Cost Information and Strategic Planning in the Egyptian Private Sector

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Acronyms and abbreviations

AA	Activity Analysis
ABB	Activity Based Budgeting
ABC	Activity Based Costing
ABCM	Activity Based Costing Management
ABM	Activity Based Management
ABPI	Association of the British Pharmaceutical Industry
ACP	African, Caribbean and Pacific countries
AGD	Arabian Group for Development
ALEB	Agriculture-Led Export Businesses
AmCham	American Chamber of commerce in Egypt
ANOVA	Analysis Of Variance
ASCC	Alexandria Sodium Carbonate Company
ASRT	Academy of Scientific Research and Technology
BI	Biotechnological Institute of Denmark
BPR	Business Process Reengineering
BRC's	Business Resource Centers
BSC	Balanced Scorecard
CAM	Computer-Aided Manufacturing
CAP	Customer Account Profitability
CAPMAS	Central Agency for Public Mobilization And Statistics
CEFIC	European Chemical Industry Council
CEO	Chief Executive Officer
CIMA	Chartered Institute of Management Accounting
CIP	Commodity Import Program
CO&ST	Cost Information and Strategic Planning
COMESA	Commonwealth of East and South Africa Countries
CP	Cleaner Production
CPA	Customer Profitability Analysis
CRD	Cost and Revenue Driver
CVA	Customer Value Analysis
CVP	Cost Volume Profit
EBA	Egyptian Business's Association
EEA	Egyptian Exporters Association
EEAA	Egyptian Environmental Affairs Agency
EIP	European Investment Bank
EIPICO	Egyptian International Pharmaceutical Industries Company

EOS	Egyptian Organization for Standards and quality
EPAP	Egyptian Pollution Abatement Project
ESA's	Employee Shareholder Associations
ESR	Education and Scientific Research
EU	European Union
EUN	Egyptian Universities Network
EVA	Economic Value Added
FDI	Foreign Direct Investment
FMS	Flexible Manufacturing Systems
FTC	Food Technology Center
GAAP	Generally Accepted Accounting Principles
GATT	General Agreement on Tariffs and Trade
GDN	Global Development Network
GDP	Gross Domestic Product
GOE	Government Of Egypt
GT	Group Technology
GTG	Growth Through Globalization
HACCP	Hazard Analysis and Critical Control Point
HRD	Human Resource Development
ICCA	International Council of Chemical Association
IDSC	Information and Decision Support Center
IMA	Institute of Management Accountants
IMC	Industrial Modernization Center
IMI	International Market Insight
IMP	Industrial Modernization Program
IPR	Info-Product Research
IRIS	International Reform and the Informal Sector
ISO	International Organization for Standardization
IT	Information Technology
ITC's	Industrial Technology Centers
IUPAC	International Union of Pure and Applied Chemistry
JIT	Just-In-Time
LS	Likert Scale
MACS	Management Accounting and Control Systems
MAS	Management Accounting Systems
MCIT	Ministry of Communication & Information Technology
MDI	Management Development Initiative
MENA	Middle East and North Africa

MIT	Ministry of Information Technology
MITD	Ministry of Industry and Technological Development
MNC's	Multinational Corporations
NASA	National Aeronautics and Space Administration
NDP	National Domestic Product
OCM	Ongoing Change Management
PEU	Perceived Environmental Uncertainty
PLC	Product Life Cycle
QMS	Quality Management System
R&D	Research and Development
RC	Research Cycle
RI	Residual Income
ROI	Return On Investment
ROS	Return On Sales
SAB	System Application Product
SME's	Small and Medium Enterprises
SWOT	Strengths, Weaknesses, Opportunities and Threats analysis
TOSCO	Tanta Oil and Soap Company
TQM	Total Quality Management
TRENCO	Transport and Engineering Company
TRIPS	Trade-Related aspects of Intellectual Property rights
TTIC's	Technology Transfer and Innovation Centers
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
WB	World Bank
WTO	World Trade Organization

Chapter One

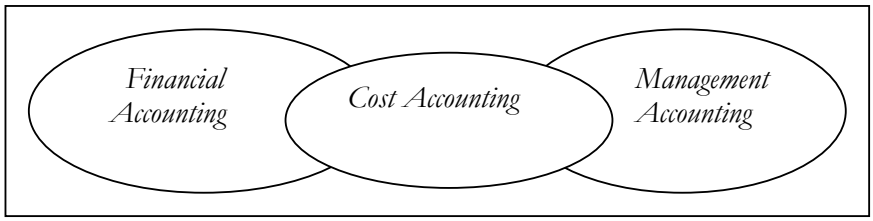
Introduction, Problem Formulation, Methodology and Summary

1.1 Introduction

Management accounting plays a vital role in supplementing managers with useful information to plan, examine, scrutinize and control their operations along with carrying out the decision-making process effectively and efficiently (Young, 1999). Accordingly, this has a tremendous impact on the entire organization's profitability (Kaplan and Atkinson, 1998). To elaborate on the decision-making process, Mendoza and Bescos (2001) point out that information should have numerous characteristics, which allow managers to better identify problems and clearly understand their causes, in order to be able to consider all existing alternatives. These characteristics include respecting the deadline, providing sufficient details, reliability and comprehensiveness. Derived from that, managers should give a particular consideration to the precision of accounting information in order to synchronize different dimensions as explained by Wouters and Verdaasdonk (2002). In their study; they argue that most management decisions have consequences for different dimensions (e.g., number of units produced, inventory levels, reliability of processes and service towards customers) that require obtaining helpful accounting information to translate these different dimensions into a common financial dimension.

From an accounting perspective, much information required is associated with the costs of products and services that allow managers to recognize the underlying functions such costs carry out. Burch (1994) mentions a number of these functions; developing strategic plans for the enterprise, translating those plans into budgets, making daily decisions about operations, making special short-term decisions and evaluating how well operations were performed. Accordingly, cost accounting plays an essential role in supporting valuable and timely data for internal and external reports. As Burch (1994, p.15) states, *"cost accounting is defined as a technique or method for determining the cost of a project, process or thing… This cost is determined by direct measurement, arbitrary assignment, or systematic and rational allocation"*. The cost accounting system performs a fundamental function within a company. It provides information for two major purposes: (1) valuing ending inventories and determining cost of goods sold for financial reporting purposes, and (2) costing products and services for management control purposes (planning, monitoring and controlling operations and performance evaluation). Figure 1.1 illustrates this function of the cost accounting system. Cost accounting should serve both financial and management accounting (Burch 1994, Raiborn 1993). Cost accounting will continue to provide inventory values and cost of goods manufactured and sold in compliance with Generally Accepted Accounting Principles (GAAP).

Figure 1.1: Cost accounting: a dual function



Sources: Burch (1994, p.16) and Barfield et al (1991, p.2)

Cost accounting will also be an integral part of the broader field of management accounting, providing product and service cost information that is more relevant to managers. Consequently, Blocher et al (2002) point out that companies should expand their cost management approach to be able to cope with the various changes in the business environment in recent times. These changes include, for example; an increase in global competition, a greater focus on customer's activities, the trend toward continual strategic plans, advances in manufacturing technologies and advances in IT and E-Commerce.

Based on the above-mentioned changes in the business environment both locally and internationally, most companies are attempting to develop their thinking to create ways by which they can achieve competitive advantages along with improving the internal systems in order to monitor and control the company's activities. Hence, a considerable number of researchers have discussed the significant role of strategic planning in implementing a range of programs that can play a part in achieving the overall organization's mission and attaining its objectives (Hodgetts and Luthans 2003, Anthony and Govindarajan 1995, Brock and Barry 2003, Neigher 2003, Houben et al 1999, Tanabe et al 2003, Kim et al 2003). According to Hodgetts and Luthans (2003), strategic planning is a process that is designed by the company to establish an organization's fundamental mission and objectives, as well as a plan of action to accomplish these objectives. To avoid the possibility of confusion, Anthony and Govindarajan (1995) make an apparent distinction between strategy formulation (deciding new strategies) and strategic planning (implementing these strategies). A company that seeks to develop its cost information system should involve its strategic planning process to achieve this fundamental purpose.

1.2 Research Objectives

Most organizations seek to develop their internal information systems in order to deal with the challenges and opportunities in the world, which enable them to acquire a passable position in the global market by helping them to improve the quality of products, reduce costs, deal with a rigorous competition, achieve customer satisfaction and ultimately increase profits. McWatters et al (2001, P.422) state, "*Management accounting is an integral part of an organization's strategy and implementation efforts to create customer value. Organizations must continually adapt to changes in consumer demand, global competition, and a rapidly evolving technological revolution".* Accordingly, the basic research objective of this is "exploring the role of cost information in decision-making process and its role in carrying out a number of strategic planning programs

in the industrial private sector of Egypt". Several sub-objectives can be derived from this central objective.

1 Identifying the critical vision of the traditional management accounting techniques to understand the weaknesses of such techniques and what makes them not sufficient in providing managers with the information they require (C*hapter Two* "L*iterature Review" achieves this objective).*

2 Understanding the basic control variables (organizational, technological and environmental), which play a major role in the success or failure of the link between cost information and the strategic planning process. (*Chapter Three "Conceptual Model" fulfils this objective).*

3 Introducing an overview of the Egyptian private sector including the essential role of labor force, acquiring technological equipments, competition challenges and applying recent managerial tools in the business environment (C*hapter Four "An* O*verview of the Private Sector in Egypt" accomplishes this objective).*

4 Analyzing the control variables of the study, which presents an important starting point before explaining the interdependent relationship between cost information and strategic planning. (C*hapter Five "Analysis of Control Variables" leads to this objective).*

5 Exploring the interdependent relationship between cost information and strategic planning process along with identifying the potential role of management accounting in strategic planning. *(Chapter Six "Cost Information and Strategic Planning: An Interdependent Relationship" attains this objective).*

1.3 Research Questions

There is a broad agreement that the environment in which businesses thrive is uncertain. The increasingly fast-changing environment has led to a fundamental shift in the competitive rules of winning and the norms of behavior (Laitinen, 2002). One of the important elements that organizations focus on is their internal information system. Indeed, management accounting's primary function is often defined as providing useful information for managerial purposes (Mendoza and Bescos 2001, Abernethy et al 1999, Tayles and Walley 1997, Young 1999, Williams and Seaman 2001, Schulz 1999, and Wouters and Verdaasdonk 2002). With this information, users analyze the situation, identify the appropriate steps to meet their objectives, draw up a plan and follow–up its implementation. This explains why a number of textbooks are based on a postulate that can be summarized as follows: Mendoza and Bescos (2001, P. 257) state, *"Management accounting information is one of the primary informational sources for decision making and control in organizations"*. Hence, this study attempts to address the following central research question: "To what extent does cost information play an important role in providing managers with valuable, timely and relevant information to help them to enhance the strategic planning process in the Egyptian private sector?"

Specific supplementary questions can be presented in line with the respective chapters:

(1) What are the theoretical criticisms of the traditional management accounting tools?
(2) How do internal and external factors (organizational, technological, environmental) affect the relationship between cost data and the strategic planning process?
(3) What are the specific characteristics of the Egyptian private sector?
(4) What is the impact of control variables on the basic relationship of the study (the relationship between cost information and strategic planning process)?
(5) How does the interdependent relationship between cost information and strategic planning work? How do Egyptian firms utilize the recent management accounting techniques for business success?

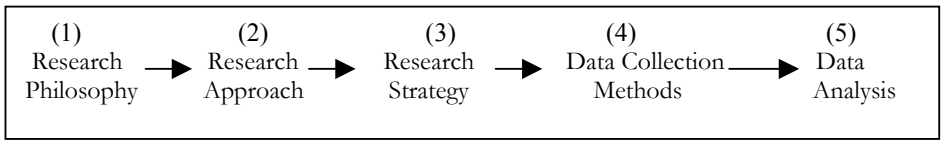
1.4 Methodology

Research methodology makes up one of the most fundamental parts in any research project as it is a structure for data analysis that facilitates interpreting and analyzing such data in the practical sections of the research. This reminds us of a favorite quote in *Alice's Adventures in Wonderland*. This is part of Alice's conversation with the Cheshire Cat. In this Alice asks the Cat (Saunders et al 2000, p.12):

'Would you tell me, please, which way I ought to walk from here?'
'That depends a good deal on where you want to get to,' said the Cat.
'I don't much care where,' said Alice.
'Then it doesn't matter which way you walk,' said the Cat.

Consequently, the following section is concerned with understanding the way that we think about the development of knowledge, determining an apparent research approach, identifying a comprehensible research strategy, clarifying data collection methods and finally explaining how to analyze such data. To do this logically, figure 1.2 explains these sequential stages through RC.

Figure 1.2: Research Cycle (RC)



1.4.1 Research Philosophy

Research philosophy refers to the way that we think about the progress of knowledge. Two views about the research process dominate the literature: *positivism* and *phenomenology*. They are dissimilar views about the manner in which knowledge is developed and both have an important role to play in business and management research (Saunders et al, 2000). This research explores the interdependent relationship between cost information system and the strategic planning process. There will be an emphasis on formulating a model between the two variables, influenced by a number of factors, that lead to a statistical investigation, which assumes the role of an objective analysis about data that have been collected through questionnaires and interviews in the Egyptian private sector (*positivism perspective*). Additionally, the research tries to obtain sufficient information through formal and informal

interviews concerning the obstacles that might face the cost accountants and hinder them from providing useful and reliable cost information for the decision-making process, along with their lack of ability to cope with the sophisticated tools of cost management such as Activity-Based techniques. This might be achieved in the course of discovering behaviors, skills, attitudes and values of the management accounting staff (*phenomenology perspective*). . Nevertheless, the dominant philosophy is related to the positivism perspective.

1.4.2 Research Approach

The research project involves the use of theory. This theory may or may not be made explicit in the design of the research; the extent to which we are clear about the theory at the beginning of the research raises an important question relating to the design of the research project. This is whether the research should use the *deductive* approach or the *inductive* approach (Gill and Johnson; 1991, Saunders et al; 2000). This research project is designed to find out the interdependent relationship between cost information system and the strategic planning process by gathering quantitative data about these two fundamental variables and other control variables that have an influence on this relationship. These control variables include; organizational, technological and environmental variables. Additionally, we will be independent of what is being observed throughout the questionnaires and interviews. The conceptual model (which will be illustrated in chapter 3) has been developed to indicate the connection between basic variables and control variables to facilitate replication. Finally, the conceptual model has been operationalized in a way that enables variables to be measured quantitatively. This operationalization has been implemented for the variables from four different perspectives: expectations from literature, construction for measurement, actual research outcome and interpretations and the impact of each factor on the basic research idea. Derived from previous data, the research project is dominated by the *deductive approach.*

1.4.3 Research Strategy

The research strategy will be a general plan of how we will go about answering the research questions we have set. It will specify the sources from which we intend to collect data and consider the constraints that we will inevitably have (e.g. access to data, time, location and money, ethical issues). Several studies have discussed a number of strategies that can be used to allow the researcher to answer research questions and carry out his/her objectives (Hussey and Hussey 1997, Saunders et al 2000, Ryan et al 2002, Gill and Johnson 1991). These strategies include: experiment, survey, case study, grounded theory, ethnography, action research, cross-sectional and longitudinal studies, and exploratory, descriptive and explanatory studies. The research project focuses on the second strategy mentioned above

(survey)[1] to gather data from four different industries in the Egyptian private sector (*40 companies*) as follows[2]:

1.Pharmaceutical (10 companies): According to the American Chamber of Commerce in Egypt (AmCham), Egypt is the largest producer and consumer of pharmaceuticals in the Middle East accounting for 30% of the supply of the MENA region (Middle East and North Africa). The region absorbs most of Egypt's pharmaceutical exports, which represents approximately 6% of the total production. The Egyptian drug industry is mainly drug formulation-based rather than research-based. Local manufactures import their ingredients either from their licensors or from several international firms. Pharmaceutical raw materials or final products are imported from France, Switzerland, Belgium, Germany, the U.K and the U.S. Importation of finished drugs is related to research and advanced technology including insulin, vaccines, anti-cancerous, some cardiovascular products and baby milk. The public sector's share of the market is 29% while the private sector's share is 71%. The Egyptian pharmaceuticals market is expected to grow yearly by 14% as a result of growth in drug consumption, increased government spending on healthcare and increased foreign assistance.

2.Foodstuff (10 companies): The foodstuff industry[3] plays a major role in the Egyptian economy because all people consume the products of such industry in their daily life. Moreover, this industry helps to solve the problem of unemployment by providing many jobs to recently graduated youth. Numerous products can be produced by this industry: chocolate, biscuits, cheese, drinks, eggs, flavors and fragrances, feed additives, meat, macaroni, oil, milk, olives, patisserie, potato, poultry, salt, sugar, starch, rabbits, tea and sweets. According to AmCham, special emphasis was given in recent years to this sector due to its promising potential and rapid expansion. The sector has also witnessed a series of privatizations (e.g. Kaha and Edfina), which gave room to high-pace development. Rises in income levels among middle class Egyptians, changes in lifestyles and consumption patterns and the growing number of Western style supermarkets, have all been among the factors that have helped the sector develop rapidly.

3. Chemical (10 companies): The chemical industry is concerned with using chemical reactions to turn raw materials, such as coal, oil, and salt, into a variety of products. During the 19th and 20th century, technological advances in the chemical industry dramatically altered the world's economy. Chemical processes have created pesticides and fertilizers for farmers, pharmaceuticals for the health care industry, and soaps and beauty aids for the cosmetics industry. There are several activities concerning chemical industries in Egypt. These include; detergents, batteries, dyestuff, gas, insecticides, paints and rubber.

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[1] This type of survey is called analytical survey where the intention is to determine whether there is any relationship between different variables. The other type of survey is called descriptive survey. It is concerned with identifying and counting the frequency of a specific population. For further details, see: Hussey and Hussey (1997), pp: 65,66.

[2] This information has been obtained from the green business guide (2002), the information and decision support center (IDCS), Egypt.

[3] Food processing could become one of Egypt's leading export industries, though till now most production is consumed locally. In 2001, Egypt exported US $83 million worth of processed food to Europe, the US and the Middle East. (American Chamber of Commerce in Egypt, AmCham).

4. Packaging and Wrapping (10 companies): The packaging industry in Egypt depends mainly on the rapidly growing food processing industry, imported pharmaceutical and chemical manufacturing industries. This, in addition to frequent changes in material and techniques used in the packaging industry, should encourage the packaging industry market to continue growing. Moreover, the majority of pharmaceutical manufacturers are now purchasing complete lines, which include packaging systems to assure maximum sterilization in production, in order to obtain the ISO certification.

1.4.4 Data Collection Methods

As the title suggests, data collection methods are used in this part of the research, which is concerned with collecting data (Hussey and Hussey, 1997). Whatever the research question (s) and objectives are, we need to collect data to answer them. However, for many research questions and objectives it will be impossible to collect or to analyze all the data available owing to restrictions of time, money and often access to the required data (Sharp and Howard 1996, Saunders et al 2000). Several methods can be used to gather data including questionnaires, interviews, secondary data, observation, sampling, critical incident technique, diaries, focus groups and protocol analysis. The first three methods will be used to collect data. We discuss each of them briefly in this section.

Questionnaires

The questionnaire is designed in a way that enables the researcher to cover some issues with the intention of finding out what a selected group of respondents do, think or feel. To do this, the questionnaire is divided into three major sections. The first section is concerned with getting general information about the company. This information includes the activity of the company, the size, the role of technology and employees in the production process, to what extent the selected sample depends on advanced technology in its internal processes, the type and degree of competition that the companies can face and the range of applying modern management philosophies such as TQM and JIT. The second section asks various questions to recognize the current cost accounting system in the sample. This is addressed from several standpoints; the percentage of overhead within the cost structure, how many cost pools are distinguished in this system, allocation bases, the degree of acceptance for the levels of management that use the cost information and the desire for developing the cost information system. The third section attempts to acquire sufficient data with respect to some strategic issues that affect the environment in which cost information can be provided for the decision-making process by designing Likert Scale tables. These tables include; business unit strategy, organizational structure, perceived environmental uncertainty, firm's' IT, diversity and complexity and finally the strategic planning process. The questionnaires have been distributed and collected personally with the assistance of some colleagues in Egypt.

Interviews

Interviews are associated with both positivist and phenomenological methodologies (Hussey and Hussey 1997, Gill and Johnson 1991, Ryan et al 2002). It is a method of collecting data in which selected participants are asked questions in order to find out what they do, think or feel. Interviews make it easy to compare answers and they may be conducted face-to-face, voice-to-voice or screen-to-screen. They can be conducted with individuals or a group of individuals. Since there are a number of technical and practical problems in postal interviews and telephone interviews, the survey for this study was conducted by face-to-face interviews (personal interviews) with a pre-structured questionnaire (Appendix). For example, mail surveys are subject to response bias because they do not achieve good response rates from people with low education, people who do not like to write, those who have difficulty in reading and those who do not have an interest in the topic (Czaja and Blair, 1996). In our pilot study, the questionnaire was carefully studied and moderated after conducting a number of informal interviews with production managers, professors in managerial accounting, postgraduate students and colleagues. Some questions have been avoided such as the name of respondent, his/her age, the exact amount of the net profit over the last four years, several questions associated with ABC, the way in which the company calculates predetermined overhead rate and whether the company uses process costing or job-order costing.

In our experience in dealing with Egyptians with respect to postal questionnaires, there was a lack of control over the arrangement of questions and a lack of ability to control the context of question answering because of other people around the respondents who could have had a negative influence on their answers. On the other hand, some respondents are unable to respond to written-mail questionnaires because of some problems regarding reading, writing and understanding some questions. Hence, we selected face-to-face interviews and picked up the questionnaires as well. Although face-to-face or personal interviews are the most costly form of data collection in general, the literature cites some important advantages of face-to-face interviews (Czaja and Blair 1996, Welman and Kruger 2001, Marshall and Rossman 1999). The most significant advantage of personal interviews is that the interviewer can control the interview and questions can be explained in a clear manner and in uncomplicated words. In addition, it helps improve the quality of data and encourage the respondent to answer fully and precisely. Hence, along with the questionnaire introduced to the respondents, we have conducted numerous interviews with a variety of people in different positions in Egypt: colleagues, professors of managerial accounting, professors of financial accounting, consultants at KPMG in Egypt, production managers, marketing managers and sales managers.

Secondary Data

When considering how to answer research questions and how to achieve research objectives, we have to consider the possibility of re-analyzing data that have already been collected for some other purposes. According to Saunders et al (2000), such data are known as secondary data. It includes both quantitative and qualitative data and can be used in both descriptive

and explanatory research. Within business and management research, these data are mostly used in case study and survey-type research. However, there is no reason not to include secondary data in experimental research. In this study, we used several types of secondary data[4]: (1) Government publications (Ministry of Public Enterprise, Ministry of Industry and Technology, Ministry of Economy, Egyptian Organization for Standards and quality (EOS), Egyptian Environmental Affairs Agency (EEAA), United-States Agency for International Development (USAID), American Chamber Of Commerce in Egypt (AmCham), Ministry of Information Technology (MIT), Egyptian Businessmen's Association (EBA) and Egyptian Universities Network (EUN), (2) Periodicals in accounting and management research, (3) Government Census (for example: estimates of labor force in Egypt from 2000 till 2004), (4) Industry statistics and reports (5) Newspapers (AL-Ahram Weekly).

1.4.5 Data Analysis

Since the dominant approach of this study is *deductive*, one of the most important characteristics of this approach is the collection of quantitative data. Virtually all researches will involve some numerical data or contain data, which could usefully be quantified to help answer research questions and meet objectives (Sharp and Howard 1996, Saunders et al 2000). Accordingly, we use the six-point scale in the Likert Scale analysis to interpret the investigation outcome. In addition, we also depend on various factors to describe a number of characteristics of the sample. For example, competition, the company size, applying recent management philosophies, the degree of diversity and the role of the labor force in the Egyptian business environment.

1.5 Summary and Outline

The primary focus of this thesis on management accounting and the strategic planning process is to ask questions such as, 'why', 'what' and 'how'. The 'why' question focuses on understanding the reasons why some management accounting techniques are not capable enough to provide managers with the required information. The 'what' question has been asked in order to understand the relationship between management accounting and the strategic planning process; what is the role of cost information in the strategic planning process; what is the role of strategic planning in developing cost information system and what is the impact of this interdependent relationship on business performance. 'How' questions are related to the potential role of management accounting in the strategic planning process; how the Egyptian firms utilize contemporary management accounting techniques to enhance information required by managers and how Egyptian business environment organizes itself to adopt these new techniques effectively and efficiently. To find out answers for these questions, we conducted our field survey in Egypt. Egypt is a strong moderating force in the Middle East. Egypt made significant economic progress in the 1990s with many important reforms, which helped in strengthening macroeconomic

[4] There are different types of secondary data; documentary (written materials and non-written materials), multiple source (area based and time series based), survey (censuses, continuous and regular surveys, and ad hoc surveys). For further details about such types of data, see figure 7.1, Saunders et al (2000), P: 190.

discipline, reined in inflation and privatized many state-owned enterprises. The government of Egypt (GOE) has recognized that the transformation to a liberalized market must be fostered by the growth of the private sector. The share of private sector activity in GDP has been increased from less than 72% in 1989/90 to 77% in 2001/02. Therefore, GOE has applied several privatization techniques since the launching of the privatization program in 1991. The major objective of these techniques is the transformation of an enterprise from law 203 (public enterprise law) to law 159 (private enterprise law). Because of the great importance of the private sector in Egypt, the main objective of this study is to investigate, analyze, explain and interpret the role of management accounting in providing useful, reliable and timely information to managers.

Chapter one basically deals with the problem formulation, research objectives, research questions and the research methodology. We divide research methodology into five sections. Section (1) is concerned with research philosophy, which defined the distinction between positivism and phenomenology in building up any research. We argue that our research is related to the positivism perspective. Since the research has explored the interdependent relationship between cost information and strategic planning, the dominant philosophy is related to the positivism perspective. Section (2) explains the research approach, which is dominated by the deductive approach. Section (3) discusses the research strategy, which is a general plan of how we will go about answering the research questions that we have established. We focus on a survey to collect data from four different industries in the Egyptian private sector: pharmaceutical, chemical, foodstuff and packaging and wrapping. Our research has mainly been of an exploratory nature and we use survey research to examine the role of cost information in strategic planning and vise versa. Section (4) illustrates the methods that have been used to collect data, which include questionnaires, interviews and secondary data. Additionally, we use face–to-face personal interviews to support the questionnaires in collecting data. Section (5) describes how we analyze our data. Since the dominant approach of this study is deductive, we use a six-point scale in the Likert Scale analysis to interpret the empirical outcome. In addition, we also depend on various factors to describe a number of characteristics of the sample. At the end of this chapter, the structure of the thesis has been described in figure 1.3 to show the order and development of the thesis from chapter 1 to chapter 7.

The purpose of **chapter two** of this thesis is to review the theoretical literature related to some of the management accounting techniques in order to identify the weaknesses of these techniques, which make them insufficient in presenting valuable information. Chapter two is divided into three parts. The first part of the chapter attempts to briefly examine the various techniques in management accounting. In this regard, we review some traditional techniques such as standard costing, budgeting systems, cost-volume-profit analysis (CVP) and financial measures for performance. Our objectives in this part are: drawing attention to several existing tools, indicating the practical problems from using them and attempting to formulate a relationship between these problems and how to resolve them with the purpose of adopting the contemporary techniques. Although the standard costing systems have

several problems concerning the high cost of designing and implementing them, they are still implemented in the majority of manufacturing companies and in various service companies. The critique of budgeting systems was focused on the lesser importance of non-financial measures in evaluating the business performance. CVP analysis has many limitations related to; assuming the company produces only one product, assuming a constant sales price and costs are linear and can be divided into variable and fixed elements. Finally, financial measures for performance such as ROI, RI and EVA measure the company's performance from only financial perspective and they are not necessarily related to the company's strategy.

The second part of **chapter two** reviews the conventional cost accounting system in order to identify, analyze and interpret the current problems that face cost accountants in preparing useful cost information that helps managers in their decision-making process. The discussion focuses on four points of critique: the objectives of cost accounting, the absence of non-financial measures for performance, the negligence of quality costs and analyzing and evaluating the product life cycle (PLC). We also highlight the initial stage of this research, which focused on to the extent of applying the ABC system and its implementation in the Egyptian business environment. After almost fourteen months in researching this important issue, we unfortunately discover a number of problems; ABC system is still a new system in Egyptian firms and most managers have little knowledge of it. Another related issue is the uncertainty about the potential benefits and the difficulty to create changes in a company's accounting system to adopt a sophisticated system like ABC. We also found that the ABC system requires additional empirical efforts to make it achievable within the financial and other resources that are available in the Egyptian business environment. In the third part, we also review the constant significance of strategic planning process that helps companies to decide on the programs that will be undertaken and the approximate amount of resources that will be allocated to each program. In this regard, SWOT analysis has been explained to identify, examine and evaluate the organization's strengths, weaknesses, opportunities and threats before drawing up the corporate strategy. To achieve great consequences from the strategic planning process, companies should consider and scrutinize a number of modern management philosophies that affect the company's operations and its overall profitability. In this regard, we review some management philosophies including Total Quality Management (TQM), Just-In-Time (JIT) and Business Process Reengineering (BPR).

Chapter three explains the conceptual framework of the study. The main objective of this chapter is to develop an integrated conceptual model in order to investigate the factors that affect the relationship between cost information and the strategic planning process. Our conceptual model consists of three categories of variables: (1) cost information system, (2) strategic planning process (these two variables make up the major relationship of this study, which introduces the interdependent relationship between them) and (3) control variables, which include organizational variables, technological variables and environmental variables. Additionally, several factors should be taken into consideration when examining and analyzing cost information system; these factors include indirect costs and functions that can

use cost data and applications in which cost data might play a major role. On the other hand, since the strategic planning process is concerned with a lot of programs in the company, we select only three programs according to the research limitations along with the actual research outcome. These programs include pricing policy, customer profitability analysis and short-term decisions. Organizational variables include business unit's' strategy, organizational structure and organizational size. Technological variables consist of diversity/complexity, firm's IT and production process. Environmental variables include perceived environmental uncertainty (PEU) and competition. We discuss the operationalization of each factor from two major perspectives; the scientific description of the factor and how can we measure it.

Chapter four of this thesis deals with an overview of the private sector in Egypt. The chapter is divided into three parts. The first part provides a brief background about Egypt, the public sector and private sector and the privatization program. The Ministry of Public Enterprise has privatized 191 companies since the beginning of its privatization program in 1992 up until June 30, 2002. We also found that the private sector carries out approximately 75% of the development investments. Its role is very important in generating new job opportunities and solving unemployment problems. The second part defines a number of characteristics of the sample, which involved indicating the acquisition of technological equipment, explaining the role of diversity as a powerful business tool and applying a number of modern managerial approaches such as TQM and JIT. Our purpose in this part is to analyze the previous characteristics from three major viewpoints: (1) expectations from literature, (2) the actual research outcome and (3) the interpretation of the outcome and trying to link them with the Egyptian business environment. The third part discusses the costing system in the Egyptian private sector in the course of explaining four major aspects: the nature of the costing system, overhead allocation, use of cost information in various functions and applications as well as the tendency for developing this system. We found that the costing system in the selected sample is a surcharge system and the concept of ABC is almost unknown. In addition, we also found that the average overhead as a percentage of total costs is 35% (several studies have found that manufacturing overhead averages about 16% of sales revenues, Garrison and Noreen, 2003, p41). Finally, the empirical results identified that 80% from the selected sample has expressed its desire toward developing the cost information system to be able to respond to the growing challenges in the business environment.

