are developed, including information systems, such as management accounting innovations (Lawrence and Lorsch, 1967; Galbraith, 1973; Blau et al., 1976).

Another reason for large firms being relatively high adopters of recently-developed management accounting practices is their relatively greater access to resources to experiment with administrative innovations (Innes and Mitchell, 1995; Chenhall and Langfield-Smith, 1998). As large organizations may have more resources for the development of innovations, it seems likely that they will experiment more with innovative accounting systems.

That's why the researcher decided to test the effect of size on the adoption of recently developed management accounting practices as proved from the literature to be in a way or another related to the decision of adopting new techniques generally, and recent management accounting practices specifically. Size can be represented by different measures, for example, Hall (1997) stated that certainly there is no single ideal measure of a concept as broad as the organizational size. However, the two most common measures are employment (number of employees) and firm assets (capital). In the contingency-based studies, there is evidence that the most common measure for organizational size is the number of employees; studies that address management practices or organizational behavior are interested in the effect of number of people on different factors such as human relationships and administrative control mechanisms (Hopkins, 1988). On the other hand, in a study conducted by Lamminmaki and Drury (2001), which presented a comparison of product-costing practices employed by New-Zealand manufacturers with those employed by UK manufacturers, size has been measured in terms of annual sales figures.

Therefore, both employees' headcount and annual sales figures will be used as measures of size. Another measure of size that will be used in the analysis is the number of products produced by each firm, because of the importance and the implication of this measure in the pharmaceutical industry, and its regulations.

6.8.2.2 Human Resources development plan

Although no previous work conducted on this topic and research area suggested the human resources development plan to be a contingent in-firm factor to the adoption of recently developed management accounting practices, but the pilot study conducted

revealed a consensus between all participants in the focus group on the importance of personnel competency and qualification before deciding on the adoption of any recent practice. Therefore, it is chosen to be one of the contingent factors to be tested in this study, especially since Egypt, a developing country with relatively low education level and high literacy rate, as compared to developed country, is the context of this study. This choice would add to the importance of this study because it is the first time this factor is considered in the adoption of management accounting innovations studies, especially in economies in transition.

6.8.2.3 Computerization level

Since the use of computerization in accounting systems is a pre-requisite to the use of an accounting software, and since both are considered a sign of the adoption of new techniques and a firm coping with technological changes and ready for change, it can be assumed that a firm keen to substitute its manual system with computerized system and to introduce some accounting software will be also keen to adopt recently developed management accounting techniques as part of its development program.

A study conducted by Hyvonen, Jarvinen, and Pellinen (2006), indicates that standardized cost accounting software packages may be useful not only because of their superior data processing properties and technical efficiency, but also because of their usability in overcoming resistance to change. The study also highlighted the importance of ready-made software packages in the successful implementation of the changes needed in the management accounting systems of large organizations. This study supports the view of Granlund and Malmi (2002), that off-the-shelf software packages can be efficient drivers for management accounting change since they can be viewed as best practice standards that create trust in the new systems.

In the same vein, Goonatilake, Jayawardene, and Munasinghe (1998), conducted a case study on ten Sri-Lankan manufacturing enterprises. And they provided evidence that developing countries industrial competitiveness can be enhanced through appropriate computer application. A debate goes on as to how best the developing countries should benefit from the ongoing computer revolution, since it is inevitable that in the emerging

global competitive environment, enhancing enterprise competitiveness is the key for survival and growth.

This explains the importance of testing the relationship between the computerization of the accounting systems and the adoption of recently developed management accounting practices, as the existence of a computerized system would facilitate and encourage the adoption of recent management accounting practices specially the ones with accounting software application packages. In addition to the importance of knowing the computerization level in firms functioning in a developing country and testing its effect on the adoption of recently developed management accounting practices, since computerization is not common in developing economy as it is in developed countries.

6.8.2.4 Acquiring the ISO Certification

The standardization of intangible issues, like management systems is relatively recent, starting from the need for purchasers, particularly large or multinational ones, to satisfy themselves as to the methods used by suppliers, in an attempt to ensure consistent quality. The standard (ISO 9001/2) is now seen more as a marketing tool than a quality tool. There is much survey evidence that a majority of companies using ISO 9001 do so because of the "marketing" benefits assumed with a "certified" company (Burgess, 1999). Most of the firms investigated in the study approved the same concept, since all of the firms were keen to get the (ISO 9001/2) for the same reasons, except for some multinational firms, which had other quality assurance procedures following the mother company.

On the other hand, ISO 14001 was introduced in September 1996. That is an international standard for environmental management systems. It has gained wide recognition among businesses, much like its sister standard on quality management systems, ISO 9000 (Bansal and Bogner, 2002). No clear rules which firms want to apply for ISO 14001, but of course some industries, like chemicals, would make a pressure on the firms to want to apply. In Bansal and Bogner (2002), an ISO 14001 certification is based on the principles of continual improvement: scope, plan, implement, check, and correct. The first step in setting up such a system requires that a firm identify all its

environmental aspects, which are defined as interactions between the firm and the environment, and the pertinent environmental regulations.

There is no clear evidence in the literature if there is a relationship between the firm application of either type of ISO certification and the firm's decision to apply recently developed advanced management accounting practices, and if the date of applying for the ISO is significant in the relation. In other word, are firms getting the ISO certificate recently, supposed to be more advanced in there accounting systems, or firms who got ISO certificate before the others are supposed to have more stable system and more advanced accounting practices, since they are aware of the need for change long time ago before their competitors? Nevertheless, Kattan et al. (2007), in their study concerned with the determination of the effect that external factors have on the design and implementation of management accounting systems in Palestine, a developing Arab country, concluded that the ISO certification is an important factor that led to change in management accounting control systems due to documentation requirements of the ISO certification.

The researcher will follow this view, assuming that the acquisition of ISO certification associated with specific documentation requirements, reflects awareness of new techniques, those include management accounting practices as well, and consequently it is expected that the oldest the better. For this reason, the acquisition of the ISO certification is considered one of the in-firm factors to be studied in this research with the aim to enrich the literature with some findings regarding this issue.

6.8.2.5 Ownership Type

Ownership type is considered by the author as a contingent variable that is expected to have an effect on the management accounting practices adopted by the firms under study, because the author suspects that the ownership type would have a direct effect on the management style and decisions. This factor was widely discussed in the literature (Purcell and Grey, 1986; Purcell, 1987; Fowler and Fowler, 1996; Biddle, 2005; McGuire, 2005; Connolly, 2006).

The expected effect of the difference of ownership type on the adoption of recently developed management accounting practices is supported by the pilot study conducted

earlier in this study on the three different type of ownership that exists in the Egyptian pharmaceutical industry: multinational; private investment and state-owned, in addition it is supported by the literature.

For example, in an attempt to investigate reasons for the adoption or non-adoption of new accounting methods in small/medium-sized UK manufacturing enterprises, Walley et al. (1994), discover that of the primary reasons is the ownership type and history of the firm. One of the most unexpected findings from the survey was the influence of ownership upon the design of management control and costing systems. Moreover, in three cases, changes in ownership or leadership resulted in significant redesign of control systems and it was clear from the cases that p proportion of the firms would not adopt more sophisticated accounting systems unless the companies were sold to conglomerates.

Also, in the study conducted by Ghosh and Chan (1997) to find out the state-of-art of management accounting in Singapore companies, it was confirmed that MNCs continued to enjoy an edge over local/regional companies in their management accounting practices. This proves the effect ownership type might have on the state of management accounting practices in use by the firm.

In the same vein, Yazdifar and Tsamenyi (2005), contributed to the debate of management accounting change and the changing roles of management accountants by providing evidence from a sample of management accountants working in both dependent and independent organizations in the UK. It was earlier hypothesized that significant differences would exist in the perceptions between the two groups. Also, Vamosi (2003) applied the institutional theory t a Hungarian, previously government-owned and production-oriented transition company, but today privatized Hungarian Production Company.

Another study conducted by Wu, Boateng and Drury (2007) that analyzes the adoption, perceived benefits, and expected future emphasis of western management accounting practices in Chinese state owned enterprises (SOEs) and joint ventures (JVs), finds that the level of adoption of management accounting practices is most influenced by

ownership type of the enterprise (JV or SOE). For example, JVs, with a foreign partner, tend to adopt more Western management accounting practices compared to SOEs.

Since the Egyptian pharmaceutical firms are divided into three categories: private investment firms; multi-national firms; and state owned firms, thus, the effect of the difference in the ownership type and consequently, the management style, on the adoption of recently developed management accounting practices, is found important to be studied, since firms' strategy was always found an important factor to organizational change (see for example Miles and Snow, 1978; Porter, 1980; Dent, 1990; Brignall and Ballantine, 1996; Langfield-Smith, 1997; Ittner and Larcker, 2001) and the strategy can be considered a function of the ownership type.

6.8.2.6 Management accounting practices

Management accounting practices are considered the dependent variable in the first phase of this study and the independent variable in the second phase. A list of 41 management accounting practices is prepared²⁰ based on the list provided in the literature by Chenhall and Langfield-Smith (1998) and then adopted by Farouk (2005). According to Chenhall and Langfield-Smith (1998) and Farouk (2005) this list of management accounting practices is classified as relating to either performance evaluation or planning, where the most recently developed techniques relates to those which are strategically focused. Performance evaluation practices are either financial measures, mainly traditional techniques, such as budgeting for controlling costs; return on investment; budget variance analysis and divisional profit, or non-financial measures, more recent techniques, such as balanced scorecards; customer satisfaction; employee attitudes; team performance and ongoing supplier evaluations. These items are the type of measures that may emphasize and be used to monitor areas of strategic importance (Lynch and Cross, 1992; and Chenhall and Langfield-Smith, 1998). Whereas, planning practices range from traditional techniques such as, budgeting for planning financial position; budgeting for planning cash flows; and budgeting to plan day-to-day operations, to strategically-focused techniques such as, total quality management; just-in-time; and flexible manufacturing systems (Bromwich and

²⁰ See table 6.3 in section 6.7.4.2

Bhimani, 1994; Chenhall and Langfield-Smith, 1998). In addition to a range of recently-developed techniques that are used for the purpose of linking operations to the company's strategies and objectives. Those techniques include activity-based costing, value chain analysis, target costing, product life cycle analysis, shareholder value analysis and benchmarking (Chenhall and Langfield-Smith, 1998).

The preceding literature concerned with management accounting practices classification as traditional and recently developed techniques, along with suggestions of financial managers during the focus group conducted earlier in the pilot section of this study, are considered the basis for the researcher classification of the list of management accounting practices into three categories²¹: traditional, moderate, and recent practices, for the sole purpose of this study. This categorization will be used for weighting²² firms with respect to the advancement of their management accounting systems in the statistical analysis conducted in the following chapter, to enable the measurement and comparison of the recently developed management accounting practices in firms under study.

6.8.2.7 Annual Sales Growth Rate

Annual sales growth rate is the dependent variable in the first sub-hypothesis of the second hypothesis. It is a measure of firm performance to test the effect of the adoption of management accounting practices over the overall firm performance. This choice was supported by the focus group conducted in the pilot part of this study, as sales growth was found of great importance to all firms' type to measure firms' success especially in the pharmaceutical industry. Moreover, the choice of annual sales growth as a financial measure of performance in this study stemmed from the broad literature; For example Sledge (2007) assessed performance using five year averages of 2000-2004 sales growth rates when the author was comparing the performance of multinational corporations from developing and developed nations in the new millennium to consider the effect of globalization. Annual sales growth is calculated using firms' annual sales figures over a six-year period (2001-2006).

²¹ See table 6.4 in section 6.7.4.2

²² Weights assigned to management accounting practices for statistical analysis purpose is presented in chapter 7.

6.8.2.8 Employee productivity

Employee productivity, as a measure of firm efficiency, is the other dependent variable in the second sub-hypothesis of the second hypothesis as a second measure of performance. So, the effect of adopting recent management accounting practices on employee efficiency is tested, as a non-financial measure of performance. Employee efficiency is calculated by dividing the firms' annual sales, for each of the six years, by the employees' headcount, this would result in each employee contribution to sales, and then an average for the six years is calculated for each firm.

The choice of this variable to be used as a measure of firms' performance is based mainly on the perceived importance of employee efficiency for the firms' success as mentioned and stressed by all participants in the focus group due to employee productivity problem associated with developing countries characteristics, which in their opinion would probably affect the overall firm performance.

Also, some support from the literature is provided to the author since the effect of employing management accounting systems or concepts on the firm's efficiency is explicitly mentioned by Ghosh and Chan (1997) as they said: "one of the most important tools in improving the efficiency of a company's operation is to employ a management accounting system or concept." This thus contributed to the need to measure the effect of adopting recently developed management accounting practices on, particularly, efficiency.

6.9 Interview process

In order to conduct a number of interviews, an interview guide²³ was developed to guarantee a systematic and a consistent way in carrying out these interviews. While forming the interview guide, the researcher was keen to make sure that the conclusions drawn from the focus group, already conducted, are put in consideration, in addition to

²³ The interview guide is available in the appendices.

the basic elements in the preparation of the interview guide as suggested by Bryman (2001):

- Create a certain amount of order on the topic areas, so that your questions about them flow reasonably well, but be prepared to alter the order of questions during the actual interview;
- Formulate interview questions or topics in a way that will help you answer your research questions (but try not to make them too specific);
- Try to use a language that is comprehensible and relevant to the people you are interviewing;
- Just as in interviewing in quantitative research, do not ask leading questions;
- Remember to ensure that you ask or record 'face-sheet' information of a general kind (name, age, gender, etc.) and a specific kind (positioning company, number of years employed, number of years involved in a group, etc.), because such information is useful for contextualizing people's answers.

The researcher also ensured that the guide comprises the nine types of questions suggested by Kvale (1996), in Bryman (2001):

- Introducing questions: 'please tell me about when your interest in X first began?'; 'have you ever ...? 'Why did you go to ...?'
- Follow-up questions: getting the interviewee to elaborate his/her answer, such as 'what do you mean by that..?' Kvale suggests that repeating significant words in an answer can stimulate further explanation.
- Probing questions: following up what has been said through direct questioning, such as 'could you say some more about that?'
- Specifying questions: 'what did you do then?'; 'how did X react to what you said?'
- Direct questions: 'do you find it easy to keep smiling when serving customers?' such questions are perhaps best left until towards the end of the interview, in order not to influence the direction of the interview too much.

- Indirect questions: 'what do most people round here think of the ways that management treats its staff?' perhaps followed up by 'is that the way you feel too?' in order to get at the individual's own view.
- Structuring questions: 'I would now like to move on to a different topic'.
- Silence: allow pauses to signal that you want to give the interviewee the opportunity to reflect and amplify an answer.
- Interpreting questions: 'do you mean that your leadership role has had to change from one of encouraging others to a more directive one?'

These questions are used as the basic guideline during the interviews to make sure that the required topics would be covered. The interviews were semi-structured with a clear set of questions to be explored.

One-to-one interviews were conducted using a semi-structured technique. This provides flexibility to pursue individual detail that arises within interviews, whilst also ensuring that the predominant focus of the interview is not lost (Bryman, 2001).

The interviews were conducted with the chief accountant, senior management accountant, or the financial manager. A pre-appointment had to be decided by phone before going to make sure that they would be available and would have the time to conduct the interview. The interviews were recorded in order to capture the required data and to guarantee that the interviewer is not distracted by having to concentrate on getting down notes on what is said (Bryman, 2001). Except for four interviews where the interviewees refused to record the conversation.

During the conduct of the interviews, the list of management accounting practices, categorized into recent, moderate and traditional practices ²⁴ was presented to the interviewee to mark the practices adopted by his firm under each of the three categories. This list was used later by the researcher to calculate the total score for management accounting practices adopted by each firm as shown in details in the following chapter.

A detailed transcription of all interviews conducted is performed. The transcription of the interviews resulted in two types of outputs: the data needed in the statistical part of

²⁴ See table 6.4

this study to test the hypotheses after giving them the suitable codes for the tests; and the main themes used by the researcher in the qualitative analysis part of this study. The three general themes extracted from the interviews transcriptions are: the Egyptian Environment Implications theme; the Accounting Practices theme; and the Performance and Quality Issues theme. These themes are explained in more details in the qualitative analysis, Chapter 8.

6.10 Statistical Analyses Methods

Peters (2002) stated that there are two basic types of statistics: inferential and descriptive statistics. Inferential statistics are those that allow us to decide whether the patterns seen in the sample data could apply to the population as a whole. On the other hand, descriptive statistics are those that summarize responses such as frequency distributions, averages, and standard deviations.

Therefore, different statistical methods will be used in this research by employing the most widely used and comprehensive statistical program in social science (SPSS).

6.10.1 Descriptive Statistics

Descriptive statistics are used to organize, summarize, and describe measures of a sample. No predictions or inferences are made regarding the population parameters. These statistics usually include the mean, median, mode, standard deviation, variance, range of scores, and skewness and Kurtosis (Cohen and Holliday, 1996).

Mean (M) is a simple measure of central tendency that represents an average of a distribution of scores for any group of individuals, objects or events. It helps to compare two or more distributions; also, it is essential in describing data sets. It represents the value that every member of the distribution would have if the sum of the distribution was spread evenly among the members (Connolly and Sluckin, 1971; Berenson and Levine, 1992; Cohen and Holliday, 1996).

Median is another useful measure of central tendency. The median is simply that point on a scale of measurement above which there are exactly half the scores and below which there are the other half of the scores. In certain situations the median may be a

better measure of central tendency than the mean; in particular it is less sensitive than the mean to extremely large or small measurements. On the other hand, the *Mode* is also another measure of central tendency. The mode is the measurement that occurs with greatest frequency in the data (Berenson and Levine, 1992; Cohen and Holliday, 1996).

Standard deviation (SD) and *Variance* are two commonly used measures of dispersion. They measure the variability around the mean. They give an indication of how dispersed is the probability distribution around its centre and how spread out on the average are the values of the random variable about its expectation (Berenson and Levine, 1992).

6.10.2 Correlation

Spearman-correlations (r) will be presented to show the direction and the strength of the associations between the dependent and independent variables examined. Spearman-correlations coefficient is a nonparametric approach to correlation that uses ordinal data. Spearman-correlations coefficients (r) can only take values from -1 to +1. The sign out the front indicates whether there is a positive correlation (the two variables move in the same direction) or negative correlation (the two variables move opposite to each other). The size of the absolute value (with ignoring the sign) indicates the strength of the relationship (Feiring, 1986; Schroeder et al., 1986; Pallant, 2001).

6.10.3 Hypotheses Testing

Parametric and Non-parametric Statistics

Field (2000), Bryman and Cramer (2001) and Pallant (2001) identified certain assumptions, for the data, that should be fulfilled in order to use parametric statistics, which are considered more powerful but they are more stringent as well. These assumptions are:

- The scale of measurement attained on the collected data should be in the form of interval or ratio scaling, because, on the contrary, non-parametric techniques are ideal for use when the data measured is on nominal (categorical) and ordinal (ranked) scales.

- The underlying distribution of scores in the population from which the sample has been randomly drawn is normal.
- The variances of variables are equal or homogenous.
- Observations should be independent of each other.

If these assumptions are not fulfilled, non-parametric statistics could be used, also sometimes called distribution-free tests. For many of the commonly used parametric techniques there is a corresponding non-parametric alternative. On the other hand, these non-parametric techniques tend to be not as powerful as parametric techniques, because they may be less sensitive in detecting a relationship, or a difference among groups (Pallant, 2001).

Due to the nature of the data collected and the small sample size, the previously mentioned assumptions are not fulfilled, therefore, different non-parametric tests are selected to test the hypotheses depending on the type of variables and the relation tested. Those tests include:

Kruskal-Wallis Test is used for the analysis of variance by Ranks. It is a non-parametric test requiring only ordinal-level data. For the Kruskal-Wallis test to be applied the samples selected from the populations must be independent, no assumptions about the shape of the populations are required (Lind, Marchal and Mason, 2002). Kruskal-Wallis test is the nonparametric alternative to the ANOVA for the analysis of variance (Hilderbrand and Ott, 1991).

Where Kruskal-Wallis test results in significant variance, to discover where the differences exist, One Way ANOVA Test is conducted to test the homogeneity of variances in order to decide on the test to be used in Multiple Comparisons to achieve this target ((Lind, Marchal and Mason, 2001).

Tamhane Multiple Comparisons test is used to show where the difference between categories exists.

6.11 Conclusion

This chapter attempted to address the methodology and methods that are adopted in this study. In the early sections of the chapter, the underlying philosophical and methodological roots of the study were thoroughly discussed. In addition, some certain statistical techniques have been raised to analyze the data collected. Largely due to its multidisciplinary character, the present research had the opportunity to build on a well-established body of empirical literature, and therefore made a conscious effort to employ previously developed and well-tested methodologies.

In the next chapter, the mechanism through which the data is being collected and weighted will be discussed, and the statistical analysis will be conducted to describe the characteristics of the research variables, in addition to testing the research hypotheses.

Chapter Seven

Sample Characteristics and Statistical Analysis

7.1 Introduction

After identifying the methodology of the research that consists of two studies; the statistical analysis, and the qualitative analysis; this chapter is only devoted to the statistical part of the study. This is a step forward in the process of studying the research problem, with the aim of deciding on the in-firm contingent factors to the adoption of recently developed management accounting practices and the effect this adoption might have on the overall firm performance.

The first part of the chapter consists of a brief description of the interviews conduct and transcription process. The second part of the chapter covers the summary of the data collected, along with the suitable coding given to all relevant variables to the statistical testing. Third part provides some information about the data collected through conducting frequency test to the research variables as well as descriptive statistics, in an attempt to give some indications about the variables of the study. Fourth part of the chapter covers the spearman correlation coefficient matrix results with a brief description of the significant relationships reached. Fifth part is concerned with the hypotheses testing process, where an explanation of the suitable tests selected for each hypothesis is undertaken, brief tests results are provided along with a brief interpretation of the results as the thorough discussion of the statistical analysis findings will not take place in this chapter, instead, chapter nine will be fully devoted to the discussion of both the statistical and the qualitative analysis findings and implications. Finally, limitations of the hypotheses testing study are discussed before the general conclusion of the chapter.

7.2 Sample and Data Collection

After determining the sample size and the firms from which data is collected, as justified in the previous chapter, addresses and contact numbers were obtained from the Industrial Modernization Center (IMC), which is an autonomous organization that is given the financial and administrative flexibility for sound and rapid execution of

Industrial Modernization Program²⁵. The IMC is responsible for providing regular reports about the firms in the Egyptian market including some statistics about the annual sales, market share and growth.

A pilot study was conducted using a group of 2 multinational firms, 2 private investment firms, and from the 2 state-owned firms invited only one state-owned firm representative attended. This was accepted by the researcher since all state-owned firms follow almost same policies; those of the holding company. This results in five firms' representatives forming the focus group. The pilot study was intended to further assist in the final formulation of the interviews and to fine tune the problem and variable definitions. A detailed presentation of the pilot study and the generated findings are presented in Chapter six. Based on the results of the pilot study, semi-structured interviews were designed and conducted by the researcher on one-to-one bases. Using semi-structured techniques in one-to-one interview base provides flexibility to pursue individual detail that arises within interviews, whilst also ensuring that the predominant focus of the interview is not lost (Bryman, 2001). Reasons for going for this qualitative mean of data collection are justified in the Chapter six.

The focus group revealed that Pharmaceutical firms are ranked locally and globally according to their annual sales' figures. Accordingly, the 30 manufacturing pharmaceutical firms that exist in the Egyptian environment are evaluated by the researcher according to their annual sales figures. The top 20 firms' annual sales represents 89.58% of the total sales of pharmaceutical firms in Egypt, while the remaining 10 firms' size is relatively too small and not significant to the entire population; it does not exceed 10% of the whole population total annual sales²⁶. As a result, the top 20 firms were selected to be the sample for this study, and contacts were made with those firms to arrange for the meetings to conduct the semi-structured interviews with the appropriate person inside the firm.

The interviews were conducted with the chief accountant, senior management accountant, or the financial manager. A pre-appointment had to be decided by phone

²⁵Find more details about the industrial modernization program in chapter five

²⁶ For more details about Egyptian pharmaceutical firms annual sales figures see table 6.1 in the previous chapter.

before going to make sure that they would be available and would have the time to conduct the interview. Due to their busy schedules and the widespread geographical locations of the sample firms across Egypt, this was the hardest task in the research. It took from March 2005 till beginning 2006, which is about ten months, to conduct all interviews and transcribe them.

Semi-structured interviews were conducted and recorded in order to capture the required data and to guarantee that the interviewer is not distracted by having to concentrate on getting down notes on what is said (Bryman, 2001). Except for four interviews where the interviewees refused to record the conversation; as a result, the researcher was forced to write down all the discussions that took place during the interviews simultaneously. On the other hand, recorded data were transcribed. Data were identified by reading each transcript and identifying phrases, sentences, and sections of conversation between the researcher and the subject, that appear to bear relevance to the aim and objectives of this research. Then all relevant data were summarized in a table and coded in order to allow quantitative analysis techniques. Codes given and codes justification are presented in the following section.

It is worth mentioning that the statistical analysis performed in this chapter, although presented before the qualitative analysis, is just to give indication of possible relationships between variables to inform the qualitative analysis, which is the main analytical tool for this study. Findings of the following statistical tests are not to be relied upon; they are just to support the qualitative analysis findings in case of consistency. While in case of contradiction, only qualitative analysis is the base for the researcher conclusions. The limitation of the statistical analysis findings is mainly due to the small sample size resulting from the small population size along with the nature of the data collected through semi-structured interviews.

7.3 Data summary and Coding

SPSS (The Statistical Package for Social Sciences) is used to analyze the data after using the suitable and appropriate coding as shown below:

7.3.1 Categorization²⁷ and Codes assignment

1. Annual sales figures: firms are divided into three categories based on their size as measured by their annual sales figures, those categories are (< 200,000,000 = 1; between 200 M and 400 M = 2; > 400,000,000 = 3). It is thus clear that '1' is given to the smallest and '3' to the largest.
2. Headcount: firms are divided into three categories based on their size as measured by the employees' headcount. Those categories' range is (<800 = 1; between 800 and 1600 = 2; > 1600 = 3). Therefore, '1' is given to the smallest size category and '3' to the largest size category.
3. Products number: also three categories are identified based on firms' size as measured by the number of products they produce. Those categories are (< 75 = 1; between 75 and 150 = 2; > 150 = 3). So, '1' is given to the smallest size category and '3' to the largest size category.
4. Human resources development plan: three categories for human resources development plan are also identified. The categorization was based on the degree of top management concern with the continuous improvement and development of human resources skills. Where '1' is given to the least concern and '3' to the high concern, as extracted from the interviews' transcriptions. The degree of emphasis of the human resources development in the strategic planning reflects top management concern with this issue. Accordingly the three categories are (no clear plan emphasis = 1; clearly stated = 2; highly emphasized = 3)
5. Accounting software: based on the results and analysis of the interviews conducted, firms' operations were found to be either totally computerized and consequently applying an accounting software or partially computerized and in the process of applying accounting software. Therefore, two categories only are identified for coding this variable, those are (partially computerized = 1; fully computerized = 2)

²⁷ Categories were mainly calculated based on the minimum, maximum and mean value for each variable, those figures are shown in table 3 that follows

6. ISO certificate: the date of obtaining ISO certification is used to categorize firms based on this variable; the acquisition of ISO certification; this is due to the researcher belief that the oldest the firms' success in obtaining the ISO certification that more stable its accounting system would be as fulfilling the operational ISO requirements would necessitate the organization of its systems including the accounting one. Five categories were identified based on the different dates of acquiring the certification as provided by the firms. The oldest in acquiring the certification was on year 1990 and the most recent date was on year 2004. As a result, the five categories were identified where each category comprises three years; 1 is given to the most recent category and 5 to the oldest category acquired ISO certification. While 0 is assigned to no- ISO- certification firms.
7. Ownership type: the sample consists of three firms' ownership types which are: state owned firms, private investment firms, and multinational firms. For test analysis the following codes are given to each type: state owned firms are coded with '3'; private investment firms are coded with '2'; and multinational firms are coded with '1'.
8. Management accounting practices: A list of 41 management accounting practices is prepared based on the list provided in the literature by Chenhall and Langfield-Smith (1998) and then adopted by Farouk (2005) in her study conducted in Egypt. This list comprises management accounting practices relating to either performance evaluation or planning, where the most recently developed techniques relates to those which are strategically focused. Performance evaluation practices are either financial measures or non-financial measures. Whereas, planning practices range from traditional techniques to strategically-focused techniques such as, total quality management; just-in-time; and flexible manufacturing systems (Bromwich and Bhimani, 1994; Chenhall and Langfield-Smith, 1998). In addition to a range of recently-developed techniques that are used for the purpose of linking operations to the company's

strategies and objectives²⁸. The literature assessed management accounting practices as traditional and recently developed techniques (Lynch and Cross, 1992; Bromwich and Bhimani, 1994; Chenhall and Langfield-Smith, 1998). This assessment along with suggestions of financial managers collected during the focus group²⁹ swayed the researcher to the importance of distinguishing between diverse techniques based on how recent they are. This process lead to identifying practices as *traditional*; those are weighted 1, *moderate*; those are weighted 3, *recent*; and those are weighted 5. Then a total weight is calculated for each firm according to the number and type of techniques it adopts³⁰. Thus, enabling the researcher to rank firms from adopting recent management accounting practices to firms with less adoption rate of recent practices, for the purpose of testing the first hypothesis. It is worth mentioning that weights 1,3, and 5 where used instead of 1,2, and 3 due to the small sample size, so the researcher found that larger intervals between weights assigned would give more variation between the firms and thus allowing for more meaningful findings.

9. For tests where management accounting practices is the independent variable; in testing the second hypothesis, a categorization is needed in order to test for any difference between firms performance caused by their different levels of adopting recent management accounting practices. Firms were divided into 3 categories as follows: using the totals calculated for each firm in "7" above; firms scoring from 0 through 50 were coded with "1", those are labeled 'the traditional' ones; firms scoring from 50 through 100 were coded "2"; 'the moderate firms', while firms scoring from 100 through 150 were coded "3"; 'the recent firms'.
10. Sales growth rate is calculated for six years (2001-2006) and then the average sales growth rate is used in the analysis for each firm.

²⁸ The list of management accounting practices used in the study is presented in table 6.3 in the previous chapter, section 6.7.4.2.

²⁹ See table 6.4 in section 6.7.4.2 in the previous chapter.

³⁰ Total weight for each firm is shown in table 1 that follows

11. Productivity is measured by each employee's contribution to sales revenue; by dividing annual sales figures by the number of employees for each firm, for each of the 6 years, then an average is calculated.

The data collected regarding the variables relevant to the study and different codes given to each variable are summarized in Table 1 below. Of the 30 firms that constitutes Egypt's pharmaceutical industry (Egypt pharmaceutical and healthcare report, 2006) the top 20 firms (evaluated based on their annual sales figures) are ranked in Table 1. The selected 20 out of the total 30 firms represents 89.58% (4,179,396,200 L.E.) of the total sales of pharmaceutical firms. Thus, the remaining 10 firms' total annual sales represent almost 10% only (486,157,800 L.E.) of the total sales. In other word is considered not significant to be considered. Firms' names are omitted as conditioned by the participants.