Chapter five of this thesis analyzes the control variables. As indicated in chapter three, we have three control variables of this study: organizational (strategy, organizational structure, organizational size), technological (diversity/complexity, firm's IT, production process) and environmental (PEU and competition). The discussion of each factor involves four steps: expectations from literature, construction for measurement, actual research outcome/interpretations and the impact of each factor on the basic research idea (cost information and strategic planning, CO&ST). The results of this chapter suggest that several firms in the selected sample are adopting a cost leadership strategy in the production process that allows them to sell their products or services at a lower price. In addition, some firms

also preferred to apply the differentiation strategy in order to encourage the innovation that enables firms to stimulate new product development and increase the skills and abilities of the workforce. We also found that the food sector companies are somewhat smaller than other sectors. In contrast, the pharmaceutical companies are somewhat bigger. In this regard, the pharmaceutical industry in Egypt represents one of the largest markets in the Middle East and North Africa region (MENA). To achieve the anticipated objectives of applying a mixture of strategies, we found that there is a degree of participation in the decision-making process and this process is allocated to many groups within the organization (see table 5.6). This means that Egyptian firms have a degree of decentralization in the decision-making process.

The second part of **chapter five** explains the technological factors and their role in the basic research idea. The discussion of this part along with interviews argue that the basic central aim of diversity and complexity in the selected sample is to enhance and expand the productivity that has been achieved by introducing continuous improvements to products. We also found that the chemical industry is very diverse, there is no one typical product or one typical company. This industry converts raw materials such as oil, coal, gas, water and minerals into a variety of substances that can be used by other chemical industries, other industries and consumers. We also examine the role of IT in the Egyptian business environment. In this regard, the Information and Decision Support Center (IDSC) was established in 1985 as one of the most significant instruments to manage information that helps in generating an appropriate atmosphere to increase speedy socio-economic development. When Egyptian firms have a specific department for IT, they can conduct various training sessions to the work staff in the cost accounting department to provide them with modern tools of management accounting that will modernize their information, which sequentially will have a positive influence on the decision-making process. Finally, this part highlighted the role of the labor force in the Egyptian environment. Egypt's labor force is the largest in the Arab World and second only to Turkey's in the wider Middle East. In addition, labor force in Egypt has increased from 18.617.000 in the year 2000 to 20.703.000 in year 2004. AmCham in Egypt (2004) argued that the major challenge confronting the private sector is the lack of adequately qualified human resources on both working and managerial levels. Our survey results confirm that the pharmaceutical industry requires highly skilled and trained workers that would enable this industry to overcome a lot of challenges internally and externally.

The third part of **chapter five** discusses the environmental factors that should be considered when analyzing and indicating the role of cost information in strategic planning and vise versa. Based on our interviews, the respondents suggest that three major perspectives should be analyzed to get appropriate data about the environmental uncertainty. They are competition, production technology and environmental rules. We argue that Egyptian firms that are willing to export to the EU should be familiar with EU policy and follow EU specifications (the demanding aspect, the diversity aspect and the dynamic aspect). To assist the Egyptian firms in understanding environmental factors, we suggest the

Issues Priority Matrix (Weelen and Hunger, 2000) in order to identify and analyze developments in the external environment. This matrix will help managers to be acquainted with the environmental factors which should be scrutinized and which have to be controlled and monitored as strategic factors. Finally, we discuss the competition as one of the most important factors related to the external environment. Our survey results confirm that the industry modernization program in Egypt encourages domestic and global competitiveness by providing technical assistance for small and medium-scale enterprises (Egypt Magazine, 2002). In addition, competitor analysis makes up one of the most powerful tools in the strategic planning process, which should be carefully analyzed to determine the competitors' strategy in costs and in the production process.

Chapter six of this study examines the interdependent relationship between cost information and the strategic planning process. We divide this chapter into three major parts. The first part explains the role of strategic planning in developing the cost information system. Our survey results found that the ABC system has been facing several difficulties in application in the Egyptian business environment because it is still a new system that requires further efforts to successfully be adopted. In addition, we found that the Egyptian private sector has achieved a great success in terms of improving the production process and increasing sales to meet local and international demand (USAID, Egypt, 2004). In this regard, the Egyptian food sector achieved a remarkable development by increasing Egypt's processed foods export value from 1998 to 2001 by 42.7%. In order to achieve the previous objectives related to production and sales, Egyptian firms should develop their internal systems, which provide valuable information to managers. From an accounting standpoint, most of this information is related to cost information. Egyptian firms have to formulate and establish "developing cost system" as a fundamental strategy and should decide on the programs that the organization should perform and the financial resources that will be allocated to each program. We introduce several programs to help Egyptian firms to achieve this objective effectively and efficiently. For example, these programs involve: convincing Egyptian top managers of the necessity for change, increasing the degree of coordination between managers and management accountants and facilitating the difficulties that prevent adopting the ABC system.

The second part of **chapter six** scrutinizes the role of cost information in strategic planning in the course of indicating the functions and applications in which cost information can be used. According to research limitations along with the actual statistical outcome, we discuss three major programs: pricing policy, customer profitability analysis and different types of management accounting decisions. We suggest that management accountants have to examine the product cost when determining the selling price in order to explain comprehensively which method is already used to set up the cost (total cost, manufacturing cost or variable/incremental cost). The study also found that drug manufacturers in Egypt claimed that one of their major challenges is the government's pricing policy that has failed to keep up with the rising costs of imported raw materials. In addition, the discussion also suggest that management accountants should build up their internal reports to support

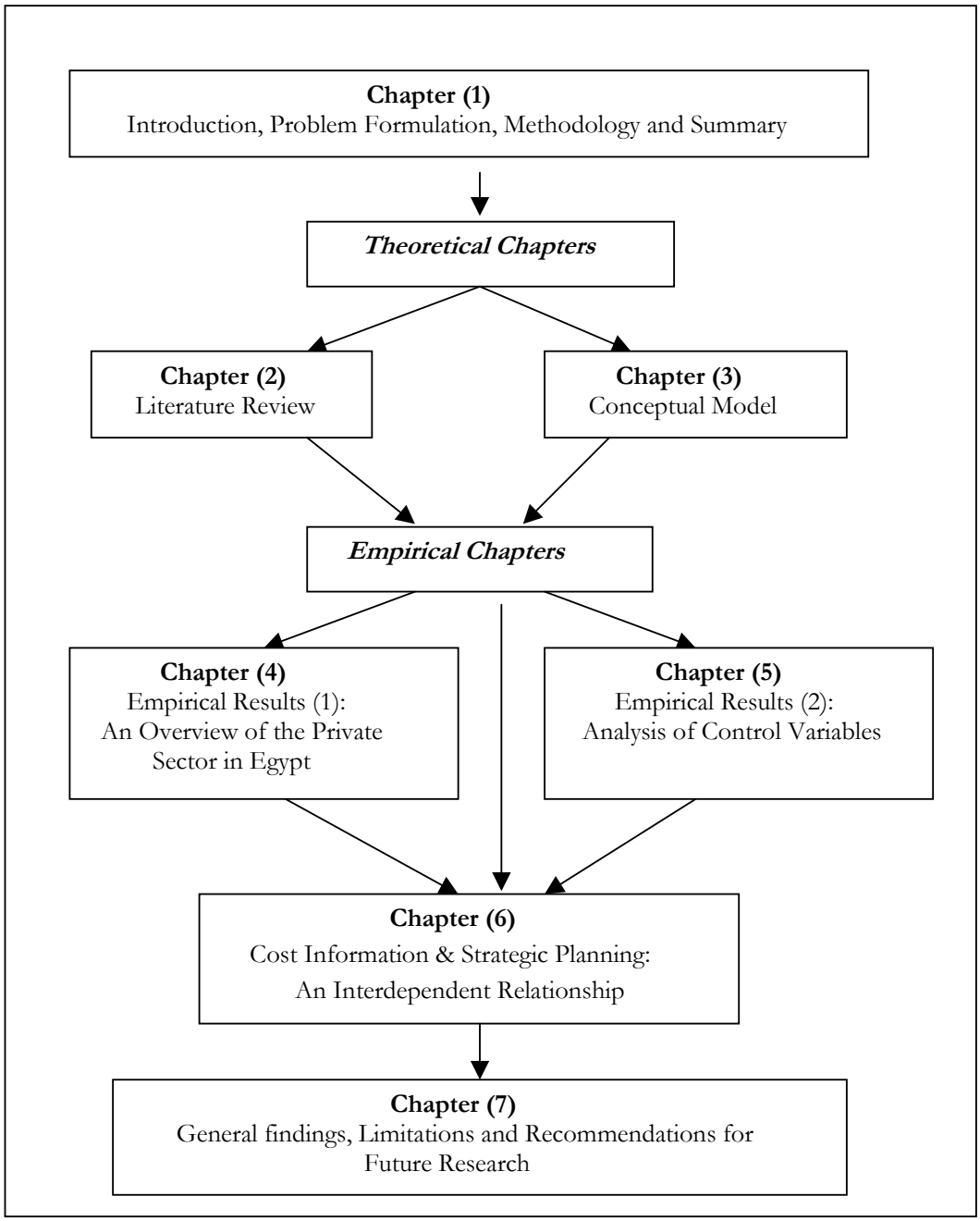
managers with different categories of costs (selling, marketing, distribution and general and administration) to help them settle on the profitable and unprofitable customers that help in the decision-making process. To accomplish this objective, we introduce customer profitability statement (Hilton et al, 2003), which shows revenues and costs of customers that provide managers with the required information to facilitate determining the profitable and unprofitable customers along with indicating the major role of cost accountants and mangers in this process that has a great impact on the overall organization's profitability. The third part of chapter six explores the potential role of management accounting in the Egyptian firms.

The purpose of the **final chapter (seven)** is to present general findings, limitations and recommendations for future research.

Appendix 1A

Figure 1.3

Structure of the Thesis



Chapter Two
Literature Review and Theoretical Background

2.1. Introduction

This chapter is devoted to a review of the main theoretical and empirical literature related to the issues of management accounting techniques[1]. Additionally, a number of researchers[2] have studied the vital role of management accounting information with respect to the manager's work. Basically, mangers in any organization carry out three major activities: - planning, directing/motivating and controlling. Planning involves selecting a course of action and specifying how the action will be implemented. Directing and motivating involves mobilizing people to carry out plans and run routine operations. Controlling involves ensuring that the plan is actually carried out and is appropriately modified as circumstances change (Garrison and Noreen, 2003). Implementing these activities (most particularly in the planning and control functions) requires periodical information from the management accounting department. Consequently, management accounting[3] is concerned with providing information to managers. On the other hand, financial accounting provides information to external users.

There have been many studies[4] of traditional techniques of management accounting which have been used already in the organizations a long time ago, such as standard costing and variance analysis, budgeting systems for planning and control, Cost-Volume-Profit analysis for decision-making and financials measurements of performance such as Return On Investment and Residual Income. Nevertheless, these techniques are not sufficient to provide managers with the information they require particularly in the changing business environment. Garrison and Noreen (2003) and others such as Zimmerman (2003) point out that the last two decades have been a period of remarkable change in the business environment, including the explosive development of the Internet, competition in many industries which has become international in scope, as well as the pace of innovation in products and services has accelerated. Since the early 1980s, many companies have gone through several waves of improvement programs, starting with Just-In Time (JIT), passing on to Total Quality Management (TQM) and Business Process Reengineering (BPR). Hence,

[1] Management accounting includes two types of techniques; (1) traditional techniques: these techniques include the use of budgeting systems for planning and control, performance measures such as ROI, divisional profit reports, and cost-volume-profit techniques for decisions. (2) A variety of contemporary practices include various forms of benchmarking, activity-based techniques; such as Activity-based management and Activity – based costing, and Balanced performance measures (Chenhall and Langfield-Smith, 1998). In this chapter, critical vision will be introduced for traditional techniques and in chapter six of the thesis the contemporary techniques will be introduced in brief.

[2] For example, Mendoza and Bescos 2001, Jonsson 1998, Wouters and Verdaasdonk 2002.

[3] There are a number of differences from various perspectives between management accounting and financial accounting; these perspectives include major users, GAAP constraints, data characteristics, performance evaluation, types of reports, frequency of reports, quantity of information required and mandatory or not mandatory. See for example, Mclaney and Atrill 2002, Garrison and Noreen 2003, Horngren et al. 1999.

[4] For example, Zimmerman 1995, Kaplan and Atkinson 1998, Hilton et al. 2003.

adopting these improvement programs could improve quality, shrink cost, amplify output, reduce delays in responding to customers and finally increase profits. Accordingly, the management accounting system requires considerable changes in its techniques to be able to supply managers with information to assist them continually in the strategic planning and decision-making process. [5]

This chapter has three major parts. The first part discusses the critical vision on traditional management accounting techniques. The discussion in the first part will further identify the weaknesses of these techniques that make them inadequate in providing managers with the information they need. The second part discusses various criticisms of the cost accounting system that has to be taken into consideration to enable this system to provide accurate information to managers. The third part highlights the strategic planning process in the changing business environment and the recent tendencies of management thinking. In addition, this part also will explain that these changes in the business environment and new management thinking require new techniques of management accounting that allow managers to cope successfully with this environment.

2.2 Critical view to the traditional management accounting techniques.

Management accounting systems provide information to assist managers in their planning and control activities. Management accounting activities include collecting, classifying, processing, analyzing and reporting information to managers. Unlike the financial accounting information prepared for external users, such as investors, creditors, suppliers and tax and regulatory authorities, management accounting information should be designed to help decision-making inside the firm (Kaplan and Atkinson, 1998). In this section, the study briefly reviews the theoretical understanding of the traditional management accounting techniques. Our major objectives in discussing these techniques are: (1) drawing attention to a wide range of existing tools applied in most firms, (2) identifying the practical problems of using them and (3) attempting to link between such challenges and how to overcome them by adopting new tools.

2.2.1 Standard Costing and Variance Analysis.

Standard costing represents one of the earliest tools that has been used. By the first decade of the twentieth century, accountants and engineers extended the quantity standards of scientific management[6] to include labor costs per hour and a material cost per unit so that labor and material cost standards could be developed for production processes. At that time, complicated systems to record and analyze the variances of actual from standard costs had

[5] JIT, TQM and BPR are worthy of extended study, but we will discuss them in the third part of this chapter briefly. The details are best handled in operations management courses.

[6] Scientific management movement has been founded by a group of mechanical engineers (Frederick Taylor is the best known of this group). The objective was to simplify the work, make the workers more efficient, and be able to monitor the workers' efforts. Detailed and accurate standards for material and labor usage were developed to control work and to pay workers on a "scientifically determined" piecework basis (Kaplan and Atkinson, 1998).

already been articulated (Kaplan and Atkinson, 1998). Hence, standard costing had been widely adopted mainly in manufacturing companies with the purpose of responding to a new set of challenges for management accounting systems, such as the wide variety of finished products and how different products consumed resources at different rates. A number of researchers[7] have introduced different perspectives in defining and explaining the meaning of a standard. Zimmerman (2003, P. 599) states, "*Standard costs are benchmarks. They represent the expected or desired future cost of a product, process, or subcomponent. Once standards are set, managers can gauge performance by comparing actual operating results against the standards".* Weetman (1999) refers to a variety of purposes for which the standards will be used, for example (1) to provide product costs for stock valuation, (2) to integrate costs in the planning and pricing structure of a business, (3) to reduce record-keeping costs when transactions take place at different prices[8]. In the words of Drury (1996, p. 544) "*Only by comparing total actual costs with total standard costs for each operation or responsibility center for a period can control be effectively achieved*". In addition, standards are divided into two categories, price and quantity; as different managers are usually responsible for buying and for using inputs and these two activities occur at different points in time. Accordingly, differences between standard prices and actual prices and standard quantities and actual quantities are called variances or discrepancies. The act of computing and interpreting variances is called variance analysis (Garrison and Noreen, 2003)[9].

Critique of standard costing in today's business environment[10]

Standard costing has been extensively used in the accounting system in manufacturing companies for both cost control and product-costing purposes for several decades. However, today's manufacturing environment is altering considerably. It is evident that a large number of researchers have discussed several practical problems related to standard costing and variance analysis. Most of these problems are concerned with the high cost of designing and implementing the standards (McWatters et al 2001, Weetman 1999, Drury 1996). On the other hand, a number of studies criticized standard costing focusing on the problems resulting from traditional cost variances and standard costing system in general (Hilton et al 2003, Mclaney and Atrill 2002).

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[7] For example, Garrison and Noreen 2003, MacWatters et al. 2001, Blocher et al. 2002.

[8] There are other purposes as well. (A) Providing useful information to managers of responsibility centers who are responsible for the various operations, (B) increasing control within a budgeting system and (C) gauging performance of a business unit by using variance analysis.

[9] In this source, you can observe that the model of variance analysis is designed only for variable production costs; on the other hand fixed overhead costs (such as depreciation, supervisory salaries and insurance) come in large, indivisible pieces. Expressing fixed costs on a unit or per hour basis, though necessary for product costing for external reports, is artificial. Increases or decreases in activity in fact have no effect on the total fixed costs within the relevant range of activity. Even though fixed costs are expressed on a unit or on a per hour basis, they are not proportional to activity. In a sense, the volume variance is the error that occurs as a result of treating costs as variable costs in the costing system.

[10] Although these are criticisms of standard costing, Garrison and Noreen (2003) argue that standard costing systems have a number of advantages for example, (1) standard costs is a key element in a management by exception, (2) it fits naturally in an integrated system of "responsibility accounting" (3) it provides benchmarks that individuals can use to judge their own performance.

McWatters et al (2001) point out that standard cost systems are very expensive in terms of designing and implementation. The accounting system must maintain standards for each labor and material input; these standards should be revised and adjusted on a regular basis as well. Moreover, the continuous improvement tools (such as TQM and JIT) might make standards quickly obsolete. In addition, investing cost variances is expensive in terms of the cost of the manager's time. Furthermore, there are several drawbacks related to standard costing in an advanced manufacturing setting[11]. These drawbacks include (for example): the variances calculated are too aggregated and come too late to be useful, traditional standard-costing systems focus on cost minimization rather than improving product quality or customer satisfaction, traditional standard cost systems focus basically on the cost and efficiency of direct labor which in turn is becoming an insignificant aspect of production and finally shorter product life cycles mean that standards are relevant for only a short time. When new products are introduced, new standards are required. However, standard costs are still found in the enormous majority of manufacturing companies and in many service companies. A comparative study of cost accounting practices found that three-fourths of the companies surveyed in the United Kingdom, two-thirds of the companies surveyed in Canada, and 40% of the companies surveyed in Japan used standard cost systems. For evaluating performance, standard cost variances may be supplanted in the future by the Balanced Scorecard[12] in order to evaluate the company's performance from different perspectives other than financial viewpoint. These perspectives include customer, internal business processes and the employees' skills.

2.2.2 Budgeting Systems for Planning and Control

Organizations develop strategies as a basis to compete in their operating environment. Budgets are a key component of the organization's planning and control system[13], providing the mechanism to translate organizational goals into financial terms. As McWatters et al (2001, p. 240) state, "*Budgeting is the process of gathering information to assist in making forecasts; it is a very costly process. Managers often spend up to 20% of their time on budgeting. Its popularity, however, indicates that its perceived benefits are greater than its costs".* Additionally, a budget plays an important role in allocating resources, coordinating operations including identifying constraints and communicating and authorizing actions, motivating and guiding implementation, providing guidelines for controlling operations and managing cash flows, and finishing criteria for evaluating performance (Blocher et al, 2002). Furthermore, companies realize many benefits from a budgeting program. According to Garrison and Noreen (2003), a budgeting system provides benefits to organizations in managing their activities properly; (1) budgets provide a means of communicating management's plans

[11] These drawbacks are quoted from Hilton et al (2001).

[12] Chapter 6 is concerned with providing a brief idea about this new technique and the requirements of applications that help to adopt it.

[13] The planning and control process in firms is implemented through seven steps as follows: (1) identify business objectives, (2) consider options, (3) evaluate options and make a selection, (4) prepare budgets, (5) perform and collect information on actual performance, (6) respond to variances, and (7) revise plans and (budgets) if necessary. For more details about these steps see Mclaney and Atrill (2002).

throughout the company, (2) budgets encourage managers to think about and plan for the future (3) budgets define goals and objectives that can serve as benchmarks for evaluating subsequent performance and (4) the budgeting process can determine potential bottlenecks before they occur.

The mechanism of budgets has been discussed in a number of studies (McWatters et al. 2001, Blocher et al. 2002, Garrison and Noreen 2003, Weetman 1999, Horngren et al. 2002, Hilton et al. 2003). We have chosen some of these studies to indicate briefly how to construct a master budget. The master budget, the principal output of a budgeting system, is a comprehensive profit plan that ties together all phases of an organization's operations. The master budgets are comprised of many separate budgets, or schedules that are interdependent (Hilton et al. 2003). According to Blocher et al. (2002, P.349) state "*the master budget is the comprehensive budget for the period and consists of many interrelated budgets including both operating and financial budgets. Preparation of a master budget starts with a review of the firm's strategic goals, long-term objectives, and long-range plan. Some firms refer to the process of preparing a master budget as profit planning or targeting".*

The master budget is a summary of a company's plans that sets specific targets for sales, production, distribution and financing activities. It generally culminates in a cash budget, a budgeted income statement, and a budgeted balance sheet. In short, it represents a comprehensive expression of management's plans for the future and how these plans are to be accomplished (Garrison and Noreen, 2003). However, the previous discussion about budgets raises an important question: w*hat is the role of accountants in preparing budgets*? The discussion in Drury (1996, P. 471) attempts to provide a reasonable answer to that question as he states *"The accounting staff*[14] *will normally assist managers in the preparation of their budgets; they will for example, circulate and advise on the instructions about budget preparation, provide past information that may be useful for preparing the present budget, and ensure that managers submit their budgets on time".* However, a relevant question could be posed at this point: are traditional budgets relevant to an organization in relation to its external environment? The discussion in the next section will provide a brief explanation that will help understand the drawbacks of budgets. Throughout the subsequent discussion, we will try to link such drawbacks and how to eliminate them by adding new tools in order to enhance the efficiency of budgets to carry out their objectives in planning and control functions.

Critique of budgeting systems and suggestions for change.

In recent years, the business environment has witnessed more changes in competition tools and management strategies. Consequently, there are major changes that must be implemented as to how organizations are managed and in how work is achieved. One of the major tools, which must be modified to be able to deal with such a new environment, is the budgeting system. More studies have discussed the problems facing the budget's

[14] The accounting staff does not determine the content of the various budgets, but they do provide a valuable advisory and clerical service for the line managers.

performance in planning and control (Mclaney and Atrill 2002, Garrison and Noreen 2003, Horngren et al. 2002, Hilton et al. 2003). The discussion in the next section summarizes some of the criticisms of budgeting systems in points as follows:

First: Non-financial measures have an important role to play in assessing performance in such key areas as customer / supplier delivery times, set-up times, defect levels and customer satisfaction levels. Thus, non-financial measures can be incorporated into the budgeting process and reported alongside the financial targets for the business (Mclaney and Atrill 2002). A 1993 survey of manufacturing business revealed that non-financial measures are widely used by business. Figure 2.1 is taken from this study.

Figure 2.1: Non- financial measures in assessing performance.

	Extent to which performance is measured					
	Never / rarely		sometimes		often / always	
	Smaller Firms %	Larger Firms %	Smaller Firms %	Larger Firms %	Smaller Firms %	Larger Firms %
Customer satisfaction / Product quality	22	2	11	7	67	91
Customer delivery Efficiency	16	2	22	7	62	91
Supplier quality Delivery	16	4	32	15	52	81
Throughput times	33	6	24	20	43	74
Set-up times	59	32	19	22	22	46

Source: McLaney and Atrill (2002, P. 377)

As shown in Figure 2.1, we can see that customer-based measurements are the most widely used form of non-financial performance measures. There are also clear differences between the smaller firms and larger firms in the extent to which non-financial measurements are used. One of the most popular techniques of contemporary management accounting is a Balanced Scorecard, which consists of an integrated set of performance measures that are derived from the company's strategy.

Second: Garrison and Noreen (2003, P. 399) state, *"Fluctuations in foreign currency exchange rates create unique budgeting problems. Exporters may be able to predict with some accuracy their sales in the local foreign currency such as South African Rands and Swiss Frances. However, the amounts they eventually receive in their own currency will depend on the currency exchange rates that prevail at the time. If, for example, the currency exchange rates are less favorable than expected, the company will ultimately receive in its own currency less than it had anticipated"*. Egyptian companies could face this problem when purchasing raw materials from abroad. From our point of view, this problem does not exist

among exporters who are dealing with each other in the European Union because the unified currency (EURO) has facilitated exporting and importing transactions among the countries that are members.

Third: Horngren et al (2002) refer to a study[15], which summarizes some problems of traditional budgeting and the proposals relating to improving traditional budgeting systems, however, we have selected three of these criticisms[16] through table 2.2.

Table 2.2: Problems of traditional budgeting and proposals for change

Problems of traditional budgeting	Proposal for change	Notes[17]
1. Excessive reliance on extrapolating past trends.	Link budgeting explicitly to strategy.	Balanced Scorecard is based on how to translate the firm's strategy to performance measures.
2. Budget is preoccupied with financial aspects of events in the budget period.	Balance financial aspects with non-financial (such as quality and time).	Balanced Scorecard consists of an integrated set of performance measures from other perspectives.
3. Make across-the-board fixed percentage cuts when early iterations of a budget provide unacceptable results.	Use activity-based budgeting to guide areas for cost reduction.	Activity-Based Budgeting (ABB) is the process of developing a master budget using information obtained form ABC.

2.2.3 Cost –Volume-Profit analysis for decision-making (CVP analysis)

A model is a representation of reality; a financial model is an accurate, reliable simulation of the relationships between relevant costs, benefits, value and risk that is useful for supporting business decisions (Hilton et al, 2003). A good financial model works in much the same fashion as a flight simulator, allowing an organization to test the interactions of decisions and economic variables in a variety of settings. These models require analysts to develop sets of relationships that represent a company's operating and financial activities, such as the ratio of variable costs to sales and the inventory turnover ratio. Hilton et al (2003) indicate that financial models should be designed to have the following three common characteristics and objectives: (1) usefulness for decision-making, (2) accurate and reliable simulation of relevant factors and relations and (3) flexible and responsive analysis[18]. Cost-Volume-Profit

[15] Source: Adapted from Advanced Budgeting study group for CAM-I, management accounting (UK), Dec. 1994. See the rest of criticisms in Horngren et al. 2002, PP: 490,491.

[16] The choice of these three criticisms is intentional, because we wanted to link between these criticisms and how to overcome them by using contemporary management accounting techniques that will be discussed with details in the analytical chapters in this study.

[17] These notes are designed by the researcher to complete the benefits from showing these criticisms.

[18] For more details, see Hilton et al (2003). According to this source you can show examples of financial models used by organizations of all types and sizes. Otherwise, these specialized models are beyond the scope of my thesis.

(CVP) analysis[19] (the most basic financial model) is a method that examines a product's profitability at different sales volumes. CVP estimates the change in profit with a change in units sold. It makes certain assumptions about revenues and product costs to simplify the analysis (McWatters et al. 2001). Thus, CVP analysis is considered one of the powerful tools that managers can use to help them in most of their decisions. Horngren et al (2002, P. 226) state *"managers commonly use CVP as a tool to help them answer such questions as: How will revenues and costs be affected if we sell 1000 more units? If we raise or lower selling prices? If we expand business into overseas markets?"*

Furthermore, CVP analysis helps managers to understand the interrelationship between cost, volume, and profit in an organization by focusing on interactions among the following five elements: (1) prices of products, (2) volume or level of activity, (3) per unit variable costs, (4) total fixed costs and (5) mixture of products sold. Consequently, if the interrelationship is effectively formed among the above elements, managers can use CVP[20] as a vital tool in many business decisions. Garrison and Noreen (2003) mention some of these decisions that may include: which products to manufacture or sell, what pricing policy to follow, what marketing strategy to employ and what type of productive facilities to acquire. In addition, CVP has a role in strategic planning that can assist managers in achieving their goals effectively. Anthony and Govindarajan (1995, P. 319) state, "*Management decides on the goals of the organization and the main strategies for achieving these goals. The strategic planning process takes these goals and strategies as given and seeks to develop programs that will implement the strategies efficiently and effectively".* Figure 2.3 outlines some of the strategic questions answered by CVP analysis.

Figure 2.3: Strategic questions answered by CVP Analysis

1. What is the expected level of profit at a given sales volume?
2. What additional amount of sales is needed to achieve a desired level of profit?
3. What will be the effect on profit of a given increase in sales?
4. What is the required funding level for a governmental agency, given desired service levels?
5. What sales level is needed to cover all costs in a sales region or product line?

Source: Blocher et al (2002, P. 300)

As figure 2.3 shows, the role of CVP analysis is to identify the most cost-effective manufacturing methods, including automation, outsourcing, and total quality management. In contrast, a firm following the differentiation strategy[21] needs CVP analysis in the early

[19] A more general name for these financial planning models is CRD (Cost and Revenue Driver) models, but CVP is widely used at this time. Besides, pronouncing this acronym might reduce confidence in the model

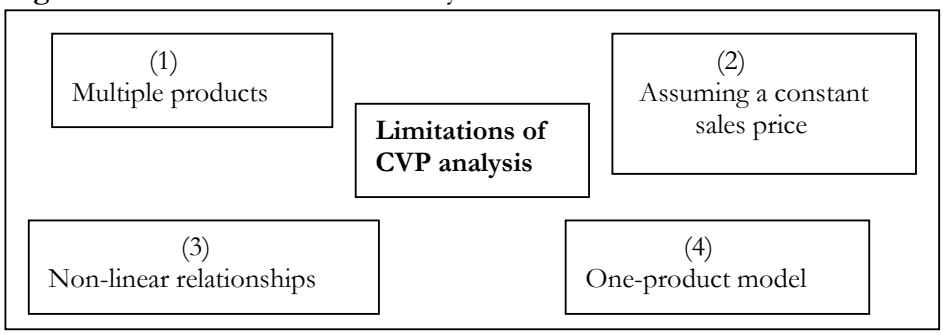
[20] As we mentioned in the preceding paragraph, CVP is one of the financial models in the organization; however, designing that model properly needs significant understanding of an organization's cost structure. Once planners have identified the organization's cost structure, they can use the information to develop a financial model of the organization. See for example, Kaplan and Atkinson 1998, Zimmerman 1996, Weetman 1999.

[21] According to Chenhall and Langfield-Smith (1998), based on Porter (1980) it is evident that two basic strategic priorities are commonly used in a large number of firms; (1) Low price: Low cost production allows the firm to sell its products or services at a lower price than competitors, (2) Differentiation: Sources of

phases of the cost life cycle to assess the profitability of new products and the desirability of new features for existing products. Nevertheless, CVP provides a useful basis for exploring certain business decision situations. According to Zimmerman (2003, P. 47) *"Cost-Volume-Profit analysis forces managers to understand how costs and revenues vary with changes in output. In fact, 55 percent of 219 large U.S. firms surveyed use it"*. Similarly, firms that specialize in home health care, nursing homes, or outpatient care use CVP analysis to identify profitable new services and to help analyze the costs of delivering existing services.

Limitations of CVP analysis

Figure 2.4: Limitations of CVP analysis[22]



As indicated in figure 2.4, according to Mclaney and Atrill (2002) most businesses do not offer just one product or service. This is a problem for break-even analysis since it raises the question of the effect of additional sales of one product or service on sales of another of the business's products or services. Moreover, producing several products also creates a problem related to fixed cost. Zimmerman (2003, P. 47) states, *"If the firm produces multiple products, and fixed costs such as property taxes are incurred to produce all the products, then the break-even point or target profit for any one of the products depends on the volume of the other products. With multiple products and common fixed costs, it is not meaningful to discuss the break-even point for just one product"*. On the other hand, another problem resulting from CVP analysis is the assumption of a constant sales price. In recent years, particularly after the widespread increase of technology in many sectors, numerous firms have entered the market wanting to take a high percentage of the market share. Consequently, to compete more in the introduction market, some firms increase their sales regardless of the high price. They sell more at a low price to achieve progress in addition to reducing the inventory of some kinds of products. According to McWatters et al (2001), in most markets, if you want to sell more units, you must lower your sales price. Assuming that you can sell very large amounts at a constant price is unrealistic. CVP analysis has no explicit assumption of a constraint in production or sales. The

differentiation include superior quality, product flexibility, customer service, prompt delivery and product design.

[22]The researcher designs this figure after surveying some sources that discussed the problems related to CVP analysis (McWatters et al. 2001, Mchlaney and Atrill 2002, Blocher et al. 2002, Zimmerman 2003, Garrison and Noreen 2003).

assumption of a constant sales price is probably accurate only over a narrow range of output levels[23].

Additionally, the normal approach to break-even analysis, in practice, assumes that the relationships between sales revenues, variable costs and volume are strictly straight-line ones. In real life this is unlikely to be true. This is probably not a major problem, since break-even analysis is normally conducted prior to the activity actually taking place. The ability to predict future costs, revenues and so on is somewhat limited, hence, what are probably minor variations from strict linearity are unlikely to be significant compared to other forecasting errors. Alternatively, CVP analysis is a one-period model. During a period of time, the revenues and costs are estimated for different levels of output. Products may have a life cycle of many years. McWatters et al (2001, P. 144) discuss this problem in depth and point out *"to accommodate a longer product- life cycle, an assumption could be made that each intermediate time period is identical in terms of revenues and costs. If revenues and costs differ for different intermediate time periods, some methods of trading off profit from different periods of time must be used".*

2.2.4 Financial measures for performance

Managers of responsibility centers are evaluated on the basis of performance measures and should be based on the controllability principle; they may either be accounting based or nonfinancial. Return on Investment (ROI) and Residual Income (RI)/ Economic Value Added (EVA) are accounting-based performance measures commonly used to evaluate managers of investment centers[24]. These performance measurements have their own strengths and weaknesses and are generally more effective when used in conjunction with other performance measurements. ROI is the most popular investment center performance measure. ROI is defined as net operating income divided by average operating assets[25]:

$$ROI = \frac{\text{Net operating income}}{\text{Average operating assets}}$$

We can adjust this formula slightly by introducing sales as follows:

---

[23] For most goods, including, for example high-end athletic shoes, a lower price is needed to increase sales. This basic law of supply and demand highlights one limitation of CVP analysis- the assumption of a constant sales price even firms that offer the latest fashion trend face constraints in terms of sales and production levels.

[24]Most companies classify business segments into cost centers, profit centers, and investment centers−depending on the responsibilities of the managers of the segments. The investment center is a segment in an organization whose manager has control over cost, revenue and investment in operating assets. Investment center mangers are usually evaluated using return on investment or residual income measures as discussed later in this section. For further details about responsibility centers, see for example, Wilson and Chua 1988, Garrison and Noreen 2003.

[25] Companies vary in the way they define both the numerator and the denominator of the ROI, for example, some firms use operating profit for the numerator, other firms use net profit. Some firms use total assets in the denominator. Others use total assets minus current liabilities. This problem is more common among researchers; see for example, Horngren et al 2002, Garrison and Noreen 2003.

$$ROI = \underbrace{\frac{\text{Net operating income}}{\text{Sales}}}_{\text{Margin}} \times \underbrace{\frac{\text{Sales}}{\text{Average operating assets}}}_{\text{Turnover}}$$

As shown in the previous formula, ROI has two elements: margin and turnover, in addition, sometimes margin is called Return On Sales (ROS) and turnover is called Asset Turnover. Blocher et al (2002, P. 903) note, "*Return on sales (ROS), a firm's profit per sales dollar, measures the manager's ability to control expenses and increase revenues to improve profitability. Asset turnover, the amount of dollar sales achieved per dollar of investment, measures the manager's ability to increase sales from a given level of investment. Together, the two components of ROI tell a more complete story of the managers performance and enhance top manager's ability to evaluate and compare the different units".* Furthermore, according to Wilson and Chua (1988), an investment center manager can increase ROI in basically three ways: (1) boost sales, (2) reduce invested capital and (3) reduce expenses (while holding the other two factors constant). In other words, an increase in percentage margins or capital turnover without worsening the other will enhance ROI.

Problems with ROI

Although ROI has the advantage of controlling the size of the investment center, it has problems as a performance measure. These include: (1) measurement problems, (2) conflicts between the manager and the entire organization's strategy, and (3) failure to recognize the risk of the projects. Computing ROI requires a better understanding for its components but this is not clear as Wilson and Chua (1988, P. 317) note, "*There is a lack of consensus on the definition of numerator and denominator".* Furthermore, according to McWatters et al (2001), using ROI as a performance measurement does not reflect the market value for two reasons. First, accounting income (the numerator of the ROI) is not a measure of change in the organization's market value. Second, investment (the denominator of the ROI) is not the market value of the center's investment. Traditionally, the income and investment are measured using historical costs, which usually differ from the market value.

According to Garrison and Noreen (2003), just telling managers to increase ROI may not be enough. Managers may not know how to increase ROI. They may increase ROI in a way that is inconsistent with the company's strategy, or they may take actions that increase ROI on the short run and harm the company on the long run (such as cutting back on research and development). In addition, a manager whose evaluation is based on ROI may reject investment opportunities that are profitable for the whole company but that would have a negative impact on the manger's performance evaluation. Furthermore, there is a link between using ROI to measure performance and the allocation of organization's resources. Wilson and Chua (1988, P. 317) state, "*the use of divisional ROI to evaluate performance can distort an enterprise's overall allocation of resources when the manager of one division avoids investing in a project that would improve overall performance for the enterprise but which would reduce that division's ROI".* Finally, the ROI of an investment center does not explicitly recognize the center's risk. From

a financial theory, we know that risky investments should have a higher expected return to compensate for the higher risk. Therefore, a manager who generates a large ROI could be investing in riskier assets, which may not be consistent with the organization's goals. Other approaches to measuring an investment center's performance are Residual Income (RI)/ Economic Value Added (EVA)[26]. A number of researchers[27] have explained what residual income refers to. Residual income is the net operating income of an investment center above the minimum, which is required to achieve return on its operating assets (Garrison and Noreen, 2003). The term opportunity cost can be used to illustrate clearly the purpose of residual income as McWatters et al (2001, P. 206) state, "*Residual income is the difference between the investment center's profits and the opportunity cost of using its assets. The opportunity cost of using the assets is the opportunity cost of capital times the market value of the assets. This can be shown by the following equation: Residual income= Profits – (opportunity cost of capital) (total assets).*

On the other hand, Economic Value Added (EVA) is an adaptation of residual income that has been recently adopted by many companies. EVA is calculated by subtracting the opportunity cost of the capital from profits generated (Villiers, 1997)[28]. Consequently, EVA is calculated in the same manner as residual income. However, according to McWatters et al (2001), differences in the general formula are noted in practice. First, EVA makes a series of adjustments to accounting income[29]. For example, research and development costs often are included as assets. Second, the opportunity cost of capital is calculated as the weighted-average cost of debt and equity. Third, EVA has been linked more frequently to managerial compensation contracts. In summary, although traditional management accounting techniques are still applicable in a wide variety of organizations, they continually face some problems in achieving the company's objectives successfully. Hence, companies may find a lot of obstacles in enhancing internal operations that can affect profits and market share particularly in the changing business environment. Successful organizations can adapt rapidly to changing customer demand, technological modernization and global competition. As a consequence, meeting or even exceeding customer expectations is the key to success for an organization. This could be achieved if an organization modifies its internal systems to be able to cope with the industrial revolution–including (TQM), (JIT) and (BPR) along with the recent trend to strategic management and strategic planning.

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[26] The basic idea underlying residual income and economic value added has been around for over 100 years. In recent years, economic value added has been popularized and trademarked by the consulting firm Stern, Stewart &Co.

[27] For example, Kaplan and Atkinson 1998, Wilson and Chua 1988, Garrison and Noreen 2003.

[28] This source explains the main benefits of EVA; moreover, it outlines the calculation of EVA and discusses the difference between accounting returns and true returns. It also presents the model used in the analysis, which consists of a theoretical firm in steady state under inflation making known true returns. For further details, see Villiers (1997).

[29] Over 100 different adjustments could be made for deferred taxes, LIFO reserves, provisions for future liabilities, mergers and acquisitions, gains or losses due to changes in accounting rules, operating leases, and other accounts, but most companies make only a few. For further details. See Garrison and Noreen (2003).

2.3 A Conventional Cost Accounting System: A Critical Look

Several studies have discussed the correlation between management and its needs for cost data (for example: Wright 1994, Atrill and McLaney 2002, Nobes and Parker 2000, Garrison et al 2003). Management's work involves specifying objectives and drawing up how to attain these objectives (*planning phase*). It also involves taking steps to make certain that the objectives that have been set are successfully realized and implemented (*control phase*). To carry out these planning and control responsibilities, managers need adequate information about the organization. From an accounting perspective, this information is often associated with the costs of the organization. Since managers depend to a great extent on cost information in performing the majority of decisions, the cost information system should be able to provide sufficient, dependable and valuable information that can be used effectively in executing many short and long-term decisions which have a bearing on the entire organization's profitability. The following part discusses certain criticisms of cost accounting system including objectives, non-financial measurements, quality costs and product life cycle.

2.3.1 Cost accounting objectives: appraisal and critique

Numerous researchers have discussed the objectives of cost accounting and its role in providing useful and reliable information to internal and external users (Barfield 1998, Wright 1994, Atrill and McLaney 2002, Kaplan and Atkinson 1998). Barfield (1998) clearly indicates the fundamental role of cost information is sustaining managers and other users with the required data. As mentioned in chapter one, cost accounting integrates financial accounting by providing product cost information for financial statements. It also integrates management accounting by providing some of the quantitative and cost-based information that managers need to perform their tasks. Additionally, Kaplan and Atkinson (1998) identify an assortment of tasks that can be carried out with cost data including: making important product feature and product mix decisions, developing competitive strategies and performance evaluation. Moreover, costing systems continue to serve many purposes in their internal service role. Wright (1994) mentions these purposes of costing systems including: (1) analyzing cost information over products, jobs, departments, services and processes, (2) comparing costs of manufacturing different products and providing varied services, (3) identifying trends in the way costs are incurred and (4) regulating use of scarce resources.

Although these traditional uses of cost information are still applicable, the contemporary trend is to provide cost information to managers for use in their various activities such as functional planning, controlling, performance evaluation and decision-making. Now, in the beginning of this new millennium, the world, characterized by surplus industrial production, has altered fundamentally. Most of it is now characterized by: capital-intensive and machine-paced production, a high level of overheads relative to direct costs and a highly competitive international market. As a result, businesses also have to develop their cost systems to enable them to deal with such new trends, particularly a high level of overheads, by focusing on performed *activities* and the costs of such activities. Analyzing activities and their costs is extremely crucial. For example, the current business issues in the pharmaceutical industry

include cost pressure on all operational departments, accelerating innovation, shortening time-to-market and easy-to-use and secure software for the laboratory as well as providing reliable information throughout the whole company. Hence, scrutinizing activities should be one of the most essential objectives that a cost accounting system has to adopt in order to improve business processes and cope with domestic and global competition.

2.3.2 Absence of non-financial measurements for performance

Organizations need measurements to evaluate their performance which in turn can help them take positive steps to cover problems they encounter and handle challenges they face. They can use performance measurement as a tool to provide feedback concerning what works and what does not work along with motivating people to sustain their efforts (Folk et al 2002, Ward 1992, Garrison et al 2003, Burch 1994, Nobes and Parker 2000). Standard costing is considered one of the most important financial measurements for performance. Companies in highly competitive industries like Federal Express, Southwest Airlines, Dell Computer, Shell Oil and Toyota must be able to provide high-quality goods and services at a low cost. Accordingly, managers must obtain inputs such as raw materials and electricity at the lowest prices possible and must use them as effectively as possible—while maintaining or increasing the quality of the output. If inputs are purchased at prices that are too high or more input is used than is really necessary, higher costs will result. For many companies, the answer to this control problem lies, at least partially, in standard costs.

Louderback and Holmen (2003) discuss the performance evaluation and manager's work as they argue that performance evaluation and control are closely related. Managers are evaluated partly on the basis of how well they control their operations: whether they achieve budgeted sales, meet budgeted cost levels or produce budgeted quantities of products. Unfortunately, most companies in the world, including Egyptian companies, —still rely on financial measurements for performance. As Ward (1992, P.46) confirms *"Most businesses have not yet developed their financial control systems, the overall measure of return on investment (*ROI*) is used as the most common financial control yardstick irrespective of the stage of development of the product. This particular measure has the major problems of both being short-term, and relying on measuring accounting profits, which are much more subjective than the more decision-oriented cash flow"*. To evaluate the actual performance of the organization, measurements should combine financial and non-financial perspectives in order to draw up a comprehensive image of the company's performance. Hence, the evaluation should be based on measurements other than money such as customer satisfaction, learning and development and internal business processes. (Chapter six will introduce a Balanced Scorecard in an attempt to measure the company's performance based on measures other than financial aspects).

2.3.3 The negligence of quality costs

Various aforementioned studies have scrutinized quality costs and the extensive necessity of analyzing and interpreting such types of costs (Ansari et al 1997, Anderson and Sedatole 1998, Elshazly 1999, Sjoblom 1998, Oliver and Qu 1999, Kim and Liao 1994, Krisnam et al 2000, Wheldon and Ross 1998). In accordance with the first study mentioned above, quality costs are costs incurred to insure that a product or service meets customers' expectations. A good system for measuring quality costs is essential for pursuing quality as a strategic goal. In addition, it helps management to achieve other strategic goals of producing products, such as a rational costs and delivering products to customers in time. In addition, Elshazly (1999) and others identify four categories of quality costs; (1) prevention costs such as quality engineering, quality training, quality circles and preventive equipment maintenance, (2) appraisal and assessment costs such as inspection of incoming materials, product tests and supplies used in testing and inspection, (3) internal failure costs such as costs of spoilage and scrap, rework, and the disposal of defective products and (4) external failure costs such as warranty repair, service calls, product recalls and lost sales due to poor quality. As a result, analyzing and interpreting quality costs are crucial for many organizations to achieve a high level of customer satisfaction. According to Oliver and Qu (1999) [30], customers' demands for quality products at the lowest possible costs have forced business managers to focus their attention on production methods and cost management strategies in a bid to reduce costs while maintaining product/service specifications. The management accountant can help determine for each department how much of its materials, labor and overhead costs represent a cost of quality. The accountant can then classify these costs into the four formerly identified categories of prevention, appraisal, internal failure and external failure (Elshazly, 1999). Moreover, Anderson and Sedatole (1998, P.231) investigate the accounting role in analyzing and designing product quality as they stated, "*Operational improvements are a weak lever for improving overall product quality and reducing costs. It is commonly accepted that as much as 80% of product costs are immutable once the product design and process technology is established. Thus the question is, "Can accounting data play a role in designing quality into products?"*

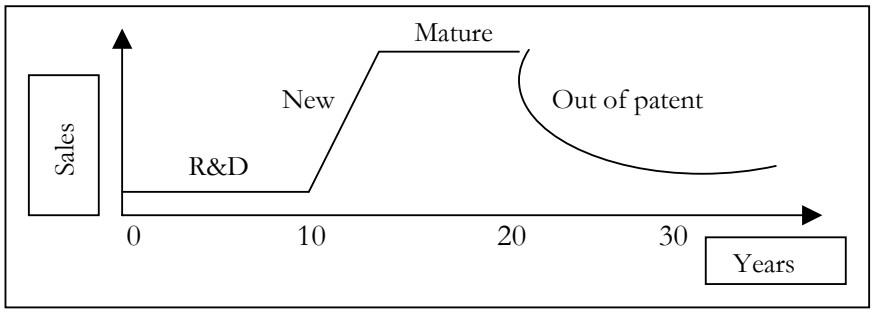
2.3.4 The product life cycle (PLC): Analysis and Evaluation

Products and services go through a series of sequential life cycle stages. Several preceding authors have identified the general stages of PLC (Raiborn et al 1993, McWatters et al 2001, Ward 1992, Hilton et al 2003). In reference to the first author, the specific product life cycle stages are: development, introduction, growth, maturity and harvest. Companies should be familiar with all stages in order to recognize the impact of each stage on costs, sales and pricing strategies. During the development stage, costs exist without any revenues; costs are greater than before during the introduction stage as well as when sales begin without attaining profits. During the remaining three stages, costs tend to be steady as the standards become stable and the production becomes regular, sales increase by growth, level off in

[30] For further information about the results of this study see; Oliver and Qu (1999).

maturity and then decrease during the harvest stage. On the other hand, Hilton et al (2003, P. 545) give a short and reasonable explanation for PLC as they state "*A product life cycle is the time from its initial research and development to the point at which customer support is withdrawn*". In accordance with the Association of the British Pharmaceutical Industry (ABPI), the pharmaceutical industry differs from other industries in terms of a number of unique characteristics: a strong relationship between production and R&D, an increased emphasis on quality assurance and control, a long product development time and a high level of regulations issued by external agencies. R&D is a stage in which scientists invent, design and discover the mixture and combinations of substances to reach to the final product. R&D is a crucial stage in a product's life cycle. Figure 2.5 illustrates the product life cycle for a typical medicine.

Figure 2.5: Product life cycle for a typical medicine



Source: The Association of the British Pharmaceutical Industry (ABPI)

Compliant with Hilton et al (2003) and McWatters et al (2001), life cycle costing tracks costs attributable to each product or service from initial point to terminate point. It provides important information for cost management and pricing. Conventionally, many organizations consider only future production, sales and customer-service costs in pricing decisions. However, early activities such as R&D, product planning and concept design for new products can consume significant resources and sales prices must cover these costs. Thus, since many product and service costs are predetermined during the earlier stages of the product life cycle, management accountants should be involved in these stages.

2.4 Strategic planning in a dynamic business environment

Numerous organizational innovations have been proposed: Total Quality Management (TQM), Just-In-Time (JIT) and Business Process Reengineering (BPR). At present, many organizations realize the advantages of involving these innovations in their strategy. As a consequence, strategic planning plays an important role in developing a company's objectives and goals that will help managers deal effectively with these innovations. Therefore, the discussion in the next part focuses on two major points: (1) describing the strategic planning process and (2) identifying the contemporary management philosophies and their effect on management accounting work.

2.4.1 Strategic planning: The need for decision-making

Strategic management attempts to understand the way in which firms may improve their performance in competitive interactions with other firms. There are several studies that have linked the demand for strategic thinking and competitive advantage[31]. Teece et al (1997) argue that the fundamental question in the field of strategic management is how companies can take steps in accomplishing and sustaining competitive advantages. To attain that objective, companies ought to develop their dynamic capabilities, which facilitate analyzing their financial resources as well as other resources required to enhance their competition expertise. Another study (Nilsson and Olve, 2001) discusses the strategic management concept in the context of control systems. This study points out the role of control systems in multi-business companies by focusing on formulation and implementation of corporate and business unit strategies. Three broadly used categories of control models are analyzed and discussed: (1) models for performance management, (2) models for value-based management and (3) models for strategic management. The third category is concerned with identifying, describing and communicating strategy in a way that can be simply understood in all levels in the organization, along with combining financial and non-financial measures for performance. As we can see, this study supports the major role of the new management accounting technique (Balanced Scorecard) in providing reliable information for management control.

Houben et al (1999)[32] argue that strategic management includes three basic elements, namely: the formulation of a strategy, the implementation of a strategy and the control and evaluation of the strategy. The second element is concerned with strategic planning, as most skilled managers spend valuable time thinking about the future. The result may be an informal understanding of the future direction the company is going to take, or it may be a formal statement of plans. The formal statement of plans is called a strategic plan; the process of adjusting this statement is called strategic planning. Anthony and Govindarajan (1995, P. 319) state, *"strategic planning is the process of deciding on the programs that the organization will undertake and the approximate amount of resources that will be allocated to each program over the next several years"*. Moreover, Anthony and Govindarajan (1995) confirm that a strategic plan provides the framework within which the operating budget is developed. An essential advantage of preparing a strategic plan is that it can help the operating budget work effectively. In addition, strategic planning[33] ensures an orderly, continuing process of consideration and commitment to certain strategic alternatives. Figure 2.6 shows the difference between companies that have strategic planning and those that do not.

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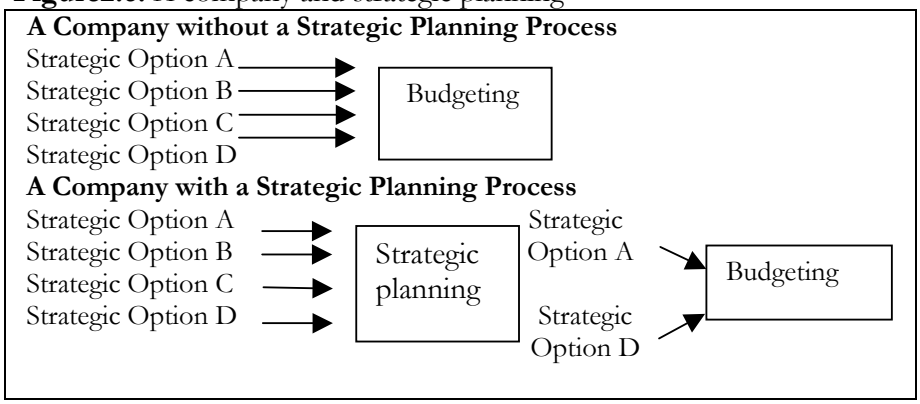
[31] See for example, Teece et al (1997).

[32] Houben et al (1999) indicates that SWOT analysis and expert system approaches are used to identify the role of such approaches in strategic planning goals. (SWOT analysis will be discussed later in this section).

[33]There is a distinction between two management processes- strategic formulation and strategic planning. Because "Strategic" is used in both terms; there is a possibility for confusion. The distinction is that strategy formulation is the process of deciding on new strategies, whereas strategic planning is the process of deciding how to implement strategies. See Anthony and Govindarajan (1995).

Figure2.6: A company and strategic planning



Source: Anthony and Govindarajan (1995, pp. 321, 322)

As shown in figure 2.6, strategic planning seeks to help companies narrow the range of strategic options in the budgeting stage, which eventually solves numerous problems related to dysfunctional outcomes. Accordingly, strategic planning plays a major role in organizations achieving their goals and objectives[34]. Therefore, a number of studies have discussed a strategic planning process from a variety of perspectives[35], which indicated that the strategic planning has many interrelationships with every action performed in the organization. Liedtka (2000, P. 197) states, "*The strategic planning process utilizes strategic thinking to design a future, working in a virtual world*". SWOT analysis is the starting point in the strategic planning process with the purpose of identifying, examining and evaluating the organization's strengths, weaknesses, opportunities and threats before drawing up the corporate strategy. In line with Houben et al (1999), managers should start with the identification and evaluation of these strategic factors that support or hold back the company in attaining its planned goals. Figure 2.7 shows SWOT analysis.

Figure 2.7: SWOT analysis

Internal	Strengths	Weaknesses
External	Opportunities	Threats

Source: Ward (1992, p. 22)

Ward (1992) points out that SWOT analysis can be used to evaluate the existing situation in the course of analyzing internal and external factors. Internal factors take into account strengths and weaknesses, whereas external factors involve identifying and assessing opportunities and threats including customers, competition, suppliers, market place, technological development, social concerns, economic environment and legal regulatory factors. Hence, the fundamental purpose of that analysis is to decide on appropriate alternatives that allow a company to accomplish its goals and objectives with the financial

[34] The terms "Goals, objectives, mission, and vision" are sometimes used interchangeably by organizations, whereas other businesses attribute very specific meanings to the different titles. Unfortunately there does not appear to be universal agreement on the differences. For in-depth details about these terms, see Ward (1992).
[35] See for example, Hopkins and Hopkins (1997) and Pinson et al (1997).

and other available resources. Finally, one of the external environmental factors is the ever-increasing trend toward technological developments by adopting contemporary management philosophies that have an immense influence on the long-term decisions in the company. Accordingly, the following part discusses some modern management philosophies, the way these techniques affect the company's strategy and motivates managers to call for more information from management accountants to be able to adopt such techniques effectively and efficiently.

2.4.2 Contemporary management approaches

The last two decades have witnessed the expansion of numerous management philosophies, which affect the company's operations and its overall profitability. Total Quality Management (TQM) makes up one of the most important organizational innovations that should be analyzed and reviewed when setting the corporate strategy particularly in the global market. In the global market, companies need to introduce products and services with high quality and less cost in order to compete successfully and achieve competitive advantages. Several studies[36] have tried to define "TQM" as a management technique that is comprised of all segments in the organization. McWatters et al (2001) argue that TQM[37] is a management philosophy that involves leadership, employee participation, customer satisfaction, teamwork and continual improvement. Another study (Zimmerman, 2003) points out that TQM seeks to improve all aspects of the company; its products, processes and services for both internal and external customers. Managers should design measurement systems to accomplish improvements in quality.

A Just-In-Time (JIT) system is a comprehensive production and inventory management system that purchases or produces materials and parts only as required and just in time to be used at each stage of the production process. JIT is a philosophy that can be applied to all aspects of business, including purchasing, production and delivery (Blocher et al, 2002), despite the fact that coining a precise definition of JIT continues to be confusing (Drury, 1996; Zimmerman, 2003). Fullerton and McWatters (2001, P.82) provide a more specific definition as they state, *"JIT is a system of production control that seeks to minimize new materials and WIP inventories; control (eliminate) defects; stabilize production; continuously simplify the production process; and create a flexible, multi-skilled work force."*[38] The third management philosophy is called Business Process Reengineering (BPR). This philosophy involves examining business processes and making substantial changes to how the organization currently operates (Drury, 1996). BPR seeks to enhance the key business processes in an organization through focusing on cost reduction, redesigning the business process, simplification, improved quality and enhanced customer satisfaction. Other researchers[39]have carried out surveys to explain how

[36] For example, McWatters et al (2001) and Costin (1994).
[37] Thousands of organizations have been involved in TQM and similar programs. Some of the better-known companies are American Express, AT&T, Cadillac Motor Car, KLM Royal Dutch Airlines and IBM. See (Garrison and Noreen, 2003).
[38] Fullerton and McWatters (2001).
[39] See for example: Wu (2002), Ranganathan et al (2001) and O'Neill and Sohal (1999).

BPR has helped firms contain costs and achieve breakthrough performance in a variety of parameters like delivery times, customer service and quality. For example, through BPR, Bell Atlantic reduced the time to install new telecommunication circuits from 15 to 3 days, and cut labor costs from 88 million to 6 million US Dollars. Similarly, Ford reduced its accounts payable staff by 75% with BPR (Wu, 2002; Ranganathan et al, 2001).

Therefore, to get tangible consequences from these techniques, firms should adopt new management accounting techniques that allow them to construct a quality cost system so as to identify and measure quality costs and bring these expenditures to the attention of senior managers, which facilitate applying TQM. Additionally, throughput time can be reduced when adopting JIT system. Therefore, the activities performed in the firm should be divided into activities that add value to the work and those that do not add value. Activity-Based Management (ABM) can fulfill that. Finally, activities should not only be classified but available opportunities should be suggested so as to improve value-added activities and eliminate (or reduce) non-value added activities. This information represents good raw materials that help implement BPR correctly.

2.5 Conclusions

The main intention of this chapter has been to review the theoretical background of the literature related to management accounting information and how this information has to be modified to deal with the current innovations in industry and management thinking. The chapter begins with a brief review of the traditional management accounting techniques (Standard Costing and Variance Analysis, Budgeting Systems for Planning and Control, Cost-Volume-Profit Analysis for Decision Making and Financial Measurements for Performance). They have been discussed to highlight the techniques long available in most firms and what is the nature of information presented by these techniques to provide managers with the information they require. Then, the focus shifted to criticism of these techniques with the purpose of getting a greater understanding of the drawbacks, which prevent managers from getting all the information they need to assist them in strategic planning and decision-making. The discussion also attempts to relate the disadvantages of such techniques to the contemporary management accounting techniques that can help overcome the problems resulting from traditional techniques.

The second part of this chapter tries to present a critical look at the conventional cost accounting system by discussing a number of issues including objectives, the abandonment of non-financial measurements for performance, the negligence of quality costs and analysis of PLC. The main purpose of this part is to indicate the problems that the organizations face in their cost accounting system which prevent them from finding out appropriate ways to solve these problems along with improving cost system to deal successfully with the requirements of the strategic planning process. Hence, when firms implement the strategic planning process, they should take into consideration the changes happening in the environment, which in turn have a great influence on the practice of managerial accounting. These changes include some enhancement programs starting with (TQM), (JIT) and (BPR). When precisely adopted, the anticipated end result would be: better quality, diminished costs, augmented output, decreased delays in responding to customers and ultimately increased profits.

Chapter Three

Development of the conceptual model

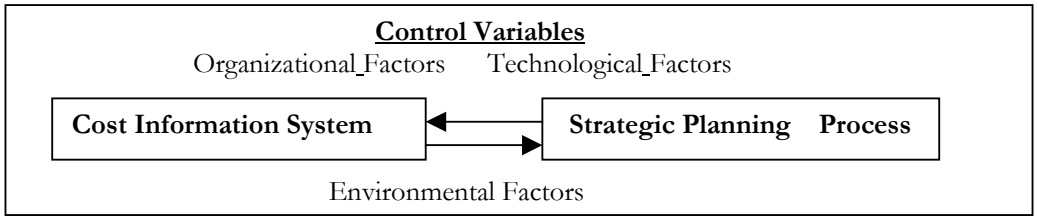
3.1 Introduction

The purpose of chapter three is to develop an integrated conceptual model to inspect the factors related to the cost information system and the strategic planning process. Accordingly, such an examination can help in making informed decisions in a firm. As a basis for this exertion, chapter two of this study discussed critically the conventional techniques of management accounting and how they play a major role in collecting cost information, which in turn is important in achieving companies' goals and objectives. In this chapter, the discussion will further develop the analytical framework in order to scrutinize the impact of using and implementing cost information on strategic planning and the decision-making process. The incorporated conceptual model that is going to be developed provides the basis for the forthcoming analytical chapters (chapters five and six). Successfully using cost data in the strategic planning process can be influenced by numerous factors. As a result, people who can provide cost data in their firms should take such factors into consideration, as they play a major role in the success or failure of the cost information system in their organizations. The next section explains the basic conceptual model of the research in general. In the following sections, the model will be developed to involve sub-factors on a regular basis that are derived from the major factors of the research.

3.2 Cost information and strategic planning influenced by various factors

As cited in the preceding chapter, cost information is a strategic planning tool, not only an accounting system. According to Anthony and Govindarajan (1995), cost data provide useful information for several strategic decisions. These decisions include product pricing policy, product mix decisions, factory facilities, policies of adding or deleting various products and elimination of non-value added activities. To carry out this relationship accurately, a number of factors will be taken into account to draw up a comprehensive overview of the major role of cost data in companies, and to what extent such data affects strategic planning and the decision making process. Additionally, these factors have a great influence on the role of strategic planning in developing the cost information system. Figure 3.1 explains the basic conceptual model of the research.