Table 7.1a: Data summary and weights (Firms 1 – 10)

Firm	Annual Sales (1,000,000)		Number of Employees		Number of Products		Type ³¹	HR Development		Accounting Software		ISO		ISO Date	Management Accounting Practices
	v ³²	e ³³	v	e	v	e		v	e	v	e	v	e		
1	680	3	1500	2	107	2	MN	Y	2	Y	2	Y	5	2000	123 ³⁴
2	640	3	750	1	245	3	MN	Y	2	Y	2	Y	5	2004	133
3	620	3	1000	2	96	2	MN	Y	2	Y	2	N	0	NA	123
4	600	3	2300	3	189	3	PI	Y	3	P	1	Y	5	1990	90
5	400	2	1500	2	250	3	PI	Y	2	Y	2	Y	5	2000	122
6	344	2	2500	3	160	3	PI	Y	3	Y	2	Y	5	1990	90
7	312	2	800	1	72	1	MN	Y	1	Y	2	Y	5	2000	123
8	300	2	2417	3	250	3	S	Y	3	P	1	Y	5	1994	96
9	294	2	600	1	59	1	MN	Y	1	Y	2	N	0	NA	123
10	218	2	2463	3	200	3	S	Y	3	P	1	Y	5	1997	101

Table 7.1b: Data summary and weights (Firms 11 – 20)

Firm	Annual Sales (1,000,000)		Number of Employees		Number of Products		Type ³¹	HR Development		Accounting Software		ISO		ISO Date	Management Accounting Practices
	v ³²	e ³³	v	e	v	e		v	e	v	e	v	e		
11	209	2	1424	2	120	2	PI	Y	2	Y	2	Y	5	1994	122
12	181	1	380	1	47	1	PI	Y	1	Y	2	Y	5	1991	122
13	176	1	338	1	100	2	PI	Y	1	Y	2	Y	5	2002	122
14	175	1	948	2	58	1	PI	Y	1	Y	2	Y	5	1996	101
15	173	1	1430	2	200	3	S	Y	2	P	1	Y	5	1996	44
16	150	1	1300	2	98	2	S	Y	2	P	1	Y	5	1997	44
17	76	1	2600	3	89	2	S	Y	2	P	1	Y	5	1998	44
18	75	1	450	1	32	1	MN	Y	1	Y	2	N	0	NA	122
19	62	1	1500	2	250	3	S	Y	2	P	1	Y	5	1997	44
20	45	1	175	1	24	1	MN	Y	1	Y	2	N	0	NA	127

³¹ Ownership Type: MN → Multinational firm, PI → Private Investment firm, S → State-Owned firm

³² V → Value of the indicated parameter

³³ C → code assigned for SPSS purpose

³⁴ 123 = (15*5) + (13*3) + (9*1); that is this firm is adopting 15 recent practice, 13 moderate and 9 traditional, multiplied by the weights 5, 3 and 1 respectively.

³⁵ Ownership Type: MN → Multinational firm, PI → Private Investment firm, S → State-Owned firm

³⁶ V → Value of the indicated parameter

³⁷ C → code assigned for SPSS purpose

7.4 Data Analysis

This section aims at providing preliminary indicators about variables of the study, by showing some characteristics of the sample. First, frequency of occurrence of each variable is calculated, with brief results explanation, then some descriptive statistics are conducted (mean, standard deviation, mode and median of the data). Finally, spearman correlation coefficient is calculated to show relationships and trends between dependent and independent variables of the study.

7.4.1 Sample characteristics

The following table shows the characteristics of the sample in terms of frequencies for each identified category for each variable:

Table 7.2: Sample Characteristics

Variables	Value	Frequency	Percent
Sales categories	less 200 millions	9	45
	between 200 and 400 millions	7	35
	greater than 400 millions	4	20
Employees categories	less than 800 employee	7	35
	between 800 and 1600 employee	8	40
	greater than 1600 employee	5	25
Products categories	less than 75 products	6	30
	between 75 and 150 products	6	30
	greater than 150 products	8	40
Ownership type	Multinational	7	35
	Private investment	7	35
	State owned	6	30
HR development categories	not so clear strategic plan	7	35
	clearly stated strategic plan	9	45
	highly emphasized strategic plan	4	20
Computerization level categories	partially computerized	7	35
	fully computerized	13	65
ISO acquisition categories	not applicable	4	20
	years 2002 – 2004	2	10
	years 1999 – 2001	3	15
	years 1996 – 1998	6	30
	years 1993 – 1995	2	10
	years 1990 – 1992	2	10
Management accounting practices categories	0-50 Traditional	4	20%
	50-100 Moderate	3	15%
	100-150 Recent	13	65%

From the previous table it is obvious that the majority of firms have sales less than 200,000,000 L.E.; 45% and that only 20% of the sample has sales greater than 400,000,000 L.E. On the other hand if size is measured using the number of products the majority of firms will fall in the largest category; 40% of firms have more than 150 products. And equal number of firms (6) fall in the medium and small size category. Additionally, the majority of the headcount in the sample is medium sized, 40%.

The previous table (2) shows that large manufacturing pharmaceutical firms are almost equally divided among the three sectors of the economy; 7 private, 6 states owned and 7 multinational and this is a reflection of the privatization program that took place since 1995. That's why private investment firms exceed the state owned firms specially that government policy encourages private investments, both national and foreign. This finding also proves the balance of the sample used in the study regarding the ownership type.

It's also remarkable that 45% of firms have human resources development plans clearly stated in their strategic plans, compared to 35% of firms with no clear plan for human resources development. This increasing percent reflects the management awareness of the importance of continuous development of human resources as one of the most important resources of any organization. And this is a step forward in management way of thinking.

Additionally, 65% of firms use accounting software and have a fully computerized operation. And this is considered a high percent for a third world country but this reflects the advancement of this industry as was mentioned in the preceding chapter. Especially that, the rest of firms are partially computerized and on their way to become fully computerized and adopt accounting software. No one firm is depending on manual system only.

Moreover, it can be seen from the previous table (2) that only 5% of firms didn't apply for ISO certificate and almost all are multinational firms. And this can be due to other quality assurance procedures followed by the mother company. The rest; 95% of firms, got ISO certificate in different years which is a good indicator of quality awareness and it also reflects a sound system able to succeed in fulfilling ISO requirements.

Finally, the frequency test shows that the majority of firms fall in the category of recent management accounting practices (65%); firms considered adopting traditional practices constitute 20% of the sample. It can be then concluded that the pharmaceutical industry in Egypt is to great deal an advanced sector, since this percent is considered a good one when we talk about the recent management accounting practices adopted in a developing country.

The next table (3) shows the descriptive statistics (mean, standard deviation, mode and median of the data), which aims at measuring the central tendency and the extent of diversity of responses, the most frequent value and the value in the centre hence, obtaining preliminary indicators about variables of the study.

Table 7.3: Descriptive Statistics

variables	Minimum	Maximum	Mean	Std. Deviation	Mode	Median
Annual Sales	45,000,000	680,000,000	290,000,000	202,891,856	NA	213,500,000
Number of Employees	175	2600	1318.75	791.131	NA	1362.00
Number of Products	24	250	132.30	78.542	NA	103.50
ISO date	1990	2004	NA	NA	1997	1997
management accounting practice weight	44	133	NA	NA	122	122

The following points can be concluded from this table:

Annual sales: the annual sales figures range from 45,000,000 L.E.; firm with the lowest annual sales, to 680,000,000 L.E.; firm with the highest annual sales. The Average annual sale is equal to 290,000,000 L.E. At the mean time the annual sales have a large standard deviation equal to 202,891,856, thus, firms' annual sales are highly dispersed around the Mean. Consequently, it can be concluded that the sample includes variety of firms regarding their sizes, as measured by annual sales figures. Finally, the table shows that 50% of the firms have annual sales above 213,500,000 and 50% fall below it.

Number of employees: number of employees among the sample firms range from 175 employees to 2600, with an average of approximately 1318. In addition, a large standard deviation of "791.131" implies that number of employees is highly dispersed around the Mean. Therefore, it can be concluded that the sample size is diversified when represented by the employees' headcount. Also, 50% of firms have number of employees above 1362 and 50% of firms have less than 1362.

Products number: number of products range from 24 to 250 with an average of 132.30. The standard deviation is also large, equal to 58.542, so number of products is dispersed around the Mean, therefore, the sample includes firms with different number of products, thus a

diversified sample. In addition, 50% of firms have number of products above 103.50 and the other 50% fall below it.

Date of ISO acquisition: the oldest date of acquiring ISO among the sample is 1990, and the most recent date is 2004, with 50% of firms acquired ISO certification before 1997 and the rest 50% got it after 1997, which is right the middle.

Management accounting practices weight: the firm with the least number of recent practices adopted scored 44, while the firm with the largest number of recent practices adopted scored 133, as shown by the minimum and maximum calculated in the previous table (3). It is also remarkable that 50% of the firms scored more than 122 (the most recent category) while the remaining 50% scored less than 122. This finding indicates that large number of firms adopts recent management accounting practices.

7.4.2 Correlation analysis

Spearman Correlation Coefficient Matrix is calculated for all the variables of the study and the results that show significant correlations are summarized in the following table.

Table 7.4: Spearman Correlation.

	Annual Sales	Number of Products	HR Development plan	Computerization and Accounting Software coded	ISO acquisition coded	Weight of Management Accounting Practices	Ownership type	Productivity	Practices Categories
Number of Employees		.623** (.003)	.861** (.000)	-.610** (.004)	.763** (.000)	-.624** (.003)	.598** (.005)	-.619** (.004)	-.579** (.008)
Number of Products			.758** (.000)	-.464* (.039)	.499* (.029)		.491* (.028)		
Number of Products coded			.862** (.000)	-.541* (.014)	.561* (.013)		.527* (.017)		-.491* (.028)
HR Development plan				-.588** (.006)	.714** (.001)	-.469* (.037)	.505* (.023)		-.500* (.025)
Computerization and Accounting Software coded					-.561* (.013)	.785** (.000)	-.819** (.000)	.736** (.000)	.806** (.000)
ISO acquisition coded						-.719** (.001)	.694** (.001)	-.603 (.006)	-.599 (.007)
Ownership Type						-.888** (.000)		-.787** (.000)	-.727** (.000)
Sales Growth				.591** (.006)				.472* (.036)	
Productivity	.570** (.009)						-.787 (.000)		.706** (.001)

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

The preceding table (4) summarizes the relationships found between variables of the study, either both independent or both dependent or dependent and independent variables. Those relationships can be enlightened and explained as follows:

- There is a positive, significant, strong relationship between the employees' headcount and the number of products the firm produces. Therefore, the more products the firm is producing the more employees it hires.
- A positive, significant, strong relationship exists between the number of employees and the emphasis of human resources' development in the firms' strategic planning. This relationship implies that the more the employees in the firm, the highly human resources development plans are emphasized in the firm's strategy. On the other hand, the smaller the number of employees; the less clearly defined the human resources development plans in the firms' strategy.
- A negative, significant, strong relationship exists between the firms' computerization and the number of employees they comprise. This relationship is explained in the sense that the more computerized the firm is; the less number of employees it needs. Moreover, since only state owned firms were partially computerized, while private investment and multinational firms were fully computerized, it can be concluded that state owned firms hire more employees than private investment and multinational firms.
- A positive, significant, strong relationship exists between the ISO certification acquisition date and the number of employees in the firm. The oldest the ISO in the firm, the larger the number of employees. This relationship leads to the conclusion that state owned firms have the largest number of employees since they are the oldest to acquire ISO certification.
- There is a negative, significant, strong relationship between the adoption of recent management accounting practices and the firms' number of employees. In other word, firms with the largest number of employees, adopt less recent management accounting practices than firms with smaller number of employees. It can be thus concluded that state owned firms are the least to adopt recent practices as compared to private investment and multinational firms, since they have the largest number of employees.

- There is a positive, significant, strong relationship between the firms' ownership type and the number of employees in the firm. According to the codes given to the variables, this relationship indicates that state owned firms are having the largest number of employees, while multinational firms are having the smallest number.
- A negative, significant, strong relationship exists between firms' productivity and the firms' number of employees. In other word, the smaller the number of employees the more productive the firm is. It can be thus concluded that multinational firms are more productive than private investment and state owned firms, since they have the smallest number of employees.
- Spearman correlation test conducted between the number of products the firm is producing and other variables included in the study, revealed only one strong, significant, positive relationship between the emphasis on human resources development plans in the firms' strategy and the number of products the firm produces, that is; the larger the number of products the firm produces the more emphasis it gives to the human resources development.
- Other significant, either positive or negative, relationships exist between the number of products the firm produces on one hand and the level of computerization of the firm's operations, the date of ISO certification acquisition, firm's ownership type and the category in which it falls regarding the management accounting practices it adopts on the other hand. However, those relationships are not proved to be strong, so can not be considered in the analysis.
- A negative, significant, strong relationship exists between the emphasis on human resources development plans in the firms' strategy and the level of computerization of operation. This relationship is explained in the sense that the less computerized the firm is, the more emphasis it gives to its human resources development plans.
- A positive, significant, strong relationship exists between the emphasis on human resources development plans in the firms' strategy and the date of ISO certification acquisition, that is, the farer the date the firm acquired ISO certificate, the more emphasis it puts on human resources development. Therefore, it can be concluded that state-owned firms are more concerned with

human resources development plans than private investment firms and multinational firms. This conclusion is consistent with previously explained correlations between the state-owned firms; being the ones with the larger number of employees; and the emphasis on human resources development.

- Another positive, significant relationship exists between the emphasis on human resources development plans in the firms' strategy and the firms' ownership type. However, this relationship doesn't prove to be strong.
- A negative, significant relationship exists between the emphasis on human resources development plans in the firms' strategy and the management accounting practices adopted; whether traditional, moderate or recent; but again this relationship doesn't prove to be strong.
- There is a negative, significant, strong relationship between the level of computerization of the firms' operation and the date of ISO certificate acquisition, that is, the firms that acquired ISO certificate long ago, are those firms that are still partially computerized, while firms that acquired ISO certificate recently are fully computerized.
- There is a positive, highly significant, strong relationship between the level of computerization of the firms' operation and the management accounting practices it adopts. This relationship suggests that the fully computerized firms adopt more recent management accounting practices than the partially computerized firms that fall in the category of traditional practices.
- A negative, highly significant, strong relationship exists between the level of computerization of the firms' operation and the firms' ownership type; as state-owned firms, coded with '3' are partially computerized while multinational firms, coded with '1' are fully computerized.
- Another negative, highly significant, strong relationship exists between the level of computerization of the firms' operation and the firms' productivity. Therefore, it can be concluded that fully computerized firms are more productive than partially computerized ones.
- A positive, significant, strong relationship exists between the level of computerization of the firms' operation and the firms' sales growth rate over a six year period. In other word, fully computerized firms show higher sales growth rate than partially computerized firms.

- There is a negative, significant, strong relationship between the ISO certification acquisition and the management accounting practices adopted. This relationship implies that firms that recently acquired the ISO certification adopt more recent management accounting practices than firms that were first to acquire the ISO certification.
- A positive, significant, strong relationship exists between the ISO certification acquisition and the firms' ownership type, that is firms that were first to acquire the ISO certification are state-owned firms while firms that recently acquired it are multinational firms.
- A negative, significant, strong relationship exists between the ISO certification acquisition and the firms' productivity. Therefore, state-owned firms, which are first to acquire the ISO certification are less productive than multinational firms which acquired it recently.
- There is a negative, significant, strong relationship exists between the firms' ownership type and the management accounting practices they adopt. Since, multinational firms are coded '1', in addition, traditional management accounting practices are weighted with '1' against '5' for recent management accounting practices, therefore, it can be concluded that multinational firms adopt more recent management accounting firms than the other two firms' ownership type.
- Another negative, significant, strong relationship exists between the firms' ownership type and their productivity. In other word, multinational firms, coded with '1', are more productive than private investment firms and state-owned firms.
- A positive, significant relationship exists between the firms' productivity and the firms' sales growth rate over a six year period, but this relationship is not strong.
- Finally a positive, highly significant, strong relationship exists between the firms' productivity and the management accounting practices they adopt; firms adopting more recent management accounting practices are more productive than firms adopting less recent management accounting practices.

Previously discussed correlations are elaborated in the discussion chapter (9) along with the hypotheses testing results conducted in the next section, and the qualitative analysis results presented in the following chapter (8).

7.5 Hypotheses testing

This section is concerned with choosing and conducting the suitable statistical tests, using the SPSS package, with the reformulation of each sub-hypothesis, formulated earlier in chapter 6, in a testable form. The result of each test is acknowledged with a conclusion on whether the null hypothesis is to be rejected or cannot be rejected.

7.5.1 Firms characteristics

In this subsection the following hypothesis is tested:

H₁: There is a relationship between firms' characteristics and the management accounting practices adopted by the firm.

This hypothesis is broken down into 5 sub-hypotheses for testing purpose:

H_{1.1} The larger the firm size, the more recently developed management accounting practices it adopts.

H_{1.2} Firms with better human resources (HR) development plans are adopting more recently developed management accounting practices.

H_{1.3} Firms with higher computerization level adopt more recently developed management accounting practices.

H_{1.4} Firms with ISO certification adopt more recently developed management accounting practices.

H_{1.5} There is a relationship between the firms' ownership type and the adoption of more recently developed management accounting practices.

These sub-hypotheses are tested consecutively in the coming section:

H_{1.1} the larger the firm size, the more recently developed management accounting practices it adopts.

This hypothesis is testing the relationship between firms' size and the adoption of advanced management accounting practices. Size of the firm can be measured by

either annual sales figures, or employee headcount, or number of products produced. The three size measures will be tested for the purpose of this study.

1. Annual sales

For testing purpose, this hypothesis is formulated as follows:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

$$H_1: \mu_1 \neq \mu_2 \neq \mu_3$$

Where, μ_1 = average weight of sales less than 200 millions.

μ_2 = average weight of sales between 200 millions and 400 millions.

μ_3 = average weight of sales greater than 400 millions.

Two tests were conducted to test this relationship; Kruskal-Wallis Test and Median test. Where the weight of management accounting practices is the dependent variable and the weight of annual sales figure is the independent variable. Kruskal-Wallis test resulted³⁸ in an asymptotic significance equal to 0.170 (> 0.05) and the Median test resulted in an asymptotic significance equal to 0.067 (> 0.05) and this means we don't reject the null hypothesis H_0 . This states that the three sales figures categories are equal regarding adopting management accounting practices.

Therefore there is no significant difference in the adoption of management accounting practices between firms with average sales less than 200 millions and firms with average sales between 200 and 400 millions and firms with average sales greater than 400 millions. Consequently, the different level of sales doesn't affect the adoption of recently developed management accounting practices.

2. Number of employees:

For testing purpose, this hypothesis is formulated as follows:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

$$H_1: \mu_1 \neq \mu_2 \neq \mu_3$$

³⁸ Find detailed SPSS tests results in the appendices

Where, μ_1 = average weight of employees less than 800 employee.

μ_2 = average weight of employees between 800 and 1600 employee.

μ_3 = average weight of employees greater than 1600 employee.

Again Kruskal-Wallis test is conducted and resulted in a significance of .013 (< 0.05). Therefore H_0 is rejected. This means that the difference in employees' headcount between firms resulted in a difference in the management accounting practices they adopt.

To discover where the difference exists, the following tests are conducted. First, One Way ANOVA Test is conducted to test the homogeneity of variances in order to decide on the test to be used in Multiple Comparisons. To conduct the test H_0 and H_1 are formulated as follows:

$$H_0: \sigma_1^2 = \sigma_2^2 = \sigma_3^2$$

$$H_1: \sigma_1^2 \neq \sigma_2^2 \neq \sigma_3^2$$

Where, σ_1^2 = variance of employees that fall in the category of less than 800 employee.

σ_2^2 = variance of employees that fall in the category between 800 and 1600 employee.

σ_3^2 = variance of employees that fall in the category of greater than 1600 employee.

The One Way ANOVA Test resulted in a significance of .000 (<.05). This means reject H_0 as the variances are not equal. This leads to Tamhane Multiple Comparisons test. The test is conducted and only the first (less than 800) and the third (greater than 1600) resulted in a significant difference of .048 (<.05). It can be then concluded that there is a significant difference in management accounting practices adopted by firms with number of employees less than 800 employee and firms with number of employees greater than 1600.

3. Number of products

For testing purpose, this hypothesis is formulated as follows:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

$$H_1: \mu_1 \neq \mu_2 \neq \mu_3$$

Where, μ_1 = firms with product number less than 75.

μ_2 = firms with product number between 75 and 150.

μ_3 = firms with product number greater than 150.

Kruskal- Wallis test is conducted and it resulted in a significance of .148 (>.05). Also Median test resulted in a significance of .310 (>.05). Therefore, H0 is not rejected and this means that the size of firms measured by the number of products they produce does not affect the adoption of recently developed management accounting practices.

It can be then concluded that only the employees' headcount, as a representative of size, proved to affect the adoption of recent management accounting practices. The direction of the relationship and whether or not the sub-hypothesis is rejected are clarified later in the discussion chapter (chapter 9).

H_{1.2}: Firms with better human resources (HR) development plans are adopting more recently developed management accounting practices.

For testing purpose, this hypothesis is formulated as follows:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

$$H_1: \mu_1 \neq \mu_2 \neq \mu_3$$

Where, μ_1 = firms with not so clear strategic plan for HR development

μ_2 = firms with clearly stated strategic plan for HR development

μ_3 = firms with HR development highly emphasized in their strategic plan.

Kruskal-Wallis Test and the Median Test are conducted and they both resulted in a significance of (0.123) and (0.315) respectively, which is greater than (0.05), therefore we don't reject the null hypothesis H0. This means that there is no

significant difference in management accounting practices adopted between the three types of firms; firms with no clear strategic plan for HR development, firms with clearly stated strategic plan for HR development and firms HR development highly emphasized in their strategic plan. Therefore we can conclude that Human Resources development plans do not affect the firms' choice of adopting recent management accounting practices.

H_{1.3}: Firms with higher computerization level adopt more recently developed management accounting practices.

For testing purpose, this hypothesis is formulated as follows:

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \neq \mu_2$$

Where, μ_1 = firms partially computerized

μ_2 = firms totally computerized

To test this hypothesis Mann-Whitney Test is conducted and resulted in significance level of (0.000). This means reject the null hypothesis H_0 since significance is $< .05$. Therefore it can be concluded that there is a significant difference in the management accounting practices between firms totally computerized and firms partially computerized. This means that computerization of operation in firms affects the level of adoption of recently developed management accounting practices.

H_{1.4}: Firms with ISO certification adopt more recently developed management accounting practices.

This hypothesis is formulated as follows:

$$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6$$

$$H_1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6$$

Where, μ_1 = firms with no ISO certificate.

μ_2 = firms got ISO between year 2002-2004.

μ_3 = firms got ISO between year 1999-2001.

μ_4 = firms got ISO between year 1996-1998.

μ_5 = firms got ISO between year 1993-1995.

μ_6 = firms got ISO between year 1990-1992.

Kruskal-Wallis Test and Median Test are conducted and resulted in significance of .033 and .012 respectively. Therefore, we reject the null hypothesis H_0 since significance is $<.05$. This means that there is a significant difference in management accounting practices adopted by firms and the date they got the ISO certificate.

To discover where the difference exists the following tests are conducted.

First, One way ANOVA Test is conducted to test the homogeneity of variances in order to decide on the test to be used in Multiple Comparisons. To conduct the test H_0 and H_1 are formulated as follows:

$$H_0: \sigma_1^2 = \sigma_2^2 = \sigma_3^2 = \sigma_4^2 = \sigma_5^2 = \sigma_6^2$$

$$H_1: \sigma_1^2 \neq \sigma_2^2 \neq \sigma_3^2 \neq \sigma_4^2 \neq \sigma_5^2 \neq \sigma_6^2$$

Where, σ_1^2 = variance of firms that do not have ISO certification

σ_2^2 = variance of firms that acquired ISO certification between year 2002-2004.

σ_3^2 = variance of firms that acquired ISO certification between year 1999-2001.

σ_4^2 = variance of firms that acquired ISO certification between year 1996-1998.

σ_5^2 = variance of firms that acquired ISO certification between year 1993-1995.

σ_6^2 = variance of firms that acquired ISO certification between year 1990-1992.

A significance level of .000 is reached; therefore, H_0 is rejected; this means that the variances are not equal. As a result Tamhane Test for Multiple Comparisons is chosen to be used to discover where the difference between categories exists.

After conducting the test, significant differences are found between firms that got the ISO certificate between year 1990-1992, the oldest category, on one hand and firms that don't have ISO certificate (significance .001) and firms who got the ISO between year 1999-2001 (significance .002), on the other hand.

Also, significant differences are found between firms that got the ISO certificate between year 1996-1998 on one hand and firms that don't have ISO certificate (significance .056) and firms that got ISO certificate between year 2002-2004, the latest, (significance .041) on the other hand.

$H_{1.5}$: there is a relationship between the firms' ownership type and the adoption of more recently developed management accounting practices.

For testing purpose, this hypothesis is formulated as follows:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

$$H_1: \mu_1 \neq \mu_2 \neq \mu_3$$

Where, μ_1 = Multinational firms.

μ_2 = Private investment firms.

μ_3 = State-owned firms.

Kruskal-Wallis Test is conducted to test this hypothesis and resulted in a significance level of (0.001) which is less than (0.05). This means we reject the null hypothesis H_0 . Therefore, we can conclude that the ownership type affects the level of adoption of recent management accounting practices. Due to this significant difference, one way ANOVA Test is conducted to test the homogeneity of variances. To conduct the test H_0 and H_1 are formulated as follows:

$$H_0: \sigma_1^2 = \sigma_2^2 = \sigma_3^2$$

$$H_1: \sigma_1^2 \neq \sigma_2^2 \neq \sigma_3^2$$

Where, σ_1^2 = variance of multinational firms.

σ_2^2 = variance of private investment firms.

σ_3^2 = variance of state-owned firms.

The test resulted in a significance level of (0.000) which is less than (0.05). This means reject the null hypothesis H_0 as the variances are not equal. As a result Tamhane Multiple Comparisons Test is chosen to be used to find out where the difference exists. After the test is conducted, significant differences are found between the Multi-national firms and the State Owned firms; also the Private Investment firms and the State Owned firms (Significance of 0.008 and 0.02 respectively). No significant difference is found between the Multi-national firms and the privately owned firms.

7.5.2 Firms Performance

In this sub-section, the following hypothesis is tested:

H₂: There is a relationship between the adoption of advanced management accounting practices and the firms' performance.

This hypothesis is broken down into 2 sub-hypotheses for testing purpose:

H_{2.1} Firms adopting recently developed management accounting practices have higher average sales growth rate.

H_{2.2} Firms adopting recently developed management accounting practices have better employee productivity.

These sub-hypotheses are tested consecutively in the coming section:

H_{2.1}: Firms adopting advanced accounting practices have higher average sales growth rate.

For testing purpose, this hypothesis is formulated as follows:

$H_0: \mu_1 = \mu_2 = \mu_3$

$H_1: \mu_1 \neq \mu_2 \neq \mu_3$

Where, μ_1 = firms adopting traditional management accounting practices.

μ_2 = firms adopting moderate management accounting practices.

μ_3 = firms adopting recent management accounting practices.

Kruskal-Wallis Test is conducted with the average sales growth rate is the dependent variable and the weight of management accounting practices is the independent variable. The Test resulted in a significance level of 0.111 (> 0.05). This means we do not reject the null hypothesis H_0 . Therefore we conclude that there is no significant difference in average sales growth figures between firms adopting recently developed management accounting practices, firms adopting moderately developed management accounting practices and firms adopting traditional management accounting practices. So the adoption of recent management accounting practices does not affect the average sales growth rate of the firms.

H_{2.2}: Firms adopting advanced accounting practices have better employee productivity.

For testing purpose, this hypothesis is formulated as follows:

$H_0: \mu_1 = \mu_2 = \mu_3$

$H_1: \mu_1 \neq \mu_2 \neq \mu_3$

Where, μ_1 = firms adopting traditional management accounting practices.

μ_2 = firms adopting moderately developed management accounting practices.

μ_3 = firms adopting recently developed management accounting practices.

Kruskal-Wallis Test is conducted and resulted in a significance level of 0.008 ($< .05$). Therefore, we reject the null-hypothesis H_0 . This means that there is a significant difference in employee productivity between firms adopting low level of management accounting practices, firms adopting medium level of management accounting practices and firms adopting advanced level of management accounting practices. In order to know where this difference exists and between which firms category, a Multiple Comparisons Test is to be conducted. Before we decide on the test a One

Way ANOVA Test is conducted to test the homogeneity of variances. To conduct the test H₀ and H₁ are formulated as follows:

$$H_0: \sigma_1^2 = \sigma_2^2 = \sigma_3^2$$

$$H_1: \sigma_1^2 \neq \sigma_2^2 \neq \sigma_3^2$$

Where, σ_1^2 = variance of firms adopting traditional management accounting practices.

σ_2^2 = variance of firms adopting moderately developed management accounting practices.

σ_3^2 = variance of firms adopting recently developed management accounting practices.

The ANOVA Test resulted in a significant difference of 0.025 (< >05). Therefore, we reject the null-hypothesis, H₀ since the variances are not equal. As a result the Tamhane Multiple Comparisons Test is chosen to be the suitable test to find out where the difference exists. The test is thus conducted and it revealed that the difference exists between firms adopting recently developed management accounting practices and firms adopting traditional management accounting practices, with a significance of 0.001, with high employee productivity in firms adopting recent management accounting practices.

So it can be concluded that the adoption of recently developed management accounting practices improves employee efficiency and does not affect the annual sales growth rate. Further discussion and conclusions about the hypotheses testing and the correlation test is presented in chapter 9.

7.6. Limitations of Hypotheses Testing Study

Before moving to the qualitative analysis in the following chapter, and before interpreting the results of both statistical and qualitative analysis in chapter 9 (the discussion chapter), the researcher believes it is of great importance to stress the fact that all the findings of this statistical analysis are not the base for the conclusions drawn regarding the framework under study, rather they can just be treated as a source of some indications of possible relationships between research variables to inform the

qualitative analysis that is to be conducted in the following chapter, which is the main analytical tool in this study, and the base upon which the researcher will build his final conclusions. This statistical analysis limitation is mainly caused by the small sample size resulting from the small population size along with the subjective nature of the data collected through semi-structured interviews.

In addition to this main limitation, other limitations are mentioned below:

- This research investigates only some in-firm contingent factors to the adoption of recently developed management accounting practices that were found by the researcher, after reviewing the literature and conducting the pilot study, to be important to this study. Therefore other in-firm contingent factors as well as external contingent factors can be considered and tested.
- The effect of the adoption of recently developed management accounting practices on the firm performance is measured only by sales growth rate and employee efficiency, other measures of performance as suggested by the literature can be used and might give different results.
- Management accounting practices were classified into recent, moderate and traditional based on the suggestion of the focus group according to the time by which the practice or technique is introduced. This classification is limited to a specific period of time, and this categorization would for sure differ with time as what is recent at the present time will be considered moderate in an upcoming period.
- This study is constrained to the Egyptian pharmaceutical industry; contingent factors affecting the adoption of recent management accounting practices could differ in other industries in Egypt as well as in other developing countries.

Despite those limitations, the statistical analysis was able to shed the light on some possible relationships between the contingent variables and the management accounting practices as well as the effect that recent management accounting practices might have on improving the firms' performance.

7.7 Conclusion

This chapter was mainly concerned with the statistical and hypotheses testing of the data collected. To allow for the SPSS tests, the data collected through semi-structured interviews had to be summarized in a tabulate form then suitable codes had to be given to all variables relevant to the statistical tests, and weights, when necessary to allow statistical testing, had to be justified. Then, descriptive statistics were conducted along with the correlation coefficient test. Suitable statistical tests were afterward conducted to test the research hypotheses. Unreliable results are reached regarding the in-firm contingent factors to the adoption of recent management accounting practices and the effect of such recent practices on the overall firm performance, due to the main limitation of the statistical analysis conducted in this research as explained earlier in the chapter. Therefore, the results are to be evaluated in the light of the findings of the qualitative analysis that will follow.

The next chapter covers the qualitative analysis of the data collected to allow a more in-depth discussion of the research problem and allow the researcher to reach some conclusions regarding the variables under study, in the light of the statistical analysis findings, reached in this chapter. In addition the next chapter will also tackle the last point of interest in the research problem; that is concerned with the Egyptian economy's special effect on the pharmaceutical industry, as an example of a developing country and an economy in transition.

Chapter 8

Qualitative Analysis

8.1 Introduction

This chapter aims to enhance the findings of the statistical analysis and to provide a more in depth investigation of the research problem defined in Chapter 6. It is concerned with the qualitative presentation and analysis of the data collected through semi-structured interviews³⁹. A detailed transcription of all interviews conducted is performed to extract the main themes of the research. The data collected is classified into three general themes; the Egyptian Environment Implications theme, the Accounting Practices theme, and the Performance and Quality Issues theme. The chapter discusses each theme separately by breaking it down into three sub-sections: points of focus of each theme, comparative tabulation of the respondents' views regarding each theme's point of focus, and finally a set of concluded findings is presented.

8.2 Themes

Themes identification starts from the analysis of the main areas of investigation identified earlier by the researcher⁴⁰. Those include:

- Demography of the firms in consideration
- Special characteristics of the Egyptian economy as a model representing developing countries
- The pharmaceutical industry and the implications of the Egyptian environment on it
- Management accounting practices
- Quality assurance systems
- Performance measures

These areas were considered in the pilot study and accordingly the research hypotheses were finalized and the semi-structured interview was designed in a way

³⁹ Full sample description is presented in chapter 6, Methodology.

⁴⁰ See section 6.5 in chapter 6.

that ensures the collection of all needed information, such that all previously mentioned areas are covered.