Figure 3.1: The basic conceptual model of the research. (The general form)



The basic conceptual model of the research above is based on careful inspection and precise revision of several previous studies (Guilding 1999, Fowler 1999, Carmona and Gutierrez 2003, Sutcliffe 1999, Gosselin 1997, Frey and Gordon 1999,Cagwin and Bouwman 2001, Hopkins and Hopkins 1997, Boyd and Reuning-Elliott 1998, Guilding et al 2000 and Chenhall and Langfield-Smith 1998). As shown in figure 3.1, the cost information system makes up one of the most fundamental management accounting tools, it cannot provide the desired consequences without an understanding of the whole environment in which this system will be implemented both internally and externally. In addition, academics and practitioners proposing a change in management accounting systems should be aware of dealing with new techniques in the field. This, this awareness assists them in planning, controlling, costing, directing and decision-making. According to Williams and Seaman (2001), firms operating in a competitive environment should be motivated to change their management accounting control systems[1] because appropriate costing systems and proper performance monitoring are essential for survival. Moreover, strategic planning is a managerial task that focuses on choosing the business programs and providing the resources for these programs in order to enhance the entire performance of the firm and achieve the long and short-term objectives. (Jonsson 1998, Mendoza and Bescos 2001)[2].

3.3 Operationalization of the variables

3.3.1 Cost Information System

When companies try to use cost data in the strategic planning process, several factors should be taken into consideration. These factors play a major role in facilitating or hindering this relationship. These factors include indirect costs, functions in which cost data can be used, using of cost data in specific applications and to what extent the cost information system is integrated into the performance evaluation systems. The next section discusses the first variable in this study (the cost information system) and the factors that influence it. Each factor will be discussed from two perspectives: *the scientific description of the factor and how to measure it.*

3.3.1.1 Indirect costs

Scientific description: Indirect costs cannot be conveniently or economically traced from the cost or cost pool to the cost pool or cost object. The cost of supervising manufacturing

[1] In an exploratory study involving 24 Canadian manufacturing firms, Libby, T., & Wterhouse, J.H. (1996) presented evidence indicating that management accounting and control systems (MACS) have a fluid propensity to change, component parts do not change uniformly and organizational capacity is a strong correlate of MACS change. For more details about this study see the source.

[2] Jonsson 1998 has explained in his study that methodology in this area is developing rapidly in other areas of social science where a "linguistic turn" has made an impact. Managerial work, characterized by "brevity, variety, and fragmentation," provides the context in which accounting information is used. Management is thus described as a cooperative game where communication is central to attention direction as well as problem solving.

employees and the cost of handling materials are good examples of costs that generally cannot be traced to individual products and therefore are indirect costs for the products (Blocher et al, 2002). In accordance with Frey and Gordon (1999), critics of traditional cost accounting systems claim that product costs (and, in turn, managerial decisions) are distorted (i.e., cross-subsidization of products occurs) when all overhead costs are allocated to products on a single, volume-related base such as direct labor hours. Additionally, McWatters et al (2001, P. 76) stated "*To estimate the indirect costs of products, the management accountant must have a good understanding of the organization's operations. Knowing how different activities in the organization interact to create products allows the manager to more accurately trace indirect costs to products.*"

Measurement: This factor will be measured by asking the respondents about the percentage of the overhead within the structure of the company. Manufacturing overhead consists of many different items ranging from the grease used in machines to the annual salary of the production manager (Garrison and Noreen, 2003). The respondents were also asked to mention the number of cost pools in the firm.

3.3.1.2. Functions

Scientific description: A company has several functions[3] that consume different resources to achieve organizational targets. Managers seek these to get accurate information in order to understand their tasks more clearly and reduce uncertainty before making their decisions. This information involves current and projected costs and sales; what, when and how much to purchase materials; current and potential employees; payroll, benefits, performance, compensation and information related to training, assistance, installation, warranties and maintenance.

Measurement: To measure this factor in particular, the respondents were asked to determine to what extent cost information could be provided about various functions in the company to support managers with what they need for the decision-making process. The functions include design engineering, marketing, corporate finance, production and top management (Cagwin and Bouwman, 2001). Each item was measured on a 6-point scale ranging from 1 (extremely disagree) and 6 (extremely agree).

3.3.1.3 Applications

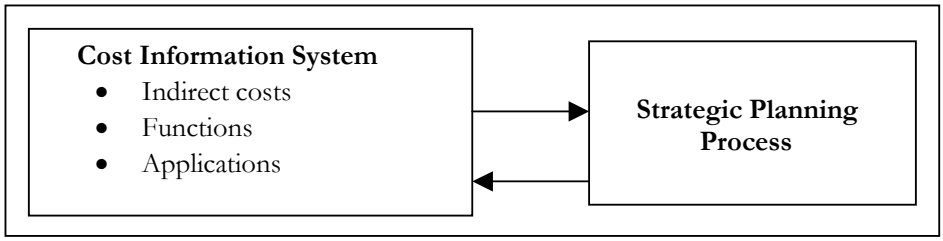
Scientific description: In order to achieve the main goals of business process improvement, Anthony and Govindarajan (1995) propose that managers need to fully understand the applications in which cost information can be used to increase the benefits from applying a cost system. In addition, big companies, particularly manufacturing companies, have several

[3] Larson et al (2002) explained seven internal operating functions common to most organizations: research and development, purchasing, human resources, production, distribution, marketing, and servicing. Accounting is essential to the operation of each function. Each unit often has its own internal user (manager) who makes decisions. Depending on the type of business, not all of these functions may be necessary (or some may be combined). For example, publishing companies usually do not require separate research and development units, and banks do not require production units. For more details about the information needs of each function, see the source mentioned above pages: 14,15,16.

internal applications[4] that can respond to cost information, but these companies should evaluate precisely which applications will be successful and whether the expected benefits outweigh the approximated costs. Cagwin and Bouwman (2001) explain the possibility of using cost data for specific applications, activities and decisions, such as product costing and pricing decisions. Moreover, cost information can be useful in setting reasonable prices for specific products that increase the company's profitability and competitive advantage. Cost information also includes a profitability analysis for customers and products, the results of which might persuade the company to retain or eliminate some products or customers.

Measurement: To measure this factor accurately, the respondents were asked to select in which of the company's applications cost information can be used and implemented to achieve valuable benefits. The applications include pricing decisions, make-or-buy decisions, product mix decisions, adding or eliminating products, customer profitability and performance measurement. Each item is measured based on a 6-point scale ranging from 1 (extremely disagree) to 6 (extremely agree). (Cagwin and Bouwman, 2001). Figure 3.2 summarizes the factors linked to the cost information system and the progress of the model until this stage.

Figure 3.2: Cost information system and strategic planning *(*sub-model components)[5]



3.3.2 Strategic Planning Process

Several studies have discussed the evolution of strategic planning starting from the late 1950s (Anthony and Govindarajan 1995, Houben et al 1999, Tanabe et al 2003). In accordance with the first study, a few companies began formal strategic planning[6] towards the end of the1950s by implementing a small number of modifications to their existing budget system. However, there were several problems that did not support the success of these efforts.

[4] General Motors used ABC analysis to formulate a component make-or-buy strategy. In a single plant, its ABC system had over 5,000 activity cost pools and over 100 different cost drivers (i.e., drivers that traced activity cost pools to products). Scharder Bellows used ABC analysis to re-evaluate marketing and product line strategies, and Stewart Box Company uses ABC analysis to develop price estimates. See Anthony and Govindarajan (1995).

[5] To explain the progress of the conceptual model, we build up the model gradually after discussion of each variable.

[6] We can observe the distinction between two management processes: strategy formulation and strategic planning. Because "strategic" is used in both terms, there is a possibility for confusion. The distinction is that strategy formulation is the process of deciding on new strategies, whereas strategic planning is the process of deciding how to implement strategies. The document that describes how strategies are to be implemented is here called a strategic plan. For more details see for example, Anthony and Govindarajan, 1995. McWatters et al 2001. Otherwise, see section two in chapter two.

These problems include: the required data were much more detailed than was desired, most of the work was completed by employees rather than by managers and participants spent nearly all their time filling in various forms and documents rather than thinking creatively and quickly to make choices. Several efforts were made to learn from the preceding experience, which lead participants to consider some important facts. The objective should be to make difficult choices, spend significant time thinking innovatively throughout analysis and informal discussions and to set programs that are consistent with the organization's overall strategy.

3.3.2.1 Pricing policy

Scientific description: Numerous preceding studies have discussed comprehensively pricing strategies and their major role in achieving organizations' targets (Raiborn et al 1993, Burch 1994, McWatters et al 2001). According to McWatters et al (2001), an important strategic planning decision for an organization is the pricing of its products and services. To carry out the pricing decision, data about customers, competitors and product costing are required to form a clear picture of the market. Accordingly, this can have an enormous impact on establishing the product price. Alternatively, in an attempt to find a link between pricing policy and an organization's mission, Raiborn et al (1993) state that a pricing policy should be consistent with the organization's objectives, and this policy should relate to some considerations that play a major role in achieving it effectively. These considerations include: market share, the target ROI and competition intensity.

Measurement: This factor is measured accurately in two ways. Firstly, the respondents were asked in the strategic planning section in the questionnaire to what extent their business unit is continuously developing the product pricing policy and whether their business unit also evaluates the pricing objectives with regards to global competition. A six-point scale is used to do this (this measurement has been developed by the researcher with support from Blocher et al, 2002). Secondly, in the interviews, the respondents were asked to identify the most commonly used methods of pricing a product.

3.3.2.2 Customer profitability analysis[7]

Scientific description: A considerable number of prior studies have explained the most important job of customer profitability analysis as being one of the core areas where improvements in management accounting could make an extremely positive contribution to the future results of the organizations (Hilton et al 2003, Ward 1992). Hilton et al (2003) claim that customer-profitability analysis is an approach to cost management that makes analysis of costs and benefits of serving specific customers or customer types in order to enhance an organization's overall profitability along with classifying effective and ineffective

[7] In recent years, customer value has become a major focus among strategy researchers and practitioners as an essential element of a firm's competitive strategy. Many firms have been interested in customer value analysis (CVA), which involves a structural analysis of the antecedent factors of perceived value (i.e., perceived quality and perceived price) to assess their relative importance in the perceptions of their buyers. For further information about customer profitability analysis, see Ward (1992).

customer-related activities. Ward (1992, P. 118) states "*customer account profitability (CAP) can be defined as the total sales revenue generated from a customer or customer group, less all the costs that are incurred in servicing that customer or customer group".*

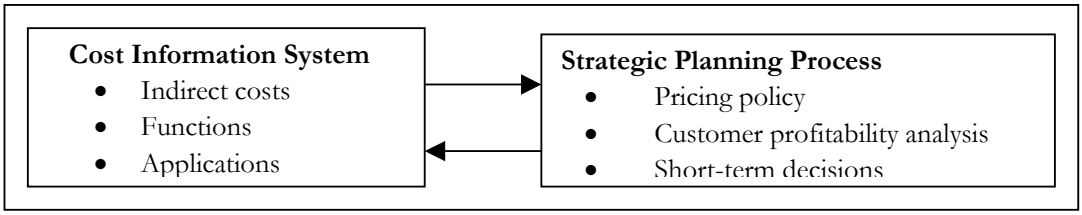
Measurement*:* This factor can be measured in two ways. Firstly, the respondents were asked in the first part of the questionnaire about the extent to which cost information can be used in customer profitability analysis. Secondly, in the strategic planning section, the respondents were asked some questions related to customers' activities. These include, for example, whether their firms evaluate their performance based on customer satisfaction as measured by survey results and if their companies evaluate their performance based on the number of complaints received from customers. In addition, some interviews were conducted to discuss if such a technique is to be adopted, and if the information that has been collected helps the organization either retain its profitable customers or drop unprofitable customers. (Developed by the researcher with support from Hilton et al, 2003).

3.3.2.3 Short-term planning decisions

Scientific description: Short-term planning decisions need to be made on a daily basis, for example, those related to production, make-or-buy decisions, adding or dropping a product line and other modifications in activities (McWatters et al, 2001). In addition, Burch (1994) identifies two important characteristics for short-term decisions: (a) they are operating decisions that usually do not require significant resource commitments and could be carried out in the course of the year and (b) they can be modified or reversed rapidly if more opportunities become accessible. Louderback and Holmen (2003, P. 165) demonstrate the economic criterion for making short-term decisions as they state, "*take the action that you expect will give the organization the highest income or lowest loss"*

Measurement: This factor can be measured by introducing a set of short-term planning decisions to the respondents and asking them to identify to what extent cost information can play a major role in these decisions. This in turn provides managers with helpful information to carry out these decisions. Hence, we provide a variety of decisions to give the respondents the opportunity to select the most significant decision, the one that can make the best possible use of cost data. A six-point scale is used to measure this factor. (Developed by the researcher with support from Cagwin and Bouwman, 2001). Figure 3.3 shows the factors associated with cost information and the strategic planning process at this stage.

Figure 3.3: Cost information system and strategic planning (sub model components)



3.3.3 Control Variables
3.3.3.1 Organizational Factors

The first control variable involved in the basic model that can influence the role of cost information in the strategic planning process is the organizational aspect. This variable influences the innovativeness of an organization and may facilitate or hinder the using of cost data from one hand; while on the other hand; it also effects the quick implementation of strategic planning process. Three organizational factors are examined in this study: strategy, organizational structure and organizational size.

3.3.3.1.1 Strategy

Scientific description: Strategy plays an imperative role in facilitating or hindering the acceptance of the ABC system and achieving strategic planning progression. Miles and Snow (1978, 1994) identify four strategic types of organizations according to the rate at which they change their products and markets: prospectors, defenders, analyzers and reactors[8]. The fundamental distinction among these types is the rate of change in the organizational domain. Gosselin (1997) explains the connotation of each one. Prospectors are characterized by their dynamism in seeking market opportunities, their capability to develop and produce new products to meet customers' needs, their investment in large amounts of financial resources related to research and development and their use of teamwork. Defenders have a strategy that is the polar opposite of prospectors. Defenders operate within a narrow product-market domain characterized by high production volume and low product diversity. On the other hand, analyzers stand between these two categories, sharing characteristics of both prospectors and defenders[9].

Measurement: Strategy is measured using an instrument developed by Frey and Gordon (1999). Respondents answer on a six-point scale ranging from 1 (extremely disagree) to 6 (extremely agree). This part includes 18 items explaining which strategy that the firm can adopt and apply. These items involve several strategies, for example: the company's main objective is to be the low cost producer in their industry, the company develops new products or adds technological improvements to existing products, the company seeks to maintain brand identification rather than compete mainly on price and the company invests in technology to develop low-cost processes or facilitate automation[10].

[8] Reactors are not explained as they do not follow a conscious strategy. They are viewed as a dysfunctional organizational type (according to Gosselin, 1997).
[9] Frey and Gordon (1999) examined in their article the link between ABC and competitive strategy. They have argued that there are many different topologies of competitive strategy (i.e., how a firm intends to achieve a competitive advantage over other firms in its market). Porter (1980) describes three generic competitive strategies for outperforming other firms in an industry: (1) overall cost leadership, (2) differentiation and (3) focus. For more explanation of each one for the previous competitive strategies, see Frey and Gordon (1999).
[10] You can examine all such elements in the questionnaire in the appendix.

3.3.3.1.2 Organizational structure

Scientific description: Companies need to understand precisely the organizational structures to facilitate the accomplishment of organizational objectives (Hill 2003, Rees and Porter 2001). Organizational structure means three things: (1) the formal division of the organization into subunits, which we shall refer to as horizontal differentiation; (2) the location of decision-making responsibilities within that structure, which we shall refer to as vertical differentiation; and (3) the establishment of an integrating mechanism[11]. From another perspective, a particularly useful classification of organizational structures is the extent to which they are mechanistic or organic. Rees and Porter (2001) explain the distinction between such structures in this way: mechanistic systems include a clear hierarchy of control, a high degree of specialization of labor and reference upwards for the reconciliation of differences within the organization. A mechanistic system would simply not be adaptive, or its responses fast enough, to enable an organization to remain competitive. Therefore, there is the need in some situations for 'organic' systems.[12]

Measurement: The organizational structure will be measured by getting information from respondents about the number of hierarchical levels existing between senior management and team leaders in their firms. This measurement is also designed to describe to what extent the jobs are standardized within the firm (written job descriptions exist for which level: operation level employees, team leaders, production line managers, production managers, and senior management). Finally, the organizational structure will be evaluated as to what extent employees in the firm have the authority to make certain decisions (such as, designing a new product, establishing the budget level, selecting suppliers, determining labor force requirements, determining sale prices, dismiss direct workers and determining personal rewards (Schoute, 2003).[13]

3.3.3.1.3 Organizational size

Scientific description: Another factor that can influence the strategic planning process of an organization is its size. Various preceding studies have highlighted the connection between the size of the firm and its ability to succeed in accomplishing objectives (John et al 1997, Rees and Porter 2001, Parkin et al 2003, Matsuura 1991). The link between the degree of formality and firm size has been addressed by Rees and Porter (2001). They have explained that the firm does not need much formality if it is engaged in constructing a small building, because people can determine what needs to be done for them. On the other hand, the mass production of vehicles, for example, requires much more formality because, amongst other

[11] This chapter does not attempt to pursue in detail the advantages and disadvantages of each structure. There are many books and readings on the topic of international organizations and organization design that comprehensively cover these issues, see for example Hill (2003), Matsuura (1991), Mead (1994), Wheelen and Hunger (2000).

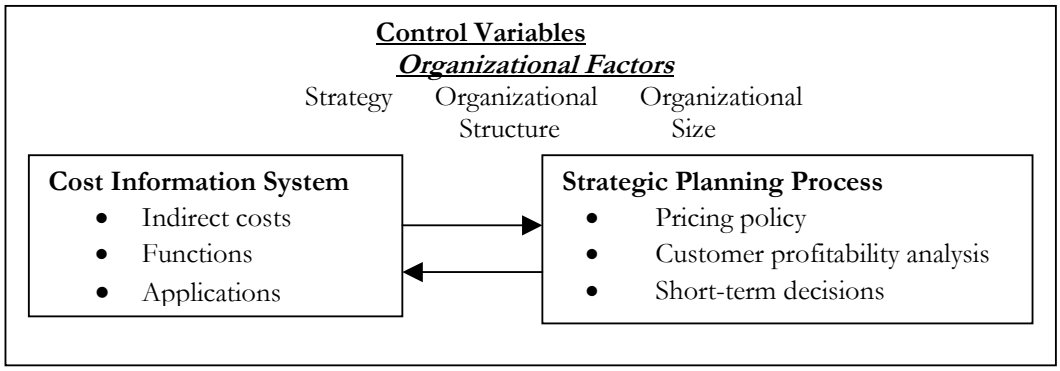
[12] Rees and Porter (2003) have identified clearly in their study the differences between mechanistic and organic systems for organizational structures. "Organic" systems are characterized by greater room for initiative, contact, cooperation and decision-making as in accordance with the needs of specific situations rather than the formal organization.

[13] This measurement was taken from a paper under publishing at that time, Schoute, (2003).

things, people cannot easily grasp what has to be done. Consequently, most organizations fail to adapt with increased work. Rees and Porter (2001, P. 60) state, " *Many organizations fail to grow because of their inability to develop a viable structure to cope with increased work. Larger organizations*[14] *generally need an element of formality, clear reporting lines, delegation, managerial and specialist expertise, and control systems".*

Measurement: The organizational size will be measured in the selected sample by asking the respondents to explain the size of their companies via the assets value or the sales value (Taha, 2003). The previous discussion covers the organizational factors as the first control variable in the study. Accordingly, Figure 3.4 illustrates the extension of the conceptual model at this stage.

Figure 3.4: Cost information system and strategic planning (sub model components)



3.3.3.2 Technological factors

Strategic planning is the process in which a firm attempts gain competitive advantage. To remain competitive, firms need to develop long-term strategies for acquiring and using advanced engineering and manufacturing technologies. In addition, technology managers are under increasing pressure to produce better results, with less time and risks, and with fewer resources. A resulting trend is a greater use of external relationships and resources to achieve the needed technological accomplishments with greater efficiency (Gagnon and Sheu, 2003). However, there are numerous alternatives for obtaining internally and/or externally the personnel and equipment components of advanced technologies. Therefore, the next part focuses on three main elements that are discussed from a technological perspective. These elements include: (1) product diversity and complexity, (2) firm's information technology and (3) production process.

[14] Small organizations may also actually fail because they do not have the facilities to cope with extra work or the financial resources to wait until payment of large orders is made.

3.3.3.2.1 Product diversity and complexity

Scientific description: A company's complexity increases as the breadth of its product line expands. Hence, each product uses more unique components, and consequently more process options are available to manufacture the product (or provide the service) (Cagwin and Bouwman, 2001). Firms therefore must diversify to sustain growth. Both the increased diversity and increased competitive pressures have led many firms to adopt a divisional format. According to Culturosity (2005), companies should consider a number of issues when managing product diversity. These issues include: how diversity adds value to an organization, ways that an organization can obtain the desired consequences from diversity, the current capabilities of the organization to diverse and introduce the competitors' models of diversity appropriately.

Measurement: product diversity and complexity will be measured on a six-point scale from 1 (extremely disagree) to 6 (extremely agree). The questions asked include: to what extent there are differences in volumes between products, the costs of support departments which are similar for each product, if there are a large number of intra-company transactions among departments, if the company constantly develops and enhances its products, and if there are more than two products lines in the firm (Schoute, 2003).

3.3.3.2.2 Firm's Information Technology (IT)

Scientific description: O'Regan and Ghobadian (2003, P. 1) explain the crucial impact of new technology on achieving an organization's goals concerning wealth as they point out *"the degree and complexity of change in the current economic environment is driving firms to seek new ways of conducting business to create wealth. But change need not be detrimental – it can also be opportunities that firms should seek to exploit.* In the last two decades, most companies in Egypt–small or large-have shown an interest in advancing their operations by developing a specific division that undertakes the task to improve the overall financial performance[15]. Hence, according to AmCham in Egypt, the performance of the IT market has been enhanced in the past few years. In 2001 alone, approximately 202 companies entered the market, compared to 129 new entrants in 2000. The existence of such a large number of companies indicates that the market is increasing. By 2004, the Egyptian IT market is expected to reach a value of $1,315 million, increasing with a compound average growth rate of 16.1% from 1998.

Measurement: numerous items measure, on a six-point scale, to what extent the business unit's information technology in the chosen sample is able to ease the work in all departments. This will eventually help to adopt new technologies in the production process. These items include: whether the business unit is using automated machines in collecting and interpreting cost data, what the degree of accuracy of the cost management system is, to what extent the sales and operating data are available in the company, if the information

[15] One of the recent studies conducted to investigate the manufacturing strategy of 72 Chinese furniture companies was based on a nationwide survey conducted in mid-2001, just prior to WTO accession. This study provides an overview of the industry and its context before reporting on the operations objectives of the firm by focusing on their relationship to financial performance and technology. For further knowledge about the furniture manufacturing in China and the survey methodology. See Robb and Xie (2003).

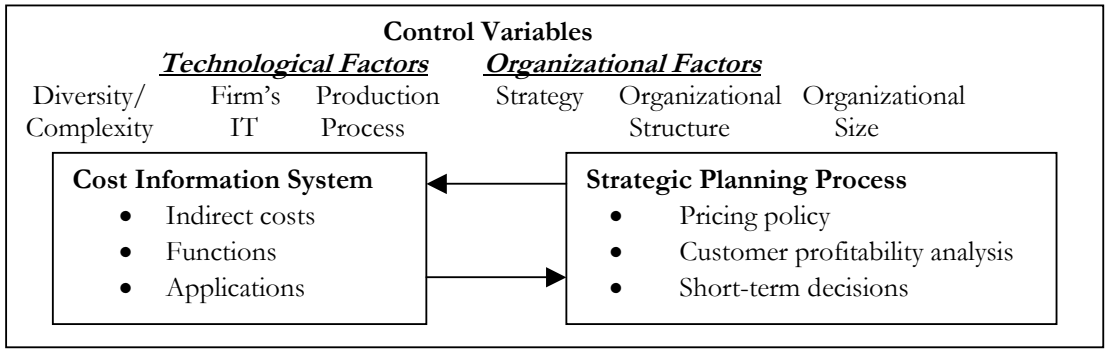
system offers data about several activities in the firm including value-added and non-value added activities and finally if there is a particular department for IT that provides a number of training programs to the labor force. (Adapted from Kazim, DPA thesis in MSM, 2003).

3.3.3.2.3 Production process

Scientific description: In addition to product diversity/complexity and business unit's IT, the production process might have an influence on the improvements to the cost information system and its impact on strategic planning process. Schoute (2003) explains that the structure of the production process seems to be important because in the production process classified as heterogeneous mass production or serial unit production, the amount of indirect activities is generally much larger than in the production process classified as either homogeneous mass production or unit production. Accordingly, in an attempt to explain the importance of a production process, Matsuura (1991) argues that many products are standardized throughout the world. Such products are produced according to the same specifications, formulas and often the same packaging. Consumer products such as Coca-Cola, Seiko Watches, Stolichnaya Vodka, Kodak Film and Nikon Cameras are sold throughout the world with little or no modifications. Consequently, (Matsuura 1991, p. 330) states "*standardization*[16] *of products is often economically efficient because it can take full advantage of economies of scale in production, promotion, after sale service, and distribution".*

Measurement: To measure a production process specifically, the respondents are asked in different parts of the questionnaire whether their companies produce a mixture of products, i.e., if the products vary from each other on the basis of using the resources. They are also asked about adding new products, if there are more differences in volumes between products and within product lines; and whether the products require similar processes to design, manufacture and distribute. Figure 3.5 shows the progress of the research model up until this stage.

Figure 3.5: Cost information system and strategic planning (sub-model components)



[16] In contrast with standardization, product differentiation in foreign markets can increase the profit and the efficiency of production. A product can be modified from market to market to use locally available resources and to meet the specific demand and pricing conditions of the foreign market. For an in-depth discussion about the distinction between standardization and product differentiation, see Mastuura (1991), pp: 328-332.

3.3.3.3 Environmental Factors

The last control variable that has an effect on the affiliation between cost data and the strategic planning process is the environmental feature. With the increase in the number of companies in the market in this day and age, demands placed on competition rise. All such companies are trying to approve new techniques and tools that can help them in introducing goods and services with superior quality and less cost in order to gain high profits. Several studies explain the growing need for strategic planning to meet the enormous challenges in the worldwide environment (Hodgetts and Luthans 2003, Wheelen and Hunger 2000, Akhter 2003, Frrelly and Brambilla 2003, Wortzel and Wortzel 1997). According to Hodgetts and Luthans (2003), one of the primary reasons that MNCs such as Toyota or Citibank need strategic planning is to keep track of their increasingly diversified operations in a continuously changing international environment. The next part discusses two environmental factors that affect the study. These two factors are (1) competition, (2) perceived environmental uncertainty.

3.3.3.3.1 Competition

Scientific description: Thomson et al (2004) and Parkin et al (2000) confirm that the market competition can be considered as a factor that has an impact on the formulation of a company's strategy. Competition seems to be an important market characteristic that a company should handle with care. Competition refers to the intensity of the competition in the market of the firm. This factor is extremely important because a higher level of intensity of market competition increases the importance of precise cost information, as in highly competitive markets competitors are likely to take advantage of costing errors. Additionally, Ward (1992) argues that a competitor analysis[17] based on relative efficiencies against direct, obvious and existing competitors[18] can be far too simplistic and may indeed attract new entrants into the market, if they can identify a new method of distribution or wherever they might have a sustainable advantage.

Measurement: Competition will be measured by using a lot of instruments throughout the questionnaire. (1) The respondents are asked about the kind of competition that their companies face: local, international or both, (2) to what degree of competition their companies are exposed: very big, big, normal, weak, or no competition, (3) respondents are

[17] A firm can apply competitor analysis by getting information from a lot of sources of competitors. These sources include comparative industry analysis, published financial statements, competitor press releases, trade and financial media coverage, physical analysis of competitive products, mutual customers, banks and financial markets, ex-employees of competitors, commodity markets, trade associations, mutual suppliers, government statistics, own employees and physical observations. For more details about each of the previous sources, see Ward (1992), pp: 109, 110,111,112.

[18] This study attempts to link the strategic planning and competitiveness and the impact of such a link on the entire performance in the company. This study focuses on the Brazilian supermarket sector during the period 1988-1999. This was a period marked by significant changes in economic and competitive conditions. The concluded results suggest that variables representing changes in economic conditions and strategic planning were both statistically significant when they were used to explain performance differences among Brazilian supermarket operations. For an in-depth discussion about this study see, Tanabe et al (2003).

asked on a six–point scale ranging from 1 (extremely agree) to 6 (extremely disagree) to indicate the intensity of competition that their companies face. (Adapted from Taha, 2003).

3.3.3.3.2 Perceived environmental uncertainty (PEU)

Scientific description*:* With the arrival of the global economy, the United States has experienced a dramatic increase in the number of large corporations as well as medium and small companies, which are going international, as well as those in which a growing percentage of overall revenue is coming from overseas markets. The same is true throughout Europe, Asia, and the rest of the world. As a result, international management and the process of applying management concepts and techniques in a multinational environment, are rapidly gaining importance. Wheelen and Hunger (2000) argue that to undertake environmental scanning, strategic managers must first be aware of the many variables within a corporation's societal and task environments. The societal environment includes general forces that do not directly touch on the short-term activities of the organization but that can, and often do, influence its long-term decisions. These are as follows: (1) economic forces that regulate the exchange of materials, money, energy and information, (2) technological forces that generate problem-solving inventions, (3) political and/or legal forces that allocate power and provide laws and regulations to constrain and protect and (4) socio-cultural forces that regulate the values, mores and customs of society.

Consequently, the number of environmental variables[19] increases and the perceived environmental uncertainty increases. According to Schoute (2003), perceived environmental uncertainty (PEU) refers to top managers' inability to predict an organization's external environment accurately. The critical aspects of the PEU construct are: (1) it refers to the external environment of an organization, (2) it refers to perceptions of that environment, (3) a degree of uncertainty results from the perceptions and (4) the relevant perceptions are those of top managers. Consequently, the higher level of perceived environmental uncertainty increases the need for information, including cost information. It is important to emphasize that it is the perceptions of uncertainty, rather than the actual uncertainty that is present in the environment, which influence the decisions that managers make in response to their firms' external environment.

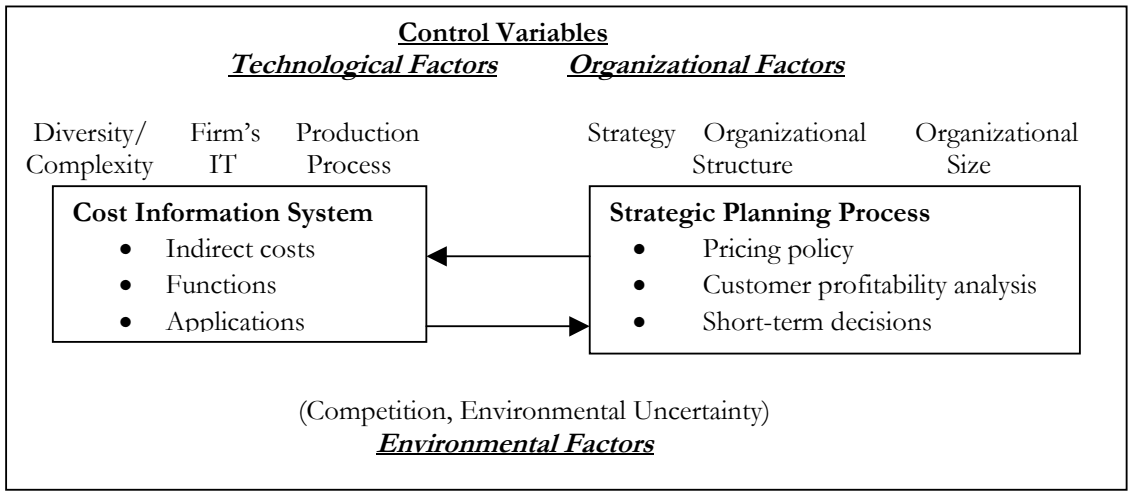
Measurement*:* Perceived environmental uncertainty (PEU) will be measured by asking the respondents on a six-point scale ranging from 1 (extremely disagree) to 6 (extremely agree) to indicate the extent to which some elements are important for the success or failure of their firms. These elements include: suppliers' actions, customer demands (tastes and

[19] In their book, Wheelen and Hunger (2000) refer to several important variables in the societal environment. For example: (1) Economic variables include GDP trends, interest rates, money supply, inflation rates and unemployment levels. (2) Technological variables include new products, patent protection, productivity improvement and new developments in technology. (3) Political-legal variables include tax laws, special incentives, stability of government and laws on hiring and promotion. (4) Socio-cultural variables include lifestyle changes, career expectations, consumer activism, rate of family formation, growth rate of population and birth rates. For more details about other variables and an in-depth discussion concerning each variable, see Wheelen and Hunger (2000), pp: 54-59.

preferences), intensity of competition, production technologies, government regulations and policies, economic environment, industrial (workplace) relations and international technologies development.

The earlier argument concerning environmental factors clarified the association between the cost information system and the strategic planning process. Hence, Figure 3.6 explains the entire conceptual model together with all factors.

Figure 3.6: Cost information system and strategic planning (the ultimate model)



3.4 Conclusions

The core intention of this chapter has been to develop the conceptual framework for the proposed study. The chapter began with drawing up the fundamental conceptual model of the research. It explains the relationship between cost information and the strategic planning process as being influenced by several factors that should be considered in analyzing such relationship. The discussion is followed by the operationalization of the basic variables integrated the study. Therefore, the argument began with the cost information system and its influence on the strategic planning process. As stated in this chapter, there are various factors that can be derived from the cost information system variable; these factors include indirect costs, functions and applications. To achieve the desired benefits from such debate, each factor mentioned above has been explained from two basic views. These views are the scientific description of the factor and how to measure it.

In the following part of this chapter, the dispute concerning the description of the control variables that have an effect on the study is discussed in detail. Organizational factors have a huge influence on the study because the strategy plays an essential role in facilitating or hindering the implementation of the cost information system. As confirmed in this part, there are three strategic types of organizations (prospectors, defenders and analyzers). They differ from each other in the rate of change in the organizational domain. On the other

hand, firms need to understand accurately the organizational structures to achieve their targets and objectives. Various previous studies have explained that if the existing fundamental structure of a firm simply does not support a strategy under further examination, top management has to decide if the wished-for strategy is practicable or if the structure should be altered to a more highly developed one. Additionally, a considerable number of former studies have explored the connection between firm size and its ability to succeed in the competitive market (John et al 1997, Rees and Porter 2001, Parkin et al 2003, Matsuura 1991).

Technology has a crucial function in the relationship between cost information and the strategic planning process that can aid firms attaining competitive advantages. Consequently, firms need to expand long-term strategies for acquiring and implementing advanced engineering and manufacturing technologies. Many prior researchers (for example, Cagwin and Bouwman in 2001 and Lane et al in 1997) have explained that ABC data are most likely to vary from traditional cost data is settings with high harmonization and control costs, such as those with diverse products, processes, customer demands or vendors. To do so it is essential to be able to manage diversity. From a global competition point of view, firms increase their efforts to adopt advanced manufacturing technology to achieve goals and objectives that can help to improve overall financial performance. These advanced manufacturing technologies include computer-aided manufacturing (CAM), group technology (GT), flexible manufacturing systems (FMS), environmental control systems, real-time process control systems and automated material handling systems. The final control variable in this chapter is environmental aspects. Several researchers explore the growing need for strategic planning to conquer the vast challenges in the universal environment (Akhter 2003, Wheelen and Hunger 2000, Frelly and Brambilla 2003). One of these environmental aspects is competition; market competition is associated with greater use of management controls. Therefore, firms attempt to better the quality of their products and services to enjoy a superior position in the international market. Along with competition, environmental uncertainty is a threat to strategic managers because it decreases their capability to build up long-term plans and to make strategic decisions to keep the corporation in balance with its exterior environment.

Appendix 3A: Description of variables and measurement instruments.

Variable	Measurement Instrument	The instrument adapted from
(1) Cost Information System		
a. Indirect Costs	-Approximate percentage of overhead -The way in which manufacturing overhead can be assigned to products by using an assortment of allocation bases	(Taha, 2003) (Frey and Gordon, 1999)
b. Functions	-Average of seven items, measured on a 6-point scale, with respect to what extent the cost information can support to many functions in the chosen sample	(Cagwin and Bouwman, 2001)
c. Applications	-Average of eight items, measured on a 6-point scale, with respect to in which applications in the firm cost information can be used and implemented.	(Cagwin and Bouwman, 2001)
(2) Strategic planning		
a. Pricing policy	-On a six-point scale, to what extent the companies are developing the product pricing policy constantly and whether such companies evaluate and assess the pricing objectives with respect to global competition. In the interviews, the most widely used method of pricing a product is explained	(We developed it with support from Blocher et al, 2002)
b. Customer profitability analysis	- On a six-point scale, with respect to what extent the companies know this relatively new technique. In the interviews, to what extent such technique helps the organization to ensure that it retains profitable customers and drops unprofitable customers.	(We developed it with support from Hilton et al, 2003)
C. Short-term planning decisions	- On a six-point scale, the respondents were introduced to several decisions and asked to identify to what extent cost data can play a major role in these decisions, which provide managers with helpful information to carry out these decisions.	We developed it with support from Cagwin and Bouwman 2001)

(3) Organizational Factors		
a. Strategy	-Average of eighteen items, measured on a six-point scale, with respect to examining which strategy that the firm may adopt and apply	(Frey and Gordon, 1999)
b. Organizational structure	-*VERT*: number of hierarchical levels between senior management and team leaders. -*FORM*: Average of three items, measured on a six-point scale, with respect to the degree to which tasks are standardized. -*CENT*: Average of thirteen items, measured on a six-point scale, with respect to the degree to which power and control in the firm are concentrated in the hands of relatively few individuals.	(Schoute, 2003)
c. Organizational size	-The respondents identify the size of their companies expressed by the assets value or the sales value (approximate amount)	(Taha, 2003)

(4) Technological Factors		
a. Diversity and complexity	-Average of 6 items, measured on a six-point scale, with respect to the products differences in volumes, if there are more than two product lines, and within product lines, products require similar or different processes in the departments.	(Schoute, 2003)
b. Firm's IT	-Average of five items, measured on a six-point scale, with respect to what extent the business unit's information technology is able to smooth the progress of the work that will help adopt new technologies in the production process.	(Kazim, 2003)
c. Production process	- A variety of elements that explore if the company produces a mixture of products and to what extent the products vary from each other based on using the resources.	(Taha, 2003)

(5) Environmental Factors		
a. Competition	-The type of competition that the companies face. Three-point scale. -The degree of competition that the companies are exposed to. Five-point scale.	(Taha, 2003)
b. Perceived environmental uncertainty	-Average of eight items, measured on a six-point scale and evaluated according to their level of importance, with respect to the level of predictability of the external environment.	(Schoute, 2003)

Chapter Four

Empirical Results:

An Overview of the Private Sector in Egypt

4.1 Introduction

This chapter deals with the first analytical part of the study that introduces general information about the selected sample. A preliminary discussion is considered before commencing to explain the relationships between the fundamental variables in the study (cost information and strategic planning, as well as the control factors that will be discussed in detail in chapter five). To do so, this chapter provides basic information about Egypt, its private sector and how this sector is developing to be able to cope locally and internationally with the contemporary business environment. Additionally, the discussion is directed to give a concise idea about the privatization programs in Egypt and their objectives to improve the Egyptian economy by applying several privatization techniques. These techniques are comprised of, for example, long-term leases, asset sales, anchor investment and majority through the stock market.

In addition, the chapter presents extensive information about activities of the selected sample. Various issues are explained, including the dependence on employment and machinery in production operations, the use of technological equipment in the production processes, the adoption of modern management tools such as TQM and JIT, the urgent need for information technology in the Egyptian business environment and the functions and applications that can make use of cost data in the decision-making process. The third section explains the nature of the cost information system in the sample, including the costing system, the indication of functions and purposes that depend on cost data and the tendency for improvement. A brief description of these key issues is in the last section of this chapter.

4.2 Egypt: An Overview

4.2.1 Background

Egypt is the most densely inhabited country in the Arab world and the second-most populous on the African Continent. It has endured as a unified state for more than 5000 years, and archeological evidence indicates that Egyptian society has existed long before. Egyptians take pride in their "pharaonic heritage" and what is considered mankind's earliest civilization. Egypt acquired its independence in 1922 after many years of British occupation. It gained full sovereignty after World War II. The completion of the Aswan High Dam in 1971 and the resultant Lake Nasser have augmented the significance of agriculture and the ecology of Egypt. A rapidly growing population (the largest in the Arab world), limited arable land and dependence on the Nile all continue to overtax resources and stress the society. The government of Egypt has made numerous efforts to prepare the economy for global challenges through economic reform and large investments in communications and physical infrastructure. Table 4.1 shows a range of interesting facts about Egypt.

4.2.2 Interesting facts about Egypt (September 2003)

Table4.1: Interesting facts about Egypt

Official name	Jumhuriyat Misr al-Arabiyah (Arab Republic of Egypt)
Area	1,001,450 square kilometer (24 X Holland), including the Sinai; only 66,000 km2 is inhabitable
Number of inhabitants	74.7 million (July 2003)
Population density	74 people per square kilometer when calculated for the whole country, but 1132 per km2 inhabitable area
Capital	Cairo
Monetary unit	Pound (EGP), divided into 100 piaster. 1 pound is about € 0.13 (Jan, 2003); 1 € = about EGP 7.50
Road network	Fairly good in the inhabitable regions
Fuel prices	Gas: € 0.25; Diesel: € 0.10 per liter
Time difference	GMT + 2; one hour later than in Holland
Languages	Almost 98% of the population speaks Egyptian-Arabic of the modern Standard Arabic. It is also the most important Arabic spoken since Egypt produces most of the Arab films, TV-series and music.
Religions	Muslim (mostly Sunni) 94 %, Coptic Christian and other 6 %

Source: General information about Egypt, Demographics of Egypt

4.2.3 Economy, public sector and private sector

According to the history of Egypt, its economy was based mostly on farming despite the fact that more than 95% of the nation's land area is infertile desert. During the 19th century, Egypt started to specialize in growing cotton, which became a valuable cash crop. The government of Egypt has exerted wide-ranging efforts to direct the economy towards industrialization by establishing various industries between 1930 and 1960, after most of the industrial area came under state control. In the late 20th century, other industries have been involved in the economy's growth such as tourism, oil production and remittances from the 3 million Egyptians working in the Persian Gulf states (AmCham, 2003). The USAID's[1] new strategy (Egypt, 2002) points out that public-private roles need to change to achieve sustainable growth, to attain economic and social progress and to raise the standard of living for the Egyptian people. The public sector plays a fundamental role in the Egyptian economy by facilitating and regulating many areas in order to create a stable and possible environment for development. To amplify the level of synchronization between the public and private sectors, the USAID has argued that opening dialogues between the two sectors would not only increase transparency in the decision–making process but also will augment long-term stability and growth. According to the USAID's new strategy, the essential objective of implementing activities is to persuade increased public/private dialogue and partnerships, to take advantage of the strengths that can be offered by each sector (USAID, Egypt 2002).

[1] USAID= United States Agency for International Development.

4.2.4 Privatization

The privatization program in Egypt was initiated in the early 1990s through a formal commitment made by the government of Egypt. This program announced a plan for transferring 125 public enterprises over the following five years (IPR, Middle East, 2002)[2]. The government also decided to sell its shares in more than 250 public venture companies. The privatization program in Egypt has two major objectives; the first and most important part involves divestment of public sector holdings in production and manufacturing companies by undertaking sales of shares through the stock exchange and sales of strategic stakes to anchor investors through public auction. The second goal focuses on the encouragement of private sector investments in sectors that are historically controlled and operated by the public sector such as roads, airports, electricity and oil and gas transmissions. As a result, the GOE applied numerous privatization techniques since the launching of the program in 1991. The key to these techniques is the transformation of the Enterprise from Law 203 (Public Enterprise Law) to Law 159 (Private Enterprise Law). The Ministry of Public Enterprise successfully privatized 191 companies/units since the beginning of its privatization program in 1992 up until June 30, 2002. The government is moving to privatize Egypt's leading four state banks along with the insurance industry, this commitment began during 1997 in accordance with the1996 agreement with the International Monetary Fund (IMF). Table 4.2 displays the details of the privatization program since its initiation in 1992 until June 30, 2002.

Table 4.2: Privatization program from 1992 until June 30, 2002.

No	Privatization Techniques	Aggregate no. Of companies
1.	Majority through the stock market	48
2.	Anchor investment	29
3.	Employee Share Holder Association (ESAs)	34
4.	Trenches less than 50%	6
5.	Sold as assets	33
6.	Factories	21
7.	Long term lease	20
	Aggregate	**191**

Source:(Ministry of Public Enterprise, Public Enterprise Office, Privatization Unit)

Basically, manufacturing is still dominated by the public sector, which controls virtually all heavy industries. This sector is characterized by low productivity, financial losses and depressed incomes. However, progress has been made on the privatization of the largest public sector enterprises; more than one third of the 314 public sector enterprises have been

[2] Examples of privatization programs include the sale of shares in the profitable Kabo/Nasr Clothing and Textiles; United Arab Spinning and Weaving; Egyptian Electro-Cables; Alexandria Portland Cement; Helwan Portland Cement; Amreya Cement; Al-Ahram Beverages; Egypt's only brewer; Madinet Nasr Housing and Development and Egyptian Dredging Co. In the agriculture sector companies include Wadi Kom Ombo for Land Reclamation, Egyptian Akkaria Co., Arab Co. for Land Reclamation and Behera Co. In the chemicals sector companies include Alex. Pharmaceutical & Chemical Industry, Misr Chemical Industries, Nile Pharmaceutical and Chemical Industries. For further information, see Info-Product Research, Middle East, 2002.

partially or fully privatized (Ministry of Public Enterprise, 2003). The Minister of Foreign Trade has confirmed that the private sector is extremely important. It carries out approximately 75% of the development investments. Its role is crucial in generating new job opportunities that contribute in turn to improving the standard of living and solving the unemployment problem (The Egyptian State Information Center, 2002). Furthermore, it argues that the privatization program in Egypt, if compared with other countries that are undergoing an identical phase of structural and economic reform, has proved to be highly successful. Although there are several unreceptive practices in this stage, the Egyptian private sector has positively presented all technological developments that are necessary to achieve tremendous long-term results from the privatization programs.

4.3 Statistical Analysis Background

4.3.1 Sampling Frame

The sampling frame for any probability sample is a complete list of all the cases in the population from which the sample will be drawn (Hussey and Hussey 1997, Czaja and Blair 1996). So, the completeness of the sampling frame is very important. An incomplete or inaccurate list means that some cases will have been excluded and so it will be impossible for every case in the population to have a chance of be selected. Consequently, the sample may not be representative of the total population (Saunders et al 2000). We have chosen four different industries to carry out our empirical inquiry. According to the green business guide (2002), the information and decision support center (IDCS, Egypt), pharmaceuticals 30, chemical 40, foodstuffs 45 and packaging and wrapping 30.

4.3.2 Sample Size and Sample Technique

In accordance with the preliminary plan of this study, 100 questionnaires have been sent to 100 companies in different industries in the private sector via normal mail. Unfortunately, the response rate was only *2%* (we received two questionnaires from 100 but they were not completed) due to several possible obstacles. These obstacles include, for instance; data confidentiality, particularly cost data, for competition reasons; the time necessary to answer the questions; the lack of knowledge to answer every question and the insignificance of mail research to some managers. According to Anderson et al (2002), several methods can be used to select a sample from a population. One of the most common is simple random sampling. By using this method, we reduced the sample to 40 companies in four industries, which should ease distributing and collecting the questionnaires directly to and from the responsible person or his/her secretary. Additionally, entering these companies was very difficult due to the particular environment of the private sector in Egypt. Hence, distributing and gathering the questionnaires was done with the support of two colleagues in the Accounting Department of the faculty of Commerce, Benha University, Egypt. Moreover, we do not have good information about the size distribution of Egyptian firms. Therefore, it is very difficult to determine whether or not the sample is representative.

4.4 Descriptive characteristics of the sample

Based on the practical study, the next part discusses a number of issues that can help in analyzing and interpreting the cost information in the sample and its relation to strategic planning development. These issues include the level of technological equipment, computer use in financial and managerial activities, product diversity and implementation of modern managerial philosophies such as TQM and JIT.

4.4.1 Acquisition technological equipment

(A) Expectations from literature:

Several studies conducted during the past two decades have demonstrated the importance of the manufacturing strategy in relation to firm performance and marketing/sales strategy (Robb and Xie 2003; O'Leary-Kelly and Flores 2002; Muto 2003; and Gagnon and Sheu 2003). According to the second study, the integration of key decision areas between manufacturing and marketing/sales is widely cited as a means of gaining a competitive advantage in the marketplace that may lead to increased organizational performance. In the four industries that the researcher has selected, the respondents were asked to what extent their companies are interested in adopting less than normal/normal/advanced/very advanced technology in their production processes by purchasing highly sophisticated equipment.

(B) The actual research outcome:

Table 4.3: the degree of using technological equipment

	F	%
• Normal	8	20 %
• Advanced	20	50 %
• Very advanced	12	30 %
Total	**40**	**100.00 %**

(C) Explanations:

As shown in table 4.3, 32 companies (80%) from the sample adopt advanced and very advanced technological equipment in running their operations. To support this target, the Ministry of Industry and Technological Development in Egypt (MITD) took the strategic initiative to establish Industrial Technology Centers (ITC's) in the form of Joint Venture Companies for all industrial activities. These technology centers will serve the industry by transferring know-how and technology by providing technical consultancy for purchasing new equipment, management, marketing, training and information technology. In addition, the Industrial Technology Centers together with the Business Resource Centers (BRC's) will be the implementation tools of the Industrial Modernization Program[3] in Egypt. Additionally, acquiring advanced equipment in the production processes will help carry out

[3] The Industrial Modernization Program is a national initiative, with a total budget of 430 million Euros, of which 250 million is funded by the European Union making it the largest industrial support program the European Union has ever funded in the Southern Mediterranean countries. The overall goals of the IMP are: (1) upgrading Egyptian technological skills to international standards, (2) improving the performance of the workforce at all levels, (3) enhancing investment opportunities, and (4) developing an appropriate business environment for better efficiency. This information is from the Ministry of Foreign Trade and Industry in Egypt.

numerous enhancement programs in various industries in Egypt, including pharmaceutical, chemical, foodstuff and packaging and wrapping. One of these popular programs is "cleaner production" (CP). Promoting industrial pollution abatement through CP in Egyptian industry is one of the key objectives of the Egyptian Pollution Abatement Project (EPAP)[4]. EPAP is a joint project between the Governments of Egypt and Finland, the World Bank (WB) and the European Investment Bank (EIB) and has been effective since 1997. EPAP is financed by 35 M$ soft loans from WB, including a 20% grant and a slightly subsidized 15 M€ loan from the EIB.

***Success stories of CP* investments** *(EPAP, Page 2)*

Examples of the cleaner production investments financed by the WB package are:

* Replacing a polluting old limekiln with a modern kiln with superior energy and raw material efficiency. This investment of Alexandria Sodium Carbonate company ASCC will be financed with about 4.2 M$.

* Dropping hexane emissions from soy seed extraction by replacing a highly corroded toaster with a new toaster with low leakage of hexane. This project by Tanta Oil and Soap Company (TOSCO) in Benha is financed with 0.2 M$.

* Substituting a direct cooling system producing wastewater and hazardous waste emissions in food oil deodorizing process facility with indirect cooling. This project of the Arma company for food oil will be financed with 2.34M$.

* Substituting solvent based spraying in tire manufacturing into water based spraying and simultaneously switching from manual spraying to an automated enclosed process. This project by transport and engineering company TRENCO in Alexandria is financed with 0.47 M$.

4.4.2 Generating a new ministry for IT

(A) Expectations from literature

Larson et al (2002) argue that as technology has changed the way we store, process and summarize large masses of data, accounting has been freed to expand. Consulting, planning and other financial services are now part of accounting. These services require sorting through masses of data, interpreting their meaning, identifying key factors and analyzing their implications. Technology is increasingly important in accounting information systems and is encouraged by further advances in computer technology, networks, and enterprise-application software. The respondents were asked to what extent their companies are adopting techniques concerning information technology (IT) and using computers in financial and managerial activities. Table 4.4 illustrates the outcomes about adopting IT and involving computers in business activities.

[4] Dr. Raymo Lilja "Challenges in cleaner production policy in Egypt".

(B) The actual research outcome:

Table 4.4: Adopting IT in the business activities

In the recent ten years, has your firm adopted IT initiatives in its business activities?	F	%
• Yes	37	92.5 %
• No	3	7.5 %
• **Total**	**40**	**100%**

(C) Explanations:

As indicated in table 4.4, 92.5% of the sample has realized that to compete effectively in an emerging information-based economy, it is of extreme significance to enhance working by adopting IT and involving computers in processing business activities. Consequently, a contract agreement for professional partnership has been signed between MITD & the Biotechnological Institute of Denmark (B.I.) on November 3, 2003. The overall objective is to establish the food technology center (FTC) as a sustainable unit for the development of the Egyptian food industry. From a national point of view, the FTC objective is to promote GDP growth and the competitiveness of the private enterprise sector with special emphasis on SME's in the context of economic liberalization and globalization (Ministry of Foreign Trade and Industry, 2003). In view of that, according to the Council of Saudi Chambers (April, 2002), the formation of the new Ministry of Communications & Information Technology (MCIT) in October 1999 signals a new trend for Egypt's telecommunications and information technology sector, characterized by a new and more liberalized regulatory framework. The plan focuses on providing a state-of-the-art national telecommunications network, information–based development and human resources development. In 2000, the Egyptian IT market accounted for $730 million, increasing by a rate of 17.1 % from 1999 and by 33 % from 1998. It was expected to reach $849 million by the end of 2001. In June 2001, the total number of companies working in the IT field reached 565 companies, indicating a 141% growth from 363 in December 2000. In 2001 alone, nearly 202 companies, both large and small, entered the market. By 2004, the Egyptian IT market was expected to reach a value of $1.315 million. (Council of Saudi Chambers).

4.4.3 Diversity as a powerful business tool

(A) Expectations from literature:

We draw an obvious distinction between the two terms-diversity and diversification, because there is a possibility for confusion. The first refers to a variety of elements such as opinion, style or color, while the second is concerned with the expansion of a commercial organization or enterprise into new areas of business. Several studies explore diversity from different views such as market diversity, workforce diversity and diversity of products (Dessler 2004, Mintzberg 1983). The respondents were asked to what extent their firms produce various products. Table 4.5 illustrates the outcomes of this issue.

(B) The actual research outcome:

Table 4.5: Producing diverse products.

Does your firm produce various products in various markets?	F	%
• Yes	31	77.5%
• No	5	12.5%
• *Missing Responses*	*4*	10%
• **Total**	**40**	**100%**

(C) Explanations

As illustrated in the earlier table, based on the principal meaning of diversity, 31 companies produce heterogeneous products rather than homogenous products, which can build business partnerships with miscellaneous goods that reflect the broader production of the firm. According to the Egyptian Exporters Association (EEA)[5], the Egyptian foodstuff industry with its two sectors of fresh fruit and vegetables and processed food is considered one of the crucial industries that produce a wide variety of products, which contributes rapidly to the development of the Egyptian economy. Hence, the export figures of the processed food industry for the first quarter of year 1999 show an increase in exports by almost double the figures of the same quarter in 1998. The total investment cost in processed food industries amount to $85.64 billion for an annual total production worth $4.6 billion (EEA, 2001). The EEA also has stated that Egypt exports processed food and fresh fruits and vegetables to the USA, Western Europe (the UK, Germany, Holland…), Eastern Europe (Russia, Romania…), Arab countries (Saudi Arabia, Kuwait, Gulf Countries…), Asia (Singapore, Malaysia, Japan…) and Australia. These exports consist of a wide variety of products that might include: fresh produce & plants, frozen/dehydrated vegetables & fruits, grocery products, breakfast cereals, dairy products, processed meat, baby food, confectionary, herbs, seeds, spices, pulses & rice, canned food & pickles and juices & fruit concentrates.

In the chemical industry, Chemical Developing Industries Company is considered one of the oldest Egyptian drug companies for its fundamental role in all fields and most significantly in the field of quality control and product diversity. Because of the advance in science and technology of the drug industry, a quick look at the company's product. We found that it covers 29-drug group from 44 represents the international drug groups in an accurate integrated vision. In addition, it is possible to know the levels of the technology used in production, storing and monitoring the 29 groups, which represents the international high technology and most advanced one[6].

[5] The EEA is a nonprofit organization founded by the Egyptian private sector exporters in 1997 with a common belief in the potential of Egyptian exports. The EEA's primary goal is to develop Egyptian non-traditional exports and increase Egyptian exports' competitive advantage, helping them reach and compete in targeted markets with sophisticated and enhanced products or services matching international market demands.

[6] These data have been adopted from industrial chemicals developing company (Sid), Egypt. Name of this plant: Sid Drugs Plant, location: Assiut city, area: 58000 meters, staff: 668, type of industry: drugs manufacture and trade, production unit: box, total capacity: various according to pharmaceutics, utilized capacity: 60% of the total capacity, amount produced in unit: various according to the pharmaceutical forms, value of production in thousand L.E.: 235,459,25.

4.4.4 Applying modern managerial approaches

(A) Expectations from literature:

Quite a lot of preceding studies (McWatters et al 2001, Reed and Mero 2000, Taylor 1998) emphasized that organizations and their management accounting systems must adapt to a rapidly changing environment to be able to deal with numerous external forces. Computer-integrated manufacturing, JIT processes, TQM and value chain analysis are methods that take advantage of technological changes and allow an organization to compete and to meet customer needs. In the Egyptian business environment, Law 203 of 1991 established the legal basis for privatization by removing 314 public sector enterprises from the control of government ministers and restructuring them as affiliates under sixteen independent holding companies. In principle, the holding companies operate as private sector companies with full financial and managerial accountability. To cope with such a changing environment, Egyptian companies have tried to adopt modern improvement programs during the last two decades, the major objective being to develop Egypt's industrial capability in an open world characterized by competitiveness, which in turn boosts Egyptian industrial exports. Table 4.6 shows the outcome.

(B) The actual research outcome:

Table 4.6: Applying modern managerial approaches

	TQM		***JIT***	
	F	Percent	F	Percent
• Is not applied	**10**	*25 %*	**29**	*72.5 %*
• Considering to apply it	**5**	*12.5 %*	**1**	*2.5 %*
• Working on applying it	**2**	*5.0 %*	**6**	*15.00 %*
• Already applied	**23**	*57.5 %*	**4**	*10.00%*

(C) Explanations of TQM

As shown in the former table, 23 companies (57.5%) have applied total quality management (TQM) in attempting to redesign their products to require fewer different parts, making it easier to maintain tighter controls on the quality of their products, to satisfy customers, encourage employee participation, reengineer production processes to reduce defects, increase cost effectiveness and improve management. Still, the essential question now is "*what does TQM mean for Egyptian managers*?" Based on several interviews with managers and professors of accounting, they indicated that the basic idea of TQM in the Egyptian environment focuses on two elements: the quality of product and customer satisfaction to maximize profits. Therefore, the Business Information Center of AmCham in Egypt has conducted workshops to introduce managers to the basic concepts of TQM as a cultural change that influences all company approaches to business (market, customers, competition, employees…) with a focus on application and adding value. The primary objectives of these workshops include identifying fundamentals of TQM, implementing TQM management, the role of measurement in total quality, putting the customer first, the road to continuous improvement and benchmarking for quality.

As a result, chemical and pharmaceutical industries in Egypt have recognized the major role of TQM[7] as a management tool to improve all activities in the organization. They started managing this tool by enhancing education in the chemical and pharmaceutical aspects of it. The 15th International Conference of the International Union of Pure and Applied Chemistry (IUPAC) (2000)[8] was organized by the Department of Chemistry, Faculty of Science, Ain Shams University, Cairo, Egypt. Since TQM includes every person in the firm, adopting such a tool will not be successful without well-trained people. Accordingly, this conference has covered a lot of topics trying to improve the skills of people who will undertake TQM programs. These topics include: chemical education, recycling and treatment of waste, environmental chemistry, low cost apparatus, pollution detection, clinical and medicinal chemistry, computer use in teaching chemistry, self evaluation methods, environmental culture, rallying support and funding for chemical education and new methods in teaching and learning chemistry. Hence, achieving such objectives will enhance the quality of all segments in the organizations in order to be able to participate in the global market and to meet the international standards for quality systems, which help achieve the international certificates of quality such as ISO 9000 and ISO 14000.

Standards in Egypt (IMI, September2004)[9]

Standards play an important role in Egypt in helping firms create products and services that have the ability to match these standards and achieve competitive advantages by meeting the international standards. Standards in Egypt include two types. Some standards are originally Egyptian in accordance with the Egyptian Organization for Standardization and Quality Control (EOS), the remaining standards have been implemented in line with the International Organization for Standardization (ISO). Synchronization of the Egyptian standards was started in 1957 in order to give Egyptian firms the ability to become members in the World Trade Organization (WTO) (for instance, 90% of the food industry has been harmonized, while other sectors lag behind). The ISO 9000 has been gradually adopted in Egypt; many Egyptian companies have already expressed a preference for importing from organizations that have this certificate. In 1994 there were only 9 companies certified to ISO 9000. In 1995, there were 37, in 1996, there were 120 and today there are more than 200 companies that have been certified to ISO 9000 in Egypt.

Several pharmaceutical and chemical companies in the Egyptian private sector have obtained ISO 9001, which specifies requirements for a quality management system where an organization needs to demonstrate its ability to consistently provide products that meet customer and applicable regulatory requirements and aims to enhance customer satisfaction through the effective application of the system (ISO, 2000). Furthermore, they have

[7] TQM was discussed deeply in chapter 2, literature review.
[8] Chemical Education International, Vol.1, No.1, 11-14, Published in August 31, 2000. This conference is held in corporation with the UNESCO organization, the Arabian Group for Development (AGD), and the Academy of Scientific Research and Technology Cairo (ASRT).
[9] Hamdy, D. (2004), "Standards in Egypt", International Market Insight (IMI). Report date: 15/9/2004.

achieved ISO 14001, which is designed to develop a systematic management approach to the environmental concerns of an organization. Alternatively, some foodstuff firms have obtained HACCP[10] certification, which has been widely recognized as the preferable system for assuring food safety.