Lately, at the transcription phase of the interviews, the researcher noticed that the multi-sectional data collected can be categorized into three main themes, in a way that can allow for the further qualitative analysis. This was found to be of more sense to the researcher and helped establish a better focus on the areas of interest that better address the problem of the study, thus, cover the major areas and facilitate grouping of the feedback generated from the interviewees in a form that can then be further investigated against the results obtained from the statistical analysis.

Based on the above, three themes are identified by the researcher:

1. Egyptian Environment Implications,
2. Accounting Practices, and
3. Performance and Quality Issues

The first theme serves the problem of the study by providing the required information relating to the impact of the Egyptian economy as a model of a developing country on the firms functioning in Egypt. While the second theme directly addresses the different accounting practices in use by pharmaceutical firms in an attempt to develop a better understanding of the firms' contingent factors to the adoption of such practices. Finally, the third theme addresses the two related areas of performance and quality and focuses on the effect of the adoption of accounting practices on the overall firm's success (performance).

The points of focus of each theme are detailed in the tables shown in the following sections where columns represent the type of firm (multinational, private investment, and state-owned). The rows of the tables represent the different firms in order of their rank within each of the three firm types. It is worth mentioning that there are 7 multinational firms, 7 private investment firms, and only 6 state-owned firms. Themes 1, 2, and 3 are detailed in tables 1, 2, and 3 respectively. Each table is presented in multiple parts where each part represents one focus point. That is, Table 1a is the table representing focus point 'a' of Theme 1 and so on. This will ease the presentation of the findings and allow for a closer and simpler inspection of the results

of the analysis and facilitates comparisons across the different firm for each focus point of each theme. Concluding remarks are presented after each table and final theme conclusions are presented at the end of each theme. A final set of collectively prepared results, summary, findings, and conclusions are presented at the end of the chapter. Final remarks include relations to main points of discussion that are dealt with in the Discussion chapter, Chapter 9.

It is important to mention here that the data summarized in the following table doesn't represent a direct answer from each respondent to the questions, but a summary or conclusions made by the researcher, after revising the interviews' transcriptions and extracting the answers to those points of focus.

8.2.1 Theme 1: Egyptian Environment Implications

Hopwood (1983) stated that Accounting and management models should be studied in the context and environment in which they are supposed to operate. Therefore, this theme is focusing on the Egyptian environment in which the firms of concern function. It focuses namely on the political, economical, social, and the state of competitiveness.

The importance of this theme stems from the fact that management accounting cannot be understood without reference to political, cultural and economic factors important in countries with less homogenous cultures, weaker capital markets and less effective bureaucracies and regulation (Hopper, 2000; Luther and Longden, 2001), like Egypt and most developing countries specially those with history with colonization. Moreover, Joshi (2001) studied the diffusion of new management accounting practices in Indian firms as compared to Australian firms, and most differences found in respect to adoption rates, benefits derived, and the focus for future emphasis was attributed to the differences in cultural values.

Belkaoui (1983,1985) and Hassabelnaby et al., (2003) argued that the political atmosphere in any country affects the management style in different organizations in this country, which in turn has significant influence on different accounting practices. They explained this by stating that the political environment affects accounting in an indirect way through its effect on the national culture and the economy. The form of

government, dictatorship or democracy, influences the national culture, which in turn influences the business and accounting environment.

Therefore, studying the effect of the Egyptian political, social, and economical environment on the adoption of recent practices was considered important and relevant to the study. The following questions were prepared by the researcher to sufficiently cover the subject of the first theme.

8.2.1.1 Theme 1: Points of Focus

- Q1-a Does the political environment have a special effect on functioning in Egypt?
- Q1-b What effect does fluctuating exchange rates have on the firm?
- Q1-c What social related issues, if any, might have contributed to the success of the pharmaceutical industry in Egypt?
- Q1-d With the high rate of unemployment in Egypt does the social responsibility of the firm result in over staffing, which may result in low efficiency?
- Q1-e Describe the competitive environment in which the firm operates and the extent of its effect on the firm's success.

8.2.1.1.1 The Political Environment

Table 8.1a: Does the political environment have a special effect on functioning in Egypt?

Co.	Multinational	Private Investment	State-Owned
1	Egypt compared to other Middle East countries is considered a stable political environment to function in.	The Egyptian government provides support to firms in the pharmaceutical production business, in the meanwhile places some tough limits on the operations.	Strict and limiting regulations imposed on all state owned firms by the holding company. Pricing is specially regulated as per the guidance of the Egyptian government.
2	The Egyptian political environment is stable compared to the ME, with a stronger national security system as compared to other African nations. But internal regulations limit some operational strategies like expansion, reporting, and pricing.	Functioning in Egypt has many challenges, political issues is not one of them.	Strict and limiting regulations imposed on all state owned firms by the holding company. Pricing is specially regulated as per the guidance of the Egyptian government.
3	The Egyptian political environment is stable compared to the ME, with a stronger national security system as	It has no effect; in fact the government provides a great support for the business, like tax cuts and	Strict and limiting regulations imposed on all state owned firms by the holding company. Pricing is specially regulated as per the

	compared to other African nations.	low interest loans.	guidance of the Egyptian government.
4	The Egyptian political environment is stable compared to the ME, with a stronger national security system as compared to other African nations.	Functioning in Egypt has many challenges, political issues is not one of them.	Strict and limiting regulations imposed on all state owned firms by the holding company. Pricing is specially regulated as per the guidance of the Egyptian government.
5	The Egyptian political environment is stable compared to the ME, with a stronger national security system as compared to other African nations.	Functioning in Egypt has many challenges, political issues is not one of them.	Strict and limiting regulations imposed on all state owned firms by the holding company. Pricing is specially regulated as per the guidance of the Egyptian government.
6	The Egyptian political environment is stable compared to the ME, with a stronger national security system as compared to other African nations. But internal regulations limit some operational strategies like expansion, reporting, and pricing.	It has no effect; in fact the government provides a great support for the business, like tax cuts and low interest loans.	Strict and limiting regulations imposed on all state owned firms by the holding company. Pricing is specially regulated as per the guidance of the Egyptian government.
7	Egypt compared to other Middle East countries is considered a stable political environment to function in.	The Egyptian government provides support to firms in the pharmaceutical production business, in the meanwhile places some tough limits on the operations.	

Q1-a: Does the political environment have a special effect on functioning in Egypt?

The information provided regarding the effect of the Egyptian political environment on companies' operations showed a clear variation in the perception of interviewees from different firms' types.

Multinational firms were more concerned about the external political affairs. All of the 7 multinational firms agreed on the relative stability of the Egyptian political environment, as compared to the Middle-East countries. 5 firms also mentioned something about the internal national security as compared to most African countries. Only 2 tackled the issue of restrictions imposed on their operations by some internal governmental regulations.

On the other hand, neither private investment firms nor state-owned ones mentioned anything in the interview about the external political environment but were more concerned about the internal governmental regulations as follows; 5 private

investment firms out of the 7 interviewed, do not consider the implications of the political environment on their operations and see that the political environment in Egypt doesn't represent a challenge for their firms, and 4 added that if it has any effect it would be a positive effect as the government provides great support to encourage private investments. Only 2 private investment firms mentioned the existence of some governmental regulations that limit to some extent their operations. While state-owned firms weren't concerned with governmental regulations but were more specific and discussed mainly the holding company's regulations and policies imposed on all the subsidiaries, which are sometimes supporting and some other times paralyzing the operations.

It is thus concluded that the political environment in Egypt does not represent the same degree of importance to all firms under investigation. Multi-National firms are more concerned with the political environment and stability of the country in which they want to establish a subsidiary. While private investment firms are more concerned with privileges provided by the government to support their operations, which would help them gain a competitive advantage. On the other hand, state-owned firms are obsessed by the holding company's policies, not the overall country's political environment or the Ministry of Health regulations.

8.2.1.1.2 The Fluctuating Exchange Rate

Table 8.1b: What effect does fluctuating exchange rates have on the firm?

Co.	Multinational	Private Investment	State-Owned
1	The Egyptian Pound has been falling lately, which has a negative effect on the cost of imported raw materials. This along with the lack of price flexibility, locally and internationally, the firm's profitability is affected negatively.	The costing system needs to be very wary of the changes as most raw materials are imported resulting in a fluctuating unit cost as the value of the Egyptian Pound changes against other foreign currencies.	It affects the profitability of the company greatly due to the pricing strategy imposed by the holding company.
2	The Egyptian Pound has been falling lately, which has a negative effect on the cost of imported raw materials. This along with the lack of price flexibility, locally and internationally, the firm's profitability is affected negatively.	The costing system needs to be very wary of the changes as most raw materials are imported resulting in a fluctuating unit cost as the value of the Egyptian Pound changes against other foreign currencies.	It affects the profitability of the company greatly due to the pricing strategy imposed by the holding company.

3	The Egyptian Pound has been falling lately, which has a negative effect on the cost of imported raw materials. This along with the lack of price flexibility, locally and internationally, the firm's profitability is affected negatively.	Profitability fluctuates a lot as the exchange rate fluctuates. Unfortunately, it has been in the unfavorable direction lately.	It affects the profitability of the company greatly due to the pricing strategy imposed by the holding company.
4	The lately continuous drop in the value of the Egyptian Pound had major effects on the firm's profitability.	The costing system needs to be very wary of the changes as most raw materials are imported resulting in a fluctuating unit cost as the value of the Egyptian Pound changes against other foreign currencies.	It affects the profitability of the company greatly due to the pricing strategy imposed by the holding company.
5	The costing system needs to be very wary of the changes as most raw materials are imported resulting in a fluctuating unit cost as the value of the Egyptian Pound changes against other foreign currencies.	The instability of the Egyptian Pound adds many challenges that threaten the continuation and success of the firm.	It affects the profitability of the company greatly due to the pricing strategy imposed by the holding company.
6	It affects greatly the profitability of the firm especially with the pricing regulations.	The dropping value of the Egyptian Pound continuously results in an increased unit cost.	It affects the profitability of the company greatly due to the pricing strategy imposed by the holding company.
7	It affects greatly the profitability of the firm especially with the pricing regulations.	Profitability fluctuates a lot as the exchange rate fluctuates. Unfortunately, it has been in the unfavorable direction lately.	

Q1-b: What effect does fluctuating exchange rates have on the firm?

The effect of fluctuating exchange rates was approved by all interviewees specially that the Egyptian pound value has been deteriorating with respect to the EURO and the US Dollar lately. It was stated clearly by 4 Multinational firms and 1 Private investment firm that the direct effect of the fall of the Egyptian pound value is on the cost of raw materials needed for production which happened to be almost all imported. This indirectly affects the firm's profitability due to the inflexibility in pharmaceutical products' prices as regulated by the Egyptian Ministry of Health. This means that the increase in production cost cannot be compensated by an increase in the selling price. 6 Multinational firms approved this indirect effect, 2 private investment firms, and all state-owned firms regarded this as the main effect of the falling value of the Egyptian pound. Another point of view was presented by 1

multinational firm and 3 private investment firms. This point of view suggests that the continuous fluctuation in the costs of raw materials, due to the Egyptian pound's fluctuations, calls for a sound costing system capable of coping with such fluctuations. Only one private investment firm considered the deterioration of the value of the Egyptian pound as a main threat to the going concern of the firm.

It is then concluded that the Egyptian pound's exchange rate does have both direct and indirect effects on the firms' operations, regardless of its type. And that the profitability of the firm will be definitely affected in a positive relationship with the Egyptian pound value. This is mainly due to the fact that most of the raw materials are imported.

8.2.1.1.3 Social Related Issues

Table 8.1c: What social related issues, if any, might have contributed to the success of the pharmaceutical industry in Egypt?

Co.	Multinational	Private Investment	State-Owned
1	Over populated areas, literacy, and diseases, contributes a lot to the success and needs of the pharmaceutical industry in Egypt.	Literacy and over population result in increased diseases that provide an opportunity for the pharmaceutical industry in Egypt.	Over population and literacy encourage the government to provide all support needed for the pharmaceutical industry.
2	Dense population and diseases increase the need for pharmaceutical products.	Increased diseases in Egypt call for a great need for pharmaceutical products which generates a great potential for the firm.	Poverty and high level of literacy along with over population result in increased diseases which forces the Egyptian government to support the pharmaceutical industry to provide the necessary medications.
3	Over populated areas, literacy, and diseases, contributes a lot to the success and needs of the pharmaceutical industry in Egypt.	The continuously increasing needs for pharmaceutical products in Egypt call for the existence of successful pharmaceutical firms.	Over population and literacy encourage the government to provide all support needed for the pharmaceutical industry.
4	Over populated areas, literacy, and diseases, contributes a lot to the success and needs of the pharmaceutical industry in Egypt.	Increased diseases in Egypt call for a great need for pharmaceutical products which generates a great potential for the firm.	Poverty and high level of literacy along with over population result in increased diseases which forces the Egyptian government to support the pharmaceutical industry to provide the necessary medications.
5	The continuously increasing needs for pharmaceutical products in Egypt call for the existence of successful	Increased diseases in Egypt call for a great need for pharmaceutical products which generates a great potential for	Poverty and high level of literacy along with over population result in increased diseases which forces the

	pharmaceutical firms.	the firm.	Egyptian government to support the pharmaceutical industry to provide the necessary medications.
6	Dense population and diseases increase the need for pharmaceutical products.	The continuously increasing needs for pharmaceutical products in Egypt call for the existence of successful pharmaceutical firms.	Over population and literacy encourage the government to provide all support needed for the pharmaceutical industry.
7	Dense population and diseases increase the need for pharmaceutical products.	Dense population and diseases increase the need for pharmaceutical products.	

Q1-c: What social related issues, if any, might have contributed to the success of the pharmaceutical industry in Egypt?

Talking about the social issues in the Egyptian environment that are considered major success factors to the pharmaceutical industry from different firms' point of views it has been found that 6 Multinational firms regarded the dense population as a main factor to the increased demand for this industry, 2 added literacy as another factor, 5 mentioned also the existence of diseases among them, only one put the increased diseases as a result of the other two mentioned factors. One of the multinational firms did not really specify factors but only mentioned that the social environment in Egypt creates a potential for pharmaceutical firms' success. In the same vein, 2 Private investment firms did not specify factors, while 5, mentioned diseases as the main factor for this industry's success in Egypt. 2 firms mentioned the dense population and 1 firm mentioned also the high literacy rate and clarified that this factor along with the dense population result into increased diseases and this for sure leads to the increased demand for the pharmaceutical industry. Another social factor, which is poverty, was added by 3 State-owned firms. The whole 6 State-owned firms mentioned dense population and high literacy rate, among them, 3 added increased diseases, and they all suggested that these four factors lead to the success of the pharmaceutical industry in Egypt due to the resulting pressure put on the government to provide all needed support for the industry.

It can be then concluded that the social environment in Egypt contributes to a great extent to the success of the pharmaceutical industry due to the dense population, high level of literacy and poverty which result in increased diseases. Those factors all

together increases, not only the need for pharmaceutical products but also the government support for the industry.

8.2.1.1.4 Unemployment, Social Responsibilities, Over Staffing, and Efficiency

Table 8.1d: With the high rate of unemployment in Egypt does the social responsibility of the firm result in over staffing, which may result in low efficiency?

Co.	Multinational	Private Investment	State-Owned
1	The mother company's policy controls recruitment needs and does not allow for over staffing.	Unemployment rates in Egypt result in low wages and salary rates that are put to the advantage of the firm. However, the firm's profitability and due to the highly competitive market, overstaffing and low efficiency cannot be allowed.	Yes, the government's responsibility towards unemployment, results in many overstaffing situations but this does not necessarily imply low efficiency.
2	The mother company's policy controls recruitment needs and does not allow for over staffing.	Unemployment rates in Egypt result in low wages and salary rates that are put to the advantage of the firm. However, the firm's profitability and due to the highly competitive market, overstaffing and low efficiency cannot be allowed.	Yes, the government's responsibility towards unemployment, results in many overstaffing situations and this results in low efficiency problems.
3	The mother company's policy controls recruitment needs and does not allow for over staffing.	Unemployment rates in Egypt result in low wages and salary rates that are put to the advantage of the firm. However, the firm's profitability and due to the highly competitive market, overstaffing and low efficiency cannot be allowed.	Yes, the government's responsibility towards unemployment, results in many overstaffing situations but this does not necessarily imply low efficiency.
4	The mother company's policy controls recruitment needs and does not allow for over staffing.	Unemployment rates in Egypt result in low wages and salary rates that are put to the advantage of the firm. However, the firm's profitability and due to the highly competitive market, overstaffing and low efficiency cannot be allowed.	Yes, the government's responsibility towards unemployment, results in many overstaffing situations and this sometimes results in low efficiency problems.
5	The mother company's policy controls recruitment needs and does not allow for over staffing.	Unemployment rates in Egypt result in low wages and salary rates that are put to the advantage of the firm. However, the firm's profitability and due to the highly competitive market, overstaffing and low efficiency	Yes, the government's responsibility towards unemployment, results in many overstaffing situations and this sometimes results in low efficiency problems.

		cannot be allowed.	
6	The mother company's policy controls recruitment needs and does not allow for over staffing.	Unemployment rates in Egypt result in low wages and salary rates that are put to the advantage of the firm. However, the firm's profitability and due to the highly competitive market, overstaffing and low efficiency cannot be allowed.	Yes, the government's responsibility towards unemployment, results in many overstaffing situations and this sometimes results in low efficiency problems.
7	The mother company's policy controls recruitment needs and does not allow for over staffing.	Unemployment rates in Egypt result in low wages and salary rates that are put to the advantage of the firm. However, the firm's profitability and due to the highly competitive market, overstaffing and low efficiency cannot be allowed.	

Q1-d: With the high rate of unemployment in Egypt does the social responsibility of the firm result in over staffing, which may result in low efficiency?

In this focus point, the researcher was interested in any over staffing problem that probably leads to decreased efficiency. Both, over staffing and low labor efficiency might be the results of the unemployment problem characterizing the Egyptian social environment. Increased levels of unemployment in Egypt have no effect on all multinational firms interviewed as they follow the recruitment policy of the mother company which wouldn't allow for any overstaffing consequences. While the Private investment firms tackled another point regarding unemployment situations, which from their opinion is considered an advantage due to the resulting low wage and salary rates. They also agreed that overstaffing and decreased efficiency cannot be allowed due to the severe competition in the pharmaceutical industry market. State-owned firms on the other hand, are the only firms suffering from overstaffing due to the government's social responsibility towards employment, but only 4 firms agreed that this will affect for sure the firms' efficiency and the other 2, although agreed that they suffer from overstaffing but they were not quite sure that this will consequently affect the firms' efficiency.

It can be then concluded, that although all interviewees agreed that there is an unemployment problem in Egypt. Only State-owned firms are directly affected by this problem due to government social responsibility which results in some overstaffing situations. And this most probably leads to decreased efficiency. While on the other

hand, Multinational firms follow the mother company's recruitment policy which doesn't allow for overstaffing and the private investment firms cannot allow overstaffing and inefficiency which may result in losing competitiveness.

8.2.1.1.5 The Competitive Environment

Table 8.1e: Describe the competitive environment in which the firm operates and the extent of its effect on the firm's success.

Co.	Multinational	Private Investment	State-Owned
1	The high competitive market is a result of the increasing rate of private establishments in the pharmaceutical industry which is supported by the government. But the brand name provides a competitive advantage.	The Egyptian highly competitive market calls for huge investments in marketing campaigns. This is especially when it comes to competing with the multinational tycoons of the industry.	The pharmaceutical industry in Egypt is a highly competitive market; however, the market sector that our firm serves is different than that provided by the multinational firms or newly privately owned companies. This is due to the less expensive products we produce.
2	The high competitive market is a result of the increasing rate of private establishments in the pharmaceutical industry which is supported by the government. But the brand name provides a competitive advantage.	The Egyptian highly competitive market calls for huge investments in marketing campaigns. This is especially when it comes to competing with the multinational tycoons of the industry.	The pharmaceutical industry in Egypt is a highly competitive market; however, the market sector that our firm serves is different than that provided by the multinational firms or newly privately owned companies. This is due to the less expensive products we produce.
3	The high competitive market is a result of the increasing rate of private establishments in the pharmaceutical industry which is supported by the government. But the brand name provides a competitive advantage.	The Egyptian highly competitive market calls for huge investments in marketing campaigns. This is especially when it comes to competing with the multinational tycoons of the industry.	The pharmaceutical industry in Egypt is a highly competitive market; however, the market sector that our firm serves is different than that provided by the multinational firms or newly privately owned companies. This is due to the less expensive products we produce.
4	The Egyptian pharmaceutical market is a highly competitive one. This results in having to increase the marketing budget adding extra cost to the delivery of our products. This however, is for most products of the company. Some products don't have substitutes and thus provide support and a competitive edge.	The highly competitive market in Egypt, generated by both the local and international manufacturers creates a survival challenge. A huge portion of the firm's expenses is allocated to promotional activities. The stronger financial capabilities of the multinationals and our limited resources give them a competitive advantage.	The pharmaceutical industry in Egypt is a highly competitive market; however, the market sector that our firm serves is different than that provided by the multinational firms or newly privately owned companies. This is due to the less expensive products we produce.

5	The Egyptian pharmaceutical market is a highly competitive one. This results in having to increase the marketing budget adding extra cost to the delivery of our products. This however, is for most products of the company. Some products don't have substitutes and thus provide support and a competitive edge.	The highly competitive market in Egypt, generated by both the local and international manufacturers creates a survival challenge. A huge portion of the firm's expenses is allocated to promotional activities. The stronger financial capabilities of the multinationals and our limited resources give them a competitive advantage.	The pharmaceutical industry in Egypt is a highly competitive market; however, the market sector that our firm serves is different than that provided by the multinational firms or newly privately owned companies. This is due to the less expensive products we produce.
6	The Egyptian pharmaceutical market is a highly competitive one, as a result, larger promotional and advertising expenses are required than other subsidiaries in other countries.	The highly competitive market in Egypt, generated by both the local and international manufacturers creates a survival challenge. A huge portion of the firm's expenses is allocated to promotional activities. The stronger financial capabilities of the multinationals and our limited resources give them a competitive advantage.	The pharmaceutical industry in Egypt is a highly competitive market; however, the market sector that our firm serves is different than that provided by the multinational firms or newly privately owned companies. This is due to the less expensive products we produce.
7	The Egyptian pharmaceutical market is a highly competitive one. This results in having to increase the marketing budget adding extra cost to the delivery of our products. This however, is for most products of the company. Some products don't have substitutes and thus provide support and a competitive edge.	The highly competitive market in Egypt, generated by both the local and international manufacturers creates a survival challenge. A huge portion of the firm's expenses is allocated to promotional activities. The stronger financial capabilities of the multinationals and our limited resources give them a competitive advantage.	

Q1-e: Describe the competitive environment in which the firm operates and the extent of its effect on the firm's success.

The environment in Egypt was described by all of the 20 interviewees as being a highly competitive one. 3 Multinational firms mentioned that the growing size of the private sector, supported by the Egyptian government, is the main reason of the increased competition. As a result of this severe competition, 4 Multinational firms and all Private investment firms had to increase their marketing budgets which is agreed upon to be harder for private investment firms as compared to the multinational firms that are supported by the mother company. 6 of the Multinational firms added that some products automatically gain a competitive advantage due to the lack of substitutes in the market. On the other hand, State-owned firms compete with

prices, as they provide relatively less expensive products as compared to the other two firm types.

It can be then concluded that the Egyptian pharmaceutical industry operates in a highly competitive environment, due to the existence of the tycoon multinational firms, and the lately growing size of the private sector. This increased competition resulted in huge budgets allocated to marketing activities. While state-owned firms' competitiveness depend more on their low priced products, therefore, serving a different market segment and thus they don't have to increase their marketing budgets.

8.2.1.2 Theme 1: General Conclusions

Regarding the Egyptian environment implications, it can be concluded from the previous tabulated analysis of the interviewees opinion that the Egyptian political and social environment, characterized by relative political stability and internal security, as compared to other middle-east and African countries, high dense population with high literacy rate and poverty, which consequently lead to the existence of different diseases, has contributed to great extent to the success of pharmaceutical industry and the growing size and number of multinational firms and private investment firms operating in Egypt. As a result the environment became severely competitive and huge budgets were devoted to marketing activities if not able to compete on price. But on the other hand the deteriorating value of the Egyptian pound against other currencies, which increased expenses on imported raw materials, along with the strict pricing policy imposed by the ministry of health on all firms, lead to a decrease in the firms' net profit achieved. Another implication of the Egyptian environment is the unemployment problem which negatively affects the state-owned firms by being forced sometimes to be overstaffed due to social responsibilities and this would of course lead to inefficiency as compared to other firms' types operating in the market. Which if not making advantage of the unemployment problem, like private investment firms which benefit from the resulting low labor rate, at least won't be negatively affected, such as multinational firms which don't consider themselves socially responsible and don't adjust their mother companies' recruitment policies to help in solving the unemployment problem.

It is then clear from the discussion that the Egyptian environment supports the growth of the pharmaceutical industry and is contributing to great extent to the continuous growth of the private sector and is also encouraging foreign multinational firms to invest in Egypt. In addition to the support it provides to state-owned firms which enabled them to compete with the other tycoons and show great success among other firms' types, since 6 state-owned firms are in the list of the top 20 manufacturing pharmaceutical firms operating in Egypt.

8.2.2 Theme 2: Accounting Practices

This theme analyzes the status of management accounting practices in the Egyptian pharmaceutical industry in terms of the extent of use of traditional systems, how the decisions are made to adopt a recently developed practice, and the extent of computerization and its benefits.

8.2.2.1 Theme 2: Points of Focus

- Q2-a Why are some traditional practices still in use?
- Q2-b What criteria are used in selecting newly developed practices?
- Q2-c Does the availability of financial resources affect the decision of adopting recently developed practices?
- Q2-d To what extent is the firm's accounting system computerized?
- Q2-e Would computerization affect your decision to adopt recently developed accounting practices?

8.2.2.1.1 Traditional Practices

Table 8.2a: Why are some traditional practices still in use?

Co.	Multinational	Private Investment	State-Owned
1	Certain traditional practices are useful for what they're used for and cannot be eliminated, like budgeting. Some traditional practices are needed to satisfy local regulations.	The use of traditional methods eliminates the need for unnecessary training expenses. In addition, some regulations of the Ministry of Health require the use of some of these techniques.	Personnel are familiar with the traditional techniques, resulting in ease of use and interpretation which minimizes mistakes and increases accuracy. On the other hand, the more recently developed practices require a long period of time for the personnel to be familiar with it.

2	Certain traditional practices are useful for what they're used for and cannot be eliminated, like budgeting. Some traditional practices are needed to satisfy local regulations.	The ease of use and interpretation of many traditional practices justify relying on them rather than the more recently developed ones. In addition, some governmental regulations require the use of traditional practices, like taxation and pricing.	Currently used traditional practices are well established and cannot be eliminated. In addition, it eases decision making and interpretation of results.
3	Certain traditional practices are useful for what they're used for and cannot be eliminated, like budgeting. Some traditional practices are needed to satisfy local regulations.	Some traditional techniques cannot be eliminated, like budgeting; however, some recent developments may be used in addition to it. In addition, some governmental regulations require the use of traditional practices, like taxation and pricing.	Ease of use and interpretation, in addition to saving training expenses required for the more advanced practices.
4	Personnel in the local market are well trained on the traditional practices, therefore, there's no need to introduce other more recent techniques, unless the traditional ones are found to be insufficient.	The ease of use and interpretation of many traditional practices justify relying on them rather than the more recently developed ones. In addition, some governmental regulations require the use of traditional practices, like taxation and pricing.	Personnel are familiar with the traditional techniques, resulting in ease of use and interpretation which minimizes mistakes and increases accuracy. On the other hand, the more recently developed practices require a long period of time for the personnel to be familiar with it.
5	Personnel in the local market are well trained on the traditional practices, therefore, there's no need to introduce other more recent techniques, unless the traditional ones are found to be insufficient.	The ease of use and interpretation of many traditional practices justify relying on them rather than the more recently developed ones. In addition, some governmental regulations require the use of traditional practices, like taxation and pricing.	Ease of use and interpretation, in addition to saving training expenses required for the more advanced practices. In addition, they comply with some regulations of the Ministry of Health.
6	Personnel in the local market are well trained on the traditional practices, therefore, there's no need to introduce other more recent techniques, unless the traditional ones are found to be insufficient.	Some traditional techniques cannot be eliminated, like budgeting; however, some recent developments may be used in addition to it. In addition, some governmental regulations require the use of traditional practices, like taxation and pricing.	Ease of use and interpretation, in addition to saving training expenses required for the more advanced practices.
7	Personnel in the local market are well trained on the traditional practices, therefore, there's no need to introduce other more recent techniques, unless the traditional ones are found to be insufficient.	The use of traditional methods eliminates the need for unnecessary training expenses. In addition, some regulations of the Ministry of Health require the use of some of these techniques.	

Q2-a: Why are some traditional practices still in use?

This point focuses on the traditional management accounting practices that were found to be still widely in use by all firms under investigation. 3 multinational firms mentioned the importance of some traditional practices that cannot be eliminated either because they can not be substituted by more recent practices or because they satisfy some local government regulations. While the other 4 multinationals were more concerned about the competency of local personnel to those traditional techniques, so unless found to be insufficient, changes are not recommended. private investment firms were all concerned about the ability of traditional practices to satisfy governmental regulations. While 2 firms also mentioned that relying on traditional practices results in saving personnel training expenses associated with the introduction of new practices. And another 2 private investment firms supported the view of multinational firms that some traditional practices are very useful that they cannot be eliminated or substituted. Finally, the ease of use and interpretation of such traditional practices that are well established in the firms was another reason for the sound use of traditional practices as explained by 3 private investment firms. This view was also supported by all of the 6 State-owned firms which explained that the ease of use and interpretation minimizes mistakes and increases accuracy in decisions made relying on information provided by such traditional practices. 3 State-owned firms also mentioned the savings in personnel training expenses associated with the introduction of new practices, the point that was also suggested by 2 private investment firms. One firm mentioned the importance of such traditional practices as it cannot be substituted for, and another firm mentioned that they satisfy local government regulations. 2 firms mentioned another interesting point which is the long period of time required for the personnel to get familiar with the application and use of new practices which adds to the importance of traditional practices.

It can be then concluded that traditional management accounting practices are still in use due to many reasons; first one is the difficulty of eliminating some of these practices because they have no recently developed substitutes and also because they satisfy some governmental regulations and requirements. This view was mainly supported by multinational firms and private investment firms. In addition to the familiarity of personnel to the use and the interpretation of results of traditional practices as compared to recently developed ones which would require huge

investment in personnel training before they are implemented. This view was totally supported by all state-owned firms and some of the multinationals and private investment firms. Besides, recent practices will not show any benefits in the short-term due to the long period of time needed for the personnel to get familiar with the new practice implementation and use, therefore traditional practices need to continue in existence until firms get familiar with the new ones.

8.2.2.1.2 Newly Developed Practices Selection Criteria

Table 8.2b: What criteria are used in selecting newly developed practices?

Co.	Multinational	Private Investment	State-Owned
1	Appropriateness to the needs of the firm, compatibility to the skill level of the personnel, and time needed for full implementation are among the most considered criteria.	Justified cost, required training, satisfying regulations, and implementation time.	Government regulations, the holding company's policy, justifiable cost, compatibility to personnel, and the amount of additional training requirements.
2	Appropriateness to the needs of the firm, compatibility to the skill level of the personnel, and time needed for full implementation are among the most considered criteria.	Justified cost, required training, satisfying regulations, implementation time, and contribution to success.	Government regulations, the holding company's policy, justifiable cost, compatibility to personnel, and the amount of additional training requirements.
3	Appropriateness to the needs of the firm, compatibility to the skill level of the personnel, and time needed for full implementation are among the most considered criteria.	Appropriateness to the needs of the firm, compatibility to the skill level of the personnel, and time needed for full implementation are among the most considered criteria.	Government regulations, the holding company's policy, justifiable cost, and the amount of additional training requirements.
4	Appropriateness to the needs of the firm, compatibility to the skill level of the personnel, and time needed for full implementation are among the most considered criteria.	Justified cost, required training, satisfying regulations, implementation time, and contribution to success.	Justified cost, required training, satisfying regulations, implementation time, and contribution to success.
5	Appropriateness to the needs of the firm, compatibility to the skill level of the personnel, and time needed for full implementation are among the most considered criteria.	Appropriateness to the needs of the firm, justified cost, required training, and contribution to success.	Government regulations, the holding company's policy, justifiable cost, and the amount of additional training requirements.

6	Contribution to success, justifiable cost, and time needed for full implementation are among the most considered criteria.	Justified cost, required training, satisfying regulations, implementation time, and contribution to success.	Government regulations, the holding company's policy, justifiable cost, and the amount of additional training requirements.
7	Contribution to success, justifiable cost, and compatibility to the skills of the personnel, are among the most considered criteria.	Justified cost, required training, satisfying regulations, implementation time, and contribution to success.	

Q2-b: What criteria are used in selecting newly developed practices?

Talking about the criteria used to select newly developed practices, the following points were collected; 6 out of the 7 multinational firms consider the compatibility of personnel to the new practice under evaluation and the time required until full implementation are among the most important criteria. 5 firms mentioned also the appropriateness of the practice to the firm's needs. Another two criteria were mentioned by only 2 of the multinational firms which are the expected contribution of the new practice implementation to the overall firm success, as well as the justification of the additional costs that need to be incurred to implement such new practices. While on the other hand, private investment firms were more concerned with time needed for full implementation, expected contribution of the new practice to the overall firm success, and justification of the additional costs incurred to implement a new practice. They also discussed 2 other criteria that weren't mentioned by the multinational firms, which are the required personnel training to use the new practice, and the degree of fit between the practice and the governmental regulations. All of the five criteria were mentioned by 5 private investment firms. 2 firms mentioned the appropriateness of the new practice to the firm needs and only one firm was also concerned with the compatibility of personnel to the new practice. State-owned firms didn't add new criteria to the list already mentioned by multinational and private investment firms but, they put different weights to each one. All of the 6 firms agreed on the justification of additional incurred cost and the fit between the practice and government regulations to be the most important criteria used in the choice of adopting a new practice. 5 firms mentioned the additional training needed to familiarize personnel with the use and implementation of the new practice. 2 mentioned the compatibility of personnel. 1 was also concerned with the required

time to complete full implementation and 1 regarded the expected contribution to the overall firm success as an important criterion.

It can be then concluded that the main criteria used in selecting the recent practice to be adopted are appropriateness to firm's needs, compatibility to personnel skills, time needed for full implementation, its expected contribution to the firm's success, justification of its implementation cost, required personnel training associated with its adoption and the degree to which it satisfies government regulations and requirements. But it is clear from the answers that different firms' types gave different weights to each criterion. For example, multinational firms were more concerned about the firms' needs and also the compatibility of personnel and didn't mention at all government regulations or training requirements and this reflects the doubt multinational firms have regarding the recruitment for their subsidiaries specially the ones established in a developing country. While private investment firms were concerned more of the time needed for full implementation, its expected contribution to the overall firm success, justification of its costs, personnel training requirements to implement and use the new practices, and the degree of fit with government regulations. This reflects the interest of any private firm in the maximization of profit and the avoidance of any unnecessary costs to ensure firms' success. Finally the State-owned firms were more concerned about the fit into government regulations and the required training for implementation and use, which clearly shows the consciousness of the state-owned firms towards regulations, and any increase in expenses as well. It is also worth mentioning that the two points mentioned: compatibility of personnel and required training are two sides of the same coin but from the point of view of multinationals they care about the existence of qualified personnel while the same point is reflected in the private investment and the state-owned firms' answers but from a materialistic point of view in which they are more concerned about required personnel training and of course the associated additional expenses.

8.2.2.1.3 Availability of Financial Resources

Table 8.2c: Does the availability of financial resources affect the decision of adopting recently developed practices?

Co.	Multinational	Private Investment	State-Owned
1	No, because all needed resources are provided by the mother company.	No, we are financially supported by the Industrial Modernization System (IMS)	No, the holding company provides all the necessary justifiable financial resources.
2	No, because all needed resources are provided by the mother company.	No, we are financially supported by the Industrial Modernization System (IMS)	No, the holding company provides all the necessary justifiable financial resources.
3	No, because all needed resources are provided by the mother company.	No, we are financially supported by the Industrial Modernization System (IMS)	No, the holding company provides all the necessary justifiable financial resources.
4	No, because all needed resources are provided by the mother company.	No, we are financially supported by the Industrial Modernization System (IMS)	No, the holding company provides all the necessary justifiable financial resources.
5	No, because all needed resources are provided by the mother company.	No, we are financially supported by the Industrial Modernization System (IMS)	No, the holding company provides all the necessary justifiable financial resources.
6	No, because all needed resources are provided by the mother company.	No, we are financially supported by the Industrial Modernization System (IMS)	No, the holding company provides all the necessary justifiable financial resources.
7	No, because all needed resources are provided by the mother company.	No, we are financially supported by the Industrial Modernization System (IMS)	

Q2-c: Does the availability of financial resources affect the decision of adopting recently developed practices?

Regarding the availability of financial resources and whether it affects a firm's decision to adopt a recently developed practice, it was unexpectedly found that financial resources do not represent an obstacle to any of the firms; rather, it was found that funds can be made available, but only subject to proper justification and approval by a higher authority depending on the firm's type. For all multinational firms, the mother company always provides the needed financial resources if its use is justified. While for private investment firms, the Industrial Modernization System (IMS) provides financial support to all privately owned firms. On the other hand, the holding company provides the needed financial resources to all its subsidiaries under the condition of accepting the submitted project by the subsidiary for implementation approval.

It can be then concluded that the availability of financial resources doesn't represent a constraint to or limit choices of the adoption of recently developed management accounting practices in firms of the 3 types.

8.2.2.1.4 Computerization

Table 8.2d: To what extent is the firm's accounting system computerized?

Co.	Multinational	Private Investment	State-Owned
1	It is fully automated and connected to the mother company, however, due to local governmental regulations; the manual system is run in parallel.	It is fully automated, however, due to local governmental regulations; the manual system is run in parallel.	Computerization of the system started recently, in a gradual progression following a program set by the holding company to be able to exercise control over all of its subsidiaries. The manual system will continue to be in use even after the computerization is fully implemented in the next 2 years.
2	It is fully automated and connected to the mother company, however, due to local governmental regulations; the manual system is run in parallel.	It is fully automated, however, due to local governmental regulations; the manual system is run in parallel.	Computerization of the system started recently, in a gradual progression following a program set by the holding company to be able to exercise control over all of its subsidiaries. The manual system will continue to be in use even after the computerization is fully implemented in the next 2 years.
3	It is fully automated and connected to the mother company, however, due to local governmental regulations; the manual system is run in parallel.	It is fully automated, however, due to local governmental regulations; the manual system is run in parallel.	Computerization of the system started recently, in a gradual progression following a program set by the holding company to be able to exercise control over all of its subsidiaries. The manual system will continue to be in use even after the computerization is fully implemented in the next 2 years.
4	It is fully automated and connected to the mother company, however, due to local governmental regulations; the manual system is run in parallel.	It is fully automated, however, due to local governmental regulations; the manual system is run in parallel.	Computerization of the system started recently, in a gradual progression following a program set by the holding company to be able to exercise control over all of its subsidiaries. The manual system will continue to be in use even after the computerization is fully implemented in the next 2 years.
5	It is fully automated and connected to the mother company, however, due to local governmental regulations; the manual system is run in parallel.	It is fully automated, however, due to local governmental regulations; the manual system is run in parallel.	Computerization of the system started recently, in a gradual progression following a program set by the holding company to be able to exercise control over all of its subsidiaries. The manual system will continue to be in use even after the computerization is fully implemented in the next 2 years.

6	It is fully automated and connected to the mother company, however, due to local governmental regulations; the manual system is run in parallel.	It is fully automated, however, due to local governmental regulations; the manual system is run in parallel.	Computerization of the system started recently, in a gradual progression following a program set by the holding company to be able to exercise control over all of its subsidiaries. The manual system will continue to be in use even after the computerization is fully implemented in the next 2 years.
7	It is fully automated and connected to the mother company, however, due to local governmental regulations; the manual system is run in parallel.	It is fully automated, however, due to local governmental regulations; the manual system is run in parallel.	

Q2-d: To what extent is the firm's accounting system computerized?

Regarding system computerization, multinational firms and private investment firms were all fully computerized but running a manual system in parallel as well since the manual system satisfies government requirements and regulations. As for the state-owned firms, they were all at the same level of gradually computerizing of the system as they all follow the same program imposed by the holding company to computerize all of its subsidiaries to be able to exercise more control over them. The system is expected to be fully computerized in two years time period. They also confirmed that the manual system is to be maintained in parallel even after full computerization as a backup system and again to satisfy some governmental regulations like taxation and pricing issues.

It's then concluded that all multinational and private investment firms are fully computerized but running a parallel manual system, while the state-owned firms are only partially computerized but expected to fully computerize their systems in 2 years. Running a parallel system is not optional because it is a requirement by the government for taxation, pricing, and other control concerns.

8.2.2.1.5 Computerization and the Adoption of Recently Developed Practices

Table 8.2e: Would computerization affect your decision to adopt recently developed accounting practices?

Co.	Multinational	Private Investment	State-Owned
1	Yes, it will ease the transition to the new selected practice. In addition, some practices are implemented through software packages; therefore, they cannot be implemented in the absence of a computerized system.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.
2	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.
3	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.
4	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.
5	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.

6	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.
7	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	Yes, because it eases the transition to the new selected practice, and is considered a pre-requisite for some practices that cannot be implemented in the absence of a computerized system, because they are implemented through software packages.	

Q2-e: Would computerization affect your decision to adopt recently developed accounting practices?

This focus point is concerned about whether computerization is an important factor to be considered in the decision to adopt a new management accounting practice. And for the first time all respondents, regardless of the type of firms they represent, agree on the same answer. As they all confirmed that yes, it is an important factor to be considered in taking the decision to apply a new practice, even more it can be considered a pre-requisite to the implementation and adoption of some recently developed management accounting practices specially the ones that are implemented through software packages. They also added that the existence of computerized systems, generally speaking, eases the transition to any new techniques.

8.2.2.2 Theme 2: General Conclusions

After the thorough analysis of theme 2, presented in the preceding section, the researcher can conclude that traditional management accounting practices are still heavily in use and don't have to be substituted by newly developed practices unless found to be insufficient to the firms' needs. This of course is mainly due to the associated expenses with the adoption of the new practices and the time needed for the personnel to get familiar to their use and interpretation, a problem that does not exist with the traditional ones. Also, computerization is a main criterion to be considered before considering switching to an advanced practice, which is found to ease the transition or even more, is considered a prerequisite to adopting recently

developed techniques specially the ones implemented through software packages. That's why all firms are fully computerized. State-owned firms realized also the importance of computerization and its role in facilitating the adoption of recently developed techniques; however, due to the lengthy process and regulations imposed by the holding company, they are still in the process of computerization which is expected to be completed in the near future. But computerization does not eliminate the need to run the manual system in parallel as a back up and at the same time to satisfy some governmental regulations and requirements. In addition to computerization, firms will go for the new practices, but only if it's justifiable. Namely, when a need necessitates the adoption of a newly developed technique, then it can be adopted if the new practice under consideration justifies the additional associated costs incurred, contributes to the overall firm success, and can find the personnel with the competency needed to use it without having to heavily invest in personnel training. Scarcity of financial resources is of course an important point to be considered before deciding any change, but it is not a main obstacle to firms under study as financial resources can be provided for all firm types under the condition that the need is justified as per the above mentioned criteria.

8.2.3 Theme 3: Performance and Quality Issues

This theme considers in the analysis quality related issues, specifically those related to the ISO certification and its impact on the firm. It also considers performance indicators and takes a close look at the different types of measures in use by the firms under study.

8.2.3.1 Theme 3: Points of Focus

- Q3-1 Other than the quality assurance measures imposed by the industry, have you applied for the ISO certificate? When? Why? (Why not)?
- Q3-2 Did the acquisition of the ISO certificate (or its equivalent) affect the choice of adopting recently developed accounting practices?
- Q3-3 Did adopting recently developed accounting practices enhance the firm's success?
- Q3-4 What is the most commonly used performance evaluation financial measures?

Q3-5 What is the most commonly used performance evaluation non-financial measures?

8.2.3.1.1 The ISO Certification

Table 8.3a: Other than the quality assurance measures imposed by the industry, have you applied for the ISO certificate? When? Why? (Why not)?

Co.	Multinational	Private Investment	State-Owned
1	Yes, 2000, to gain competitive advantage in the Egyptian market where it's greatly appreciated.	Yes, 1990, mainly to gain competitive advantage, but it also organized internal procedures greatly.	Yes, 1994, to gain a competitive advantage as recommended by the holding company.
2	Yes, 2004, to gain competitive advantage in the Egyptian market where it's greatly appreciated.	Yes, 2000, mainly to gain competitive advantage, but it also organized internal procedures greatly. In addition, it facilitates exporting.	Yes, 1997, to gain a competitive advantage as recommended by the holding company.
3	No, N/A, an equivalent system is followed by the mother company and therefore, is to be applied on all of its subsidiaries.	Yes, 1990, mainly to gain competitive advantage, but it also organized internal procedures greatly. In addition, it facilitates exporting.	Yes, 1996, to gain a competitive advantage as recommended by the holding company.
4	Yes, 2000, to gain competitive advantage in the Egyptian market where it's greatly appreciated.	Yes, 1994, mainly to gain competitive advantage, but it also organized internal procedures greatly. In addition, it facilitates exporting.	Yes, 1997, to gain a competitive advantage as recommended by the holding company.
5	No, N/A, an equivalent system is followed by the mother company and therefore, is to be applied on all of its subsidiaries.	Yes, 2003, mainly to gain competitive advantage, but it also organized internal procedures greatly.	Yes, 1998, to gain a competitive advantage as recommended by the holding company.
6	No, N/A, an equivalent system is followed by the mother company and therefore, is to be applied on all of its subsidiaries.	Yes, 2002, mainly to gain competitive advantage, but it also organized internal procedures greatly.	Yes, 1997, to gain a competitive advantage as recommended by the holding company.
7	No, N/A, an equivalent system is followed by the mother company and therefore, is to be applied on all of its subsidiaries.	Yes, 1996, mainly to gain competitive advantage, but it also organized internal procedures greatly.	

Q3-a: Other than the quality assurance measures imposed by the industry, have you applied for the ISO certificate? When? Why? (Why not)?

The first focus point is concerned with the ISO certification. Only 3 multinational firms have recently got the ISO certificate after year 2000. The main reason they thought of acquiring the ISO certificate is the competitive advantage it provides in the

Egyptian market, as it is highly appreciated by the society. While the rest of the multinational firms didn't acquire it as the mother company follows other equivalent quality systems and finds no need for the ISO. On the other hand, all private investment firms are ISO certified; 4 acquired the certification before year 2000 and 3 after 2000. All 7 firms agreed that the competitive advantage it provides in the Egyptian market is the main motive behind acquiring it, but they also added that it was found to be of great help in organizing the internal systems and operations of the firm. Only 3 Private investment firms mentioned the importance of being ISO certified in the exports activities, as it is sometimes required by the foreign customers to guarantee the quality of their products. While for the state-owned firms, all of them had acquired the ISO certificate before year 2000 and they all followed the instructions and recommendations of the holding company in order to achieve a competitive advantage as they mainly view ISO certification as a competitive weapon.

It can be then concluded that ISO certification is mainly an added competitive advantage from the point of view of both multinational and state-owned firms. Furthermore, private investment firms also appreciate its role in organizing the firms' internal systems and operations. State-owned firms were the first to acquire the ISO certification; this is mainly because state-owned firms are also the oldest established ones. While for the private investment firms, the 3 firms that acquired ISO certification after year 2000 are the more recently established ones.

8.2.3.1.2 ISO and the Adoption of Recently Developed Practices

Table 8.3b: Did the acquisition of the ISO certificate (or its equivalent) affect the choice of adopting recently developed accounting practices?

Co.	Multinational	Private Investment	State-Owned
1	Although it further assists in better organize the procedures, but it's not a major contributor to the decision.	Although it further assists in better organize the procedures, but it's not a major contributor to the decision.	It might have some effect on the choice due to the well organized procedures it results in, but it's not comparable to other more relevant factors.
2	It had no significant effect on the decision.	Depending on the situation and the accounting practice being considered, the importance of the ISO certificate may vary.	It might have some effect on the choice due to the well organized procedures it results in, but it's not comparable to other more relevant factors.

3	The specially organized procedures based on the quality assurance program followed facilitate greatly the adoption of newly developed practices.	Although it further assists in better organize the procedures, but it's not a major contributor to the decision.	It might have some effect on the choice due to the well organized procedures it results in, but it's not comparable to other more relevant factors.
4	Although it further assists in better organize the procedures, but it's not a major contributor to the decision.	Depending on the situation and the accounting practice being considered, the importance of the ISO certificate may vary.	It might have some effect on the choice due to the well organized procedures it results in, but it's not comparable to other more relevant factors.
5	The specially organized procedures based on the quality assurance program followed facilitate greatly the adoption of newly developed practices.	It facilitates the transition to a more recently developed practice.	Without the well organized set of procedures, adoption of different (more recently developed) practices may be impossible. Therefore, the ISO certification is a must.
6	The specially organized procedures based on the quality assurance program followed facilitate greatly the adoption of newly developed practices.	It provides some assistance to enhance and ease the choice and transition to different (more advanced) systems.	It might have some effect on the choice due to the well organized procedures it results in, but it's not comparable to other more relevant factors.
7	The specially organized procedures based on the quality assurance program followed facilitate greatly the adoption of newly developed practices.	It provides some assistance to enhance and ease the choice and transition to different (more advanced) systems.	

Q3-b: Did the acquisition of the ISO certificate (or its equivalent) affect the choice of adopting recently developed accounting practices?

3 out of the 7 multinational firms didn't see that acquiring the ISO certificate facilitates or contributes to the decision of adopting recent management accounting practices. And it is worth noting that those 3 firms are the 3 that already have the ISO certificate among the multinational firms. While the other 4, which have other equivalent systems, consider such quality assurance system as a major contributor to the organization of the firms' procedures and internal operations which in their opinion facilitates or can even be considered a pre-requisite to such adoption. All private investment firms didn't approve the role the acquisition of ISO certification may play in deciding to adopt new practices. 3 of them mentioned that it might facilitate and ease the transition to a more advanced practice, while 2 other firms stated that this will depend on the situation and the practice under evaluation for adoption but it is not to be taken in absolute terms. 5 out of the 6 state-owned firms clarified that the acquisition of ISO certification might have an effect on the choice of

adopting a more advanced practice but it has a minor importance as compared to more relevant factors. Only one state-owned firm considers it as an important factor to the decision of adopting new practices due to the well organized operation resulting from ISO, which facilitates any change.

It can be then concluded that the majority of firms regardless of their types, didn't see that the acquisition of the ISO certification as an effective criteria that reflects on the decision to adopt recently developed practices. Few, mainly multinational and state-owned, consider its effect on the organization of internal procedures which in turn facilitates the decision to adopt new practices.

8.2.3.1.3 The Adoption of Recent Practices and the Firm's Success

Table 8.3c: Did adopting recently developed accounting practices enhance the firm's success?

Co.	Multinational	Private Investment	State-Owned
1	New techniques should contribute to the firm's success, but no specific measure is used to clearly indicate such a relation.	New techniques should contribute to the firm's success, but no specific measure is used to clearly indicate such a relation.	Not necessarily, given the extra cost associated with the adoption of such recently developed techniques. However, it may have a positive impact on the long run.
2	Of course, but along with other contributing factors.	New techniques should contribute to the firm's success, but no specific measure is used to clearly indicate such a relation.	Not necessarily, given the extra cost associated with the adoption of such recently developed techniques. However, it may have a positive impact on the long run.
3	The effect cannot be isolated as the firm's success can be contributed to a result of many inter-relating factors.	New techniques should contribute to the firm's success, but no specific measure is used to clearly indicate such a relation.	Not necessarily, given the extra cost associated with the adoption of such recently developed techniques. However, it may have a positive impact on the long run.
4	Of course, but along with other contributing factors.	No clear answer was given since this relation was never measured in particular.	Not necessarily, given the extra cost associated with the adoption of such recently developed techniques. However, it may have a positive impact on the long run.

5	Of course, but along with other contributing factors.	No clear answer was given since this relation was never measured in particular.	Not necessarily, given the extra cost associated with the adoption of such recently developed techniques. However, it may have a positive impact on the long run.
6	Of course, but along with other contributing factors.	New techniques should contribute to the firm's success, but no specific measure is used to clearly indicate such a relation.	Not necessarily, given the extra cost associated with the adoption of such recently developed techniques. However, it may have a positive impact on the long run.
7	Of course, but along with other contributing factors.	No clear answer was given since this relation was never measured in particular.	

Q3-c: Did adopting recently developed accounting practices enhance the firm's success?

The main concern of this point is to understand to what extent the interviewees perceive a positive relationship between the adoption of newly developed accounting practices and the overall firm success. Three different opinions were provided by the three different firm types. That is, opinions were to a great extent similar within each firm type, multinational, private investment, and state-owned firms. For example; private investment firms all agreed that it should contribute to the overall firm success, but stated that this fact can't be confirmed as they have no specific measure to test this relationship or in other words: it hasn't been tested before. 1 multinational firm supported the private investment firms' opinion and the other remaining 6 added that such adoption does contribute to the overall firm success, but it is hard to isolate its effect or measure it in isolation, as firms' success is the result of many inter-relating factors. As for the state-owned firms, they all gave a different explanation to this relationship; they believe that it might have an effect on the firms' success in the long-run. That is, they see that in the short-time period, given the expenses associated with the adoption of new practices, the contribution of recently developed accounting practices to the firm's success might be questionable.

It can be then concluded that, from the point of view of the multinational and the private investment firms, adopting newly developed accounting practices can be one of a set of contributors to the overall firms' success. As for the state-owned firms, adopting recent practices would contribute to the firms' success in the long run.

8.2.3.1.4 Financial Measures

Table 8.3d: What is the most commonly used performance evaluation financial measures?

Co.	Multinational	Private Investment	State-Owned
1	Product profitability analysis, residual income, sales growth, and return on investment.	Divisional profit, return on investment, and sales growth.	Budget variance analysis, sales growth, and return on investment.
2	Sales growth, divisional profit, and return on investment.	Budget variance analysis, product profitability analysis, and sales growth.	Return on investment, budget variance analysis, and sales growth.
3	Divisional profit, sales growth, and return on investment.	Return on investment, and product profitability analysis.	Product profitability analysis and sales growth.
4	Budget variance analysis, operating income, and product profitability analysis.	Budget variance analysis, product profitability analysis, and sales growth.	Product profitability analysis and sales growth.
5	Sales growth, operating income, and product profitability analysis.	Budget variance analysis, divisional profit, and operating income.	Product profitability analysis and sales growth.
6	Divisional profit, sales growth, and return on investment.	Budget variance analysis, divisional profit, operating income, and sales growth.	Product profitability analysis and sales growth.
7	Operating income, sales growth, and return on investment.	Return on investment, product profitability analysis, and operating income.	

Q3-d: What is the most commonly used performance evaluation financial measures?

This focus point is concerned with financial performance evaluation measures commonly used by the firms under investigation in this study. The most commonly used measure is clearly “sales growth” as 16 out of the whole 20 firms use it as a performance evaluation measure, distributed as follows: 6 multinational firms, 4 private investment firms, and 6 state-owned firms. It is also the most commonly used within each firm category. 5 multinational firms rely also on return on investment (ROI). Other measures equally used by multinational firms are product profitability analysis and divisional profit and operating income. 3 firms out of the total 7 rely also on those measures. Residual income is used by only one multinational firm in the entire sample of 20 firms. Another measure mentioned by one multinational firm, but found to be also used by 4 private investment firms and 2 state-owned firms, is the budget variance analysis. Private investment firms also rely on product profitability analysis, then comes after the three already mentioned measures the ROI, the divisional profit and the operating income with the same usage level; 3 out of the seven private investment firms. As for state-owned firms, other than sales growth

used by all firms, product profitability analysis is also used by 4 firms, and then comes the ROI and the budget variance analysis with 2 firms using them as a performance evaluation financial measure.

It can be then concluded that the most commonly used measures by all firms in general, regardless of their type, are Sales Growth (16 firms in total), Product Profitability analysis (11 firms in total), and ROI (10 firms in total). The most uncommonly used measure is the Residual Income (1 firm), followed by both Divisional Profit and Operating Income (6 firms in total). As per each firm type, the most commonly used measures by multinational firms are Sales Growth and ROI. The most commonly used measures by private investment firms are Sales Growth, Product Profitability Analysis and Budget Variance Analysis, which are all equally used. As for state-owned firms, Sales Growth is the most commonly used measure. This of course reflects, as mentioned before, the importance of the annual sales' figures in this industry as well as the sales growth rate that also reflects the change in market share.

8.2.3.1.5 Non-Financial Measures

Table 8.3e: What is the most commonly used performance evaluation non-financial measures?

Co.	Multinational	Private Investment	State-Owned
1	Customer satisfaction, balanced score card, and on-going supplier evaluation.	Employee efficiency, customer satisfaction, and employee attitude.	Customer satisfaction, employee efficiency, employee attitude, and on-going supplier evaluation
2	Customer satisfaction, balanced score card, and on-going supplier evaluation.	Balanced scorecard, employee efficiency, and team performance	Customer satisfaction, employee attitude, and on-going supplier evaluation
3	Customer satisfaction, balanced score card, and on-going supplier evaluation.	Employee efficiency, customer satisfaction, and employee attitude.	Customer satisfaction, employee attitude, and on-going supplier evaluation
4	Customer satisfaction, team performance, balanced score card, and on-going supplier evaluation.	Employee efficiency, balanced scorecard, and team performance,	Customer satisfaction, employee attitude, and on-going supplier evaluation
5	Customer satisfaction, team performance, balanced scorecard, and on-going supplier evaluation.	Employee efficiency, balanced scorecard, and team performance,	Customer satisfaction, employee attitude, and on-going supplier evaluation
6	Customer satisfaction, balanced scorecard, and on-going supplier evaluation.	Employee efficiency, balanced scorecard, and team performance,	Customer satisfaction, employee attitude, and on-going supplier evaluation

7	Customer satisfaction, balanced scorecard, and on-going supplier evaluation.	Customer satisfaction, employee attitude, employee efficiency, and on-going supplier evaluation.
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Q3-e: What is the most commonly used performance evaluation non-financial measures?

Investigating the non-financial performance evaluation measures commonly used by the firms under investigation in this study, revealed the following; the most commonly used measure is the Customer Satisfaction (16 firms in total) followed by the On-Going Supplier Evaluation (14 firms in total) and the Balanced Scorecard (BSC) (11 firms in total). As per firm type; all multinational firms use Customer Satisfaction, BSC and On-Going Supplier Evaluation as non-financial performance evaluation measures, and only 2 firms mentioned Team Performance as another measure. For private investment firms, Employee Efficiency was the most commonly used measure by all of the 7 firms. 4 firms also use the BSC and Team Performance, 3 mentioned Customer Satisfaction and Employee Attitude, and only one firm uses On-Going Supplier Evaluation. While all state-owned firms use Customer Satisfaction and On-Going Supplier Evaluation, 4 also use Employee Attitude and 3 use Employee Efficiency. Neither BSC nor Team Performance is used by state-owned firms.

It can be then concluded that multinational firms as well as state-owned firms put more weight on their relationship with their third parties as both firms' types depend on Customer Satisfaction and On-Going Supplier Evaluation, while less emphases is placed on these measures by private investment firms that are more interested in Employee Efficiency. This reflects their awareness of the importance of efficiency and the harm inefficiency can cause to the overall performance of the firm. On the other hand, neither Employee Efficiency nor Employee Attitude is considered by multinational firms. This is most probably because employee's efficiency is more or less achieved by relying on their strict recruitment policies they are known to follow.

Also it is worth mentioning that all firms, regardless of their type, appreciated the importance of mixing financial with non-financial measures to evaluate performance.

8.2.3.2 Theme 3: General Conclusions

This theme was mainly designed to help the researcher find out the best performance measures that suits the pharmaceutical industry in Egypt from the interviewee's point of view, to support the performance measures selected in the statistical analysis part of this research, in a way that provides meaningful and interpretable results. Also the researcher was interested to know the effect quality issues and precisely the ISO certification might have on the decision to switch to new practices. Moreover, the researcher was interested in finding out if the adoption of recent management accounting practices would, from the interviewees' point of view affect the overall firm success. ISO certification was found to be mainly acquired to gain a competitive advantage, as it is highly appreciated in the Egyptian market, and not really perceived as a variable to be considered before deciding to switch to recent practices although considered as a facilitator to the implementation of any decided change due to the mentioned effect it has on the organization of the firms' internal procedures and operations. All firms, regardless of their type, appreciated the importance of mixing financial with non-financial measures for performance evaluation purposes. The most commonly used financial measures in the evaluation of performance by almost all firms are sales growth rate, product profitability analysis, and ROI. On the other hand the most commonly used non-financial performance evaluation measures among all firms' types are customer satisfaction, on-going supplier evaluation, and employee efficiency. In addition the effect of adopting recent practices on the overall firm performance has not been actually measured by firms although considered one of inter-related contributor to the overall firms' success.

8.3 Conclusions

This chapter thoroughly analyzed the data collected from the subscription of the in-depth, semi-structured interviews conducted by the researcher, in an attempt to better address the research problem. For the qualitative analysis purpose, the data was categorized into three themes; Egyptian Environment Implications, Accounting Practices, and Performance and Quality Issues. This categorizing helped a lot in obtaining meaningful and comparative results as shown in the different tables through the chapter. Moreover, this separate comparative tabulate presentation for each focus point of each theme, enabled the researcher to better analyze the data and easily reach

some meaningful conclusions, summarized after each table, in addition to general conclusions drawn from each theme. It is also expected that the categorization of the data collected according to the themes suggested in this chapter, will facilitate the comparison and discussion of this chapter findings along with the statistical analysis findings which will be conducted by the researcher in the following chapter.

The next chapter is devoted to discuss the findings of both the statistical and the qualitative analysis conducted in this study.

Chapter 9

Discussion

9.1 Introduction

The preceding two chapters covered both the statistical and qualitative analysis parts of this study. This chapter is devoted to discussing the findings of both analyses in an attempt to reach some conclusions regarding the research problem.

The first part of the chapter presents the results of statistical tests regarding each sub-hypothesis and whether it is supported or not, followed by the qualitative analysis findings regarding the same variable tested. Then, the researcher conclusion is presented, principally based on the qualitative analysis findings, which are sometimes supported by the statistical tests findings and sometimes not.

Moreover the qualitative analysis implications are discussed in details in another section, along with the researcher recommendations to the firms' functioning in Egypt.

9.2 Hypotheses Discussion

In this section the research hypotheses are analyzed based on the findings of the statistical tests conducted in chapter 7, along with the qualitative analysis outcomes, conducted in chapter 8, regarding the same issue, to enable the author to give a final opinion regarding the hypotheses. Each sub-hypothesis is presented followed by a reminder of the statistical analysis results, then comment based on the qualitative analysis is provided. Finally the researcher conclusion related to the hypothesis is offered.

9.2.1 Hypothesis 1

H₁: There is a relationship between firms' characteristics and the management accounting practices adopted by the firm.

This hypothesis is tested through the development of five sub-hypotheses; each of them will be discussed separately in the following section.

9.2.1.1 Sub-Hypothesis 1

H_{1.1} the larger the firm size, the more recently developed management accounting practices it adopts.

9.2.1.1.1 Statistical analysis findings:

This hypothesis was tested 3 times with size once represented by annual sales figures, the second time with the employees headcount and finally with the products' number.

After conducting the suitable tests, it was then found that neither annual sales figures nor the products' number would affect the decision of adopting recent management accounting practices. While employee's headcount was found to affect the management accounting practices adopted. A significant difference in management accounting practices adopted was reached through Tamhane Multiple comparisons⁴¹ test between firms with small number of employees (category 1: less than 800) and firms with large number of employees (category 3: greater than 1600).

It can be then concluded that only number of employees as a measurement of firms' size would affect the adoption of recent management accounting practices.

This finding was also supported by Spearman Correlation test conducted where only employee headcount was found to be significantly and negatively correlated to management accounting practices (- .624 ** significance of .003). This negative correlation means; the smallest the number of employees the more advanced management accounting practices the firms' adopt.

9.2.1.1.2 Qualitative analysis findings

Through the thorough themes' analysis conducted in the qualitative analysis chapter it was concluded that state-owned firms were the least in adopting recently developed practices and they were also among the largest firms in number of employees in addition to suffering from overstaffing problem, therefore, based on the qualitative analysis findings, it can be concluded that employees' headcount would affect the adoption of recently developed practices; the more the number of employees the less recently developed practices adopted. So it can be then concluded that there is a

⁴¹ SPSS calculations are shown in the appendices.

relationship between firms' size, as measured by the employees' headcount, and the adoption of recent management accounting practices.