Explanations of JIT system

As discussed in the literature review, the JIT system is based on minimizing a product's throughput time to avoid wasted or non-value-added time. The benefits of reducing throughput time include smaller in-process inventories, leading to the following: lower capital costs of holding inventories, factory space and cost savings, faster response time to customers, and reduced overhead costs for materials movers and expediters (McWatters et al, 2001). However, based on several discussions with Egyptian consultants, professors and production managers, there are some difficulties that face Egyptian business environment applying a JIT system. Nearly all firms in Egypt hold inventories to resolve the troubles of fluctuations in supply or demand in the event that a labor strike occurs, critical conditions prevent delivery of raw materials (e.g., bad weather, accidents on the way, and conflicts with suppliers) or demand expectation at specific times during the year. Moreover, adopting JIT requires modification of accounting systems to classify all activities in the firm into value-added and non-value-added. This requires applying ABC to some degree, which is still so hard to apply. Briefly, Egyptian companies should create a number of modifications in their systems to cope successfully with the JIT system and to achieve all expected benefits from this system.

4.5 The costing system in the Egyptian private sector

To carry out planning and control responsibilities, managers need information about the organization. From an accounting perspective, this information often relates to the costs of the organization (Atrill and McLaney 2002, Garrison et al 2003). More than 25 interviews have been conducted with professors in management accounting, consultants at KPMG in Egypt, managerial accountants, financial accountants and production managers. The outcome of these two data collection methods (questionnaires and interviews) has confirmed that the cost accounting system in the Egyptian private sector is relatively traditional and identical in most of companies. Therefore, the next section discusses three issues: (1) the costing system, (2) overhead allocation, (3) use of cost information and (4) the tendency for development.

[10] HACCP = The Hazard Analysis Critical Control Point system started in 1959 with the Pillsbury Company's manufacture of food products for the NASA space program. There was concern about the safety of the foods that were consumed as well as other safety concerns related to foods. For further details about the history of this system, see Dr. Merle Pierson, Department of Foods Science and Technology, Virginia Polytechnic Institute and State University.

4.5.1 The costing system

Firms were asked to what extent their costing information system was tailored specifically to the firm's characteristics on a scale of 1 to 4. The four options were: (a) specially designed to match the nature of the firm's activity, (b) in accordance with the nature of the company's operations to a great extent, (c) in accordance with the company to some extent and (d) is the generally accepted system in the manufacturing companies. Information on firm overhead is given in table 4.7. The average overhead as a percentage of total costs is 35% (several studies have found that manufacturing overhead averages about 16% of sales revenues, Garrison and Noreen, 2003, P 41). The averages do not differ significantly between the sectors, although the food sector seems somewhat lower: a one-way ANOVA test leads to a *p* value of .218.

Table 4.7: Overhead as a percentage of total cost

	Average	Minimum	Maximum
Pharma	38.7	15	70
Food	28.9	18	41
Chemical	35.8	19	54
Packaging	36.4	20	52
Total	35.0	15	70

We analyze the relationship between firm size and overhead by computing bivariate correlations. We take the natural log of sales to correct for the skewed distribution. The results in table 4.8 are somewhat mixed. Although the normal (Pearson) correlation shows a significant positive relationship between firm size and overhead, this is not apparent at the sector level. The non-parametric Spearman correlation has no overall relationship between firm size and overhead, and a weakly significant negative one for the food sector. This is the sector with the smallest firms.

Table 4.8: Bivariate correlations between the log of firm size and percentage overhead

	Pearson	Spearman
Pharma	.384	–. 082
Food	–. 529	–. 555*
Chemical	.459	.419
Packaging	.150	.201
Total	.332**	.107

** indicates significant at 5%, * at 10%.

The cost objects in the costing system in general are products: only 3 of the 40 firms stated that products were not costs. Nine firms use the customer as cost object, and 10 the (production) department. The companies were asked how they assessed the level of accuracy of the costing system. On a scale of 1 (inaccurate) to 5 (completely accurate), the average score was 3.28. Satisfaction was also questioned. Half of the firms indicated that they use the figures because they are available, 13 are satisfied with the numbers and seven are completely convinced that they provide the necessary level of accuracy. The concept of activity based costing (ABC) is almost largely unknown in Egypt. Of the forty firms, only two indicate that they are working on implementing it. All other firms did not reply to any of the questions

regarding ABC, this while the questionnaire part on ABC contained 12 questions. The implications of this go further than the observation that 5% of the sample is trying to use ABC: the other firms do not seem to have heard of it at all. This inference is perhaps somewhat strong, but answers to other questions reinforce the feeling that knowledge on modern management accounting techniques is rather limited. On the question whether products differed in their usage of firm resources, only six companies answered. The other 34 did not provide any answer. Since the notion of resource usage and differences in consumption of resources is central to the logic behind ABC, this would suggest question is central having an opinion on this at all. A related question asked whether overhead costs are assigned to cost centers, again a standard procedure in any advanced costing system. Five firms answered yes, two no and 31 did not give an answer.

4.5.2 Overhead allocation

Figure 4.9[11]: Overhead allocation process

Overhead items	*Total*	Production cost centers		Service cost centers[12]			
		A	B	Engineering Service	R&D	Quality Control	Stores
1. Indirect materials	X	×	×	×	×	×	×
2. Indirect labor	X	×	×	×	×	×	×
3. Maintenance	X	×	×	×	×	×	×
4. Depreciation	X	×	×	×	×	×	×
5.Taxes, rent, utilities, insurance	X	×	×	×	×	×	×
6. Other allocated overhead	X	×	×	×	×	×	×
Total overhead	X	××	××	×	×××	××××	××
Re-allocation of service cost center costs:							
1. Quality control							
2. R&D		×	×	×	×		×
3. Stores		×	×	×			×
4. ……. Others		×	×	×			
Total production overhead	X	***xxx***	***yyy***				
Overhead rates: Center A: ***xxx*** ÷ allocation base (practical and ideal)= variable rate and fixed rate Center B: ***yyy*** ÷ allocation base (practical and ideal)= variable rate and fixed rate							
Overhead absorption: Centers A and B: (actual units x variable rate)+ (actual units x fixed rate).							
Spare Capacity (for each cost center) = (ideal units-actual units) x fixed rate.							

[11] The idea of this figure has been adapted from Wright (1994) and also from the interviews that have been conducted with professors in accounting in Egypt.

[12] These centers just represent examples. In some companies in Egypt especially in the textiles sector, there are more than 20 service cost centers.

Factory overhead costs are the expenditures for factory overhead that are not separately or readily traced to finished goods. These costs include indirect materials, indirect labor, maintenance, factory utilities (water, gas, electricity), factory rent, production manager's salary, depreciation on factory buildings and equipments, factory insurance, property taxes on factory buildings and equipments, factory accounting and legal services. (Larson et al, 2002). The cost system in the Egyptian private sector depends on the traditional approach in managing this significant category of costs. As shown in figure 4.9, the product unit is charged by direct materials, direct labor and all manufacturing overhead (fixed and variable). This is the absorption costing method that is the traditional approach to product costing (Barfield et 1991, Wright 1994, Folk et al 2002, and Louderback and Holmen 2003), which treats the costs of all manufacturing components as inventoriable or product costs. Under absorption costing, costs incurred in the non-manufacturing areas of the organization are considered period costs and are expensed in a manner that properly matches them with revenues. In contrast, variable costing[13] is a cost accumulation method that includes only variable production costs (direct materials, direct labor and variable overhead) as product or inventoriable costs. Fixed overhead is treated in variable costing as a period cost. Variable costing treats costs incurred in the selling and administrative areas of the organization as period costs, just as does absorption costing. Absorption costing is the base principally used for cost ascertainment purposes, but in management decision-making situations a variable costing method (a marginal costing approach) proves more suitable. As marginal costing takes into account only variable costs, the distinction or classification of cost by behavior pattern into fixed and variable costs becomes of singular importance.

4.5.3 Use of costing information

The application of costing information is presented in table 4.10. Especially top management and marketing functions use costing information. Both functions score significantly higher than the other three at the 1% level using paired samples tests (this holds for the *t*-test and the Wilcoxon test). The difference between the marketing and the top management functions is not significant. The application of costing information reflects the focus on these two functions. Pricing decisions are the most important area where costing information is used at an average of 4.48, followed by customer profitability at 4.23. Performance measurement, which can be related to top management, is also important with an average of 4.13. These three all score significantly higher than the other applications of costing information using paired sample tests: both the *t*-test and the Wilcoxon test result in significant differences at the 1% level between product mix decisions, adding/deleting products and activity analysis on the one hand; and pricing decisions, customer profitability and performance measurement on the other. The difference of the latter three with make-or-buy decisions is less substantial, but still significant below 10% for both tests. Noteworthy

[13] Major authoritative bodies of the accounting profession, such as FASB and SEC, apparently believe that absorption costing provides external parties with a more informative picture of earnings than variable costing does. See Barfield et al (1991), p: 445.

again is the low score on activity analysis, an application that is typically associated with advanced management techniques.

Table 4.10: Usage of cost information in functions and applications

Functions	Mean	Median
• Top management	4.22	5
• Marketing	4.13	4
• Production	3.30	3
• Engineering	2.93	3
• Finance	2.38	2
Purposes	Mean	Median
• Pricing decisions	4.47	5
• Customer profitability	4.20	5
• Performance measurement	4.13	4
• Make or buy decisions	3.75	4
• Product mix decisions	3.30	3
• Adding or deleting products	2.93	3
• Activity analysis	2.38	2

All in all, this suggests that costing information is used mainly for marketing and measurement purposes. This would imply that applying costing information to improve production processes, lower cost prices or increase efficiencies is less important. Perhaps this reflects the state of the Egyptian economy; whereas in a fully developed economy market prices are leading, the influence of the Egyptian government on the economy leads to less impact from market forces. Hence, in the pharmaceutical industry, drug producers indicated that the government's pricing policy makes up one of their biggest challenges as it has failed to evolve with the ever-increasing costs of imported raw materials, making it impossible for them to increase the price of their products. As a result, pharmaceutical firms have been forced to absorb their dramatically and quickly input costs (AmCham, 2005).

4.5.4 The Tendency for development

Focusing on the U.S.-Egyptian partnership for Economic Growth and Development, the United States Agency for International Development (USAID), together with the Government of Egypt (GOE), have developed a new strategic plan that shifts the bilateral economic relationship from one based on aid to one based on trade and investment. This new plan reflects Egypt's emerging-market status, integration into the global economy and a mutual interest in stronger U.S.-Egyptian private sector relationships. Consequently, the respondents were asked to what extent they have the intention of improving and developing their cost accounting system in order to provide useful, timely and reliable information to help facilitate decision-making process that can contribute to developing the entire economy. Table 4.11 illustrates the results.

Table 4.11: The tendency for development

Do you want to develop the cost system in your company?				
Yes	Gradually	Not now	No	**Total**
18 (45%)	14 (35%)	3 (7.5%)	5 (12.5%)	**40 (100%)**

In recent years, the private sector in Egypt is attempting to improve its capability in a variety of perspectives, including accounting and managerial systems (32 companies, 80% in the selected sample), to be able to respond to the growing challenges in the business environment. As a result, during the week of May 20-25, 2000, Egypt and the USAID sponsored the first U.S. Information Technology (IT) Trade Mission to Cairo in response to President Mubarak's Information Technology initiative. The purpose of the trade mission was to enhance awareness of IT program and policy initiatives in Egypt, as well as develop internal management and accounting systems to better the trade dealings for both Egyptian and American private sector companies. The U.S. Trade Mission companies met with 18 Egyptian private sector information technology companies, Egyptian IT associations, managers, accountants and leaders[14].

4.6 Conclusions

In brief, this chapter has addressed particular issues in diverse phases of the industrial private sector in Egypt. The chapter begins by introducing a background of Egypt as the most populous country in the Arab world and the second-most heavily populated on the African Continent. In addition, privatization programs have been started in the early 1990s by the Egyptian government and in addition to a plan for the divestiture of 125 public enterprises over the following five years. The government has also decided to sell its shares in more than 250 public joint venture companies. Among private enterprises, the study has included four different industries in this sector: pharmaceuticals, chemical, foodstuffs and packaging and wrapping. The discussion has shifted to explain several descriptive characteristics of the sample including the acquisition of technological equipment, generating new ministry for an information-based economy, diversity as a powerful business tool and applying modern managerial philosophies such as TQM and JIT systems. Moreover, for competition reasons, the formation of the new Ministry of Communications Information Technology (MCIT) in October (1999) marked the beginning of a new era of governmental enhancement and development of the financial and managerial activities in the private sector as well as in the public sector.

On the other hand, the study also found the foodstuff industry in Egypt to have a high diversity, which plays a role in the rapid development of the Egyptian economy. In reference to the Egyptian Exporters Association (EEA), Egypt exports processed food and fresh fruits and vegetables products to the USA, Western Europe, Eastern Europe, Arab countries, Asia and Australia. Accordingly, to extend diversity and other advanced issues to as many sectors

[14] For further information; United States Embassy in Egypt, Ministry of Tourism/Egyptian Tourist Authority, Egyptian State Information Service and American Chamber of Commerce in Egypt.

as possible for private industries, Egyptian companies have attempted to adopt new improvement programs such as TQM and JIT throughout the last two decades. The study found that TQM to some degree is applied in a few companies in the selected sample as a management tool to improve all activities in the organization, particularly in the chemical and pharmaceutical industries. But unfortunately, there are various difficulties within the Egyptian environment that prevent the application of a JIT system. For example, most of companies in Egypt hold inventories to resolve the troubles of fluctuations in supply and demand in final products and also in raw materials. The last section of this chapter described the costing system in the Egyptian private sector; the discussion includes several related factors to the costing system. These factors involve describing the way in which cost information system was tailored to achieve its intended objectives, the correlation between firm size and percentage overhead, overhead allocation and to what extent the ABC system can be applied and used in the Egyptian private sector. The study found that the ABC system is almost completely unknown in Egypt. Of the forty firms, only 2 indicate that they are working on implementing it. The rest of firms did not fill in the questions regarding ABC.

Chapter Five

Empirical Results: Analysis of control variables

5.1 Introduction

In order to facilitate the work throughout the entire organization, managers are given the task of making decisions. This task requires the availability of sufficient information. This chapter is concerned with analyzing the control variables of the study before explaining the interdependent relationship between cost information and strategic planning in chapter six. These variables include: organizational factors (strategy, organizational structure, organizational size), technological factors (diversity and complexity, firm's IT, production process) and environmental factors (competition, environmental uncertainty). The central objective of this chapter is to interpret the results of the empirical study that have been achieved through questionnaires and interviews, in-line with the conceptual model presented in chapter three. To realize this objective, this chapter is divided into four sections: (1) the basic conceptual model of this research, (2) organizational factors, (3) technological factors and (4) environmental factors. The control factors will be analyzed in four different steps. (A) Previous studies related to the factor will be analyzed, as this represents a good starting point to help sketch a theoretical image of each factor; (b) how to construct each factor for measurement is also very essential to achieve the consistency between this chapter and the questionnaire that has been designed to gather empirical data, (c) then we can draw attention to the actual results and attempt to interpret these results in consistence with the Egyptian business environment and (d) last, but certainly not the least in terms of importance, is to indicate the impact of each factor on the basic research idea (cost information and strategic planning), which will be discussed in chapter six.

5.2 Cost information system and strategic planning process

Derived from the development of the research conceptual model that was presented in chapter three, the ultimate conceptual model is given in figure 5.1.

Figure 5.1: Cost information and strategic planning ***(CO&ST)***

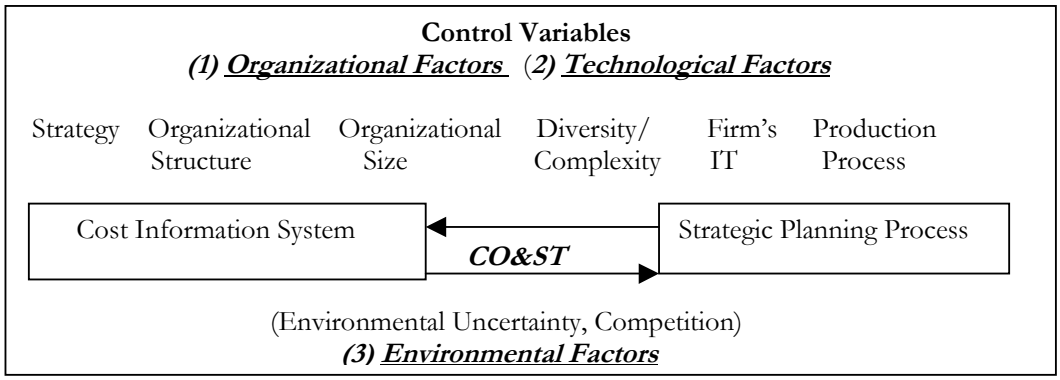


Figure 5.1 shows the basic conceptual model of this research, the central variables and the factors that have been previously discussed in depth in chapter three. As mentioned above, the discussion of each factor will be planned in the following approach:
Step (1): Expectations from literature.
Step (2): Construction for measurement.
Step (3): Actual research outcome and interpretations.
Step (4): The impact of each factor on (CO&ST).

5.3 Organizational factors

5.3.1 Firm's Strategy

5.3.1.1 Expectations from literature

According to Thompson et al (2004), a company's strategy is a comprehensive plan that is designed by the management to consider several things, including market position, attracting customers, accomplishing competitive advantages and attaining organizational objectives. Porter (1980)[1] classifies competitive strategies into three basic strategies: cost leadership, differentiation and focus. Cost leadership requires constant cost reductions, tight cost and overhead control and avoidance of marginal customer accounts. Differentiation involves generating customer service, technology, brand image, a dealer network and product features. Focus strategy leads a firm to focus on a particular buyer group, segment of the product line or geographic market. Alternatively, Miles and Snow (1978, 1994)[2] identify four types of organizations according to the rate at which they change their products and markets: prospectors, defenders, analyzers and reactors. Prospectors look for market opportunities, developing new products and encouraging teamwork. Defenders run their operations within a narrow product-market area characterized by high production volume and low product diversity. Analyzers stand between these two categories. However, according to Cottenet and Mulder (2001), Egyptian competitiveness depends not only on efficiency but also on production costs. Egypt's relatively low labor costs tend to balance the low productivity of its human resources. Additionally, some highly educated workers are leaving Egypt to get jobs out of the country particularly in the gulf countries, which pay higher salaries. Consequently, we expect that the Egyptian private sector will focus on a cost leadership strategy in running its operations.

5.3.1.2 Construction for measurement

Respondents were asked several questions on a six-point scale ranging from 1 (extremely disagree) to 6 (extremely agree), which explain the type of strategy that the company uses to achieve its objectives. This part includes various questions that were planned to cover Porter's Model[3]. We took the average of each question by multiplying the number of companies by its respective number in the six-point scale, and then divided by the total

[1] As mentioned in Frey and Gordon (1999).
[2] As mentioned in Gosselin (1997).
[3] We select Porter's Model to classify the responses as it is related to cost information, which makes up one of the two basic research's variables.

number of companies. For example: question No.1: [(0 company x extremely disagree 1) + (6 companies x highly disagree 2) + (7 companies x somewhat disagree 3) + (6 companies x somewhat agree 4) + (14 companies x highly agree 5) + (7 companies x extremely agree 6)] ÷ 40 companies= 4.23.

5.3.1.3 Actual Research outcome and interpretations.

Table 5.2: Likert Scale results

N	***Cost Leadership***	M
1	One of our objectives is to be the low cost producer in the industry	4.23
10	We invest in technology to develop low cost processes	2.20
12	We invest in technology to develop low cost product design	4.18
17	In our firm, management encourages frugality	3.70

N	***Differentiation***	M
4	We are constantly developing new products	2.38
5	We are constantly developing technological improvements to existing products	4.13
6	We offer a broad product line to appeal to as many potential customers as possible	4.48
7	Product innovation is the most important aspect of our business	3.75
8	We seek to maintain brand identification rather than to compete on price	4.35
9	Management sets targets for learning improvements	4.28
11	We invest in technology to facilitate automation	3.05
13	My firm has a very diverse customer group	4.83
14	My firm allocates many resources to marketing activities	4.38
15	In our firm, management encourages innovation	3.10
16	In our firm, management encourages risk-taking	1.98
18	My firm responds to environmental changes concerning products and markets	4.48

N	***Focus***	M
2	We choose to specialize in a particular market segment	2.93
3	We choose to specialize in a particular geographic area	3.30

Interpretations

As shown in table 5.2, several firms in the selected sample are adopting a cost leadership strategy in the production process (notice: items 1,12 with means 4.23, 4.18), which allows them to sell their products or services at a lower price. For this reason, according to Cottenet and Mulder (2001), relative labor costs depend on three factors: hourly labor costs valued at the exchange rate, labor productivity valued at the exchange rate and the relative price level of manufacturing. This study also explained that Egyptian labor costs only 33% of what it costs in France. This is due mainly to low labor costs per hour and the low Egyptian price levels. Alternatively, there is significant interest in adopting another strategy (differentiation) in order to face the local and global challenges related to recent industrial developments and rigorous competition. This would help Egyptian firms augment their processes in order to improve quality along with increasing customer satisfaction. To achieve this goal, the table also indicates that there is a particular concern given to customer perspectives and marketing activities in the selected sample, and that this goal has been set to be one of the most important objectives when formulating the strategy within the company (*notice*: elements

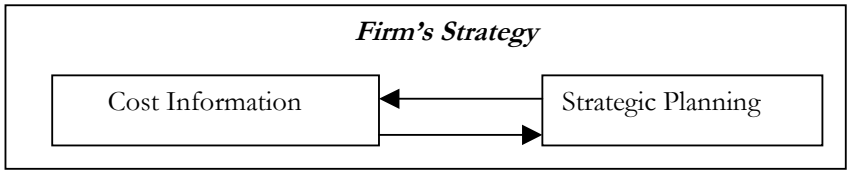
6,8,13,14,18 with Means 4.48, 4.35, 4.83, 4.38, 4.48). Hence, Egypt's economy has been opened up for foreign competition since the 1990s in order to extend its products and services to new markets and attract new customers in different industries. For instance, in the pharmaceutical industry, the EIPICO[4] Company adopted "A Process Approach" system when developing, implementing and improving the effectiveness of their quality management system (Q.M.S) to help improve customer satisfaction by meeting customer requirements. This approach defines the relationship between the individual processes, understands and meets customer requirements and implements continuous improvements to the various processes. This approach also gives customers a crucial role in defining their requirements as input.

A different strategy (differentiation) encourages the innovation needed to stimulate the development of new products and increases the abilities and skills of the workforce. However, it is observed that few companies encourage innovation that leads to facilitating automation and developing new products, as this requires well-trained staff and experts who support these companies in managing international trends of innovation (*notice:* 7,15,11,4, 16 with lower Means 3.75, 3.10, 3.05, 2.38, 1.98). Within a focus strategy, firms can accomplish their targets whether they carry out cost leadership or differentiation strategies. Hence, we can conclude that the Egyptian private sector has a variety of strategic types that might exist in any country. We recommend that Egyptian firms focus not only on cost activities, but also that they show particular concern to additional issues. For example, improving customer satisfaction and adding advanced improvements to products.

5.3.1.4 The impact of strategy on CO&ST

Anthony and Govindarajan (1995) indicate the importance of consistency between strategy and the strategic planning process, which enables the firm to develop programs that will implement strategies effectively and efficiently. Moreover, the nature of industry specifies the type of strategy adopted. The impact of strategy on the basic research idea is given in figure 5.3.

Figure 5.3: The impact of strategy on CO&ST



As shown in figure 5.3, accomplishing the desired results from the interdependent relationship between cost information system and strategic planning depends to some extent on the type of strategy adopted in the company. Egyptian firms should regularly revise and adjust their strategy formulation concerning the cost information system. Hence, to get

[4] EIPICO is the largest local producer of pharmaceuticals in Egypt; it exports their pharmaceutical products to Arab Countries and to some African, Asian and Eastern European Countries. It is the industry leader, monopolizing 8% share of the local pharmaceutical market and approximately 20% of Egypt's total drug exports.

reliable and useful information from the cost accounting system, firms should consider '**improving cost system'** as one of the most important goals when developing and setting a strategy. Moreover, the strategic priority adopted by the company reflects the nature of information that should be prepared for managers. This includes whether the firm applies low cost or differentiation, is a prospector or a defender. Therefore, management accountants have to be acquainted with the applied strategy that enables them to prepare appropriate reports, which include useful and reliable information to meet the managers' requirements. In addition, adopting the cost leadership strategy would require various efforts to develop the cost system in order to help Egyptian firms in achieving their desired results from this strategy. Alternatively, as previously mentioned in the literature (Anthony and Govindarajan 1994; Haberberg and Rieple 2001), if the firm's strategy involves several goals and objectives concerning competition, market share, product lines, improving internal systems, innovation and environmental analysis; the strategic planning process should settle on a number of programs (consistent with the firm's goals and objectives) which should be accurately planned so as to support the firm in successfully carrying out its goals and objectives.

5.3.2 Organizational Structure

5.3.2.1 Expectations from literature

Several previous studies discussed the nature and role of organizational structure and its influence in running the organization's activities (De Wit and Meyer 2004, Thompson et al 2004 and Dessler 2004). According to Hodgetts and Luthans (2003), during the past decade, an increasing number of large and small MNCs (Multinational Corporations) have been rethinking their approach to organizing international operations. Motorola, Coca-Cola, Mazda, and Li & Fung, a well-known Hong Kong firm, are examples. These companies are dramatically reorganizing their operations to compete more effectively in the international field. Several basic organization structures need to be considered, and in many cases, the designs are similar to those used domestically. However, there may be significant differences between the nature and scope of the overseas businesses and the home office's approach to controlling the operation. Haberberg and Rieple (2001) argue that organizational structures can be formulated to promote innovation, new ideas and permanent improvement in working practices while also enhancing teamwork and synchronization of the internal activities. We expect that Egyptian firms that have a small number of levels below CEO could achieve a high degree of communication and synchronization among their employees, which would contribute to attaining the company's objectives. On the other hand, the Egyptian Organization for Standardization (EOS, 2001) identified the major roles of standards for Egyptian economic players. These roles include: a factor for rationalization of production, a factor for clarification of transactions, a factor for innovating and developing products, a factor for the transferal of new technologies and a factor for strategic choice. We expect an essential role of standardization in the Egyptian private sector in order to meet the national and international quality requirements in addition to reaching the necessary technical and technological evolution.

Alternatively, bureaucratic activities, especially in the Third World, have a number of negative effects on the country's economy. These include multiple approvals, signatures and stamps. Hence, the industry modernization program requires adopting a variety of approaches to modernizing management decisions in order to improve efficiency of administrative machinery by introducing modern management techniques (Egypt Magazine, 2002). We expect that the Egyptian private sector will avoid the bureaucratic problems by delegating decision-making authority throughout the firm by providing various managers with the authority to make decisions relating to their area of responsibility.

5.3.2.2 Construction for measurement

Organizational structure is measured by getting information from respondents concerning three major perspectives. These perspectives are (1) hierarchical levels, which indicate the number of levels below the chief executive officer (CEO). This factor is constructed by asking respondents to determine the specific number of levels below CEO among four alternatives that are given to them; these alternatives include four, five, six and seven levels. (2) Formalization and standardization, which identify to what extent jobs are standardized within the firm. Respondents are asked various questions in a six-point scale to specify the degree of flexibility allocated to them to deviate from the standards within their written job description (mean score will be taken for interpretations). (3) Centralization and decentralization, which involve establishing thirteen different decisions that were presented to respondents in order to select the level of management that has the authority to carry out these decisions.

5.3.2.3 Actual research outcome and interpretations

(A) Vertical differentiation

Table 5.4: Hierarchical levels

Hierarchical levels	F	%
Four	19	47.5%
Five	12	30.00%
Six	6	15.00%
Seven	3	7.5%
• Total	**40**	**100.00%**

Interpretations

As shown in table 5.4, 31 companies (77.5%) have four or five levels between the top and bottom layer and nine companies (22.5%) only have six or seven levels. Thus, in accordance with Cole (2004), the Egyptian private sector has a mixture of structures that depend on the nature and size of company. We observe that 31 companies apply a flat structure, which tends to have several characteristics including centralized authority, few authority levels and a wide span of control. It has fewer problems of communication and coordination, encourages delegation by the managers involved and can motivate rank-and-file employees to take greater responsibility for their output. On the other hand, few companies (nine companies: three pharmaceuticals, two foodstuffs, two chemicals, two packaging and

wrapping, which represent 22.5%) apply a tall structure, which has various characteristics, namely decentralized authority, many authority levels and narrow spans of control in addition to long lines of communication and decision-making.

(B) Formalization and standardization

Table 5.5: Formalization and standardization

1.Written job descriptions exist for:	Yes	No	
a) Operation level employees	25	15	
b) Team leaders	33	7	
c) Production line managers	33	7	
d) Production managers	36	4	
Likert Scale			M
2.Where written description exists, employees are monitored to ensure compliance with standards set in the job description.			3.78
3. There is a degree of flexibility given to employees to deviate from the standards.			3.55
4. Team leaders and production line managers are free to exercise their judgment when they make decisions.			4.03

Interpretations

As revealed in table 5.5, the majority of companies want to provide their employees with written job descriptions or functions standards in order to guide them in running the company's activities accurately. According to EOS[5], the history of standardization in Egypt goes back seven thousand years. Relics from ancient Egyptian civilization provide sufficient proof that standardization was being deliberately applied to weight and measurement activities. Moreover, according to the EOS, the four most important types of standards are:(a) fundamental standards, (b) test methods and analysis standards, (c) definitions of the characteristics of a product or of a specification standards through which service and performance thresholds are to be reached and (d) organizational standards which deal with the description of the functions of the company and their relationships, as well as with the modeling of the activities (quality management and assurance, maintenance, value analysis, logistics, quality management, project or systems management, production management, etc.). Consequently, the type concerning organizational standards facilitates the performance of team leaders and production line managers to exercise their judgment when they make decisions. According to Farid's study (1997) - one of the Egyptian studies that explored the differences between public and private sectors- the significant difference was mainly in the area of leadership style. Private sector Egyptian managers reported more positive scores on aspects of leadership style, such as the existence of plans and goals, employee' participation, performance-based rewards, interesting tasks and initiative opportunities. This study also explored that performance-based rewards are not widely used by public organizations and public managers resist that delegation of authority. This could be attributed to several

[5] EOS (Egyptian Organization for Standardization and Quality Control) is a governmental body affiliated with the Ministry of Industry and Technology, largely financed by the government. EOS obtained ISO Membership in 1957, the same year in which EOS was established.

reasons: absence of clear performance measures such as profit and sales, multiple and competing goals and the existence of high public inspection.