9.2.1.1.3 Researcher conclusion

Spearman Correlation test's results; (- .624 ** significance of .003), entail that the smaller the employee headcount, the more recent management accounting practices adopted. Same findings are supported by the qualitative analysis results. This finding contradict with the first sub-hypothesis formulated, assuming the larger the size the more recent practices adopted. The findings proved the opposite when size is represented by the employees' headcount. On the other hand no relation was found at all when size is measured using annual sales figures or products number. Therefore, the first sub-hypothesis is not supported. But based on the qualitative analysis findings employees' headcount is considered a contingent factor to the adoption of recent management accounting practices, the better the control on the employees headcount the more adoption of recent practices. The contradiction between this conclusion and the literature calls for further investigation. There is considerable evidence from the literature, especially research conducted on developing countries, such as India and Sri Lanka, that adoption rates of recently-developed management accounting practices are much higher in larger firms (Drury and Tayles, 1994; Innes and Mitchell, 1995; Bjornenak, 1997; Child, 1973; Kapuge and Smith, 2007).

This relationship is explained by the suggestion that increased organizational size leads to an increased complexity of tasks; this will lead to extensive differentiation, as a consequence, to respond to increased difficulties of integration, more sophisticated integrative mechanisms are developed, including information systems, such as management accounting innovations (Lawrence and Lorsch, 1967; Galbraith, 1973; Blau et al., 1976). Also, large firms are supposed to relatively have access to resources to experiment with administrative innovations (Innes and Mitchell, 1995; Chenhall and Langfield-Smith, 1998).

9.2.1.2 Sub-Hypothesis 2

H_{1.2} Firms with better human resources (HR) development plans are adopting more recently developed management accounting practices.

9.2.1.2.1 Statistical analysis findings

After conducting the relevant test it was concluded that there is no relationship between the top management concern of HR development plans and the adoption of recent management accounting practices. Therefore, the sub-hypothesis is rejected.

While Spearman Correlation test showed a negative correlation between the two variables (- .469* significance of .037), which means that the highly emphasized human resources development plan in the firm strategy, the less recent management accounting practices adopted. But a value of .469 is not considered a strong correlation; therefore, the sub-hypothesis is rejected.

9.2.1.2.2 Qualitative analysis findings

The qualitative analysis revealed that the firms considered highly emphasizing the human resources development plans are the state owned firms; with the least rate of recent management accounting practices adopted. While at the mean time, it revealed another different but related factor, suggested by almost all participants to be of great importance to the adoption of recent management accounting practices is *personnel competency*, which relates also to another criterion which is the training expenses needed to familiarize personnel with the implementation and use of the new practice; mentioned by 6 multinational firms; 5 private investment firms, and the whole 7 state-owned firms. So compatibility of personnel was considered by almost all firms under study to be of great importance to the firm to be able to successfully implement recent management accounting practices. This conclusion is consistent with the findings of Kattan et al. (2007) in the case of Palestine, where the level of education of both the manager and employees of the accounting department was considered an influential factor to changes in management accounting practices in the last ten years.

9.2.1.2.3 Researcher conclusion

There is a clear contradiction between the statistical and the qualitative analysis findings, based on the statistical findings the sub-hypothesis is rejected, since Kruskal-Wallis, Median test and spearman correlation test resulted in no significant relationship between the two variables. But the researcher, following the qualitative analysis findings, suggests that this variable, *human resources development plan*, be

replaced by a more relevant variable to this study that is *personnel competency*, to be suggested as a contingent factor to the adoption of recent management accounting practices subject to further investigation.

9.2.1.3 Sub-Hypothesis 3

H_{1.3} Firms with higher computerization level adopt more recently developed management accounting practices.

9.2.1.3.1 Statistical analysis findings

After conducting the Mann-Whitney test, which resulted in a highly significant result, the null hypothesis was rejected and it can be then concluded that the firms fully computerized are adopting more recent management accounting practices than firms partially computerized. Accordingly the sub-hypothesis is not rejected.

This finding is also supported by Spearman Correlation test which resulted in a significant and strong positive correlation between the computerization of accounting systems and the adoption of recent practices (.785** significance of .001); the more computerization the more recent practices adopted.

9.2.1.3.2 Qualitative analysis findings

According to themes analysis it was assured by all firms that computerization of operation affects to great extent their decision to adopt recent developed practices, it was also mentioned that it can be considered a pre-requisite to the implementation and adoption of some recent developed practices. In addition, computerization, generally, eases any change or development. It is also worth mentioning that only state-owned firms are partially computerized, while multinational and private investment firms are fully computerized.

9.2.1.3.3 Researcher conclusion

This sub-hypothesis is therefore supported, and based on the qualitative analysis findings, which was also supported by the statistical analysis results; it can be then concluded that firms with fully computerized operation adopt more recently developed management accounting practices than partially computerized firms. in other words, *computerization of the accounting system* is considered a contingent

factor to the adoption of recent management accounting practices. This result is consistent with the work of Goonatilake, Jayawardene, and Munasinghe (1998), Granlund and Malmi (2002), and Hyvonen, Jarvinen, Pellinen (2006) and Kattan et al. (2007).

Moreover, since all multinational firms and private investment firms of the sample firms are fully computerized and only state-owned ones are still in process, it can be then concluded that multinational and private investment firms are adopting more recently developed management accounting practices than state-owned firms, and this is partially due to their fully computerized systems.

9.2.1.4 Sub-Hypothesis 4

H_{1.4} Firms with ISO certification adopt more recently developed management accounting practices.

9.2.1.4.1 Statistical analysis findings

The tests conducted revealed a significant difference in management accounting practices adopted by firms and the date they got the ISO certification. The difference mainly existed between the oldest to acquire ISO and firms who don't have ISO or which are relatively recent in getting ISO.

Also Spearman Correlation test resulted in a significant and strong negative correlation between the two variables (- .719** significance of .001). The negative correlation implies that, firms with no ISO certificate, coded with 1 and firms that recently acquired it are supposed to be adopting more recently developed management accounting practices than firms who acquired the ISO certification long-time ago. This way, the statistical tests proved the existence of a relationship between the ISO certification and the adoption of recent practices, but not in the direction assumed in the sub-hypothesis, that the acquisition of ISO reflects stability and maturity of accounting system, as well as management awareness of new techniques. Therefore it was expected that the firms with the oldest ISO acquisition date would be the most advanced in the adoption of new practices. But the results indicated the opposite. This way, the sub-hypothesis is rejected.

9.2.1.4.2 Qualitative analysis findings

This part of the analysis revealed that state-owned firms were the oldest to acquire ISO certification, being also the oldest established firms, and that the four firms that didn't acquire the ISO certification and not planning to, are multinational firms. On the other hand multinational firms were found applying more recent practices than state-owned firms. But basically, all firms, regardless of their type, didn't consider *acquisition of ISO certificate* as a contingent factor to the adoption of recent management accounting practices, and agreed that it can't be considered an important factor to be considered or acquired before adopting a new practice. Those findings contradict with the conclusion of Kattan et al. (2007) in the case of Palestine. They stated that the acquisition of ISO certification is one of the important factors that led to change in management accounting practices.

9.2.1.4.3 Researcher conclusion

Accordingly, it is concluded that this sub-hypothesis is to be rejected as the acquisition of ISO certificate although relates to the adoption of recent management accounting practices, does not enhance such adoption. But this relationship, reached from the statistical test, is to be ignored after the qualitative analysis findings. Therefore, it is then concluded that *ISO certification* cannot be considered a contingent factor to the adoption of recent management accounting practices in Egyptian pharmaceutical firms. As to the contradiction between this conclusion and that of the literature; Kattan et al. (2007); more studies are to be conducted with an application on other industries in Egypt to find out if this finding is due to the nature of the pharmaceutical industry, regulated with international quality standards; so the ISO certification is not that important. Or it is due to the Egyptian culture and can prove to be also true in other industries functioning in Egypt.

9.2.1.5 Sub-Hypothesis 5

H_{1.5} there is a relationship between the firms' ownership type and the adoption of more recently developed management accounting practices.

9.2.1.5.1 Statistical analysis findings

The suitable test conducted proved that there is a relationship between the firms' ownership type and the adoption of recent management accounting practices. Tamhane test revealed that the difference in the adoption level exists between multinational firms and private investment firms on one hand, and the state-owned firms on the other hand.

Spearman correlation test also resulted in a significant and strong negative correlation between the two variables (-.888** significance of .001) in a sense that multinational (coded with 1) and private investment firms (coded with 2) adopt more recent management accounting practices than state-owned firms (coded with 3). So it can be then concluded that there is a relationship between the ownership type and the adoption of recent management accounting practices, as a result the sub-hypothesis is not rejected.

9.2.1.5.2 Qualitative analysis findings

Themes analysis revealed that firms' type affects to great extent the comments on all the focus points. While regarding the criteria upon which firms decide to adopt recent management accounting practices it was clear from the answers that different firms' types gave different weights to each criterion. For example, multinational firms were more concerned about the firms' needs and also the compatibility of personnel and didn't mention at all government regulations or training requirements and this reflects the doubt multinational firms have regarding the recruitment for their subsidiaries specially the ones established in a developing country. While private investment firms were concerned more about the time needed for full implementation, its expected contribution to the overall firm success, justification of its costs, personnel training requirements to implement and use the new practices, and the degree of fit with government regulations. This reflects the interest of any private firm in the maximization of profit and the avoidance of any unnecessary costs to ensure firms' success. Finally the State-owned firms were more concerned about the fit into government regulations and the required training for implementation and use, which clearly shows the consciousness of the state-owned firms towards regulations, and any increase in expenses as well.

Also the themes analysis provided evidence that both multinational firms and private investment firms adopt more recent management accounting practices than state-owned firms; therefore, the statistical analysis results support the qualitative analysis findings.

9.2.1.5.3 Researcher conclusion

It can be then concluded that the sub-hypothesis is not rejected since there is evidence both statistically and qualitatively that the firm type affects the adoption of recent management accounting practices. Therefore, firms' ownership type is to be considered a contingent factor to the adoption of recent practices. However, the qualitative analysis revealed an effect the holding company's policy might have on all state owned firms, and this consequently affected the effect of state-owned firms on the overall analysis as they all shared common features and this, in the researcher opinion, might have biased the conclusions. This perceived effect calls for further investigation.

This factor was widely discussed in the literature (Purcell and Grey, 1986; Purcell, 1987; Fowler and Fowler, 1996; Biddle, 2005; McGuire, 2005; Connolly, 2006), and this research findings regarding ownership type is consistent with the previous findings in the literature; Walley et al. (1994), in their study to investigate reasons for the adoption or non-adoption of new accounting methods in small/medium-sized UK manufacturing enterprises, discovered that of the primary reasons is the ownership type that has great influence upon the design of management control and costing systems.

Also, in the study conducted by Ghosh and Chan (1997) to find out the state-of-the art of management accounting in Singapore companies, it was confirmed that multinational companies (MNCs) continued to enjoy an edge over local/regional companies in their management accounting practices.

In the same vein, Yazdifar and Tsamenyi (2005), contributed to the debate of management accounting change and the changing roles of management accountants by providing evidence from a sample of management accountants working in both dependent and independent organizations in the UK. It was earlier hypothesized that significant differences would exist in the perceptions between the two groups. Also,

Vamosi (2003) applied the institutional theory at Hungarian, previously government-owned and production-oriented transition company, but today privatized Hungarian Production Company.

Another study conducted by Wu, Boateng and Drury (2007) that analyzes the adoption, perceived benefits, and expected future emphasis of western management accounting practices in Chinese state owned enterprises (SOEs) and joint ventures (JVs), found that the level of adoption of management accounting practices is most influenced by ownership type of the enterprise (JV or SOE). For example, JVs, with a foreign partner, tend to adopt more Western management accounting practices compared to SOEs.

These previous findings provide evidence supporting the importance of the ownership type to the adoption of recent management accounting practices, and how the difference in ownership type, which consequently reflects different management styles, would result in differences in the management accounting practices adopted, in both developed and developing countries.

From the previous discussion, the researcher concludes that the first hypothesis is partially supported.

9.2.2 Hypothesis 2

H2: There is a relationship between the adoption of recent management accounting practices and the firms' performance.

Two sub-hypotheses are developed in order to measure the effect of adopting recent management accounting practices on the firms' performance. Discussion of each is presented in the following section.

9.2.2.1 Sub-Hypothesis 1

H_{2.1} Firms adopting recently developed management accounting practices have higher average sales growth rate.

9.2.2.1.1 Statistical analysis findings

Kruskal-Wallis test is conducted and resulted in a significance level of .111, which means not to reject the null hypothesis. In other words it is concluded that there is no significant difference in average sales growth figures between firms adopting recent, moderate or traditional management accounting practices.

Spearman Correlation test also didn't show any significant relationship between sales growth rates and the different categories of management accounting practices as classified into recent, moderate and traditional practices. Therefore, the sub-hypothesis is rejected.

9.2.2.1.2 Qualitative analysis findings

The qualitative analysis supported the use of sales growth rates as a good measure of performance of pharmaceutical firms, but couldn't provide evidence of relationship between the adoption of more recently developed practices and the increase in average sales growth rate. The participants explained that the effect of specifically the adoption of recent management accounting practices on sales growth rates has not been measured before, so it might be one of other factors affecting sales growth rates.

9.2.2.1.3 Researcher conclusion

It is then concluded that the sub-hypothesis is to be rejected. And based on the qualitative analysis findings which are supported by the statistical analysis results, no direct relationship exists between the adoption of recent management accounting practices and the improvement of firms' annual sales growth rates.

9.2.2.2 Sub-Hypothesis 2

H_{2.2} Firms adopting recently developed management accounting practices have better employee productivity.

9.2.2.2.1 Statistical analysis findings

Kruskal-Wallis test is conducted and resulted in a significance level of .008. Therefore, the null hypothesis is rejected, which means that there is a significant difference in employee productivity between the 3 firms' categories; adopting recent practices, adopting moderate practices and adopting traditional practices.

Spearman Correlation test resulted in a significant and strong positive correlation between the adoption of recently developed management accounting practices and employee's productivity equal to .706** with a significance of .001. This means that firms adopting more recent management accounting practices have higher employee productivity. Therefore, the sub-hypothesis is not rejected.

9.2.2.2.2 Qualitative analysis findings

The qualitative analysis revealed that multinational firms and private investment firms do not suffer any problem of overstaffing which might result in employee inefficiency, while state-owned firms are the only ones, due to social responsibility in facing unemployment problem characterizing developing countries in general and Egypt in specific that might be sometimes overstaffed. And they concluded that this would definitely affect their ability to operate efficiently. While neither multinational firms' mother company's policy, nor private investment firms, aiming at profit, would allow for employee inefficiency. On the other hand, state-owned firms were found from the themes analysis, to be the least adopters of recent developed practices.

9.2.2.2.3 Researcher conclusion

There is then evidence, both statistically and qualitatively, that a relationship exists between the adoption of recent management accounting and employees' productivity level (measured by the employee contribution to sales). This finding is consistent with what is suggested by Ghosh and Chan (1997) as they said: "one of the most important tools in improving the efficiency of a company's operation is to employ a management accounting system or concept."

From the previous discussion, it can be concluded that the second hypothesis is partially supported, since one of the two sub-hypotheses is not rejected. It can be then concluded that the adoption of recent management accounting practices might enhance the overall firms' performance as measured by employee productivity, as a measure of efficiency. On the other hand, the adoption of recent management accounting practices does not affect firms' growth rates. Those contradicting findings regarding the positive effect of the adoption of recent management accounting practices and the firms' performance, when different performance measures were used, call for more investigation of this relationship using other performance

measures; financial and non-financial. Summary of the hypotheses testing is provided in the following table:

Table 9.1: summary of the hypotheses testing

Hypothesis #	Hypothesis	Conclusion
H ₁	There is a relationship between firms' characteristics and the management accounting practices adopted by the firm.	Partially supported
H _{1.1}	The larger the firm size, the more recently developed management accounting practices it adopts	Not supported
H _{1.2}	Firms with better human resources development plans are adopting more recently developed management accounting practices	Not supported
H _{1.3}	Firms with higher computerization level adopt more recently developed management accounting practices	supported
H _{1.4}	Firms with ISO certification adopt more recently developed management accounting practices	Not supported
H _{1.5}	There is a relationship between the firms' ownership type and the adoption of more recently developed management accounting practices	supported
H ₂	There is a relationship between the adoption of recent management accounting practices and the firms' performance	Partially supported
H _{2.1}	Firms adopting recently developed management accounting practices have higher average sales growth rate	Not supported
H _{2.2}	Firms adopting recently developed management accounting practices have better employee productivity	supported

It can be then concluded at this stage of the study that both; employee headcount, and the ISO acquisition proved to be negatively related to the adoption of recent management accounting practices, computerization of operations, and the ownership type are contingent factors to the adoption of recent management accounting practices. However, HR development does not relate to this decision according to the statistical analysis. In addition, such adoption is expected to improve firms' performance and efficiency, as measured by employee productivity. But those findings have to be studied in the light of the qualitative analysis findings as the latter are the base for the researcher's conclusion.

9.3 Qualitative Analysis Discussion

This section deals with the additional findings and conclusions stemmed from the qualitative analysis conducted in chapter 8 that are found by the researcher important for the discussion, in the context of this study, and for better addressing the research problem, particularly the part not covered in the statistical testing; the Egyptian economy implications on the pharmaceutical industry, regarding the adoption of recently developed management accounting practices, as an example of a developing country entering the globalization era.

9.3.1 Qualitative Analysis Brief

To facilitate the investigation of the data collected, qualitatively, it was essential to classify the gathered data into general areas of focus, referred to as themes. As per the view of the researcher, assisted by the nature of the data and the areas of investigation defined in Chapter 8 that support the research problem, the themes defined are: Egyptian Environment Implications, Accounting Practices, and Performance and Quality Issues.

The first theme, Egyptian Environmental Implications, focuses on the effects of the Egyptian environment on the performance of the pharmaceutical industry in Egypt. This includes the effect of the external and internal political environment, the economical environment, and the social environment, on the potential growth, continuation, and success of the pharmaceutical industry in Egypt.

The second theme, Accounting Practices, focuses on the different practices in use by the different types of pharmaceutical firms functioning in Egypt. This investigation was geared towards the recognition of the most commonly applied traditional and newly developed practices, along with the criteria used by different firms to guide the adoption decision. This was further supported by investigating the level of computerization and its effect on this decision.

The third theme, Performance and Quality Issues, focuses on the quality related issues, namely, ISO certification and its role in supporting the decision to adopt newly developed practices and the effect of such practices on the overall firm's performance.

It also investigates performance measures most commonly used by the pharmaceutical industry in Egypt.

Main findings of the three analyses are explained in details in chapter 8; this section is only concerned with the researcher's concluded findings in relation to the research problem on one hand and the previous literature in the area on the other hand.

9.3.2 Theme 1 Discussion

The Egyptian political environment, characterized by relative stability and internal security, as compared to other middle-east and African countries does not represent a threat to foreign investors. This resulted in encouraging multinational firms to choose Egypt as a base for their subsidiaries in the Middle East as well as encouraging private investments.

The social environment, characterized by dense population with high literacy rate, poverty, and the spread of diseases, that is to great extent similar to most of developing countries, created opportunities for the success of pharmaceutical industry in specific. This is what made the pharmaceutical industry in Egypt an attractive and promising business to all business sectors; multinational firms, private investment firms, and state-owned firms.

Both political and social characteristics of the Egyptian economy resulted in a highly competitive market in which the pharmaceutical firms operates, which makes this industry, particularly, an appealing candidate to researches concerned with the adoption of recent management accounting practices in developing countries since competition could be a very important reason for a change as it is considered an important source of external pressure that calls for change and innovation in a firm's systems (see for e.g. Walley et al., 1994 and Baines and Langfield-Smith, 2003).

The general characteristics of adoption of new innovations are that their adoption does not require a dramatic change in the management accounting systems of manufacturing organizations. Or in other words, they do not need serious modifications in the management accounting systems to be implemented. Therefore, management accounting practices in Egypt which undergo a phase of transition must change to meet the challenges of external environment and cope with new reality and

everyday life; however, this change must be gradual rather than total especially in this transitional phase, which is considered a turbulent process phase.

Egypt, as a developing country, suffers from poor infrastructure components such as telecommunications, transportation, networks and unreliable power supplies (Herms EFG, 2003). Some advanced practices like ABC, ABB, or benchmarking practices are not feasible and practical under such conditions. Therefore, the adoption of some recent practices will be restricted on firms functioning in Egypt even if multinational. This result is consistent with the study of Peasuell (1993) who argue that implementation of JIT, or ABC will be difficult in developing countries due to the poor infrastructure.

The strict regulatory system, imposed by the Ministry of Health, which governs the pricing policies of the pharmaceutical industry in Egypt, protects the customers from increasing prices, as a result, limiting pricing flexibility which prevents pharmaceutical firms from reacting to the deteriorating value of the Egyptian pound against foreign currencies; by passing the increased cost of imported material to the customer via increased prices, which may result in limiting their generated profits. However, surprisingly, this strict regulatory system did not discourage firms from investing and expanding their operation in Egypt. Hence, the Egyptian economy's characteristics are more encouraging than discouraging.

Another challenge in the Egyptian environment is the high rate of unemployment that characterizes developing countries in general and Egypt in specific. Unemployment problem negatively affects the efficiency of state-owned firms, as compared to multinational and private investment firms, due to their social responsibilities that sometimes result in overstaffing problems and consequently reduced efficiency thus, creating an additional competitive challenge.

Finally, the researcher could argue that consideration should always be given to the political, economic, social, and cultural environments that surround organizations in Egypt especially in this transitional phase. Thus, adoption of recent practices must be gradual. In other words, firms should start with adopting practices that do not require dramatic change in management accounting systems then shift gradually to more complicated practices until all useful recent practices are adopted at the end.

9.3.3 Theme 2 Discussion

Traditional management accounting practices are still heavily in use and don't have to be substituted by newly developed practices unless found to be insufficient to the firms' needs. This finding is consistent with other studies conducted also on developing countries. For example the findings of Guilding, Lamminmaki and Drury (1998), in New Zealand regarding the popularity of standard costing systems and budgeting in advanced manufacturing technology environments. And it is also the case of India as studied by Joshi (2001); he concluded that the future emphasis in India is on traditional practices and less on the new techniques, because higher benefits were derived from such techniques. The same conclusion was reached by Sulaiman, Ahmad and Alwi (2004) (2005) when they examined the extent to which traditional and contemporary management accounting tools are being used in four Asian countries: Singapore, Malaysia, China and India. They concluded that the use of traditional accounting techniques remains strong and the basic principles of standard costing remain sound. Moreover, traditional management accounting was found alive and well in developed countries as well, in a study conducted by Abdel-Kader and Luther (2006) on the British food and drinks industry, and the study conducted by Chenhall and Langfield-Smith (1998) on Australian manufacturing firms.

Reasons for the continuing use of traditional management accounting practices in this study are to great extent similar to that found in studies in other developing countries, for example the study conducted by Tho et al. (1998). He suggested reasons as to why traditional management accounting practices are still widely used in developing countries: the lack of awareness of new techniques; the lack of expertise and the lack of top management support. Additional factors include the high cost associated with the implementation and the fact that there simply was "no reason to change" from the traditional technique to the new tool. For example Waweru et al., (2004) argue in their study about management accounting change in South Africa that in a developing country where the cost of information processing is still high, adoption of advanced and complicated practices, like, statistical methods for forecasting and operation research techniques might not meet the cost/benefit consideration. In addition they add that the adoption of ABC might not also meet the cost/benefit consideration in developing countries where the labor is still abundant and relatively cheap to be used

in allocation of overhead costs in those countries when compared to the developed ones. This result is also consistent with the study of Haldma and Laats (2002), that investigates the management accounting practices change in Estonia; and Vamosi (1999) who also investigates management accounting change in Hungary. They have found out that the change was done gradually.

In China, it is a different story, as argued by Lin and Yu (2002) in their study investigating the management accounting systems and practices in Han Dan Iron and Steel Company in China that the company adopts a series of advanced practices but after several adjustments to suit their business environment to be applied effectively. They provide a successful example for developing countries of how management accounting can play a positive role in improving business management and profitability.

Besides the gradual introduction of new management accounting practices, it is also found that the adoption of a new practice is contingent upon the justification of the additional associated costs incurred, the contribution to the overall firm success, and the existence of the competent personnel able to use it without having to heavily invest in personnel training. In the same vein, Rogers (1995) mentioned that adoption of accounting innovations is contingent upon the degree of benefit the innovation will bring to the organization; the consistency of the innovation with the adopters' existing values; the complexity of the innovation; the potential of the idea for being implemented on a trial basis, and the ease of observing the resulting benefits. This view was also confirmed by Malmi (1999) who assumed that most adoptions of new practices occur because of the benefits and efficiencies gained through implementation. In the same vein Walley et al (1994) identified seven determinants they consider to have significant influences on the adoption or non-adoption of modern costing systems; of which were Ownership and history, Managerial resistance, Satisfaction with existing systems, Availability of resources and Group encouragement.

Firms of different type gave different weights to the contingent factors to the adoption of recent management accounting practices that were mentioned during the interview, according to their different points of concern. For example multinational firms are mainly concerned with the competency of personnel, a point that reflects doubts about

their subsidiaries in developing countries. Private investment firms are focusing more on the importance of the time required for implementation and the cost associated with the adoption of recently developed practices because they are more profit oriented. On the other hand, state-owned firms are totally inclined towards the regulations imposed by the holding company so the most important contingent factor from their point of view is the extent to which the new practice will help satisfying the regulations if adopted, this is consistent with the view of Lapsley and Wright (2004) that the adoption of accounting innovations by public sector organizations is largely attributable to government influence.

They also suggested that the financial resources associated with the adoption of a new practice is another contingent factor to be considered although it is not a main obstacle to the sample firms regardless of their ownership type as explained in chapter 8; as each firm type can find a source of finance. .

Computerization is a main criterion to be considered before considering switching to an advanced practice, as it is found to ease the transition or even more, is considered a prerequisite to adopting recently developed techniques specially the ones implemented through software packages.

Although Egypt is classified as being a developing country, computerized accounting systems are in use in most pharmaceutical firms; the frequency conducted in chapter 7 showed a percent of 65% of the sample firm fully computerized with the rest partially and in the process of computerization. It can be then concluded that the pharmaceutical industry in Egypt is an advanced industry. This supports the view of Farouk (2005) that the pharmaceutical sector in Egypt is very successful and promising, she also proved that this sector is an advanced industry sector in Egypt regarding the adoption of recent management accounting practices. This leads to another conclusion that Egypt, as compared to other developing countries characterized with high literacy rate, is relatively advanced (see for e.g. Goonatilake et al., 1998)

9.3.4 Theme 3 Discussion

The Egyptian culture affects to great deal the decision to adopt ISO as it is highly perceived by the public as an added value. As a result, the acquisition of ISO certification is mainly triggered to improve competitiveness rather than enhance the quality of the firms' products.

Consequently, the ISO certification can not be considered a contingent factor to adoption of recent management accounting practices, according to the interviewees' point of view.

However, quality assurance programs in general and ISO certification in particular, enhance the firms' internal operations which facilitate the transition to recently developed practices.

Adopting recent management accounting practices along with many other factors, would positively affect the firm's overall success. However, the direct effect of adopting recent management accounting practices on the overall firms' success is not particularly measured by any of the firms. Thus, the qualitative analysis did not reveal any clear, direct effect of the adoption of recently developed management accounting practices on the overall firms' success.

Firms need to continuously and closely monitor their success. All firms are using a mixture of financial and non-financial measures. This is consistent with the view of Kaplan (1982) (1996), Waller (1988), Binersely (1996), Eccles and Pyburn (1992), Goulian and Mersereau (2000), Bunce et al. (1995) Amaratunga et al. (2001)

Sales growth is the most commonly used financial measure which further confirms that annual sales figures are the most important ranking factor for the pharmaceutical industry worldwide. Sledge (2007) assessed performance using five year averages of 2000-2004 sales growth rates when the author was comparing the performance of multinational corporations from developing and developed nations in the new millennium to consider the effect of globalization.

Customer satisfaction and employee efficiency are the most commonly used non-financial performance measures due to their direct effect on a firm's competitiveness, which is of great importance nowadays in the era of globalization. This is totally

consistent with the literature, for example Amaratunga et al. (2001) argued that companies that work in this dynamic environment are searching for ways to incorporate non financial-measures, such as quality management, customer retention, research and development, and innovation, into their regular performance measurement system in order to better adapt with the current turbulent environment. Bunce et al. (1995) pointed out that traditional management tools were devised for relatively stable environments dominated by producers. In the same vein, Eccles and Pyburn (1992) and Goulian and Mersereau (2000) stated that most financial measures have an internal rather than an external focus. It can be then concluded that financial measures alone are not enough as suggested by Kaplan and Norton (1996).

9.4 Concluded Remarks

Conceptually, this research was interested in the in-firm contingent factors to the adoption of recent management accounting practices in the Egyptian pharmaceutical firms, with emphasize on the Egyptian economy and culture effects and implications on the pharmaceutical industry. After conducting both statistical and qualitative analysis for the data collected via semi-structured interviews, findings indicate that:

Employees' headcount is negatively related to the adoption of recent management accounting practices however the annual sales figures and the number of products does not relate to the decision ($H_{1.1}$ rejected).

No significant relationship exists between the firms' emphasis to HR development plan and the decision to adopt recent management accounting practices according to the statistical test, ($H_{1.2}$ rejected). However, the qualitative analysis concluded that HR competency is an important contingent factor to this adoption. This contradiction calls for more investigation as suggested in the revised framework presented later in this chapter.

Computerization of operations and accounting system is an important contingent factor to the adoption of recent management accounting practices ($H_{1.3}$ not rejected).

The acquisition of ISO certification negatively relates to the adoption of recent management accounting practices, in the sense that oldest firms to acquire the ISO certification are the least adopter of recent practices, and firms with no ISO

certification are among the adopters of recent practices ($H_{1.4}$ rejected) but on the other hand, proved to be of minor importance in the adoption decision as concluded from the qualitative analysis.

Firms' ownership type is an in-firm contingent factor to the adoption of recent management accounting practices, especially multinational and private investment on one hand and state owned on the other hand where the former adopt more recent practices than the latter ($H_{1.5}$ not rejected).

The adoption of recent management accounting practices does not enhance the firms' annual sales growth rate ($H_{2.1}$ rejected).

The adoption of recent management accounting practices would enhance the firms' employees' productivity, thus, the firms' efficiency ($H_{2.2}$ not rejected).

The Egyptian political, social, and cultural environments contribute to the success of the pharmaceutical industry in Egypt. However, gradual adoption of recent practices is recommended as well as the adjustments of the new practices to be adopted to suit the business environment of Egypt, as suggested by the experience of Han Dan Iron and Steel Company in China in the study conducted by Lin and Yu (2002). In the same vein, Ax and Bjornenak (2005) focuses on the way the balanced scorecard concept has been communicated in Sweden. The empirical findings of the study show that the original balanced scorecard presented by Kaplan and Norton has been supplemented with other administrative innovations and adapted to the existing business culture to form a potentially more attractive set of elements.

Pharmaceutical industry is an advanced industry; firms adopting recently developed management accounting practices represent the majority of the sample; 65% while firms adopting traditional practices represent only 20%. In addition, firms are characterized with high computerization level for a developing country; 65% of the sample fully computerized and the rest partially computerized; no one firm was found maintaining only a manual system⁴².