(C) Centralization and decentralization

Table 5.6: Decisions and management's positions

Decisions	Supervisor	Production manager	Plant manager	HR.manager	CEO	Purchasing manager	Sales manager	Financial manager
1.Decide to design a new product	0	18	33	0	18	2	1	4
2. Establish the budget level	0	1	19	2	23	0	0	29
3. Select suppliers	0	4	9	0	7	38	0	0
4. Determine sale prices	0	0	12	2	8	0	37	8
5. Dismiss direct workers	21	0	6	36	8	0	0	0
6.Choose the methods of work to be used	2	7	25	3	32	0	0	0
7.Determine labor force requirements	22	2	11	36	7	0	0	0
8.Decide what type of costing system will be applied	0	0	12	0	17	0	2	33
9.Determine personnel rewards	16	1	6	33	14	0	0	6
10.Select machinery or equipment to be used	0	22	14	0	10	20	0	2
11.Choose methods for marketing products	0	16	14	0	25	0	12	5
12.Add a new product line	0	27	24	1	14	0	0	0
13.Select type or brand for new equipment	0	8	18	0	21	34	0	2
Participation in decision-making process.	*61*	*106*	*203*	*113*	*204*	*94*	*52*	*89*

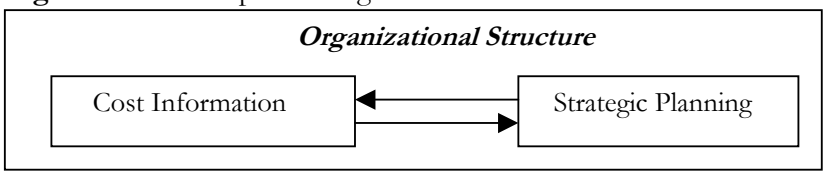
Interpretations

As shown in table 5.6, to some extent there is in the Egyptian private sector a degree of participation in the decision-making process and is allocated among many groups within the organization. This result is consistent with the preceding Likert scale results, which showed that team leaders and production managers could play a major role in the decision-making process. To deal with a market economy, according to the American Chamber of Commerce in Egypt (2001), Ahmed El Dersh, Minister of Planning and Minister of State for International Cooperation, spoke at a luncheon on October 16 (2001) about planning in a market-driven economy, placing particular emphasis on private sector participation, "Participatory Planning". The minister addressed the question of how participatory planning is relevant for Egypt. "Egypt is making a transformation from a centrally directed economy

into a free-market economy, we are moving towards a private sector-led economy, through deregulation, liberalization and promotion of competition." Therefore, promoting direct foreign investment and privatizing[6] public entities are well-known aspects of Egypt's economic and social transition. But it is also important to apply the decentralization to the decision-making process. We suggest that the Egyptian private sector should enhance the decentralization process in order to solve the bureaucratic problems along with involving the lower-levels managers who have supportive information in the decision-making process. The Egyptian private sector has carried out several efforts to develop its internal processes and functions, which enable it to cope with local and international standards concerning both production and organizational standards. As mentioned earlier[7], the EOS has set four major types of standards; the fourth type is concerned with organization standards that handle the description of the functions of the company and their relationships, along with the modeling of the activities (such as quality management and assurance, value analysis, quality management, production management, etc.). Thus, according to the EOS, standardization today is a crucial discipline for all players participating in the economy; especially those who strive to master its motivating forces and implications. 20 years ago, it was the reserved field of a few specialists; today, companies have incorporated standardization as a main technical and commercial factor. Hence, to obtain a competitive advantage locally and worldwide, companies should meet the international standards.

5.3.2.4 The impact of organizational structure on CO&ST

Figure 5.7: The impact of organizational structure on CO&ST



Organizational structure has an important influence on the cost information system since it determines whether the company adopts a flat or tall structure when specifying the number of hierarchical levels under CEO. We believe that adopting the flat structure is more appropriate for the accomplishment of a high degree of solidarity between cost system teamwork and managers who carry out programs and specify the funds that will be allocated to each program. Moreover, the high degree of delegation of authority in the decision-making process also makes up a crucial factor that encourages cost accountants to exercise initiative and plays a major part in providing reliable and useful information to the strategic planning team. Additionally, a well-designed organizational structure facilitates implementing

[6] The Egyptian government's privatization achievements: 126 majority-stake sell-offs from 1992 until mid-2001, and 54 partial leases or minority sales implemented in the same period. Meanwhile, the government is currently involved in 511 joint ventures with capital totaling LE 65.5 billion. These include 152 in the industrial sector (LE 18.1 billion), 42 in banking (LE 18.1 billion), 114 in services (LE 13.9 billion), 60 in tourism (LE 4.2 billion), 61 in construction (LE 3.3 billion), 44 in agriculture (LE 3.1 billion), seven in the insurance sector (LE 1.7 billion), 12 in transportation (LE 1.4 billion), nine in the power sector (LE 1.3 billion) and 10 in trade (LE 0.4 billion). See AmCham, "Planning in a Market Economy: What, Why, and How", Egypt, (2001).

[7] Go back to page 81.

strategic planning programs throughout an unremitting synchronization among the hierarchical levels that conveys the general firm's strategy to all employees. This in turn generates an employee commitment to carry out strategic programs in such a way that is in harmony with the firm's overall strategy. Furthermore, Wit and Meyer (2004) point out that the main question when specifying the organizational structure is which criteria will be used to differentiate tasks and hire people to accomplish these tasks. These criteria might include: business unit structure, market segment structure, product group structure, geographic structure and technology based structure[8]. An inclusive understanding of these criteria will effectively help firms set up strategic programs and appropriately carry them out.

5.3.3 Organizational Size

5.3.3.1 Expectations from literature

Organizations, small or large, seek to improve their business operations. This includes the necessity of adopting a strategic planning process that facilitates establishing a number of programs to improve the firm's overall performance. O'Regan and Ghobadian (2003) argue that organizations of all sizes need to pursue well-developed and unambiguous strategies in order to survive and achieve competitive advantages. But small firms do not accept the strategic planning process due to their ignorance of change and preference to look inward rather than outwards. They also depend on efficiency-based measures as a "strategic plan" for the future. Anthony and Govindarajan (1995) also confirm that a formal strategic plan is preferable in a relatively large and complex organization. In small and simple organizations, informal understanding of the organization's objectives and guidelines is sufficient for the decision-making process and also for allocating resources to the projected programs. Alternatively, Hodgetts and Luthans (2003) indicate that multinational corporations (MNCs, such as Toyota and Citibank) develop their strategic planning process with the purpose of diversifying their operations in a constantly changing global environment. According to Abdel-Aziz (2002), despite Egypt's position as a developing country, its pharmaceutical industry is relatively mature. Growth is moderate and local production covers 93% of demand; the balance is covered by imports. We expect that the pharmaceutical sector will have a number of firms that have been achieving high sales value when compared, for example, with the food sector.

5.3.3.2 Construction for measurement

As mentioned in chapter one, the sample is limited to forty firms from four sectors (pharmaceutical, food, chemical and packaging). Generally, there are three bases to obtain information about the company size. These bases consist of: total balance sheet, the number of employees and sales value. The questionnaire asked the respondents to indicate the company size between two offered alternatives: assets value and sales value. All companies in the sample selected the second alternative to approximately identify the company size. The semi-structured interviews that have been conducted helped us explore three major reasons

[8] For further details about the organizational structuring criteria, see Wit and Meyer (2004), p. 167.

for this selection. Firstly, sales value is simply taken from the income statement of the current year or is estimated depending on the preceding year's income statement. Secondly, most companies do not have the desire to disclose the actual value of their assets for reasons of competition. Thirdly, some Egyptian companies do not have updated information about the value of their assets, so they rely on historical data in estimating the assets value without considering the changes in market values. Accordingly, we did not take assets value as a basis for a company size because none of firms in the sample chose it.

5.3.3.3 Actual research outcome and interpretations

Table 5.8: Sales size distribution of sample*

Sector	Below 100	100-150	Over150	Average	Minimum	Maximum
Pharma	4	4	2	145	75	440
Food	7	3	0	84	56	120
Chemical	4	5	1	120	54	305
Packaging	7	1	2	106	55	210
Total	22	13	5	114	54	440

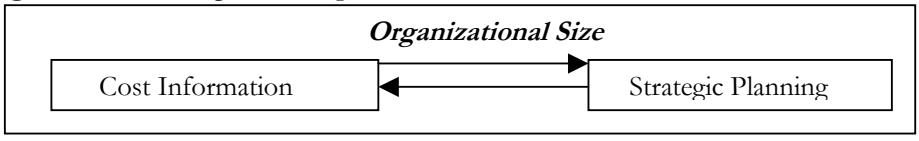
* Numbers are in millions of Egyptian pounds. At the time of the research, 1 Egyptian pound was approximately € 0.14 or $ 0.16.

Interpretations

Table 5.8 presents information on the size distribution of the sample. Although the food sector companies are somewhat smaller than other sectors, this does not reflect the consumption rates of food products by Egyptians as it differs from month to month. In contrast, we can also observe that pharmaceutical sector companies are somewhat bigger. The pharmaceutical industry in Egypt makes up one of the largest markets in the Middle East and North Africa region (MENA). Domestic supply was estimated around 93% of local demand, while total exports during 2003/2004 was $209 million of which 68% was directed towards the Arab region (IDSC, 2005, Egypt). Although the MENA region absorbs most of Egypt's pharmaceutical exports, some Egyptian companies have a preference for increasing their local sales to Egyptian customers rather than depending on international producers. EIPICO[9] has increased its local sales to 85% of total production, in particular, by increasing its channels of direct distribution to pharmaceuticals, making distribution branches reach a total of eight branches instead of a previous five. Main branches are located in Cairo, Giza, Sohag, Tanta, AL-Mansoura and Alexandria (EIPICO, 2005).

5.3.3.4 The impact of organizational size on CO&ST

Figure 5.9: The impact of organizational size on CO&ST



[9] EIPICO: Egyptian International Pharmaceutical Industries Co.

The improvement process of the cost information system depends somewhat on the company's size and the number of internal operating functions that might need cost information in making decisions. If the company has the seven common internal functions (R&D, purchasing, human resource, production, distribution, marketing and servicing) (Larson et al, 2002), the improvement process may need additional efforts and supplementary resources in an attempt to satisfy the requirements of these functions due to the fact that they have dissimilar information needs. For instance, R&D managers need information about current and projected costs and sales whereas purchasing managers need to know what, when and how much to purchase. Moreover, as pointed out by Anthony and Govindarajan (1995), a formal strategic planning process is not desirable in small organizations because managers in these organizations have a preference for informal understanding of the organization's objectives and future directions. Instead, financial resources devoted to strategic planning are intended for other activities and investments, which could contribute to increasing the overall company's profitability in a short period faster than waiting for the results of strategic planning.

5.4 Technological Factors

5.4.1 Diversity and Complexity

5.4.1.1 Expectations from literature

Chapter three offered a discussion with regards to diversity and complexity. Product diversity and production process complexity have been shown to be significant factors in the need for regularly adjusting cost allocation procedures (Cagwin and Bouwman, 2001). Besides, complexity is the major factor that causes the incurrence of costs in manufacturing the product or providing the service (Swenson 1998, Gonzalves and Eiler 1996)[10]. According to Anthony and Govindarajan (1995), a strategic plan provides a general framework within which the operating budget is developed. Since this budget includes financial and other resource commitments for the next several years, it is very important that such commitments should be prepared with an apparent idea about the different programs that the firm will carry out along with the level of diversity and complexity of these programs. Moreover, a formal strategic plan is not attractive in small and simple organizations as this style of organization depends simply on informal understanding of the organization's future directions for making decisions about the resource allocations. According to the Industrial Modernization Center (IMC, Egypt 2003), the Egyptian economy faces competitive pressures from three fronts: countries within the MENA region, East Asian economies and European transition economies, which use high-skilled labor force to produce better quality goods that have a high level of complexity and diversity.

In accordance with Gamal (2003), Egypt's pharmaceutical market is the biggest in the Middle East. This industry has increased its efforts to penetrate the market through higher productivity and adopting modern production equipments. A SWOT analysis was carried

[10] As mentioned in Cagwin and Bouwman (2001).

out in 2001 by the American Chamber of Commerce in Egypt (AmCham). It concluded that the industry's strengths are: being the largest market in the MENA region, access to Arab and African markets, low labor costs and ample supply of doctors and pharmacists. The weaknesses were the insignificance of R&D, lack of product quality and lack of reliable governmental regulations implementation. Alternatively, major chemical companies allocate 4-6% of their annual sales for R&D[11]. However, this percentage varies from one product category to another. Unfortunately, these numbers represent around or less than 1.5% in developing countries. Hence, we expect less diversity and complexity in the Egyptian private sector as a result of some problems related to the lack of product quality and the insignificance of R&D activities.

5.4.1.2 Construction for measurement

Diversity and complexity can be measured to define several issues, measured on a six-point scale from 1 (extremely disagree) to 6 (extremely agree). These issues include: to what extent there are major differences in volumes among products, what is the degree of similarity of costs for each product, the number of product lines in the organization and if each product line requires similar or different process operations to design, manufacture and distribute. In addition, Cagwin and Bouwman (2001) argue that when a company has a lot of intra-company transactions, the transfer pricing methodology might have a negative effect on the financial performance of individual business units. Companies could also supplement their products with different improvements in order to improve their quality along with constantly increasing their competition skills.

5.4.1.3 Actual research outcome and interpretations

Table 5.10: Likert Scale results

	M
1. There are major differences in volumes among products.	4.10
2. Costs of support departments are similar for each product.	3.28
3. There are more than two product lines in your firm.	3.90
4. Within product lines, products require similar processes to design, manufacture and distribute.	3.35
5. There are a large number of intra company transactions among departments.	3.75
6. Your firm constantly adds improvements to products.	4.63

Interpretations

As shown in table 5.10, to a great extent there is a high level of complexity (*observe*: statement 1 with M 4.10 and statement 2 with M 3.28) and diversity (*observe*: statement 3 with M 3.90 and statement 4 with M 3.35), which is not according to our expectations. Based on interviews that have been conducted with several production managers, the basic central aim

[11] According to the European Chemical Industry Council (CEFIC), the expenditure on R&D as % of Annual Turnover in the EU is 5.1 in 1990, 4.7 in 1995 and 5.1 in 1999. In the USA it is 5.2, 5.4 and 6.8 with respect to the years mentioned above.

of this diversity and complexity is to enhance and expand the productivity that has resulted from continuous improvements to the products (*observe*: statement 6 with highest M 4.63). Thus, when the Egyptian Businessmen's Association (EBA)[12] was established in 1975, its fundamental objectives were to combine the private sector's interests, synchronize activities, promote its products and improve its productivity in a more competitive and liberal environment. At that time the Egyptian economy was a central planned economy. In order to carry out these duties, the EBA had to be in the first place a lobbying power in favor of the Egyptian business community to safeguard its interests and develop the private sector. Additionally, in accordance with the Library of Congress, businesses with the highest productivity growth rates were food-processing operations, such as those producing sugar, oil, fodder, dairy products and canned fruits and vegetables. Some analysts, therefore, expect that these manufacturing fields would attract private entrepreneurs in the near future. The table also illustrates that there is a high necessity for developing the products to boost and improve the productivity (*observe*: statement 6 with highest M 4.63: 11 companies selected extremely agree (6), 5 pharmaceuticals, 2 foodstuffs, 3 chemicals, 1 packaging and wrapping).

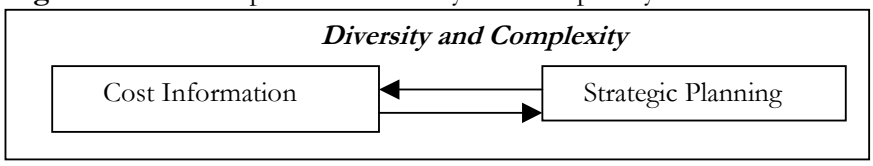
With regard to the chemical industry, according to an ICCA Report to UNEP (2002), this industry is very diverse; there is no one typical product or one typical company. This industry converts raw materials such as oil, coal, gas, water and minerals into a variety of substances that can be used by other chemical industries, other industries and consumers. These include, for example, fertilizers, paints, coatings, crop protection chemicals, plastics, pharmaceuticals and food additives[13]. The result is a complexity of operations and the urgent necessity for innovation and modernization. With respect to the packaging industry, consistent with Spore (information for agricultural development in African, Caribbean and Pacific countries, ACP, 2002), packaging is as crucial as the product itself. It protects the product against the risk of damage and spoilage, improves handling and transport, informs the buyers about the contents and facilitates the product use. Hence, the role of technology affects the nature of packaging and its production. From the paradoxal perspective of environmental laws, many western nations are reducing the amount of material and energy used in packaging food and non-foods, while still maintaining hygiene laws. The use of non-recyclable plastics is being minimized and recyclable materials such as cloth and non-wood are preferred. Hence, We recommend that the Egyptian private sector allocate additional financial and other resources to R&D activities in order to face this degree of complexity along with improving the quality of products, which in turn increases the diversity level.

[12] EBA was founded in 1975 and ratified in 1979 under the law 32/1964. EPA is a non-governmental, non-for-profit organization that seeks to unify the efforts of private Egyptian interests in contributing to the productivity and efficient national economic and social development of Egypt.

[13] ICCA (International Council of Chemical Associations) Report to UNEP (United Nations Environment Program), (2002), "The ICCA Chemical Sector Report to UNEP", for the world summit on sustainable development.

5.4.1.4 The impact of "diversity and complexity" on CO&ST

Figure 5.11: The impact of "diversity and complexity" on CO&ST



It is essential to scrutinize the components and resources that are available to manufacture a product and to provide services in order to specify the factors that drive costs. Therefore, the degree of a company's complexity determines what type of cost data should be introduced to managers to help them capture strategic decisions. Moreover, determining the cost information system improvement programs requires examining the level of internal complexity, so as to prepare all those who have the responsibility to create such programs. This might include: production managers, cost accountants, managerial accountants and purchasing managers. Consequently, adopting a strategic plan is desirable in a relatively large and complex company that has diverse operations and different inter-company transactions (Anthony and Govindarajan, 1995). Since strategic planning is raising new programs along with developing ongoing programs, it requests adequate data regarding the level of complexity in order to establish appropriate programs and to allocate sufficient financial and non-financial resources for each program.

5.4.2 Firm's IT

5.4.2.1 Expectations from literature

Since the mid 1980s, the government of Egypt has established a national information project to build up the information infrastructure that represents a vital success factor for building Egypt's business and socio-economic development plans. To achieve this purpose, the Information and Decision Support Center (IDSC) was set up in 1985 in an attempt to cope with information in a way that would expand socio-economic development (Kamel, 1997). In addition, Pearce and Robinson (2003) explain the fundamental role of information systems in dealing with a range of functional area resources and activities. These include, for instance: timeliness and accuracy of information about sales, operations, cash and suppliers, link to suppliers and customers, information to manage quality issues and the relevance of information for tactical decisions. Moreover, Haberberg and Rieple (2001) argue that the organizations that cope effectively with information and telecommunications technology would formulate and perform their programs easily. Therefore, information technology in Egypt has been identified as a potential growth sector among non-traditional industries. According to AmCham (2002), in June 2001, the total number of companies working in the IT field reached 565 companies, indicating a 141% growth from 363 in December 2000. In 2001 alone, nearly 202 companies entered the market compared to 129 new entrants in 2000. Moreover, Kamel (1997), points out that Egypt has been developing and implementing an information highway program to introduce and spread information technology and infrastructure in order to decrease the gap between developing countries and the developed world. The central objectives of this program are: encouraging private investment, improving

productivity, realizing effective economic reform, improving health care, optimizing use of natural resources and protecting competition. Accordingly, we expect that Egyptian private firms will think about this contemporary trend in IT by developing their internal systems, which allow IT departments to successfully work to provide all functions with dependable, timely, understandable, verifiable and comparable information.

5.4.2.2 Construction for measurement

Several items, measured on a six-point scale, have been introduced to respondents to specify to what extent their firms have the ability to make use of information technology in their business processes as this advantage smoothes the progress of business activities and contributes to increasing the organization's profitability. These items include to what extent the firm is using highly advanced machines in gathering and analyzing cost data, whether the work staff is satisfied with the outcome of the cost management system, the availability of information about sales and other operating expenses, to what extent the information system could classify business activities into value-added and non-value-added and the possibility to conduct several training sessions to IT employees in order to improve their skills in collecting, recording, analyzing and reporting information to all departments in their organizations.

5.4.2.3 Actual research outcome and interpretations

Table 5.12: Likert Scale results

	M
1. Your firm is using automated machines in collecting and interpreting cost data.	3.30
2. The quality of your cost management system is excellent.	3.15
3. Sales and operating data are available.	3.75
4. The information system offers data about several activities in your firm (value-added and non-value-added activities).	3.75
5. In your firm, there is a specific department for IT and your business unit provides several training programs to IT employees.	4.55

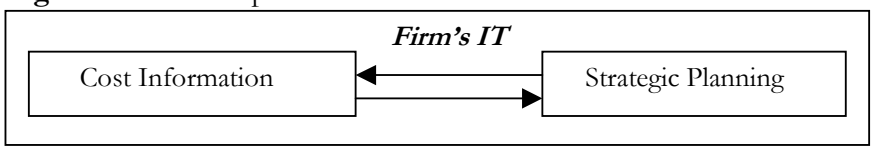
Interpretations

A number of formal and informal interviews show that IT makes up one of the most essential objectives that Egyptian firms seek to achieve particularly with the growing tendency towards technological growth all over the world. This trend also encourages these companies to build up their internal systems to present valuable, reliable and useful information for the decision-making process (*notice*: statement 5 with the highest M 4.55 and statement 2 with the lowest M 3.15). This is according to what we formulated in our expectations above. As a result, Kamel (1997) points out that the cabinet of Egypt, Information and Decision Support Center (IDSC) has been established in 1985 as one of the most significant bodies to manage information, to generate an appropriate atmosphere to enhance socio-economic development. In the pharmaceutical industry and supported by the Ministry of Health, IDSC has initiated HealthNet to facilitate the progress of communication and information exchange among physicians, healthcare providers and

patients in Egypt. HealthNet carries out numerous on-line multimedia databases on Egyptian physicians, medical centers, medical equipment companies, pharmaceutical companies and medical laboratories. In addition, the Egyptian Ministry of Industry and Foreign Trade (2004) has approved a plan to establish Technology Transfer and Innovation Centers (TTICs) to promote technology-based industrial development. The TTICs have numerous targets, including helping businesses improve quality and competitiveness by supporting their adoption of new technologies, providing grants to small and medium-scale enterprises for product innovation and mediating with companies overseas that own relevant technologies to transfer them to local companies under license.

5.4.2.4 The impact of Firm's IT on CO&ST

Figure 5.13: The impact of firm's IT on CO&ST



Since we are now living in an age dominated by information, we believe that having a specific department for IT within a firm is of extreme necessity to create a proper environment to support the labor force (particularly cost and management accountants) with a number of training courses in highly advanced institutions, which can improve their skills in dealing with cost data either; both in colleting these data and reporting them. Additionally, an IT department could support some contemporary management accounting techniques such as ABC, ABM, ABB, target costing, Kaizen costing, Benchmarking and Balanced Scorecard. On the other hand, once a strategy is set to develop the cost information system, the improvement programs will be planned to put that strategy into practice. These programs might involve conducting various training sessions for the employees in the cost department to provide them with modern tools of management accounting and periodically notifying them of the current changes in the external environment that could update their information. This, in turn specifies the type of cost data that should be presented to enhance synchronization between managers and managerial accounting staff. Additionally, IT can play a very important role in developing and implementing some strategic programs in the pharmaceutical industry. HealthNet in Egypt is a strategic initiative that was established to facilitate the progress of communications among medical centers, medical equipment companies, Egyptian physicians and pharmaceutical companies (Kamel, 1997).

5.4.3 Production Process

5.4.3.1 Expectations from literature

All companies in the world depend on machines and human resources in running the production process to offer products and services. However, the trend in many industries is towards greater fixed relative to variable costs (Garrison and Noreen 2003, Van Triest

2000[14]). Now, most companies are equipped with high technology in their processes such as barcode readers that add prices and other product information automatically. The World Competitiveness Report (1995) has confirmed that Egypt's labor force is by far the largest in the Arab World and second only to Turkey's in the wider Middle East. In addition, labor force in Egypt is increasing each year. Table 5.14 shows the estimates of the labor force from 1/1/2000 to 1/1/2004.

Table 5.14: Estimates of labor force in Egypt *(**No. In Thousands**)* [15]

	1/1/2000	1/1/2002	1/1/2003	1/1/2004
Male	14.700	15.412	15.818	16.166
Female	3.917	4.254	4.358	4.537
Total	**18.617**	**19.666**	**20.176**	**20.703**

The Egyptian people are the actual wealth of the nation. According to AmCham (2004), in spite of the fact that technological equipment takes over more and more of the tasks that were once performed by humans, the overall demand for human workers has not diminished. The demand for "knowledge" workers has tremendously increased. Since the Egyptian pharmaceutical industry is considered one of the oldest strtaegic industries in the country, it requires highly skilled and trained workers who, at the same time, are also difficult to replace. Sufficient number of these workers would enable this industry to overcome many internal and external challenges. Internal challenges facing the pharmaceutical industry involve the regulatory framework, quality assurance tests, research & development, market fragmentation, limited health-insurance coverage and the presence of production contracts. External challenges involve the implementation of GATT (Generally Agreement on Tariffs and Trade) and TRIPS (Trade-Related aspects of Intellectual Property Rights) along with global competition. (AmCham in Egypt, 2004).

With respect to the chemical industry, those companies face a different and difficult environment. Input costs fluctuate dramatically, demand is softening and customers require increased service and lower prices. There is constant turbulence from mergers, shifting strategies, accelerated technological progress and intense global competition. As a result, these companies should select their staff in the working and managerial levels with specific care that enables them to deal with the unique activities of such an industry. These chemical activities are those coping with: oxides and sulfides of carbon and metal carbonates, plant sites that exclusively produce hydrocarbons, plant sites that exclusively produce explosives, oligomer and polymers, compounds containing only carbon and metal and extraction or purification activities (according to General Guidelines for the National Authority). Therefore, we expect that the Egyptian private sector depends mainly on human resources (especially well-trained and high-skilled workers) to set up its strategies and achieve its

[14] PhD thesis, which provides a comprehensive background about variable costs and fixed costs. It also contributes to the understanding of the importance of operating leverage for firm performance and what the relationship is between operating leverage, firm characteristics and firm performance. For further details, see: Van Triest, (2000).

[15] Source: C.A.P.M.A.S: "Central Agency for Public Mobilization and Statistics", Egypt, 2004.

objectives regardless of the recent trend towards using advanced technology in running the company's operations.

5.4.3.2 Construction for measurement

The respondents were asked to what extent their companies depend on machines along with employees to run the production process. Respondents were asked to indicate on a five-point scale ranging: 1 (don't use), 2 (weak), 3 (medium), 4 (great extent) and 5 (to a very great extent). As none of the firms selected "don't use" and "weak", the table below shows the other options: 3, 4 and 5.

5.4.3.3 Actual research outcome and interpretations

Table 5.15: Employment and machinery in production process

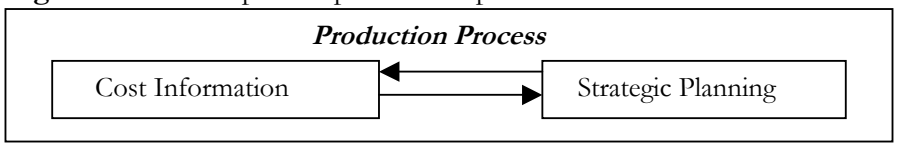
	F	%
• Medium	5	12.5 %
• Great extent	17	42.5 %
• To a very great extent	18	45.00 %
Total	40	100.00 %

Interpretations

Table 5.15 indicates that 35 companies i.e. 87.5 % from the sample rely on both labor force and machines to a great extent (no less than "great extent"), which is not fully according to our expectations. As a result, the Ministry of Industry created a new mechanism under the Egyptian Industry Modernization Program aiming to provide necessary support in upgrading equipment and machinery and replacing outdated equipment with advanced technologies (Egypt Magazine, 2002). This new trend toward technology has encouraged the Egyptian private companies to increase their dependence on high technology machines, which enable them to successfully achieve a competitive advantage. Alternatively, the Islamic Chamber of Commerce and Industry mentions Egypt's labor force has grown at an annual rate of around 2.7% in recent years, adding more than 500,000 new entrants to the labor market each year. The abundance of labor leads to low wages and the use of labor-intensive technologies. Although the Egyptian private sector depends on human resources in accomplishing its targets, the American Chamber of Commerce in Egypt (AmCham, 2004) argues that private sector development is still facing several challenges. However, the major challenge is the lack of adequately qualified human resources on both operational and managerial levels. Moreover, a comprehensive weak economic performance has not enabled the country to create the job opportunities required to absorb the increasing number of new entrants into the labor market. Therefore, we suggest that the Egyptian private sector should develop its workers' qualifications in the course of organizing extensive training sessions, which could be held in Egypt or in developed countries.

5.4.3.4 The impact of production process on CO&ST

Figure 5.16: the impact of production process on CO&ST



Schoute (2003) indicates that the production process includes a number of production lines and the structure of production (heterogeneous or homogeneous). The discussion of product lines and product structure is one of the most powerful tools that can have a great impact on cost information and the strategic planning process. It helps management accountants and managers understand the interrelationship between products, costs and profitability of product lines in an organization, which in turn helps them make decisions concerning the amount of resources that will be allocated to each product line depending on its profitability and its contribution to raising the overall profitability of the organization. Additionally, these data would enable managers to decide on which products to manufacture or sell, what type of manufacturing facility to acquire, what profitable product lines to maintain and what activities to add or eliminate (Garrison, 2003). Moreover, Schoute (2003) argues that indirect activities in heterogeneous mass production are generally much larger than in the homogeneous mass production, which sequentially direct management accountants to consider this differentiation when developing and improving cost information system.

5.5 Environmental Factors

5.5.1 Perceived Environmental Uncertainty (PEU)

5.5.1.1 Expectations from literature

As the Roman scholar Pliny the Elder once remarked: *"The only certainty is that nothing is certain*." Several millennia on, the Indian Ocean earthquake triggered killer waves, or tsunami, which represented uncertainty on an unprecedented scale (Al-Ahram weekly, 2005)[16]. Environmental analysis is very vital for all companies to understand factors that might have a remarkable influence on the organization's strategies. Fleisher and Bensoussan (2003) argue that environmental analysis should scrutinize, recognize and meet the critical information needs of decision makers. These needs change frequently over time, hence the constant need to adjust environmental analysis in order to cope fruitfully with such changes. Despite the fact that a firm does not have control over its environmental factors, Pearce and Robinson (2003) contend that these factors do have a significant influence over the success of its strategy; and strategies are usually designed based on them (these factors vary within industries). These factors might include: inflation, technology, interest rates, governmental regulations, economic conditions, competitors, suppliers and demographic/social changes. Governmental regulations in Egypt make up the major challenge that domestic and foreign investments face. The US Commercial Service (2005) mentions some trade regulations and standards. For example, most imports require certain labeling and packaging requirements,

[16] Mehta, (2005).

especially food products, the ministry of finance established a lot of customs regulations and the Egyptian Organization for Standardization (EOS) has set some obligatory standards, which represent around 15% of the total number of Egyptian specifications. Hence, we expect governmental regulations will play a major role in private sector companies, and these regulations could contribute to the success or failure of these companies. In addition, Haberberg and Rieple (2001) discuss a number of essential issues about an organization's environment: (1) it is a system that cannot be entirely understood by analyzing one or two elements, (2) it is a complex system because if anything happens to one part, other parts of the firm may be affected and (3) it is unpredictable not only because of the large number of components, but also because of the enormous influence of each component as a complex social system that involves unpredictable human beings.

5.5.1.2 Construction for measurement

PEU is measured by introducing a number of issues related to the external environment that might have an influence on the accomplishment of the decision-making process. PEU stimulates managers and management accountants to give these issues particular concern when formulating and carrying out the company's objectives. Respondents were asked on a six-point scale ranging from 1 (extremely disagree) to 6 (extremely agree) to identify to what extent these elements have a high or low effect on the success or failure of their firms. We selected these elements based on the informal interviews that have been conducted before formulating the questionnaire. The interviewers suggested that there are three major perspectives to be analyzed in order to get appropriate data about the environmental uncertainty. These perspectives include competition, production technology and environmental rules. As a result of these suggestions, and in accordance with Schoute (2003), the respondents were asked about suppliers' actions, customer demands (tastes and preferences), intensity of competition, production technology, governmental regulations and policies, economic environment, industrial relations and international technology developments.