⁴²See frequency test conducted in chapter 7; section (7.4.1), table 2

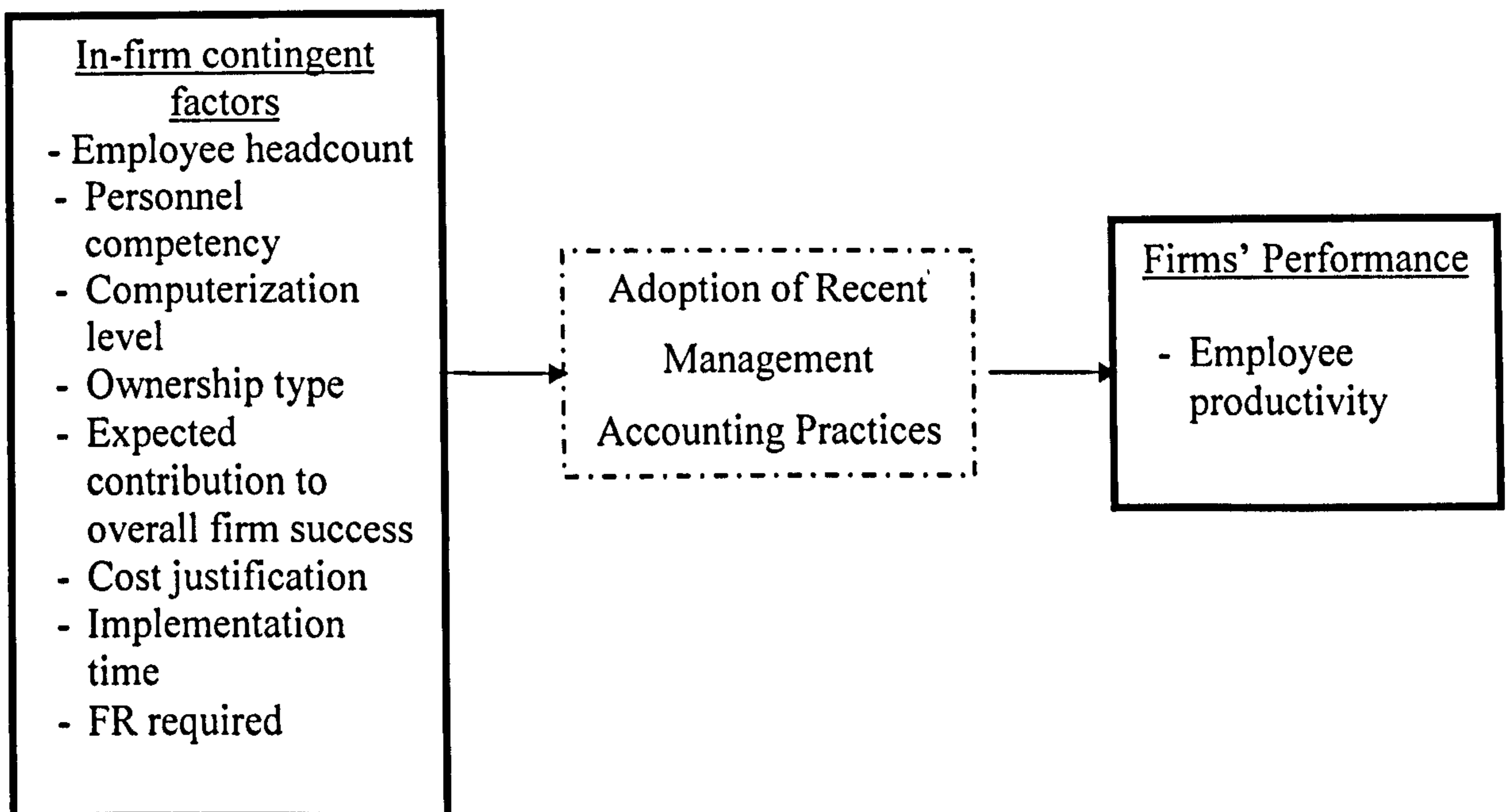
Some in-firm contingent factors to the adoption of recently developed management accounting practices were excluded from the framework based on the qualitative analysis findings suggestions, and some other factors are recommended to be considered contingent factors to the adoption of recent management accounting practices subject to further investigations. Those factors are: cost justification; expected contribution to overall firm success; competent personnel; implementation time; and financial resources (FR) required.

Finally, after presenting the study's concluded remarks, a revised framework is suggested based on the findings of the qualitative analysis supported in some cases by the statistical analysis results, both conducted through the research. The framework suggests seven in-firm contingent factors to the adoption of recent management accounting practices, and assumes that such adoption would enhance firms' performance as measured by the employees' productivity. This framework is presented in the following section.

9.5 Suggested Framework

This revised framework is the end result of the qualitative analysis conducted in this study. Some of the research variables were supported by the qualitative analysis findings as well as the statistical analysis to have an effect on the adoption or recent management accounting practices, those are; *employee headcount*, *computerization level of accounting systems* and *ownership type*. Some other variables were found to be important to the adoption of recent management accounting practices after the qualitative analysis and that weren't considered by the researcher as contingent factors relevant to the research problem, those variables are; *expected contribution to overall firm success*, *cost justification*, *implementation time* and *financial resources required availability*. On the other hand, one of the variables tested to be contingent to the adoption of recent management accounting practices, which is *human resources development plan*, were found to be irrelevant to the study, as concluded from the qualitative analysis, and was found to be better replaced by a more relevant factor as suggested by all participants that is; *personnel competency*. Therefore, *human resources development plan* was replaced by *personnel competency*. All those changes can be summarized in the following framework:

Figure 9.1: Revised Framework suggested by the study



9.6 Effect of ownership type

It has been mentioned earlier; in the preceding section; that ownership type has proved to be a contingent factor to the adoption of recent management accounting practices. However, it was remarkably noticed during the qualitative analysis that there is a special effect to *ownership type* in the Egyptian pharmaceutical firms. This conclusion can be made possible due to the fact that state-owned firms shared some common features and at the same time differed from the other two types of firms; namely; multinational firms and private investment firms. The common characteristics shared by the state owned firms are mainly caused by the effect of the holding company's policies on all of them. Some significant findings are expected to be reached if some tests are conducted within each type separately, especially regarding state-owned firms. This suggestion calls for further research to investigate the ownership effect in the Egyptian environment.

9.7 Conclusion

In this chapter, statistical analysis results are presented and explained, then a thorough discussion of the findings of both statistical and qualitative analyses is conducted, in an attempt to reach some remarks and conclusions regarding the research problem. Contingent factors that didn't prove to contribute to the decision of adopting recent management accounting practices by the Egyptian pharmaceutical firms are mentioned. In addition to the introduction of new contingent factors that are the output of the qualitative analysis.

Then, the effect of the special characteristics of the Egyptian environment on the pharmaceutical industry performance and success, and consequently on management accounting practices adopted and best ways of shifting to more advanced ones are tackled. Finally a suggested revised framework, based on the contingency theory approach, is developed.

The next chapter, the conclusion chapter, will cover mainly the contribution and the limitations of the study and present recommendations for academics through exploring many areas for future investigation. In addition, it will provide recommendations to the Egyptian pharmaceutical firms as to how to keep pace with developed countries innovations in the area of management accounting practices, and how to profit from the special characteristics of the Egyptian environment.

Chapter 10

Conclusion

10.1 Introduction

This chapter presents first, a summary of all findings of the research and how it addressed the researcher problem, with an identification of the main contribution achieved by the study. Second, it suggests several valuable recommendations regarding management accounting practices both on the organizational and the national level. Furthermore, theoretical recommendations concerning future areas of research and investigations for academics and researchers are discussed. Finally the research limitations are mentioned.

10.2 Summary and Concluded Findings

There is evidence over the past few decades that changes in an organization's external environment may lead to changes in an organization's management accounting system. Throughout the 1990s, the growing level of global competition intensified the challenges for managers who need to consider more effective ways of achieving competitive advantage and improving organizational performance. One mean of achieving this is through the adoption of clearly articulated strategies, flexible organizational structures and innovative management accounting systems.

The main aim of this research is to determine the in-firm contingent factors, to the adoption of recently developed management accounting practices in the Egyptian pharmaceutical firms and if the adoption of such practices has an effect on the overall firm performance, in an attempt to help them improve and enhance their performance and competitive ability, especially during this critical phase of transitional economy functioning in an era of globalization.

As a result, the study uses the contingency theory framework, as the theoretical framework for the study, as found suitable to discuss the main points of the interest in the research; accordingly a framework was designed for testing purpose. A relativistic; anti-positivistic (phenomenological); interpretivist methodology is followed to achieve this goal due to the main data collection method pursued in the study; semi-structured interviews. A pilot study was first conducted to help in

finalizing the suggested contingent factors, in the formulation of the hypotheses, and in the design of the interview guide. Then the data collected, through semi-structured in depth interviews, was analyzed both statistically, to test the hypotheses and examine the relationships between variables, as a way to determine the main in-firm factors upon which the adoption or non-adoption of recent management accounting practices is contingent, and, qualitatively to provide more in-depth investigation of the research problem. Finally a suggested revised framework is drawn.

Results of the two analyses are concluded and summarized in the following table:

Table 10.1: Concluded Results of the Research

Type of Study	Concluded Results
Statistical analysis	<ul style="list-style-type: none"> - There is no significant relationship between large organization size and the adoption of recent management accounting practices, and to the contrary the employees' headcount, as a measure of firms' size was found negatively related to the adoption of recent management accounting practices. In other word, the firms with smaller number of employees adopt more recent management accounting practices than larger firms. This finding is not consistent with the literature which suggests that the larger the size the more advanced the systems will be. Therefore the large firm size is not considered a contingent factor to the adoption of recent management accounting practices. - There is no significant relationship between the emphasis placed o HR development plans and the adoption of recent management accounting practices, therefore the HR development plan as a contingent factor is rejected. - There is a significant relationship between the computerization of firms' operations and the adoption of recent management accounting practices. Therefore, the computerization as a contingent factor is not rejected. This finding is consistent with the literature. - There is no significant relationship between the acquisition of ISO certification and the adoption of recent management accounting practices; to the contrary firms with no ISO certification were adopting more recent management accounting practices than the others with ISO certification. Therefore, the assumption that ISO certification would enhance the adoption of recent practices is rejected. - There is a significant relationship between the firms' ownership type and the adoption of recent management accounting practices. In other word, firms of different type would differ in the management accounting practices adopted. Therefore, the ownership type as a contingent factor is not rejected. This finding is consistent with the literature. - There is no significant relationship between the adoption of recent management accounting practices and the improvement in the firms' sales growth rates. - There is a significant relationship between the adoption of recent management accounting practices and the improvement of employees' productivity, and hence, the firms' efficiency. This finding is consistent with the literature.

Qualitative analysis	<ul style="list-style-type: none"> - Some in-firm contingent factors to the adoption of recently developed management accounting practices, other than those tested in the study, are recommended by the qualitative analysis, those factors are: cost justification; expected contribution to overall firm success; competent personnel; implementation time; and financial resources (FR) required. - Some in-firm contingent factors to the adoption of recently developed management accounting practices were excluded from the original framework of the study, those factors are: ISO certification and human resources development plan - Pharmaceutical industry in Egypt is relatively an advanced industry in addition to being relatively highly competitive. - The Egyptian political, social, and cultural environments contribute to the success of the pharmaceutical industry in Egypt. The Egyptian political environment, characterized by relative stability and internal security, as compared to other middle-east and African countries along with the social environment, characterized by dense population with high literacy rate, poverty, and the spread of diseases created opportunities for the success of pharmaceutical industry in specific. - Human resources competency and development is considered an important contingent factor to the adoption of recent practices, due to the alternative huge training expenses to familiarize personnel with the use of new techniques. This finding contradicts with the statistical analysis findings - Computerization of operations is a pre-requisite to the adoption of new practices because it eases the transition, facilitates change, and is a must in the case of practices with software packages' applications. This finding supports the statistical analysis finding. - Adopting recent management accounting practices along with many other factors, would positively affect the firm's overall success. However, the direct effect of adopting recent management accounting practices on the overall firms' success is not particularly measured by any of the firms. This finding is, to some extent, consistent with the statistical analysis findings. - Quality assurance programs in general and ISO certification in particular, enhance the firms' internal operations which facilitate the transition to recently developed practices. However, it is mainly triggered to improve competitiveness rather than enhance the quality of the firms' products. Consequently, it can not be considered a contingent factor to adoption of recent management accounting practices, which is consistent to the statistical analysis findings. - Importance of factors to be considered before adopting recent management accounting practices differed with different firms' types. Therefore the ownership type is also proved to be a contingent factor to the adoption of recent practices, as with the statistical analysis findings. - Gradual adoption of recent practices is recommended as well as the performance of needed adjustments to the new practices before adoption to suit each countries business environment.
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10.3 Research Contribution

The main motive for this research was the gap in management accounting practices literature in a developing country, namely Egypt. Management accounting practices and the contingency approach literature were mainly based in developed countries and carried out by western researchers. Kiggundu et al., (1983) stressed the importance of conducting research in developing countries, highlighting over 70 percent of the

world's population live in developing countries that face challenging problems. Developing countries are involved in development programs, such as privatization program in Egypt, which is a motive per se to investigate the effect these programs have on management practices. Younis (1996) stated that privatization of manufacturing and service companies has been one of the more obvious features of Middle Eastern economies in recent years, which needs a large foreign and domestic investment. Investors need information about management practices and performance of these privatized companies before investing their money. Younis (1996) also added that very few developing countries have conducted their own empirical studies on the performance of their own privatized and/or public companies. Therefore, Kiggundu et al., (1983) stated that what is going on in these countries is of great significance to the rest of the world, as the world becomes more interdependent and the business becomes more international. In the same vein, Shoib and Jones (2003) point out that further research is needed in the developing countries due to today's increasingly complex and interconnected world. They added that it would seem important to recognize diversity and promote learning both in and between developed and developing contexts. Gaburro and O' Boyle (2002) stated that recently it has witnessed the flourishing of economic globalization, which means the practice of economic agents working in different countries and serving the world market without any prevailing national barriers. In order for these agents to invest in other countries, especially the emerging ones, they need enough information about the opportunities for growth and profit.

Thus, there is a general awareness of the apparent gap between theory and practice. It has to be admitted that the number of studies focusing on developments in management accounting in the transition countries is limited, especially as regards studies that apply the contingency approach. Therefore it was suggested that studies in this part of the world need to be conducted and further research needs to be undertaken in these emerging and developing nations.

At a more general level, our findings may shed light on the development of management accounting in other developing societies presently undergoing rapid changes and sharing similar characteristics as the Egyptian society, those are mostly developing Arab countries in the Middle-East area. The study extends the empirical

literature on the contingent relationship between firms' internal factors and management accounting practices.

As Donaldson (2000) stated that the contingency theory of organizations holds that the organizational characteristics need to fit the level of the contingency variables of the organization for that organization to have high performance because misfit leads to lower organizational performance than fit. Therefore, the organization will need to make adaptive changes recurrently in order to regain fit each time it changes the level of one of its contingency variables. Consequently it is important to try to discover what are the main contingent factors affecting the adoption of recent management accounting practices so that any changes that occur in these identified factors (variables) is to be monitored in order to find out how such changes would reflect on the management accounting system of the firms.

This research, as a contingency-based piece of work, adds valid empirical evidence of the use of the contingency approach as a theoretical framework in management accounting studies. A thorough review of management accounting systems and contingency theory was undertaken. A study conducted by Hayes (1977), as mentioned in Reid and Smith (2000) represents a shift in the uses of the contingency theory; which earlier had the broader aim of explaining the organization itself, to a contingency theory of management accounting with the limited aim of explaining how particular circumstances shape the form of the management accounting system. He concluded that three contingent variables were the main determinants of the management accounting system. These were: sub-unit interdependence (e.g. R&D intensity); dynamism of environment (e.g. marketing intensity); and work method specification (e.g. production intensity). Then Reid and Smith (2000) suggested that the contemporary contingency theory of management accounting has the limited aim of explaining how particular circumstances (that is, contingencies) shape the form of the management accounting system. This thought differs from the earliest versions of contingency theory, which had the broader aims of explaining the form of the organization itself.

This research constitutes one of the first studies to provide evidence on the effect of the selected contingent variables on the adoption of recent management accounting practices in developing countries, in particular Egypt. After a thorough review of the

broad management accounting systems literature, along with thorough analyses of the focus group's outcomes, it was revealed that some variables are of paramount importance to the adoption of recent management accounting practices. The specific contingent factors selected in this study were firm size, emphasis on HR development plans, computerization of accounting systems, acquisition of ISO certification, and firms' ownership type.

This research utilizes the triangulation concept and provides further evidence that using both quantitative and qualitative methods in a single piece of research is complementary rather than rivalry.

It was concluded from the data collected and the qualitative analysis that pharmaceutical industry in Egypt achieved a big progress regarding the introduction of computerization, as compared to other developing countries, that have supported the adoption of recent management accounting practices. Moreover, percentage of firms adopting recent management accounting practices was found to be high (65%), which supports the finding of Farouk (2005), that pharmaceutical industry in Egypt is an advanced, promising industry; as such, the study contributes on two levels, namely, in application and in academic literature.

In application, this study enables Egyptian pharmaceutical firms to develop and evaluate their management accounting systems by identifying the factors they have to take into their consideration when deciding to adopt new practices, and evaluate the effect of such adoption on the firms' performance. In addition, this study enriches our understanding of current management accounting application in Egyptian pharmaceutical firms, which in turn, would be of interest to Egyptian and foreign, whether current and/or potential, investors who consider starting/managing their businesses in the Egyptian context. Thus, this study can be of significance to managers of pharmaceutical firms and Egyptian and foreign investors.

This study contributes to the literature of management accounting in that it helps researcher identify whether differences in management accounting practices between industrialized and developing countries have been decreasing over the past few years. Management accounting practices in the Egyptian pharmaceutical firms were found to be very similar to those in the manufacturing firms in industrialized countries, besides

the agreement between all managers on the importance of the mix between financial and non-financial performance evaluation measures. There used to be a claim that current management accounting practices are strongly framed and driven by factors at macro level, at which various and considerable global pressures of convergence are currently at work (Granlund and Lukka, 1998). There is also a considerable body of literature that stresses the particularities of management accounting practices within each country and the difficulties facing Anglo-American accounting practices with developing countries (Hove, 1989; Wallace, 1993; Longden et al., 2001). Thus this research contributes to this controversial issue of the conflict between the globalization and localization of management accounting practices. In this research, the state of management accounting practices in the pharmaceutical firms indicates a move towards globalization.

10.4 Empirical Recommendations

10.4.1 Recommendations at Organizational level

The study recommends top managers of the Egyptian pharmaceutical firms to identify precisely what they need from management accounting systems and practices. In other words, they must determine clearly the objectives and the role of management accounting before taking any relevant action. If they want relevant, timely, accurate information to improve performance within the new conditions of privatizing international business, and global competition, then, they must believe that traditional practices are no longer suitable or effective, alone, to achieve this goal and that the change to adopt advanced practices is an essential solution during this phase to survive and improve. Thus, managers must start take action and move towards the decision to change. To do so they have to focus on the contingent factors relevant to the Egyptian culture and environment, necessary to support and ease this change, in the aim of, at the end, improving the overall firms' performance.

This study suggests a number of factors that Egyptian pharmaceutical firms have to take into consideration to improve their management accounting systems. Special attention should be given to Employee headcount, personnel competency, computerization level, ownership type, expected contribution to overall firm success, and financial resources required.

In general, the research findings encourage Egyptian pharmaceutical firms to allow an adaptive management accounting system, which assumes that firms should adapt continuously in reaction to changes not only in the environment but also inside the firms. This could prevent these systems from becoming obsolete and dysfunctional as external or internal conditions change

10.4.2 Recommendations at National Level

Egyptian accounting standards must be developed in conformation with international accounting standards after taking the Egyptian environmental factors into consideration. The Egyptian professional firms like the Egyptian Society of Accountants and Auditing, and the Egyptian Institute of Accountants and Auditors must take the action and develop standards for both financial and management accounting that suit the local conditions and are also convenient to the new mentality of the new market economy approach. If some modifications of advanced practices are necessary and required to be adapted and adopted in Egyptian organizations, then professional firms must act.

Moreover, the necessities of providing training and establishing more professional organizations especially of management accountants that would provide availability to management accountants for updating their skills and increasing their ability of learning new and advance practices, as the absence of such services hinders the developments of management accounting systems resulting from either the lack of awareness or competency.

10.5 Research Limitations

While Luther and Longden (2001) suggested that the well-established contingency theory is concerned with the relationships between exogenous and firm-specific factors, which in turn influence competitive strategy, the intervening variable of organizational structure and, ultimately, performance, this study only concentrated on the firm-specific factors only, as exogenous factors were beyond the interest of this study.

Findings are only relevant in the Egyptian environment since Egypt is the context of the study. Study findings relates only to Egyptian pharmaceutical industry while other

sectors in Egypt were not considered. In addition to the small sample size, resulting from the small population size, that allowed only for the specific methodology followed in this study. Those factors all together limited results and findings generalization to the Egyptian pharmaceutical industry only.

The use of statistical analysis in this study was just to provide indication to some possible relationships between variables of the study that are mainly investigated under the qualitative analysis. The unreliability of the statistical analysis results from the small sample size, as mentioned before. Therefore conclusions reached are mainly based on the qualitative analysis.

This study provided empirical evidence on the contingent effect of each of the in-firm factors on the adoption of recent management accounting practices, while the all together effect was beyond the interest of this study.

These limitations would not lessen the importance and suitability of contingency approach as a well-established approach in studying management accounting systems.

In summary, it was important to link the theoretical framework, the research design, the data collection methods, the sample and the statistical analyses conducted in this research with previous management accounting practices literature to locate the significance of the current research in covering the gap in literature in developing countries. The research was an attempt to unveil the very complicated nature of the phenomena of new practices adoption in an emerging economy that is going through dramatic economical, social and political changes. Despite the noted limitations, this research contributes to our understanding of the links among firm size, management emphasis on human resources development, computerization, acquisition of ISO certification, and firm ownership type and the adoption of recent management accounting practices, along with the link of the latter to the overall firm success and performance improvement.

10.6 Future Research

The directions for future research are inspired by the study limitations in addition to the findings. These directions include:

Investigate the ownership effect, discussed in section 9.6, in the preceding chapter, to find out if the effect is due to the Egyptian environment generally, or to the pharmaceutical industry specifically.

Additional studies are needed concerned with other in-firm factors that might be relevant to the model.

Studies should be developed to consider both exogenous and firm-specific factors contingent effect on the adoption of management accounting practices.

The model tested in this study should be tested on other industries in Egypt and compare the findings.

Further studies are needed to investigate the relationship between size and the adoption of recent developed management accounting practices since the results contradicts with the literature suggestions. The study proves that the smaller the firm, regarding headcount, the more recent management accounting practices it adopts. More empirical studies focusing on other industries in Egypt or pharmaceutical industry in other developing countries is needed.

More studies are to be conducted to test the relationship between the HR development plan and the adoption of recently developed management accounting practices or any organizational innovations. Other techniques are to be used, other industries are to be investigated, and also other developing and developed countries, since evidence from the focus group and the themes analysis in the qualitative part of the study suggested a contingent relationship would exist.

Regarding the ISO certification, more studies are to be conducted with an application on other industries in Egypt to find out if this finding is due to the nature of the pharmaceutical industry, regulated with international quality standards; so the ISO certification is not that important, or this is due to the Egyptian culture.

The findings regarding the second hypothesis suggest that more research should be conducted in this area using different performance measures or applying the same measures on different industries. It is important to prove if the adoption of recent management accounting practices would improve firms performance as this would

encourage the decision to change and support new management accounting innovations.

Comparative study conducted on other industries in Egypt or in the same industry in other developing countries focusing on the contingent relationship between the use of software packages and computerization on one hand, and the adoption of recent management accounting practices on the other hand.

Comparative study conducted on other industries in Egypt or in the same industry in other developing countries focusing on the contingent relationship between the firms' ownership type and the adoption of recent management accounting practices.

Additional research is needed to test the effect of this study's contingent factors all together on the adoption of recent management accounting practices.

Additional research is needed to statistically test the validity of the suggested factors that resulted from the qualitative analysis part of this study on the Egyptian pharmaceutical firms.

Despite providing new insights, the current research has only scratched the surface of the complex phenomena which is the factors that may affect the adoption of advanced practices. More studies are needed testing more factors, different industries, using other data method collection techniques such as questionnaires, although it can be a daunting task, especially in Egypt.

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Appendices

Appendix 1: The Interview guide

Introduction

This is an investigation for a PhD research which I am currently preparing at Demontfort University, UK. The research is about the in-firm factors that affect the adoption of management accounting practices in pharmaceutical manufacturing firms in Egypt. In addition the study should try to explore the effect the adoption of such practices will have on the overall firms' performance.

Semi-structured interviews were conducted during an on site-visit with relevant personnel. This interview's guide was used as a basic guideline during the interview to make sure that all relevant topics are covered and to help the researcher conduct the interviews in a systematic and comprehensive fashion. Interviewing is supported by tape-recording, where possible, in order to capture much more than my memory.

I emphasized to the interviewees that the data collected via this interview is used for academic purposes only and would not be released, under any circumstances, for any other use or for any other parties. Therefore, confidentiality is guaranteed and secured.

At the end of each interview, I appreciated that there are many demands on interviewee's time, but stressed that the more complete responses I get, the better I will be able to draw a picture of these schemes. Finally, I asked the interviewee, if s/he has any queries; not to hesitate to contact me. In addition, I thanked him/her in advance for his/her concern.

Questions:

- Please, would you introduce yourself?
- Since when you are holding this post? Could you say more about your job description?
- Would you give some demographics about the firm?
 - Annual sales
 - Number of employees

- Number of products
- Would you please give some details about the nature of the pharmaceutical industry? What is so special about this industry from your experience and your point of view?
- Does the political environment have a special effect on functioning in Egypt?
- What effect does fluctuating exchange rates have on the firm?
- What social related issues might have contributed to the success of the pharmaceutical industry in Egypt from your point of view?
- With the high rate of unemployment in Egypt does the social responsibility of the firm result in over staffing? So you think this might affect firm's efficiency?
- Do you mean that unemployment problem in Egypt can in some way affect the firm's operating efficiency?
- Talking about the human resources, what kind of development plans are provided by the firm to personnel; at least in your financial department? Can you say more about that? Can you be more precise?
- Does competition affect your human resources development plans?
- Would you describe the competitive environment in which the firm operates and the extent of its effect on the firm's success?
- I would now like to move on to a different topic which is concerned with the management accounting practices in use in your firm?
- Are traditional management accounting practices still in use?
- Is this your opinion (the case in your firm) or it can be considered common to the whole industry?
- Why, from your point of view, traditional practices are still sound?
- Recent practices are also important; would mention the new practices recently adopted in your firm?
- How you chose the new practice to be adopted? (what are your criteria)
- Does the availability of financial resources affect your choice? Would you say more about that?

- Are some recently developed practices dependent on the computerization of the accounting system? What about your system; is it manual or computerized?
- Let us now move to another topic that relates to the quality assurance procedures common to the pharmaceutical industry, can you inform us about that?
- Did the firm acquire the ISO certification? Is it still needed with the existence of the quality measures imposed by the industry? Then why the firm acquired (would plan to acquire) the ISO certification?
- Do you think the acquisition of ISO certificate might affect the decision to adopt a recently developed management accounting practice?
- The last topic to be discussed relates to the performance evaluation measures used in your firm, do you evaluate firm performance based on financial or non-financial measures, or a mixed of both?
- Would you mention the most commonly used measures, both financial and non-financial?
- Finally, do you think that adopting recently developed management accounting practices have affected your overall firm performance (success)?

Appendix 2: SPSS Statistical Analysis Output

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HRDevelopment V12 V13 V14 V15 V16 V17 V18
/ORDER= ANALYSIS .

FREQUENCIES
VARIABLES=AnnualSales V4 NumberofEmployees V6 NumberofProducts V8 V9
HRDevelopment V12 V13 V14 V15 V16 V17 V18
/ORDER= ANALYSIS .

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Frequencies

Notes

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Statistics

	Annual Sales	weight of sales	Number of Employees	weight of employee	Number of Products	weight of products	ownership type	HR Development
N Valid	20	20	20	20	20	20	20	
Missing	0	0	0	0	0	0	0	

Statistics

	accounting software	weight of software accounting	iso	weight of ISO	iso date	management accounting practice weight
N Valid	20	20	20	19	15	20
Missing	0	0	0	1	5	0

Frequency Table

Annual Sales

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	45000000	1	5.0	5.0	5.0
	62000000	1	5.0	5.0	10.0
	75000000	1	5.0	5.0	15.0
	76000000	1	5.0	5.0	20.0
	150000000	1	5.0	5.0	25.0
	173000000	1	5.0	5.0	30.0
	175000000	1	5.0	5.0	35.0
	176000000	1	5.0	5.0	40.0
	181000000	1	5.0	5.0	45.0
	209000000	1	5.0	5.0	50.0
	218000000	1	5.0	5.0	55.0
	294000000	1	5.0	5.0	60.0
	300000000	1	5.0	5.0	65.0
	312000000	1	5.0	5.0	70.0
	344000000	1	5.0	5.0	75.0
	400000000	1	5.0	5.0	80.0
	600000000	1	5.0	5.0	85.0
	620000000	1	5.0	5.0	90.0
	640000000	1	5.0	5.0	95.0
	680000000	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

weight of sales

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less 200 millions	9	45.0	45.0	45.0
	between 200 and 400 millions	7	35.0	35.0	80.0
	greater than 400 millions	4	20.0	20.0	100.0
	Total	20	100.0	100.0	

Number of Employees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	175	1	5.0	5.0	5.0
	338	1	5.0	5.0	10.0
	380	1	5.0	5.0	15.0
	450	1	5.0	5.0	20.0
	600	1	5.0	5.0	25.0
	750	1	5.0	5.0	30.0
	800	1	5.0	5.0	35.0
	948	1	5.0	5.0	40.0
	1000	1	5.0	5.0	45.0
	1300	1	5.0	5.0	50.0
	1424	1	5.0	5.0	55.0
	1430	1	5.0	5.0	60.0
	1500	3	15.0	15.0	75.0
	2300	1	5.0	5.0	80.0
	2417	1	5.0	5.0	85.0
	2463	1	5.0	5.0	90.0
	2500	1	5.0	5.0	95.0
	2600	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

weight of employee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 800 employee	7	35.0	35.0	35.0
	between 800 and 1600 employee	8	40.0	40.0	75.0
	greater than 1600 employee	5	25.0	25.0	100.0
	Total	20	100.0	100.0	

Number of Products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	24	1	5.0	5.0	5.0
	32	1	5.0	5.0	10.0
	47	1	5.0	5.0	15.0
	58	1	5.0	5.0	20.0
	59	1	5.0	5.0	25.0
	72	1	5.0	5.0	30.0
	89	1	5.0	5.0	35.0
	96	1	5.0	5.0	40.0
	98	1	5.0	5.0	45.0
	100	1	5.0	5.0	50.0
	107	1	5.0	5.0	55.0
	120	1	5.0	5.0	60.0
	160	1	5.0	5.0	65.0
	189	1	5.0	5.0	70.0
	200	2	10.0	10.0	80.0
	245	1	5.0	5.0	85.0
	250	3	15.0	15.0	100.0
Total		20	100.0	100.0	

weight of products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 75 products	6	30.0	30.0	30.0
	between 75 and 150 products	6	30.0	30.0	60.0
	greater than 150 products	8	40.0	40.0	100.0
Total		20	100.0	100.0	

ownership type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MN	7	35.0	35.0	35.0
	PI	7	35.0	35.0	70.0
	S	6	30.0	30.0	100.0
	Total	20	100.0	100.0	

HR Development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Y	20	100.0	100.0	100.0

weight of HR development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not so clear strategic plan	7	35.0	35.0	35.0
	clearly stated strategic plan	9	45.0	45.0	80.0
	highly emphasized strategic plan	4	20.0	20.0	100.0
	Total	20	100.0	100.0	

accounting software

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	P	7	35.0	35.0	35.0
	Y	13	65.0	65.0	100.0
	Total	20	100.0	100.0	

weight of software accounting

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid partially computerized	7	35.0	35.0	35.0
fully computerized	13	65.0	65.0	100.0
Total	20	100.0	100.0	

iso

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid N	4	20.0	20.0	20.0
Y	16	80.0	80.0	100.0
Total	20	100.0	100.0	

weight of ISO

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid not applicable	4	20.0	21.1	21.1
year 2002 -2004	2	10.0	10.5	31.6
year 1999-2001	3	15.0	15.8	47.4
year 1996 - 1998	6	30.0	31.6	78.9
year 1993 - 1995	2	10.0	10.5	89.5
year 1990 - 1992	2	10.0	10.5	100.0
Total	19	95.0	100.0	
Missing System	1	5.0		
Total	20	100.0		

iso date

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1990	2	10.0	13.3	13.3
	1994	2	10.0	13.3	26.7
	1996	2	10.0	13.3	40.0
	1997	3	15.0	20.0	60.0
	1998	1	5.0	6.7	66.7
	2000	3	15.0	20.0	86.7
	2002	1	5.0	6.7	93.3
	2004	1	5.0	6.7	100.0
	Total	15	75.0	100.0	
Missing	System	5	25.0		
Total		20	100.0		

management accounting practice weight

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	44	4	20.0	20.0	20.0
	90	2	10.0	10.0	30.0
	96	1	5.0	5.0	35.0
	101	2	10.0	10.0	45.0
	122	5	25.0	25.0	70.0
	123	4	20.0	20.0	90.0
	127	1	5.0	5.0	95.0
	133	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

DESCRIPTIVES

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V16 V17 V19
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Descriptives

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Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Annual Sales	20	635000000	45000000	660000000	2.9E+003	202891356.08
weight of sales	20	2	1	3	1.75	.788
Number of Employees	20	2425	175	2600	1318.75	791.131
weight of employee	20	2	1	3	1.90	.788
Number of Products	20	226	24	250	132.30	78.542
weight of products	20	2	1	3	2.10	.852
weight of HR development	20	2	1	3	1.85	.745
weight of software accounting	20	1	1	2	1.65	.489
weight of ISO	19	5	0	5	2.32	1.635
iso date	15	14	1990	2004	1997.00	3.964
management accounting practice weight	20	89	44	133	100.80	31.709
Valid N (listwise)	15					

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FREQUENCIES
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  HRDevelopment V12 V13 V14 V15 V16 V17 V18
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  /ORDER= ANALYSIS .

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Frequencies

Notes

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	Cases Used	Statistics are based on all cases with valid data. .
Syntax	FREQUENCIES VARIABLES=AnnualSales V4 NumberofEmployees V6 NumberofProducts V8 V9 HRDevelopment V12 V13 V14 V15 V16 V17 V18 /STATISTICS=MEDIAN MODE /ORDER= ANALYSIS .	
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[DataSet1] H:\spss data analysis.sav

Statistics

	N		Median	Mode
	Valid	Missing		
Annual Sales	20	0	213500000.00	45000000 ^a
weight of sales	20	0	2.00	1
Number of Employees	20	0	1362.00	1500
weight of employee	20	0	2.00	2
Number of Products	20	0	103.50	250
weight of products	20	0	2.00	3
ownership type	20	0		
HR Development	20	0		
weight of HR development	20	0	2.00	2
accounting software	20	0		
weight of software accounting	20	0	2.00	2
iso	20	0		
weight of ISO	19	1	3.00	3
iso date	15	5	1997.00	1997 ^a
management accounting practice weight	20	0	122.00	122

a. Multiple modes exist. The smallest value is shown

Frequency Table

Annual Sales

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	45000000	1	5.0	5.0	5.0
	62000000	1	5.0	5.0	10.0
	75000000	1	5.0	5.0	15.0
	76000000	1	5.0	5.0	20.0
	150000000	1	5.0	5.0	25.0
	173000000	1	5.0	5.0	30.0
	175000000	1	5.0	5.0	35.0
	176000000	1	5.0	5.0	40.0
	181000000	1	5.0	5.0	45.0
	209000000	1	5.0	5.0	50.0
	218000000	1	5.0	5.0	55.0
	294000000	1	5.0	5.0	60.0
	300000000	1	5.0	5.0	65.0
	312000000	1	5.0	5.0	70.0
	344000000	1	5.0	5.0	75.0
	400000000	1	5.0	5.0	80.0
	600000000	1	5.0	5.0	85.0
	620000000	1	5.0	5.0	90.0
	640000000	1	5.0	5.0	95.0
	680000000	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

weight of sales

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less 200 millions	9	45.0	45.0	45.0
	betwee 200 and 400 millions	7	35.0	35.0	80.0
	greater than 400 millions	4	20.0	20.0	100.0
	Total	20	100.0	100.0	

Number of Employees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	175	1	5.0	5.0	5.0
	338	1	5.0	5.0	10.0
	380	1	5.0	5.0	15.0
	450	1	5.0	5.0	20.0
	600	1	5.0	5.0	25.0
	750	1	5.0	5.0	30.0
	800	1	5.0	5.0	35.0
	948	1	5.0	5.0	40.0
	1000	1	5.0	5.0	45.0
	1300	1	5.0	5.0	50.0
	1424	1	5.0	5.0	55.0
	1430	1	5.0	5.0	60.0
	1500	3	15.0	15.0	75.0
	2300	1	5.0	5.0	80.0
	2417	1	5.0	5.0	85.0
	2463	1	5.0	5.0	90.0
	2500	1	5.0	5.0	95.0
	2600	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

weight of employee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 800 employee	7	35.0	35.0	35.0
	between 800 and 1600 employee	8	40.0	40.0	75.0
	greater than 1600 employee	5	25.0	25.0	100.0
	Total	20	100.0	100.0	

Number of Products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	24	1	5.0	5.0	5.0
	32	1	5.0	5.0	10.0
	47	1	5.0	5.0	15.0
	58	1	5.0	5.0	20.0
	59	1	5.0	5.0	25.0
	72	1	5.0	5.0	30.0
	89	1	5.0	5.0	35.0
	96	1	5.0	5.0	40.0
	98	1	5.0	5.0	45.0
	100	1	5.0	5.0	50.0
	107	1	5.0	5.0	55.0
	120	1	5.0	5.0	60.0
	160	1	5.0	5.0	65.0
	169	1	5.0	5.0	70.0
	200	2	10.0	10.0	80.0
	245	1	5.0	5.0	85.0
	250	3	15.0	15.0	100.0
	Total	20	100.0	100.0	

weight of products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 75 products	6	30.0	30.0	30.0
	between 75 and 150 products	6	30.0	30.0	60.0
	greater than 150 products	8	40.0	40.0	100.0
	Total	20	100.0	100.0	

ownership type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MN	7	35.0	35.0	35.0
	PI	7	35.0	35.0	70.0
	S	6	30.0	30.0	100.0
	Total	20	100.0	100.0	

HR Development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Y	20	100.0	100.0	100.0

weight of HR development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not so clear strategic plan	7	35.0	35.0	35.0
	clearly stated strategic plan	9	45.0	45.0	80.0
	highly emphasized strategic plan	4	20.0	20.0	100.0
	Total	20	100.0	100.0	

accounting software

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	P	7	35.0	35.0	35.0
	Y	13	65.0	65.0	100.0
	Total	20	100.0	100.0	

weight of software accounting

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid partially computerized	7	35.0	35.0	35.0
fully computerized	13	65.0	65.0	100.0
Total	20	100.0	100.0	

iso

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid N	4	20.0	20.0	20.0
Y	16	80.0	80.0	100.0
Total	20	100.0	100.0	

weight of ISO

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid not applicable	4	20.0	21.1	21.1
year 2002 -2004	2	10.0	10.5	31.6
year 1993-2001	3	15.0	15.8	47.4
year 1996 - 1998	6	30.0	31.6	78.9
year 1993 - 1995	2	10.0	10.5	89.5
year 1990 - 1992	2	10.0	10.5	100.0
Total	19	95.0	100.0	
Missing System	1	5.0		
Total	20	100.0		

iso date

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1990	2	10.0	13.3	13.3
	1994	2	10.0	13.3	26.7
	1996	2	10.0	13.3	40.0
	1997	3	15.0	20.0	60.0
	1998	1	5.0	6.7	66.7
	2000	3	15.0	20.0	86.7
	2002	1	5.0	6.7	93.3
	2004	1	5.0	6.7	100.0
	Total	15	75.0	100.0	
Missing	System	5	25.0		
Total		20	100.0		

management accounting practice weight

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	44	4	20.0	20.0	20.0
	90	2	10.0	10.0	30.0
	96	1	5.0	5.0	35.0
	101	2	10.0	10.0	45.0
	122	5	25.0	25.0	70.0
	123	4	20.0	20.0	90.0
	127	1	5.0	5.0	95.0
	133	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

CORRELATIONS

```

/VARIABLES=AnnualSales V4 NumberofEmployees V6 NumberofProducts V8 V12
V14 V16 V18
/PRINT=TWOTAIL NOSIG
/MISSING=FAIRWISE .

```

Correlations

Notes

Output Created		27-MAY-2007 13:28:41
Comments		
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		<p>CORRELATIONS</p> <p>/VARIABLES=AnnualSales V4 NumberofEmployees V6 NumberofProducts V8 V12 V14 V16 V18</p> <p>/PRINT=TWOTAIL NOSIG</p> <p>/MISSING=PAIRWISE .</p>
Resources	Elapsed Time	0:00:00.27
	Processor Time	0:00:00.09

[DataSet1] H:\spss data analysis.sav

Text cut off in original

Correlations

		Annual Sales	weight of sales	Number of Employees	weight of employee	Number of Products
Annual Sales	Pearson Correlation	1	.943**	.150	.128	.311
	Sig. (2-tailed)		.000	.527	.592	.182
	N	20	20	20	20	20
weight of sales	Pearson Correlation	.943**	1	.256	.212	.341
	Sig. (2-tailed)	.000		.277	.369	.141
	N	20	20	20	20	20
Number of Employees	Pearson Correlation	.150	.256	1	.964**	.564**
	Sig. (2-tailed)	.527	.277		.000	.010
	N	20	20	20	20	20
weight of employee	Pearson Correlation	.128	.212	.964**	1	.488*
	Sig. (2-tailed)	.592	.369	.000		.029
	N	20	20	20	20	20
Number of Products	Pearson Correlation	.311	.341	.564**	.488*	1
	Sig. (2-tailed)	.182	.141	.010	.029	
	N	20	20	20	20	20
weight of products	Pearson Correlation	.329	.353	.692**	.643**	.934**
	Sig. (2-tailed)	.156	.126	.001	.002	.000
	N	20	20	20	20	20
weight of HR development	Pearson Correlation	.370	.472*	.898**	.869**	.723**
	Sig. (2-tailed)	.108	.036	.000	.000	.000
	N	20	20	20	20	20
weight of software accounting	Pearson Correlation	.226	.171	-.650**	-.641**	-.479*
	Sig. (2-tailed)	.338	.471	.002	.002	.033
	N	20	20	20	20	20
weight of ISO	Pearson Correlation	.011	.055	.809**	.799**	.477*
	Sig. (2-tailed)	.964	.825	.000	.000	.039
	N	19	19	19	19	19
management accounting practice weight	Pearson Correlation	.396	.428	-.522*	-.525*	-.286
	Sig. (2-tailed)	.084	.059	.018	.017	.222
	N	20	20	20	20	20

Correlations

		weight of software accounting	weight of ISO	management accounting practice weight
Annual Sales	Pearson Correlation	.226	.011	.396
	Sig. (2-tailed)	.338	.964	.084
	N	20	19	20
weight of sales	Pearson Correlation	.171	.055	.428
	Sig. (2-tailed)	.471	.825	.059
	N	20	19	20
Number of Employees	Pearson Correlation	-.650**	.809**	-.522*
	Sig. (2-tailed)	.002	.000	.018
	N	20	19	20
weight of employee	Pearson Correlation	-.641**	.798**	-.525*
	Sig. (2-tailed)	.002	.000	.017
	N	20	19	20
Number of Products	Pearson Correlation	-.479*	.477*	-.286
	Sig. (2-tailed)	.033	.039	.222
	N	20	19	20
weight of products	Pearson Correlation	-.543*	.572*	-.389
	Sig. (2-tailed)	.013	.010	.090
	N	20	19	20
weight of HR development	Pearson Correlation	-.585**	.720**	-.358
	Sig. (2-tailed)	.007	.001	.121
	N	20	19	20
weight of software accounting	Pearson Correlation	1	-.534*	.823**
	Sig. (2-tailed)		.018	.000
	N	20	19	20
weight of ISO	Pearson Correlation	-.534*	1	-.517*
	Sig. (2-tailed)	.018		.024
	N	19	19	19
management accounting practice weight	Pearson Correlation	.823**	-.517*	1
	Sig. (2-tailed)	.000	.024	
	N	20	19	20

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

NONPAR CORR

/VARIABLES=AnnualSales V4 NumberofEmployees V6 NumberofProducts V8 V12

V14 V16 V18

/PRINT=BOTH TWOTAIL NOSIG

/MISSING=PAIRWISE .

Nonparametric Correlations

Notes

Output Created		27-MAY-2007 13:28:41
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		NONPAR CORR /VARIABLES=AnnualSales V4 NumberofEmployees V6 NumberofProducts V8 V12 V14 V16 V18 /PRINT=BOTH TWOTAIL NOSIG /MISSING=PAIRWISE .
Resources	Elapsed Time	0:00:00.05
	Number of Cases Allowed	62955 cases ^a
	Processor Time	0:00:00.08

a. Based on availability of workspace memory

:DataSet1) H:\spss data analysis.sav

Correlations

			Annual Sales	weight of sales	Number of Employees	weight of employee	Num Pro
Kendall's tau_b	Annual Sales	Correlation Coefficient	1.000	.818**	.154	.120	
		Sig. (2-tailed)	.	.000	.346	.508	
		N	20	20	20	20	
	weight of sales	Correlation Coefficient	.818**	1.000	.221	.202	
		Sig. (2-tailed)	.000	.	.230	.328	
		N	20	20	20	20	
	Number of Employees	Correlation Coefficient	.154	.221	1.000	.837**	
		Sig. (2-tailed)	.346	.230	.	.000	
		N	20	20	20	20	
	weight of employee	Correlation Coefficient	.120	.202	.837**	1.000	
		Sig. (2-tailed)	.508	.328	.000	.	
		N	20	20	20	20	
Number of Products	Correlation Coefficient	.299	.299	.483**	.423*		
	Sig. (2-tailed)	.069	.104	.003	.021		
	N	20	20	20	20		
weight of products	Correlation Coefficient	.253	.309	.573**	.593**		
	Sig. (2-tailed)	.164	.133	.002	.004		
	N	20	20	20	20		
weight of HR development	Correlation Coefficient	.290	.425*	.746**	.837**		
	Sig. (2-tailed)	.113	.040	.000	.000		
	N	20	20	20	20		
weight of software accounting	Correlation Coefficient	.236	.167	-.514**	-.604**		
	Sig. (2-tailed)	.219	.442	.008	.005		
	N	20	20	20	20		
weight of ISO	Correlation Coefficient	.064	.046	.604**	.721**		
	Sig. (2-tailed)	.719	.816	.001	.000		
	N	19	19	19	19		
management accounting practice weight	Correlation Coefficient	.315	.365	-.448**	-.549**		
	Sig. (2-tailed)	.064	.057	.009	.004		
	N	20	20	20	20		
Spearman's rho	Annual Sales	Correlation Coefficient	1.000	.927**	.242	.168	
		Sig. (2-tailed)	.	.000	.303	.478	
		N	20	20	20	20	

Correlations

			Annual Sales	weight of sales	Number of Employees	weight of employee	N
Spearman's rho	weight of sales	Correlation Coefficient	.927**	1.000	.293	.229	
		Sig. (2-tailed)	.000	.	.210	.331	
		N	20	20	20	20	
	Number of Employees	Correlation Coefficient	.242	.293	1.000	.939**	
		Sig. (2-tailed)	.303	.210		.000	
		N	20	20	20	20	
	weight of employee	Correlation Coefficient	.168	.229	.939**	1.000	
		Sig. (2-tailed)	.478	.331	.000	.	
		N	20	20	20	20	
	Number of Products	Correlation Coefficient	.371	.383	.623**	.522*	
Sig. (2-tailed)		.107	.095	.003	.018		
N		20	20	20	20		
weight of products	Correlation Coefficient	.331	.357	.695**	.639**		
	Sig. (2-tailed)	.154	.122	.001	.002		
	N	20	20	20	20		
weight of HR development	Correlation Coefficient	.400	.491*	.861**	.863**		
	Sig. (2-tailed)	.080	.028	.000	.000		
	N	20	20	20	20		
weight of software accounting	Correlation Coefficient	.282	.176	-.610**	-.640**		
	Sig. (2-tailed)	.229	.457	.004	.002		
	N	20	20	20	20		
weight of ISO	Correlation Coefficient	.046	.043	.763**	.804**		
	Sig. (2-tailed)	.852	.862	.000	.000		
	N	19	19	19	19		
management accounting practice weight	Correlation Coefficient	.404	.426	-.624**	-.670**		
	Sig. (2-tailed)	.077	.061	.003	.001		
	N	20	20	20	20		

Correlations

			weight of HR development	weight of software accounting	weight of ISO	management accounting practice weight
Kendall's tau_b	Annual Sales	Correlation Coefficient	.290	.236	.064	.3
		Sig. (2-tailed)	.113	.219	.719	.0
		N	20	20	19	
	weight of sales	Correlation Coefficient	.425*	.167	.046	.38
		Sig. (2-tailed)	.040	.442	.816	.0
		N	20	20	19	
	Number of Employees	Correlation Coefficient	.746**	-.514**	.604**	-.4
		Sig. (2-tailed)	.000	.008	.001	.00
		N	20	20	19	
	weight of employee	Correlation Coefficient	.837**	-.604**	.721**	-.5
		Sig. (2-tailed)	.000	.005	.000	.00
		N	20	20	19	
	Number of Products	Correlation Coefficient	.625**	-.392*	.380*	-.28
	Sig. (2-tailed)	.001	.043	.033	.12	
	N	20	20	19		
weight of products	Correlation Coefficient	.819**	-.511*	.483*	-.38	
	Sig. (2-tailed)	.000	.018	.015	.0	
	N	20	20	19		
weight of HR development	Correlation Coefficient	1.000	-.558*	.640**	-.3	
	Sig. (2-tailed)	.	.010	.001	.07	
	N	20	20	19		
weight of software accounting	Correlation Coefficient	-.558*	1.000	-.500*	.6	
	Sig. (2-tailed)	.010	.	.017	.00	
	N	20	20	19		
weight of ISO	Correlation Coefficient	.640**	-.500*	1.000	-.5	
	Sig. (2-tailed)	.001	.017	.	.00	
	N	19	19	19		
management accounting practice weight	Correlation Coefficient	-.344	.692**	-.556**	1.00	
	Sig. (2-tailed)	.073	.001	.003		
	N	20	20	19		
Spearman's rho	Annual Sales	Correlation Coefficient	.400	.282	.046	.40
		Sig. (2-tailed)	.090	.229	.852	.0
		N	20	20	19	

Correlations

			weight of HR development	weight of software accounting	weight of ISO	management accounting practice weight
Spearman's rho	weight of sales	Correlation Coefficient	.491*	.176	.043	.426
		Sig. (2-tailed)	.028	.457	.862	.061
		N	20	20	19	20
	Number of Employees	Correlation Coefficient	.861**	-.610**	.763**	-.624**
		Sig. (2-tailed)	.000	.004	.000	.003
		N	20	20	19	20
	weight of employee	Correlation Coefficient	.863**	-.640**	.804**	-.670**
		Sig. (2-tailed)	.000	.002	.000	.001
		N	20	20	19	20
	Number of Products	Correlation Coefficient	.758**	-.464*	.499*	-.345
		Sig. (2-tailed)	.000	.039	.029	.136
		N	20	20	19	20
weight of products	Correlation Coefficient	.862**	-.541*	.561*	-.443	
	Sig. (2-tailed)	.000	.014	.013	.051	
	N	20	20	19	20	
weight of HR development	Correlation Coefficient	1.000	-.588**	.714**	-.469*	
	Sig. (2-tailed)	.	.006	.001	.037	
	N	20	20	19	20	
weight of software accounting	Correlation Coefficient	-.588**	1.000	-.561*	.785**	
	Sig. (2-tailed)	.006	.	.013	.000	
	N	20	20	19	20	
weight of ISO	Correlation Coefficient	.714**	-.561*	1.000	-.719**	
	Sig. (2-tailed)	.001	.013	.	.001	
	N	19	19	19	19	
management accounting practice weight	Correlation Coefficient	-.469*	.785**	-.719**	1.000	
	Sig. (2-tailed)	.037	.000	.001	.	
	N	20	20	19	20	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

NEAR TESTS

/K-W=V16 BY V4:2 3)
 /MEDIAN=V13 BY V4:2 3)
 /MISSING ANALYSIS.

NPar Tests

Notes

Output Created	27-MAY-2007 14:32:29	
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Input	Data	H:\spss data analysis.sav
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /K-W=V18 BY V4(1 3) /MEDIAN=V18 BY V4(1 3) /MISSING ANALYSIS.	
Resources	Elapsed Time	0:00:00.02
	Number of Cases Allowed	112420
	Processor Time	0:00:00.00

a. Based on availability of workspace memory.

:DataSet1] H:\spss data analysis.sav

Kruskal-Wallis Test

Ranks

	weight of sales	N	Mean Rank
management accounting practice weight	less 200 millions	9	8.17
	between 200 and 400 millions	7	11.14
	greater than 400 millions	4	14.63
	Total	20	

Test Statistics^{a,b}

	management accounting practice weight
Chi-Square	3.539
df	2
Asymp. Sig.	.170

- a. Kruskal Wallis Test
- b. Grouping Variable: weight of sales

Median Test

Frequencies

		weight of sales		
		less 200 millions	between 200 and 400 millions	greater than 400 millions
management accounting practice weight	> Median	1	2	3
	<= Median	6	5	1

Test Statistics^a

	management accounting practice weight
N	20
Median	122.00
Chi-Square	5.393 ^a
df	2
Asymp. Sig.	.067

- a. 5 cells (83.3%) have expected frequencies less than 5. The minimum expected cell frequency is 1.2.
- b. Grouping Variable: weight of sales

```

NEAR TESTS
/K-W=V18 BY V6(1 3)
/MEDIAN=V18 BY V6(1 3)
/MISSING ANALYSIS.
    
```

NPar Tests

Notes

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Comments		
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /K-W=V18 BY V6(1 3) /MEDIAN=V18 BY V6(1 3) /MISSING ANALYSIS.	
Resources	Elapsed Time	0:00:00.02
	Number of Cases Allowed	112420
	Processor Time	0:00:00.02

a. Based on availability of workspace memory.

[DataSet1] H:\spss data analysis.sav

Kruskal-Wallis Test

Ranks

	weight of employee	N	Mean Rank
management accounting practice weight	less than 800 employee	7	15.43
	between 800 and 1600 employee	8	9.13
	greater than 1600 employee	5	5.80
	Total	20	

Test Statistics^{a,b}

	management accounting practice weight
Chi-Square	8.721
df	2
Asymp. Sig.	.013

a. Kruskal Wallis Test

b. Grouping Variable: weight of employee

Median Test

Frequencies

		weight of employee		
		less than 800 employee	between 800 and 1600 employee	greater than 1600 employee
management accounting practice weight	> Median	4	2	0
	<= Median	3	6	5

Test Statistics^b

	management accounting practice weight
N	20
Median	122.00
Chi-Square	4.694 ^a
df	2
Asymp. Sig.	.096

a. 5 cell's (93.3%) have expected frequencies less than 5. The minimum expected cell frequency is 1.5.

b. Grouping Variable: weight of employee

```

NEAR TESTS
/RT-W=V12 BY V9(1 3)
/MEDIAN=V13 BY V9(1 3)
/MISSING ANALYSIS.
    
```

NPar Tests

Notes

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	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /K-W=V18 BY V8(1 3) /MEDIAN=V18 BY V8(1 3) /MISSING ANALYSIS.	
Resources	Elapsed Time	0:00:00.05
	Number of Cases Allowed	112420
	Processor Time	0:00:00.03

a. Based on availability of workspace memory.

:DataSet1) H:\spss data analysis.sav

Kruskal-Wallis Test

Ranks

weight of products		N	Mean Rank
management accounting practice weight	less than 75 products	6	14.08
	between 75 and 150 products	6	10.33
	greater than 150 products	8	7.94
Total		20	

Test Statistics^{a,b}

	management accounting practice weight
Chi-Square	3.828
df	2
Asymp. Sig.	.148

a. Kruskal Wallis Test

b. Grouping Variable: weight of products

Median Test

Frequencies

		weight of products		
		less than 75 products	between 75 and 150 products	greater than 150 products
management accounting practice weight	> Median	3	2	1
	<= Median	3	4	7

Test Statistics^b

	management accounting practice weight
N	20
Median	122.00
Chi-Square	2.341 ^a
df	2
Asymp. Sig.	.310

a. 5 cells (93.3%) have expected frequencies less than 5. The minimum expected cell frequency is 1.9.

b. Grouping Variable: weight of products

NEAR TESTS

/K-W=V13 BY V10(1 3)
/MEDIAN=V13 BY V12(1 3)
/MISSING ANALYSIS.

NPar Tests

Notes

Output Created	27-MAY-2007 14:33:41	
Comments		
Input	Data	H:\spss data analysis sav
	Active Dataset	DataSet1
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /K-W=V18 BY V12(1 3) /MEDIAN=V18 BY V12(1 3) /MISSING ANALYSIS.	
Resources	Elapsed Time	0:00:00.02
	Number of Cases Allowed	112420
	Processor Time	0:00:00.02

a. Based on availability of workspace memory.

[DataSet1] H:\spss data analysis.sav

Kruskal-Wallis Test

Ranks

	weight of HR development	N	Mean Rank
management accounting practice weight	not so clear strategic plan	7	13.79
	clearly stated strategic plan	9	9.67
	highly emphasized strategic plan	4	6.63
	Total	20	

Test Statistics^{a,b}

	management accounting practice weight
Chi-Square	4.186
df	2
Asymp. Sig.	.123

a. Kruskal Wallis Test

b. Grouping Variable: weight of HR development

Median Test

Frequencies

		weight of HR development		
		not so clear strategic plan	clearly stated strategic plan	highly emphasized strategic plan
management accounting practice weight	> Median	3	3	0
	<= Median	4	6	4

Test Statistics^b

	management accounting practice weight
N	20
Median	122.00
Chi-Square	2.313 ^a
df	2
Asymp. Sig.	.315

a. 5 cells (83.3%) have expected frequencies less than 5. The minimum expected cell frequency is 1.2.

b. Grouping Variable: weight of HR development

```

NEAR TESTS
  /K-W=V18  BY V14(1 2)
  /MEDIAN=V19  BY V14(1 2)
  /MISSING ANALYSIS.
    
```

NPar Tests

Notes

Output Created		27-MAY-2007 14:34:13
Comments		
Input	Data	H:\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		<pre> NPAR TESTS /K-W=V18 BY V14(1 2) /MEDIAN=V18 BY V14(1 2) /MISSING ANALYSIS. </pre>
Resources	Elapsed Time	0:00:00.37
	Number of Cases Allowed	112420
	Processor Time	0:00:00.05

a. Based on availability of workspace memory.

[DataSet1] H:\spss data analysis.sav

Kruskal-Wallis Test

Ranks

	weight of software	N	Mean Rank
management accounting	partially computerized	7	4.43
practice weight	fully computerized	13	13.77
	Total	20	

Test Statistics^{a,b}

	management accounting practice weight
Chi-Square	11.712
df	1
Asymp. Sig.	.001

a. Kruskal Wallis Test

b. Grouping Variable: weight of software accounting

Median Test

Frequencies

		weight of software accounting	
		partially computerized	fully computerized
management accounting practice weight	> Median	0	6
	<= Median	7	7

Test Statistics^a

	management accounting practice weight
N	20
Median	122.00
Exact Sig.	.051

a. Grouping Variable: weight of software accounting

```

NEAR TESTS
  /K-W=V18 BY V16(1 5)
  /MEDIAN=V18 BY V16(1 5)
  /MISSING ANALYSIS.
    
```

NPar Tests

Notes

Output Created		27-MAY-2007 14:34:36
Comments		
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		<pre> NPAR TESTS /K-W=V18 BY V16(1 5) /MEDIAN=V18 BY V16(1 5) /MISSING ANALYSIS. </pre>
Resources	Elapsed Time	0:00.00.02
	Number of Cases Allowed	112420
	Processor Time	0:00.00.02

a. Based on availability of workspace memory.

[DataSet1]: H:\spss data analysis.sav

Kruskal-Wallis Test

Ranks

	weight of ISO	N	Mean Rank
management accounting	year 2002 - 2004	2	13.00
practice weight	year 1999-2001	3	12.67
	year 1996 - 1998	6	4.50
	year 1993 - 1995	2	9.00
	year 1990 - 1992	2	5.50
	Total	15	

Test Statistics^{a,b}

	management accounting practice weight
Chi-Square	10.485
df	4
Asymp. Sig.	.033

- a. Kruskal Wallis Test
b. Grouping Variable: weight of ISO

Median Test

Frequencies

		weight of ISO				
		year 2002 -2004	year 1999-2001	year 1996 - 1998	year 1993 - 1995	year 1990 - 1992
management accounting practice weight	> Median	2	3	0	1	0
	<= Median	0	0	6	1	2

Test Statistics^b

	management accounting practice weight
N	15
Median	101.00
Chi-Square	12.917 ^a
df	4
Asymp. Sig.	.012

- a. 10 cell's (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is .8.
b. Grouping Variable: weight of ISO

```

ONEWAY
  VAR BY VC
  /STATISTICS HOMOGENEITY
  /MISSING ANALYSIS
  /POSTHOC = BONFERRONI TO ALPHA(.05).
    
```

Oneway

Notes

Output Created		27-MAY-2007 14:48:16
Comments		
Input	Data	H:\spss data analysis sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax		<pre> ONEWAY V13 BY V6 /STATISTICS HOMOGENEITY /MISSING ANALYSIS /POSTHOC = BONFERRONI T2 ALPHA(.05). </pre>
Resources	Elapsed Time	0:00:00.11
	Processor Time	0:00:00.03

[DataSet1] H:\spss data analysis.sav

Test of Homogeneity of Variances

management accounting practice weight

Levene Statistic	df1	df2	Sig.
17.363	2	17	.000

Post Hoc Tests

Text cut off in original

Multiple Comparisons

Dependent Variable: management accounting practice weight

	(I) weight of employee	(J) weight of employee	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Bonferroni	less than 800 employee	between 800 and 1600 employee	34.196	14.257	.085	-3.66	
		greater than 1600 employee	40.371	16.130	.068	-2.45	
	between 800 and 1600 employee	less than 800 employee	-34.196	14.257	.085	-72.05	
		greater than 1600 employee	6.175	15.704	1.000	-35.52	
	greater than 1600 employee	less than 800 employee	-40.371	16.130	.068	-83.20	
		between 800 and 1600 employee	-6.175	15.704	1.000	-47.87	
Tamhane	less than 800 employee	between 800 and 1600 employee	34.196	13.906	.123	-8.82	
		greater than 1600 employee	40.371*	10.376	.048	.52	
	between 800 and 1600 employee	less than 800 employee	-34.196	13.906	.123	-77.21	
		greater than 1600 employee	6.175	17.211	.980	-42.20	
	greater than 1600 employee	less than 800 employee	-40.371*	10.376	.048	-80.23	
		between 800 and 1600 employee	-6.175	17.211	.980	-54.55	

*. The mean difference is significant at the .05 level.

```

O:ENAY
V16 BY V14
/STATISTICS HOMOGENEITY
/MISSING ANALYSIS
/POSTHOC = BONFERRONI TO ALPHA=.051.
    
```

Notes

Output Created		27-MAY-2007 14:48:38
Comments		
Input	Data	H:\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax		ONEWAY V18 BY V14 /STATISTICS HOMOGENEITY /MISSING ANALYSIS /POSTHOC = BONFERRONI T2 ALPHA(.05).
Resources	Elapsed Time	0:00:00.02
	Processor Time	0:00:00.03

Oneway

Notes

Output Created		27-MAY-2007 14:48:51
Comments		
Input	Data	H:\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax		ONEWAY V18 BY V16 /STATISTICS HOMOGENEITY /MISSING ANALYSIS /POSTHOC = BONFERRONI T2 ALPHA(.05).
Resources	Elapsed Time	0:00 00.19
	Processor Time	0:00 00.06

[DataSet1] H:\spss data analysis.sav

Test of Homogeneity of Variances

management accounting practice weight

Levene Statistic	df1	df2	Sig.
11.893	5	13	.000

Post Hoc Tests

Multiple Comparisons

Dependent Variable: management accounting practice weight

	(I) weight of ISO	(J) weight of ISO	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Bonferroni	not applicable	year 2002 -2004	-3.750	16.547	1.000	-63.05	55.55
		year 1999-2001	1.083	14.593	1.000	-51.22	53.38
		year 1996 - 1998	60.750*	12.333	.004	16.55	104.95
		year 1993 - 1995	14.750	16.547	1.000	-44.55	74.05
		year 1990 - 1992	33.750	16.547	.934	-25.55	93.05
	year 2002 -2004	not applicable	3.750	16.547	1.000	-55.55	63.05
		year 1999-2001	4.833	17.442	1.000	-57.68	67.34
		year 1996 - 1998	64.500*	15.601	.018	8.59	120.41
		year 1993 - 1995	13.500	19.107	1.000	-49.98	86.98
		year 1990 - 1992	37.500	19.107	1.000	-30.93	105.98
	year 1999-2001	not applicable	-1.083	14.593	1.000	-53.38	51.22
		year 2002 -2004	-4.833	17.442	1.000	-67.34	57.68
		year 1996 - 1998	59.667*	13.511	.010	11.25	108.09
		year 1993 - 1995	13.667	17.442	1.000	-43.84	76.18
		year 1990 - 1992	32.667	17.442	1.000	-29.84	95.18
	year 1996 - 1998	not applicable	-60.750*	12.333	.004	-104.95	-16.55
		year 2002 -2004	-64.500*	15.601	.018	-120.41	-8.59
		year 1999-2001	-59.667*	13.511	.010	-103.09	-11.25
		year 1993 - 1995	-46.000	15.601	.170	-101.91	9.91
		year 1990 - 1992	-27.000	15.601	1.000	-82.91	28.91
year 1993 - 1995	not applicable	-14.750	16.547	1.000	-74.05	44.55	
	year 2002 -2004	-13.500	19.107	1.000	-86.98	49.98	
	year 1999-2001	-13.667	17.442	1.000	-76.18	48.84	
	year 1996 - 1998	46.000	15.601	.170	-9.91	101.91	
	year 1990 - 1992	19.000	19.107	1.000	-49.48	87.48	
year 1990 - 1992	not applicable	-33.750	16.547	.934	-93.05	25.55	
	year 2002 -2004	-37.500	19.107	1.000	-105.98	30.98	
	year 1999-2001	-32.667	17.442	1.000	-95.18	29.84	
	year 1996 - 1998	27.000	15.601	1.000	-29.91	82.91	
	year 1993 - 1995	-19.000	19.107	1.000	-87.48	49.48	

Multiple Comparisons

Dependent Variable: management accounting practice weight

	(I) weight of ISO	(J) weight of ISO	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tamhane	not applicable	year 2002 -2004	-3.750	5.611	1.000	-718.61	711.11
		year 1999-2001	1.083	1.158	1.000	-7.06	9.23
		year 1996 - 1998	60.750	12.068	.056	-1.52	123.02
		year 1993 - 1995	14.750	13.047	1.000	-2248.69	2278.19
		year 1990 - 1992	33.750*	1.109	.001	24.32	43.18
	year 2002 -2004	not applicable	3.750	5.611	1.000	-711.11	718.61
		year 1999-2001	4.833	5.510	1.000	-985.66	995.33
		year 1996 - 1998	64.500*	13.216	.041	2.71	126.29
		year 1993 - 1995	18.500	14.116	.999	-720.92	757.92
		year 1990 - 1992	37.500	5.500	.768	-988.18	1063.18
	year 1999-2001	not applicable	-1.083	1.158	1.000	-9.23	7.06
		year 2002 -2004	-4.833	5.510	1.000	-995.33	985.66
		year 1996 - 1998	59.667	12.021	.061	-3.00	122.34
		year 1993 - 1995	13.667	13.004	1.000	-2395.48	2422.81
		year 1990 - 1992	32.667*	.333	.002	26.98	38.36
	year 1996 - 1998	not applicable	-60.750	12.068	.056	-123.02	1.52
		year 2002 -2004	-64.500*	13.216	.041	-126.29	-2.71
		year 1999-2001	-59.667	12.021	.061	-122.34	3.00
		year 1993 - 1995	-46.000	17.703	.716	-196.52	104.52
		year 1990 - 1992	-27.000	12.017	.687	-89.71	35.71
year 1993 - 1995	not applicable	-14.750	13.047	1.000	-2278.19	2248.69	
	year 2002 -2004	-18.500	14.116	.999	-757.92	720.92	
	year 1999-2001	-13.667	13.004	1.000	-2422.81	2395.48	
	year 1996 - 1998	46.000	17.703	.716	-134.52	196.52	
	year 1990 - 1992	19.000	13.000	.999	-2405.33	2443.33	
year 1990 - 1992	not applicable	-33.750*	1.109	.001	-43.18	-24.32	
	year 2002 -2004	-37.500	5.500	.768	-1063.18	988.18	
	year 1999-2001	-32.667*	.333	.002	-38.36	-26.98	
	year 1996 - 1998	27.000	12.017	.687	-35.71	89.71	
	year 1993 - 1995	-19.000	13.000	.999	-2443.33	2405.33	

*. The mean difference is significant at the .05 level.

SAVE OUTFILE='K:\spss data analysis.sav'
/COMPRESSED.
NEAR TESTS

/M-W= V18 BY V14(1 2)
/MISSING ANALYSIS.

NPar Tests

Notes

Output Created	21-JUN-2007 13:15:34	
Comments		
Input	Data	C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /M-W= V18 BY V14(1 2) /MISSING ANALYSIS.	
Resources	Elapsed Time	0:00:00.03
	Number of Cases Allowed	112420
	Processor Time	0:00:00.00

a. Based on availability of workspace memory.

[DataSet1] C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Mann-Whitney Test

Ranks

	weight of software	N	Mean Rank	Sum of Ranks
management accounting practice weight	partially computerized	7	4.43	31.00
	fully computerized	13	13.77	179.00
	Total	20		

Test Statistics^b

	management accounting practice weight
Mann-Whitney U	3.000
Wilcoxon W	31.000
Z	-3.422
Asymp. Sig. (2-tailed)	.001
Exact Sig. [2*(1-tailed Sig.)]	.000 ^a

a. Not corrected for ties.

b. Grouping Variable: weight of software accounting

AUTORECODE

VARIABLES=V9 /INTO ownership
/PRINT.

V9 into ownership ownership type)
Old Value New Value Value Label

MN	1	MN
FI	2	FI
S	3	S

```

SAVE OUTFILE='C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data
analysis.sav'
/COMPRESSED.
NPAR TESTS
/K-W=V18 BY ownership(1 3)
/MISSING ANALYSIS.

```

NPar Tests

Notes

Output Created	21-JUN-2007 13:23:57	
Comments		
Input	Data	C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /K-W=V18 BY ownership(1 3) /MISSING ANALYSIS.	
Resources	Elapsed Time	0:00:00.06
	Number of Cases Allowed	112420
	Processor Time	0:00:00.00

a. Based on availability of workspace memory.

[DataSet1] C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Kruskal-Wallis Test

Ranks

	ownership type	N	Mean Rank
management accounting	MN	7	16.71
practice weight	PI	7	9.64
	S	6	4.25
	Total	20	

Test Statistics^{a,b}

	management accounting practice weight
Chi-Square	15.042
df	2
Asymp. Sig.	.001

a. Kruskal Wallis Test

b. Grouping Variable: ownership type

```

ONEWAY
V18 BY ownership
/STATISTICS HOMOGENEITY
/MISSING ANALYSIS .

```

Oneway

Notes

Output Created	21-JUN-2007 13:25:21	
Comments		
Input	Data	C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax	ONEWAY V19 BY ownership /STATISTICS HOMOGENEITY /MISSING ANALYSIS .	
Resources	Elapsed Time	0:00:00.03
	Processor Time	0:00:00.00

[DataSet1] C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Test of Homogeneity of Variances

management accounting practice weight

Levene Statistic	df1	df2	Sig.
21.034	2	17	.000

ANOVA

management accounting practice weight

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13580.652	2	6790.326	20.903	.000
Within Groups	5522.548	17	324.856		
Total	19103.200	19			

```

ONEWAY
V18 BY ownership
/STATISTICS HOMOGENEITY
/MISSING ANALYSIS
/POSTHOC = T2 ALPHA(.05).

```

Oneway

Notes

Output Created	21-JUN-2007 13:26:20	
Comments		
Input	Data	C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax	ONEWAY V18 BY ownership /STATISTICS HOMOGENEITY /MISSING ANALYSIS /POSTHOC = T2 ALPHA(.05).	
Resources	Elapsed Time	0:00:00.06
	Processor Time	0:00:00.06

:DataSet1) C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Test of Homogeneity of Variances

management accounting practice weight

Levene Statistic	df1	df2	Sig.
21.034	2	17	.003

ANOVA

management accounting practice weight

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13580.652	2	6790.326	20.903	.000
Within Groups	5522.548	17	324.856		
Total	19103.200	19			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: management accounting practice weight

Tamhane

(I) ownership type	(J) ownership type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
MN	PI	15.000	6.074	.126	-4.12	34.12
	S	62.690*	11.603	.008	22.44	102.94
PI	MN	-15.000	6.074	.126	-34.12	4.12
	S	47.690*	12.927	.020	8.24	87.14
S	MN	-62.690*	11.603	.008	-102.94	-22.44
	PI	-47.690*	12.927	.020	-87.14	-8.24

*. The mean difference is significant at the .05 level.

```

SAVE OUTFILE='C:\Documents and Settings\BRMOHAMED\Desktop\Dina fadaly\spss data
analysis.sav'
/COMPRESSED.
SAVE OUTFILE='C:\Documents and Settings\BRMOHAMED\Desktop\Dina fadaly\spss data
analysis.sav'
/COMPRESSED.
FREQUENCIES
VARIABLES=GROWTH PRODUCTIVITY
/STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
/ORDER= ANALYSIS .
    
```

Frequencies

Notes

Output Created	21-JUN-2007 15:27:40	
Comments		
Input	Data	C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics are based on all cases with valid data.
Syntax	FREQUENCIES VARIABLES=GROWTH PRODUCTIVITY /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN /ORDER= ANALYSIS .	
Resources	Elapsed Time	0:00.00.20
	Processor Time	0:00.00.00

{DataSet1} C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Statistics

		SALES GROWTH	PRODUC TIVITY
N	Valid	20	20
	Missing	0	0
Mean		.26965	287178.28
Median		.14800	220871.01
Std. Deviation		.567636	220077.25
Minimum		.002	29230.77
Maximum		2.641	853333.33

Frequency Table

SALES GROWTH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.002	1	5.0	5.0	5.0
	.046	1	5.0	5.0	10.0
	.048	1	5.0	5.0	15.0
	.055	1	5.0	5.0	20.0
	.064	1	5.0	5.0	25.0
	.096	1	5.0	5.0	30.0
	.107	1	5.0	5.0	35.0
	.121	1	5.0	5.0	40.0
	.126	1	5.0	5.0	45.0
	.141	1	5.0	5.0	50.0
	.155	1	5.0	5.0	55.0
	.158	1	5.0	5.0	60.0
	.200	1	5.0	5.0	65.0
	.204	1	5.0	5.0	70.0
	.217	1	5.0	5.0	75.0
	.220	1	5.0	5.0	80.0
	.260	1	5.0	5.0	85.0
	.381	1	5.0	5.0	90.0
	.551	1	5.0	5.0	95.0
	2.641	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

PRODUCTIVITY

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 29230.77	1	5.0	5.0	5.0
41333.33	1	5.0	5.0	10.0
88509.95	1	5.0	5.0	15.0
115384.62	1	5.0	5.0	20.0
120979.02	1	5.0	5.0	25.0
124120.81	1	5.0	5.0	30.0
137600.00	1	5.0	5.0	35.0
148769.66	1	5.0	5.0	40.0
166666.67	1	5.0	5.0	45.0
184599.16	1	5.0	5.0	50.0
257142.86	1	5.0	5.0	55.0
263869.57	1	5.0	5.0	60.0
266666.67	1	5.0	5.0	65.0
390000.00	1	5.0	5.0	70.0
453333.33	1	5.0	5.0	75.0
476315.79	1	5.0	5.0	80.0
490000.00	1	5.0	5.0	85.0
520710.06	1	5.0	5.0	90.0
620000.00	1	5.0	5.0	95.0
853333.33	1	5.0	5.0	100.0
Total	20	100.0	100.0	

```

RECODE
  GROWTH
  (0 thru .999=1) (.1 thru .1999=2) (.2 thru .2999=3) (.3 thru Highest=4)
) INTO growthrate .
EXECUTE .
RECODE
  PRODUCTIVITY
  (0 thru 199999.9999=1) (200000 thru 399999.999=2) (400 thru Highest=3)
) INTO prdtrate .
EXECUTE .
FREQUENCIES
  VARIABLES=V13
  /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN
  /ORDER= ANALYSIS .

```

Frequencies

Notes

Output Created	21-JUN-2007 16:40:35	
Comments		
Input	Data	C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax	FREQUENCIES VARIABLES=V13 /STATISTICS=STDDEV MINIMUM MAXIMUM MEAN MEDIAN /ORDER= ANALYSIS .	
Resources	Elapsed Time	0:00:00.00
	Processor Time	0:00:00.00

!DataSet1! C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Statistics

management accounting practice weight

N	Valid	20
	Missing	0
Mean		100.80
Median		122.00
Std. Deviation		31.709
Minimum		44
Maximum		133

management accounting practice weight

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	44	4	20.0	20.0	20.0
	90	2	10.0	10.0	30.0
	96	1	5.0	5.0	35.0
	101	2	10.0	10.0	45.0
	122	5	25.0	25.0	70.0
	123	4	20.0	20.0	90.0
	127	1	5.0	5.0	95.0
	133	1	5.0	5.0	100.0
Total		20	100.0	100.0	

```

RECODE
  V12
  (0 thru 50=1) (50 thru 100=2) (100 thru 150=3) INTO practicecateg .
EXECUTE .
NPAR TESTS
  /K-W=PRODUCTIVITY GROWTH BY practicecateg(1 3)
  /MISSING ANALYSIS.

```

NPar Tests

Notes

Output Created		21-JUN-2007 16:49:45
Comments		
Input	Data	C:\Documents and Settings\DRMOHAMED\Desktop\Dina fada'y\sps data analysis.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	20
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		<pre> NPAR TESTS /K-W=PRODUCTIVITY GROWTH BY practicecateg(1 3) /MISSING ANALYSIS. </pre>
Resources	Elapsed Time	0.00 00.22
	Number of Cases Allowed	98368
	Processor Time	0.00 00.03

a. Based on availability of workspace memory.

[DataSet1] C:\Documents and Settings\DRMOHAMED\Desktop\Dina fada'y\sps data analysis.sav

Kruskal-Wallis Test

Ranks

	practicecateg	N	Mean Rank
PRODUCTIVITY	low level techniques	4	3.00
	middle level techniques	3	8.33
	advanced level techniques	13	13.31
	Total	20	
SALES GROWTH	low level techniques	4	5.00
	middle level techniques	3	11.00
	advanced level techniques	13	12.08
	Total	20	

Test Statistics^{a, b}

	PRODUCTIVITY	SALES GROWTH
Chi-Square	9.759	4.402
df	2	2
Asymp. Sig.	.008	.111

- a. Kruskal Wallis Test
- b. Grouping Variable: practicecateg

```

ONENAV
PRODUCTIVITY GROWTH BY practicecateg
/STATISTICS HOMOGENEITY
/MISSING ANALYSIS
/POSTHOC = TD ALPHA(.05).
    
```

Oneway

Notes

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[DataSet1] C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
PRODUCTIVITY	3.896	2	17	.041
SALES GROWTH	.989	2	17	.392

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PRODUCTIVITY	Between Groups	3.2E+011	2	1.613E+011	4.590	.025
	Within Groups	6.0E+011	17	35150622507		
	Total	9.2E+011	19			
SALES GROWTH	Between Groups	.351	2	.176	.517	.605
	Within Groups	5.771	17	.339		
	Total	6.122	19			

Post Hoc Tests

Multiple Comparisons

Tamhane

Dependent Variable	(I) practicecateg	(J) practicecateg	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
PRODUCTIVITY	low level techniques	middle level techniques	-.97464.8573	49732.160	.361	-324592.5483	1296
		advanced level techniques	-.301271.717*	65522.386	.001	-477788.1509	-1247
	middle level techniques	low level techniques	97464.85729	49732.160	.361	-129662.8338	3245
		advanced level techniques	-203806.860	74874.972	.060	-415322.0405	77
	advanced level techniques	low level techniques	301271.717*	65522.386	.001	124755.2830	4777
		middle level techniques	203806.860	74874.972	.060	-7708.3212	4153
SALES GROWTH	low level techniques	middle level techniques	-.083167	.081143	.792	-.64518	
		advanced level techniques	-.308731	.192214	.350	-.84026	
	middle level techniques	low level techniques	.083167	.081143	.792	-.47895	
		advanced level techniques	-.225564	.207605	.651	-.78800	
	advanced level techniques	low level techniques	.308731	.192214	.350	-.22280	
		middle level techniques	.225564	.207605	.651	-.33687	

*. The mean difference is significant at the .05 level.

NONPAR CORR

.VARIABLES=GRONTH AnnualSales V4 NumberofEmployees V6 NumberofProducts V8
 V12 V14 V16 V17 V18 ownership PRODUCTIVITY practicecateg
 /PRINT=BOTH TWOTAIL NOSIG

/MISSING=PAIRWISE .

Nonparametric Correlations

Notes

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	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
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a. Based on availability of workspace memory

[DataSet1] C:\Documents and Settings\DRMOHAMED\Desktop\Dina fadaly\spss data analysis.sav

Correlations

			SALES GROWTH	Annual Sales	weight of sales	Number of Employees
Kendall's tau_b	SALES GROWTH	Correlation Coefficient	1.000	.000	-.071	-.31
		Sig. (2-tailed)	.	1.000	.698	.05
		N	20	20	20	2
	Annual Sales	Correlation Coefficient	.000	1.000	.818**	.15
		Sig. (2-tailed)	1.000	.	.000	.34
		N	20	20	20	2
	weight of sales	Correlation Coefficient	-.071	.818**	1.000	.22
		Sig. (2-tailed)	.698	.000	.	.23
		N	20	20	20	2
	Number of Employees	Correlation Coefficient	-.313	.154	.221	1.00
		Sig. (2-tailed)	.055	.346	.230	
		N	20	20	20	2
	weight of employee	Correlation Coefficient	-.285	.120	.202	.83
		Sig. (2-tailed)	.117	.508	.328	.00
		N	20	20	20	2
Number of Products	Correlation Coefficient	-.202	.298	.299	.48	
	Sig. (2-tailed)	.216	.069	.104	.00	
	N	20	20	20	2	
weight of products	Correlation Coefficient	-.164	.253	.309	.57	
	Sig. (2-tailed)	.366	.164	.133	.00	
	N	20	20	20	2	
weight of HR development	Correlation Coefficient	-.277	.290	.425*	.74	
	Sig. (2-tailed)	.130	.113	.040	.00	
	N	20	20	20	2	
weight of software accounting	Correlation Coefficient	.494*	.236	.167	-.51	
	Sig. (2-tailed)	.010	.219	.442	.00	
	N	20	20	20	2	
weight of ISO	Correlation Coefficient	-.178	.064	.046	.60	
	Sig. (2-tailed)	.314	.719	.816	.00	
	N	19	19	19	1	
iso date	Correlation Coefficient	.100	.020	-.012	-.36	
	Sig. (2-tailed)	.616	.920	.957	.07	
	N	15	15	15	1	

Correlations

			SALES GROWTH	Annual Sales	weight of sales	Number of Employees
Kendall's tau_b	management accounting practice weight	Correlation Coefficient Sig. (2-tailed) N	.203 .234 20	.315 .064 20	.365 .057 20	-.44 .00 2
	ownership type	Correlation Coefficient Sig. (2-tailed) N	-.270 .136 20	-.333 .066 20	-.369 .072 20	.46 .01 2
	PRODUCTIVITY	Correlation Coefficient Sig. (2-tailed) N	.326* .044 20	.400* .014 20	.367* .045 20	-.45 .00 2
	practicecateg	Correlation Coefficient Sig. (2-tailed) N	.322 .082 20	.250 .176 20	.262 .210 20	-.45 .01 2
Spearman's rho	SALES GROWTH	Correlation Coefficient Sig. (2-tailed) N	1.000 .054 20	.054 .821 20	-.088 .714 20	-.43 .05 2
	Annual Sales	Correlation Coefficient Sig. (2-tailed) N	.054 .821 20	1.000 .000 20	.927** .000 20	.24 .30 2
	weight of sales	Correlation Coefficient Sig. (2-tailed) N	-.088 .714 20	.927** .000 20	1.000 .000 20	.29 .21 2
	Number of Employees	Correlation Coefficient Sig. (2-tailed) N	-.431 .058 20	.242 .303 20	.293 .210 20	1.00 2
	weight of employee	Correlation Coefficient Sig. (2-tailed) N	-.344 .138 20	.168 .478 20	.229 .331 20	.93 .00 2
	Number of Products	Correlation Coefficient Sig. (2-tailed) N	-.292 .212 20	.371 .107 20	.383 .095 20	.62 .00 2
	weight of products	Correlation Coefficient Sig. (2-tailed) N	-.201 .394 20	.331 .154 20	.357 .122 20	.69 .00 2

Correlations

			SALES GROWTH	Annual Sales	weight of sales	Number of Employees
Spearman's rho	weight of HR development	Correlation Coefficient	-.334	.430	.491*	.861*
		Sig. (2-tailed)	.150	.080	.028	.000
		N	20	20	20	20
	weight of software accounting	Correlation Coefficient	.591**	.282	.176	-.610**
		Sig. (2-tailed)	.006	.229	.457	.004
		N	20	20	20	20
	weight of ISO	Correlation Coefficient	-.190	.046	.043	.763**
		Sig. (2-tailed)	.435	.852	.862	.000
		N	19	19	19	19
	iso date	Correlation Coefficient	.117	.128	.009	-.496
	Sig. (2-tailed)	.677	.649	.975	.060	
	N	15	15	15	15	
management accounting practice weight	Correlation Coefficient	.311	.404	.426	-.624**	
	Sig. (2-tailed)	.182	.077	.061	.003	
	N	20	20	20	20	
ownership type	Correlation Coefficient	-.389	-.379	-.407	.598**	
	Sig. (2-tailed)	.090	.100	.075	.005	
	N	20	20	20	20	
PRODUCTIVITY	Correlation Coefficient	.472*	.570**	.454*	-.619**	
	Sig. (2-tailed)	.036	.009	.044	.004	
	N	20	20	20	20	
practicecateg	Correlation Coefficient	.428	.319	.286	-.579**	
	Sig. (2-tailed)	.060	.170	.222	.008	
	N	20	20	20	20	

Correlations

			Number of Products	weight of products	weight of HR development	weight of software accounting
Kendall's tau_b	SALES GROWTH	Correlation Coefficient	-.202	-.164	-.277	.49
		Sig. (2-tailed)	.216	.366	.130	.01
		N	20	20	20	2
	Annual Sales	Correlation Coefficient	.298	.253	.290	.23
		Sig. (2-tailed)	.069	.164	.113	.21
		N	20	20	20	2
	weight of sales	Correlation Coefficient	.299	.309	.425*	.16
		Sig. (2-tailed)	.104	.133	.040	.44
		N	20	20	20	2
	Number of Employees	Correlation Coefficient	.483**	.573**	.746**	-.51
		Sig. (2-tailed)	.003	.002	.000	.00
		N	20	20	20	2
	weight of employee	Correlation Coefficient	.423*	.593**	.837**	-.60
		Sig. (2-tailed)	.021	.004	.000	.00
		N	20	20	20	2
Number of Products	Correlation Coefficient	1.000	.842**	.625**	-.39	
	Sig. (2-tailed)	.	.000	.001	.04	
	N	20	20	20	2	
weight of products	Correlation Coefficient	.842**	1.000	.819**	-.51	
	Sig. (2-tailed)	.000	.	.000	.01	
	N	20	20	20	2	
weight of HR development	Correlation Coefficient	.625**	.819**	1.000	-.55	
	Sig. (2-tailed)	.001	.000	.	.01	
	N	20	20	20	2	
weight of software accounting	Correlation Coefficient	-.392*	-.511*	-.558*	1.00	
	Sig. (2-tailed)	.043	.019	.010	.	
	N	20	20	20	2	
weight of ISO	Correlation Coefficient	.380*	.483*	.640**	-.50	
	Sig. (2-tailed)	.033	.015	.001	.01	
	N	19	19	19	1	
iso date	Correlation Coefficient	-.061	-.214	-.495*	.31	
	Sig. (2-tailed)	.762	.341	.026	.17	
	N	15	15	15	1	

Correlations

			Number of Products	weight of products	weight of HR development	weight of software accounting
Kendall's tau_b	management accounting practice weight	Correlation Coefficient	-.262	-.358	-.344	.69
		Sig. (2-tailed)	.127	.061	.073	.00
		N	20	20	20	2
	ownership type	Correlation Coefficient	.401*	.468*	.439*	-.77
	Sig. (2-tailed)	.029	.022	.033	.00	
	N	20	20	20	2	
	PRODUCTIVITY	Correlation Coefficient	-.170	-.227	-.315	.61
		Sig. (2-tailed)	.298	.211	.084	.00
		N	20	20	20	2
	practicecateg	Correlation Coefficient	-.311	-.429*	-.420*	.77
		Sig. (2-tailed)	.096	.040	.045	.00
		N	20	20	20	2
Spearman's rho	SALES GROWTH	Correlation Coefficient	-.292	-.201	-.334	.59
		Sig. (2-tailed)	.212	.394	.150	.00
		N	20	20	20	2
	Annual Sales	Correlation Coefficient	.371	.331	.400	.28
		Sig. (2-tailed)	.107	.154	.080	.22
		N	20	20	20	2
	weight of sales	Correlation Coefficient	.383	.357	.491*	.17
		Sig. (2-tailed)	.095	.122	.028	.45
	N	20	20	20	2	
Number of Employees	Correlation Coefficient	.623**	.695**	.861**	-.61	
	Sig. (2-tailed)	.003	.001	.000	.00	
	N	20	20	20	2	
weight of employee	Correlation Coefficient	.522*	.639**	.863**	-.64	
	Sig. (2-tailed)	.018	.002	.000	.00	
	N	20	20	20	2	
Number of Products	Correlation Coefficient	1.000	.942**	.758**	-.46	
	Sig. (2-tailed)	.	.000	.000	.03	
	N	20	20	20	2	
weight of products	Correlation Coefficient	.942**	1.000	.862**	-.54	
	Sig. (2-tailed)	.000	.	.000	.01	
	N	20	20	20	2	

Correlations

			Number of Products	weight of products	weight of HR development	weight of software accounting
Spearman's rho	weight of HR development	Correlation Coefficient	.758**	.862**	1.000	-.53
		Sig. (2-tailed)	.000	.000	.	.00
		N	20	20	20	20
	weight of software accounting	Correlation Coefficient	-.464*	-.541*	-.588**	1.00
		Sig. (2-tailed)	.039	.014	.006	
		N	20	20	20	20
	weight of ISO	Correlation Coefficient	.499*	.561*	.714**	-.53
		Sig. (2-tailed)	.029	.013	.001	.01
		N	19	19	19	19
iso date	Correlation Coefficient	-.093	-.255	-.581*	.39	
	Sig. (2-tailed)	.741	.359	.023	.13	
	N	15	15	15	15	
management accounting practice weight	Correlation Coefficient	-.345	-.443	-.469*	.78	
	Sig. (2-tailed)	.136	.051	.037	.00	
	N	20	20	20	20	
ownership type	Correlation Coefficient	.491*	.527*	.505*	-.81	
	Sig. (2-tailed)	.028	.017	.023	.00	
	N	20	20	20	20	
PRODUCTIVITY	Correlation Coefficient	-.243	-.313	-.426	.73	
	Sig. (2-tailed)	.303	.178	.061	.00	
	N	20	20	20	20	
practicecateg	Correlation Coefficient	-.331	-.490*	-.500*	.80	
	Sig. (2-tailed)	.098	.028	.025	.00	
	N	20	20	20	20	

Correlations

			iso date	management accounting practice weight	ownership type	PRODUCTIVITY
Kendall's tau_b	SALES GROWTH	Correlation Coefficient Sig. (2-tailed) N	.100 .616 15	.203 .234 20	-.270 .136 20	.326* .044 20
	Annual Sales	Correlation Coefficient Sig. (2-tailed) N	.020 .920 15	.315 .064 20	-.333 .066 20	.400* .014 20
	weight of sales	Correlation Coefficient Sig. (2-tailed) N	-.012 .957 15	.365 .057 20	-.369 .072 20	.367* .045 20
	Number of Employees	Correlation Coefficient Sig. (2-tailed) N	-.364 .070 15	-.448** .009 20	.469* .010 20	-.451* .006 20
	weight of employee	Correlation Coefficient Sig. (2-tailed) N	-.606** .006 15	-.549** .004 20	.576** .005 20	-.501* .006 20
	Number of Products	Correlation Coefficient Sig. (2-tailed) N	-.061 .762 15	-.262 .127 20	.401* .029 20	-.170 .298 20
	weight of products	Correlation Coefficient Sig. (2-tailed) N	-.214 .341 15	-.358 .061 20	.468* .022 20	-.227 .211 20
	weight of HR development	Correlation Coefficient Sig. (2-tailed) N	-.495* .026 15	-.344 .073 20	.439* .033 20	-.315 .084 20
	weight of software accounting	Correlation Coefficient Sig. (2-tailed) N	.314 .179 15	.692** .001 20	-.773** .000 20	.616* .001 20
	weight of ISO	Correlation Coefficient Sig. (2-tailed) N	-.935** .000 15	-.556** .003 19	.555** .005 19	-.408* .021 19
	iso date	Correlation Coefficient Sig. (2-tailed) N	1.000 .000 15	.413* .046 15	-.265 .233 15	.259 .192 15

Correlations

			iso date	management accounting practice weight	ownership type	PRODUCTIVITY
Kendall's tau_b	management accounting practice weight	Correlation Coefficient Sig. (2-tailed) N	.413* .046 15	1.000 .000 20	-.808** .000 20	.653* .000 20
	ownership type	Correlation Coefficient Sig. (2-tailed) N	-.265 .233 15	-.808** .000 20	1.000 .000 20	-.661* .000 20
	PRODUCTIVITY	Correlation Coefficient Sig. (2-tailed) N	.259 .192 15	.653** .000 20	-.661** .000 20	1.000 .000 20
	practicecateg	Correlation Coefficient Sig. (2-tailed) N	.297 .182 15	.788** .000 20	-.684** .001 20	.608* .001 20
Spearman's rho	SALES GROWTH	Correlation Coefficient Sig. (2-tailed) N	.117 .677 15	.311 .182 20	-.389 .090 20	.472* .036 20
	Annual Sales	Correlation Coefficient Sig. (2-tailed) N	.128 .649 15	.404 .077 20	-.379 .100 20	.570* .009 20
	weight of sales	Correlation Coefficient Sig. (2-tailed) N	.009 .975 15	.426 .061 20	-.407 .075 20	.454* .044 20
	Number of Employees	Correlation Coefficient Sig. (2-tailed) N	-.496 .060 15	-.624** .003 20	.598** .005 20	-.619* .004 20
	weight of employee	Correlation Coefficient Sig. (2-tailed) N	-.693** .004 15	-.670** .001 20	.645** .002 20	-.624* .003 20
	Number of Products	Correlation Coefficient Sig. (2-tailed) N	-.093 .741 15	-.345 .136 20	.491* .028 20	-.243 .303 20
	weight of products	Correlation Coefficient Sig. (2-tailed) N	-.255 .359 15	-.443 .051 20	.527* .017 20	-.313 .178 20

Correlations

			iso date	management accounting practice weight	ownership type	PRODUCTIVITY
Spearman's rho	weight of HR development	Correlation Coefficient Sig. (2-tailed) N	-.581* .023 15	-.469* .037 20	.505* .023 20	-.426 .061 20
	weight of software accounting	Correlation Coefficient Sig. (2-tailed) N	.359 .189 15	.785** .000 20	-.819** .000 20	.736* .000 20
	weight of ISO	Correlation Coefficient Sig. (2-tailed) N	-.971** .000 15	-.719** .001 19	.694** .001 19	-.603* .006 19
	iso date	Correlation Coefficient Sig. (2-tailed) N	1.000 .000 15	.542* .037 15	-.378 .165 15	.456 .087 15
	management accounting practice weight	Correlation Coefficient Sig. (2-tailed) N	.542* .037 15	1.000 .000 20	-.888** .000 20	.812* .000 20
	ownership type	Correlation Coefficient Sig. (2-tailed) N	-.378 .165 15	-.888** .000 20	1.000 .000 20	-.787* .000 20
	PRODUCTIVITY	Correlation Coefficient Sig. (2-tailed) N	.456 .087 15	.812** .000 20	-.787** .000 20	1.000 .000 20
	practicecateg	Correlation Coefficient Sig. (2-tailed) N	.400 .139 15	.860** .000 20	-.727** .000 20	.706* .001 20

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).