5.5.1.3 Actual research outcome and interpretations

Table 5.17: Likert scale results (PEU)

	M		M
1. Suppliers' actions	3.68	5. Government regulations and policies	4.18
2. Customer demands	4.33	6. Economic environment	3.95
3. Intensity of competition	4.50	7. Industrial relations	3.98
4. Production/technologies	3.93	8.International technology developments	4.90

Interpretations

With the urgent demand to develop the performance of the private sector, which can in turn improve the entire economic situation in Egypt, it is necessary to pay special attention to international technology developments (*notice*: item 8, with highest M 4.90), which can lead to adopting advanced technology from developed countries. According to the Fourth Annual

Conference in Egypt (2003)[17], in the early 1990s, the Egyptian government launched economic reform and structural adjustment programs to create free market forces, integrate into the global economy, advance domestic investments and enhance the export environment. In addition, the most important purpose of the Industrial Modernization Program (IMP) was to help the private sector handle globalization challenges and achieve positive results from industrial development. Additionally, as pointed out by Shafik (2003) competitive forces have driven everyone to be more ruthless than in the past (*notice*: item 3 with M 4.50 and item 2 with M 4.33). Competitive pressures encourage countries in the Middle East and North Africa region (MENA) to increasingly integrate in the world economy. Examples of these countries are: Jordan, Oman, Tunisia, Algeria, Bahrain, Egypt and Morocco. However, this developing trend to compete internationally is controlled by government regulations as we expected above (*notice*: item 5 with M 4.18). There is also an altering economic role of government, mainly as it moves away from production and towards regulation. In most parts of the world, there have been three waves of privatization, and the countries of this region are at different phases of this process. Aspects of these waves include: tradables, infrastructure and privatizing social services such as health care and education[18]. With respect to the pharmaceutical industry, according to AmCham, the private sector pharmaceutical company T3A Pharma Group has decided to increase its capital to LE 34 million from LE 20 million by offering 1.4 million new shares to the public, with priority given to existing shareholders. T3A will use the earnings from the capital increase to help finance its new Healthcare Production Complex in Assiut. The complex will coordinate the company's production activities, promote quality control and increase economies of scale. This project is the first in Africa and the Middle East to be designed consistently with the standards of the U.S Food & Drug Administration; a qualification that will allow T3A to export to Europe and the U.S. The government gave T3A the land on which its facility is built. T3A has also been granted a 10-year exemption from taxes on the factory's production.

Other industries in Egypt willing to export to EU should be familiar with EU policy. EU specifications (Environics, 2000)[19]are divided into legally compulsory standards, which are in general product-oriented, and voluntary standards, which are related to product and process, oriented. As mentioned by Environics (2000), environmental standards started with a focus

[17] "Egypt in a globalization world", the fourth annual global development conference theme: globalization and equity, Cairo, Egypt, 19-21 January 2003.

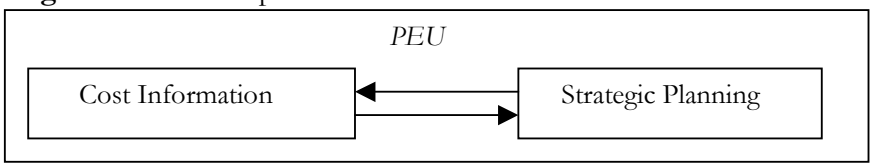
[18]Tradables such as manufacturing, services, factories, cement, financial-industries that are essentially competitive, these include those in Algeria, Yemen and Egypt. Infrastructure includes power, transportation and telecommunications. The third wave of privatization that has not arrived in the region is the issue of privatizing social services such as health care and education. For further information, see: Global Competition and the Changing Relations between the Public-Private Sectors in the Middle East and North Africa (MENA) Region, written by Nemat Shafik, Director of Private Sector Development and Finance, World Bank.

[19]The EU is Egypt's first trading partner; trade with EU represents the highest ratio compared with the U.S., Afro-Asian region and intra-Arab regional trade (average export shares between 1992 –1999 is 34.9%, and average import shares in the same period is 39.2%). For further information about these environmental effects between Egypt and the EU see: "Egypt/EU Free Trade Arrangement", Scooping of Environmental Effects, Environics, Management of Environmental Systems, September 2000, Dokki-Giza-Egypt.

on consumer protection. Thus, the current pattern is still fostering this focus; the closer the product is to the consumers, the stricter the standards are. For example, food, textiles and flowers are subject to more rigorous environmental standards than intermediate goods. However, environmental standards are gradually expanding to take other environmental issues into consideration, such as energy conservation. EU environmental specifications are demanding, diverse and dynamic, or in other words "3 D's". To summarize, Egyptian firms should analyze and adopt these specifications to be able to cope with challenges that producers face in meeting with EU requirements. The next part illustrates the impact of this factor on the research's basic idea.

5.5.1.4 The impact of PEU on CO&ST

Figure 5.18: The impact of PEU on CO&ST



Analyzing environmental factors is of vital importance in determining the strategic priorities (cost leadership and differentiation) that have been used by the competitors, which help firms adopt the most profitable strategy. In addition, supplier analysis allows firms to assess the local and external suppliers of required raw materials. Alternatively, the strategic-planning process requires a greater consideration of the entire environment in which the firm is working. According to Wheelen and Hunger (2000), there is a strong relationship between the external environment and the selection of strategic factors. The analysis of the external environment includes interest group analysis, community analysis, market analysis, competitor analysis, supplier analysis and governmental analysis. Several researchers have used an issues priority matrix to identify and analyze developments in the external environment. The issues priority matrix helps managers be familiar with which environmental factors need to be scrutinized (low priority) and which have to be controlled and monitored strategic factors (high priority). Those environmental factors will be considered as strategic factors that are then analyzed and well understood by managers in order to select the most appropriate factors that have the greatest impact on the relationship between cost data and strategic planning process.

5.5.2 Competition

5.5.2.1 Expectations from literature

The central driving force of a company's strategy is to undertake action to reinforce the company's long-term competitive position and financial performance. Typically, a company's strategy consists of both offensive and defensive elements as some actions mount direct challenges to competitors' market positions and seek to establish a competitive edge; while others aim to defend against competitive pressures, the maneuvers of rivals, and other developments that threaten the company's well being. Without a competitive advantage, a company risks being outrun by rivals and/or locked into mediocre financial performance

(Thompson et al, 2004). Accordingly, in the Global Development Network (GDN), fourth annual conference (Cairo, 2003)[20], H.E. Atef Ebeid, Prime Minister of Egypt delivered a speech entitled, "Egypt in a Globalization World". He provided a snapshot of the implications of economic globalization for the MENA (Middle East and North Africa region) and Egypt, in particular. This session highlighted the challenges and opportunities for the Egyptian economy in the light of globalization, including increasing Egyptian competitiveness for the twenty-first century. In addition, for the purpose of improving competition activities, IRIS[21] assisted the government of Egypt in developing a competition policy regime as part of the country's Economic Reform and Structural Adjustment Program. This policy was developed to encourage and promote the growth of competitive markets by reducing restraints on competition emanating from agents in the public and private sectors. However, the private sector is key to successful competition for investment and markets in a rapidly changing world economy. There are several changes that have a great impact on the forces of competition. These changes include: privatization, globalization, industry modernization programs and structural adjustment policies (USAID, 2006). In addition, during the plan period (2000-2009), USAID focused on addressing several programs that would increase the domestic and international competitiveness in the private sector, which in turn will set in motion the restructuring of economic activity. Therefore, we expect that our sample will face both local and international competition. Additionally, the above-mentioned rapid changes in the Egyptian economy will create a high level of competition among firms, which in turn will result in the appropriate competitive advantages.

5.5.2.2 Construction for measurement

Measuring competition in the Egyptian business environment requires getting two kinds of data relating to the type of competition and the degree of this competition. This is necessary to obtain a clear image of the competition factors that must be carefully scrutinized, which in turn enable companies to set up proper programs to contend with local and global markets. Accordingly, respondents were asked about the kind of competition in their firms: local, international or both. In addition, they were asked about the degree of competition ranging from weak to very big.

5.5.2.3 Actual research outcome and interpretations

Table 5.19: The degree and type of competition

Degree	F	%	Type	F	%
• Weak	4	10 %	1- Local	8	20 %
• Normal	7	17.5 %	2- International	3	7.5 %
• Big	21	52.5 %	3- Both	29	72.5 %
• Very big	8	20 %		**40**	**100 %**
	40	**100 %**			

[20] Global Development Network (GDN), Fourth Annual Conference, Day 1, January 19, 2003, Cairo, Egypt.

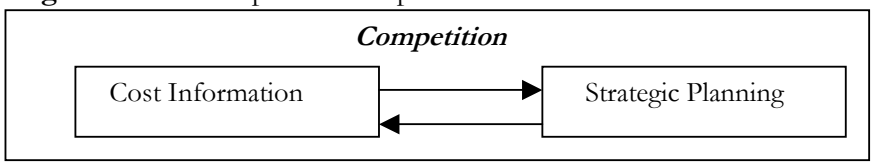
[21] IRIS: the center for Institutional Reform and the Informal Sector is a research and advisory center in the department of economics at the University of Maryland. Staffed by lawyers and economists, IRIS studies the institutional bases for economic growth and democratic development and works with reformers in developing and transition societies.

Interpretations

As shown in table 5.19, 29 companies (72.5%) face both local and international competition and 29 companies also have indicated that the degree of competition to a great extent is big (21 Big, 8 Very big), which is fully consistent with our expectations. As indicated previously in chapter four, the program of modernizing industry is a long-term national initiative that is aimed at boosting and promoting the role of Egyptian industry at domestic and world levels. The industrial sector is a key factor of economic development and in the availability of job opportunities. The program also includes means of improving the domestic and global competitiveness of Egyptian industrial products by providing technical assistance for small and medium-scale enterprises (Egypt Magazine, 2002)[22]. According to Al-Ahram Weekly (El-Din, 1999), the chairman of the Holding Company for Drugs and Pharmaceuticals said that US pharmaceutical companies are exerting "huge pressure" on the government to give up the GATT-prescribed transition period agreement on intellectual property rights and to liberalize the pharmaceutical sector before its due time in the year 2005. The Industry Minister agreed that the domestic drug industry could face great risks if liberalization was carried out too early. The Ministry of Industry has received a LE 1.5 million grant from the EU to implement an ambitious program to enhance the Egyptian pharmaceutical industry, enabling it to compete with developed countries. Moreover, Egypt has signed the GATT, which is set to be implemented for the pharmaceutical sector in 2005, and will facilitate the entry of imported products into the market by raising quantitative and qualitative barriers. This will increase the competition in the local market, force the government to reduce its rules and regulations of the industry and implement the required modifications for the pricing policy. Additionally, according to a number of informal interviews with production managers in the foodstuffs sector in Egypt, Vitrac company, one of the most well-known companies in this sector, has purchased sophisticated juice production line machines to produce better juice products in order to maintain competition with another famous company also in that sector, namely Kaha. Vitrac believes that there is a clear link between acquiring highly developed manufacturing equipment and the ability of a company to compete locally and international (Interviews results, April 2004).

5.5.2.4 The impact of competition on CO&ST

Figure 5.20: the impact of competition on CO&ST



In their research, Cagwin and Bouwman (2001) point out to some previous studies that explained the important role of competition in the strategic planning development. One of these studies is that of Khandwalla (1972). He found that output market competition is associated with greater use of management controls. Yet more recently, Mia and Clarke

[22] Modernization of Egyptian Industry, Egypt Magazine, SIS publications, Issue No. 27, Spring 2002.

(1999) argue that management accounting systems (MAS) could provide information used to identify, evaluate and implement appropriate strategies and emphasized that the level of competition is a determinant of the use of MAS. Competitor analysis is considered one of the most powerful tools in the strategic planning process. Traditionally, management accounting focused on analyzing the internal cost structure of the organization, and then on planning how this cost structure could change in the future in order to develop a long-term plan and a short-term budget. The actual cost base is then compared against this budget as the year unfolds. For more sophisticated businesses, the original budget is flexed to take significant changes in the external environment into account so that the comparisons with actual results are more significant (Ward, 1992). Furthermore, Ward (1992) argues that a competitor analysis[23] requires adequate information from several sources in order to determine the major opportunities for, and threats to, the competitive strategy of the business. In addition, one part of the competitor analysis is concerned with carrying out a regular cost comparison in order to evaluate the actual and potential problems that are related to the cost information system and how the organization can solve these problems. Hence, management accounting can play a crucial role in implementing competitor analysis by providing managers with helpful cost information about products and services.

[23] A firm can apply a competitor analysis by getting information from a lot of sources. These sources include comparative industry analysis, published financial statements, competitor press releases, trade and financial media coverage, physical analysis of competitive products, mutual customers, banks and financial markets, Ex-employees of competitors, commodity markets, trade associations, mutual suppliers, government statistics, own employees and physical observations. For more details, see Ward (1992), pp: 109, 110,111,112.

5.6 Conclusions

This chapter has addressed several issues that are related to the fundamental idea of this study. The data analysis started by analyzing the control variables that deal with the essential idea of the research, namely, the relationship between cost information and strategic planning process. These control variables include: organizational (strategy, organizational structure, organizational size), technological (diversity and complexity, firm's IT, production process) and environmental (perceived environmental uncertainty, competition). Each variable was discussed from four different perspectives: expectations from literature, construction for measurement, actual research outcome/interpretations and the impact of each factor on CO&ST. The next part summarizes what we expected with regard to each variable and what we found according to our empirical analysis.

Variable	What we expected	What we found
Strategy	Egyptian competitiveness relies not only on efficiency but also on production costs. Egypt's relatively low labor costs tend to balance the low productivity of its human resources. We expected that the Egyptian private sector would focus on cost leadership strategy in running its operations.	We found that the majority the sample is adopting cost leadership strategy. However, we explored that the Egyptian private sector has a variety of strategic types that might exist in any country (e.g., differentiation).
Organizational Structure	We expected that Egyptian firms that have a small number of levels below CEO could achieve a high degree of communication among their employees. In addition, we expected an essential role of standardization to meet the national and international quality requirements in addition to reaching the necessary technical and technological evolution.	We found that 77% from the sample apply a flat structure, which tends to have several characteristics including centralized authority, few authority levels and a wide span of control. Moreover, standardization today is an essential discipline for all players, which enables them to cope with international standards concerning both production and organizational standards.
Organizational Size	Since the pharmaceutical industry is one of the largest markets in MENA region, we expected that this industry have a number of firms that are bigger than other industries.	We found that pharmaceutical firms are somewhat bigger, domestic supply was estimated around 93% of local demand. Domestic supply was estimated around 93% of local demand, while total exports during 2003/2004 were 209 million of which 68% was directed towards the Arab region. Food firms are somewhat smaller.

Variable	What we expected	What we found
Diversity /Complexity	We expected less diversity and complexity in the Egyptian private sector as a result of some problems related to the lack of product quality and the insignificance of R&D activities.	We found that there is a high level of complexity and diversity in order to improve the productivity that has resulted from continuous improvements to the products, particularly in the foodstuffs and chemical sectors.
Firm's IT	Based on the growing tendency towards IT in Egypt, we expected that Egyptian firms will think about this contemporary trend in IT by developing their internal systems, which allow IT departments to successfully work to provide all functions with dependable, timely and verifiable information.	We found that IT makes up one the most essential objectives that Egyptian firms seek to achieve. The government of Egypt has established a number of information centers that will generate an appropriate atmosphere to enhance socio-economic development. For example, IDSC, TTICs and HealthNet.
Production Process	Since the Egyptian people are the actual wealth of the nation, we expected that the Egyptian private sector would depend mainly on human resources to set up its strategies and achieve its objectives regardless of the tendency towards technology.	We found that 87.5% from the sample rely on both labor force and machines. The Egyptian Industry Modernization Program has provided necessary support in upgrading equipment and machinery and replacing outdated equipment with advanced technologies.
Perceived Environmental Uncertainty	Governmental regulations in Egypt make up the major challenge that domestic and foreign investments face. So we expected that governmental regulations will play a major role in private sector companies, and these regulations could contribute to the success or failure of these companies.	We found that not only governmental regulations have a great influence on the firm's performance, but it is also necessary to pay special attention to international technology developments, which can lead to adopting advanced technology from developed countries. Hence, the Egyptian government launched economic reform and structural adjustment programs to create free market forces and integrate into the global market.
Competition	We expected that our sample would face both local and international competition. In addition, the rapid changes in the economy will create a high level of competition among firms to achieve appropriate competitive advantages.	We found that 29 companies (72.5%) face local and international competition and they also have indicated that the degree of competition to a great extent is big (21 Big, 8 Very big), which is fully according to our expectations.

Chapter Six

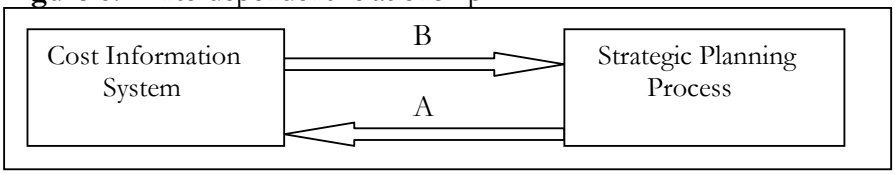
Cost Information & Strategic Planning: An Interdependent Relationship

6.1 Introduction

Cost information is a fundamental part of management accounting. It is a vital tool that managers can use when making a number of decisions, which may have an enormous influence on the entire organization's profitability. According to Barfield et al (1991), although the conventional objectives of cost information have been focused on product costing and inventory valuation, the tendency is to provide cost information to managers in order to help them fulfill a variety of functions related to planning, controlling, performance evaluation and decision making. In addition, Ansari and Lawrence (1999) discuss the major role of a cost measurement system in recording and tracking, as well as reporting information about the resources consumed by an organization in supplying its customers with the goods and services they require. Thus, they demonstrate that a cost measurement system is part of a strategic management accounting system. Furthermore, Keating and Ansari (1997) mention the organizational role of management accountants to fulfill different functions than those they traditionally fulfilled. They refer to a survey that has been conducted on behalf of the Institute of Management Accountants (IMA)[1] which describes a number of major roles for management accountants such as becoming business and strategic partners of the management, providing information about quality and costs, improving employees' understanding of their processes and participating in problem solving with managers.

As discussed in chapter two (literature review), the strategic planning process refers to the process of determining the programs that the organization will carry out and the estimated amount of financial resources that will be paid to each program over the next several years. Thus, Hodgetts and Luthans (2003) argue that one of the primary reasons that MNCs such as Toyota or Citibank need strategic planning is to keep track of their diversified operations in an incessantly altering global environment. This is particularly obvious when one considers the amount of foreign direct investment (FDI) that has occurred in recent years. The following figure shows the basic idea of this research.

Figure 6.1: Interdependent relationship



[1] These roles are only exemplary, for further information about the other organizational roles of management accountants, see: Keating and Ansari. (1997).

Based on the semi-structured and unstructured interviews that have been conducted with several managers and accountants in the course of our empirical study, it has been found that the cost information system can play a fundamental role in providing valuable and useful information to managers who prepare and carry out strategic programs such as pricing policy and customer profitability analysis. Alternatively, if the company has a well-prepared strategic plan, it has a great opportunity to make "developing a cost information system" one of the most important programs that the company will undertake and can devote significant efforts to achieving that goal. Raiborn et al (1993, P. 466) discuss the role of top-level management in carrying out strategic planning as they state *"strategic planning is generally performed only by top level management with the assistance of several key staff members"*. So, in accordance with USAID in Egypt, a variety of plans have been implemented (such as Management Development Initiative MDI) to develop management's capabilities in order to eventually create competitive advantages for Egyptian firms both locally and worldwide. Consequently, this chapter is divided into three sections. The first section discusses the role of strategic planning in cost information. The second section explains the role of cost information in the strategic planning process. The third section draws attention to the potential role of management accounting in the strategic planning process and the requirements for application in the Egyptian business environment.

6.2 Relationship (A): The role of strategic planning in cost information

As we discussed in chapter 2, strategic planning is the process of deciding on the nature and size of the programs that are to be undertaken in implementing the organization's strategies and objectives. It also includes the necessity of enhancing cost data, which can be used in providing managers with information they require (Hill 2003, Cole 2004, Anthony and Govindarajan 1996). The respondents were asked to what extent their companies are interested in the process of strategic planning in terms of several programs. These programs include: adopting the ABC system, production and sales activities, market analysis and internal & external environmental analysis. The subsequent analysis illustrates the actual outcomes that are associated with those programs.

6.2.1 Strategic planning (adopting ABC system)

Table 6.2: Likert Scale analysis: strategic planning (adopting ABC system)

N	***Adopting the ABC system***	M
2	Your firm usually eliminates some unnecessary activities.	3.78
11	ABC is tied to the competitive strategies of the firm.	0.23
12	Your firm adopts the ABC system to improve the cost system.	0.28

As shown in table 6.2, Activity–Based Costing (ABC) in the Egyptian private sector is still in the initial stage. It requires extensive efforts in the course of several years to be adopted practically (*notice*: statement 11 with M 0.23, statement 12 with M 0.28 and statement 2 with M 3.78). These results are consistent with what has been discussed previously in chapter four concerning the obstacles that face Egyptian firms in designing and applying the ABC information system. (See chapter four regarding details related to this issue). Although the

ABC system has been facing difficulties in application, we observe that activities can be examined and classified into required activities and unnecessary activities by a process called activity analysis without the actual implementation of ABC (notice: statement 2 with M 3.78). In reference to Hilton et al (2003), activity analysis is a powerful management tool that helps organizations sort out activities as value added and non-value added with the purpose of specifying opportunities to improve value added activities and to shrink or eliminate non-value added activities. However, restructuring activities into value added and non-value added requires identifying the cost of each activity, which is a major step when applying the ABC system. As a result, we believe that activity analysis in Egyptian firms is not a straightforward task as it depends to some extent on understanding the mechanism of the ABC information system.

In the initial stage of this research, we attempted to explore to what extent the Activity Based Costing (ABC) system can be applied and established in the Egyptian business environment through a number of data gathering methods including questionnaires, interviews and observations that have been conducted during the first step of this research. Consequently, a few conclusions may be drawn: ABC is still a relatively a new cost system in Egyptian enterprises, there is uncertainty about the potential benefits from ABC and ABC is a very complicated and expensive system for Egyptian business standards. In addition, firms understand the need for change but are concerned about the extensive resource requirements to implement ABC. Most managers and employees are not familiar with the mechanism of ABC. Therefore, there is resistance to change among managers and employees, and it is very difficult to make changes in a company's accounting system. Moreover, the interviewees indicated that the official cost accounting systems in most companies in the private sector are usually embedded in complex computer programs that have been modified internally over the course of many years. For example, *Aventis* Company, a famous pharmaceutical company in Egypt, is applying a cost system called **SAP** (System Application Product) that is designed specifically for the company's operations to calculate production and wrapping costs. However, a few companies in the private sector have prepared preliminary projects concerning ABC, which were introduced to auditing firms to determine whether such projects could be applied and implemented or if there are obstacles of implementation. (Based on extensive discussions and interviews with cost accounting professors who are already working as consultants for the KPMG branch in Egypt).

6.2.2 Strategic planning (production and sales activities)

Table 6.3: Likert Scale analysis: strategic planning (production and sales activities)

N	***Production and sales activities***	M
3	Your firm adds new product lines to support production process.	4.13
6	Your firm makes trend analysis for sales periodically.	4.20
10	Your firm evaluates the performance based on percentage of sales from new products.	3.50

The private sector in Egypt has achieved enormous success in terms of enhancing production processes and increasing sales to meet local and international demands (USAID,

Egypt, 2003) (*notice*: statement 6 with M 4.20, statement 3 with M 4.13 and statement 10 with M 3.50). The Agriculture-Led Export Businesses (ALEB) project, which started in January 1999, is an essential instrument of USAID's Growth Through Globalization (GTG)[2] plan that helps the Egyptian private sector increase its production and export it to the global market. Consequently, this enhances the competitive advantages of this sector. ALEB's mission (2003, P. 1) is to *"improve the global competitiveness of the Egyptian food processing industry, related service industries (e.g. packaging, printing, pest control, etc.) and associations in order to achieve sustainable export growth*". In the first phase of this project (January 9, 1999 until February 28, 2002), it was a great success as is increased Egypt's processed foods export value by 17.6%. Value of exports (in US $) increased by 16.7% from 1998 to 1999, 13.8% from 1999 to 2000 and 12.2% from 2000 to 2001. Total increase in the processed foods export value from 1998 to 2001 was 42.7%. According to the American Chamber of Commerce in Egypt (AmCham, 2001), Egypt is the largest producer and consumer of pharmaceuticals[3] in the MENA region, monopolizing one-third of the MENA market. The pharmaceutical industry is facing internal and external challenges that encourage it to expand production and sales. These challenges include: regulatory framework, quality assurance tests, limited health insurance coverage, the presence of production contracts, market fragmentation, GATT, TRIPS and international competition. In spite of these challenges, enormous efforts have been undertaken to increase the local production, which supplies 94% of the domestic market and has contributed to the growth rate that reached LE 5 billion in 2002.

6.2.3 Strategic planning (market analysis)

Table 6.4: Likert Scale analysis: strategic planning (market analysis)

N	***Market analysis***	M
7	Your firm uses competitor appraisal based on published financial statements	3.88
8	Your firm measures the performance based on the number of complaints received from customers.	4.00
9	Your firm measures the performance based on customer satisfaction as measured by survey results.	4.40
5	Your firm is constantly revising the product pricing policy in line with the market.	3.88

As previously mentioned, such plans to boost, encourage and enhance production aim to increase customer satisfaction, which is the major objective of any company (*notice*: statement 7 with M 3.88, statement 8 with W.M 4.00 and statement 9 with M 4.40). According to AmCham (2002)[4], management consultant Sherif El Attar argues that sales techniques have to be utilized to obtain substantial benefits from marketing activities aimed at reducing the gap between a company's vision and people's needs. Moreover, Egyptian food companies are competing to attract as many customers as possible by guaranteeing the customer safety

[2] ALEB Project Office (2003), Dokki, Giza, Egypt.

[3] The Egyptian pharmaceutical industry is considered one of the oldest strategic industries in the country. It was founded in 1939 with the establishment of Misr Company for pharmaceutical industries. For further details about this industry, refer to chapter one.

[4] American Chamber of Commerce in Egypt, (2002), "Scoring for your marketing team through the professional selling function".

and satisfaction. According to El-Araby et al (2005)[5], food processing is Egypt's second largest industry next to textiles with an annual production valued at $US 3.5 billion, and a strong annual growth rate of 20%. Thirty-two companies working in the food industry and other related industries such as packaging, marketing, sales and manufacturing are already applying the HACCP[6] system (Hazard Analysis and Critical Control Point). Twenty-Six of them are big companies and the remaining six of them are medium to small sized companies. HACCP is a scientific and systematic system for ensuring food safety and has a number of advantages that can grant the Egyptian food industry superior competitive advantages when facing international food processing companies. These advantages include: it can be implemented in all levels of the organization (not just management), the ability to be used successfully to anticipate possible hazards, its control is proactive as it discovers problems before they occur and its control is relatively easy as it deals with time, temperature and appearance.

6.2.4 Strategic planning (internal and external environmental analysis)

Table 6.5: Likert Scale analysis: strategic planning (environmental analysis)

N	***(Internal and External environmental analysis)***	M
1	Your firm explains the entire mission statement to everybody in it.	4.28
13	Your firm takes actions in long-term goals (i.e., investments in buildings and land, acquisition equipments to support operations).	3.03
14	Your firm usually assesses the external environment (i.e., investors, competitors, customers, economic relations and suppliers).	3.90
15	Your firm usually evaluates the internal environment (cost system, marketing policy, pricing strategy, the profitability of some products, the efficiency of some internal operations, and the quality costs classifications).	4.58
4	Your firm decides to manufacture a component internally instead of buying it	3.25

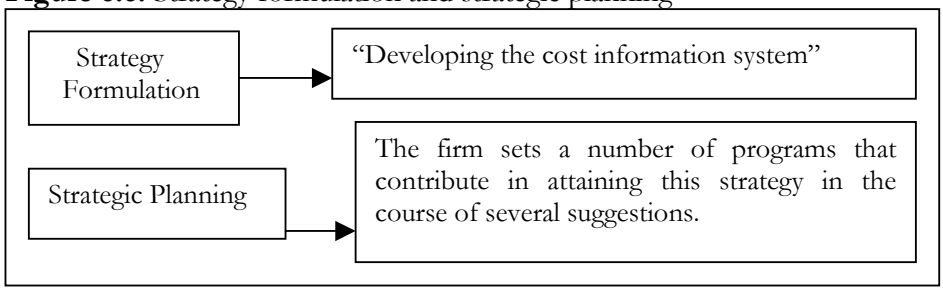
As shown in table 6.5, environmental analysis is very important in achieving the firm's objectives and targets. Therefore, firms should take it into consideration when formulating and running their strategies, which should help them to take advantage of the available opportunities from external investments, as well as acquainted with the economic and political conditions (*Notice*: statement 13 and statement 14, with means 3.03 and 3.90 respectively). According to USAID (Egypt, 2005), the Ministry of International Cooperation and USAID have signed a $200 million Commodity Import Program (CIP) agreement to allocate $120 million to the 31 Egyptian commercial banks who grant financing to Egyptian private firms for the import of U.S. equipment and materials. The CIP offers a number of investment opportunities to the private sector to support increasing productivity. It provides (for instance) a commercial mechanism to introduce highly technical, sophisticated equipment from the United States to the Egyptian economy. As illustrated earlier, the high significance of customer satisfaction encourages all companies to pay attention to several

[5] El-Araby et al (2005).

[6] HACCP system (Hazard Analysis and Critical Control Point) has become the internationally recognized and accepted method for food safety assurance. While it was originally developed to ensure microbiological safety of foodstuffs, it has been further broadened to include chemical and physical hazards in foods. For further details, see the previous article, page 109.

variables that contribute to customer satisfaction. These variables include; pricing policy, marketing strategy, profitability of some products and quality costs (*notice*: statement 15 with M 4.58 and statement 14 with M 3.90). To achieve this objective, the companies should, with regard to the above-mentioned variables, develop their internal systems with specific information; from an accounting perspective, most of this information is associated with cost information. Hence, Egyptian firms should formulate a strategy that establishes "developing the cost information system" as a fundamental strategy (*strategy formulation*) and decide on the programs that the organization will perform as well as the human and financial resources that have to be allocated to each program over the next several years to implement this strategy (*strategic planning*). The following figure illustrates a distinction between strategy formulation and the strategic planning process.

Figure 6.6: Strategy formulation and strategic planning



As shown in figure 6.6, to develop the cost information system, Egyptian firms could set up a number of programs to accomplish that objective. These programs might be composed of several factors. (1) Convincing Egyptian top managers of the crucial role of valuable, useful, timely and relevant cost data in the decision-making process in both short-term and long-term periods. Without this support from top management, strategic planning cannot accomplish its intended purposes. (2) Conducting intensive training courses with specialized educational and training institutions to train individuals in the cost department in recent techniques that assist them in collecting, analyzing, recording and reporting cost data precisely. (3) Increasing the degree of harmonization between management accountants and managers (marketing, production, purchasing…etc) to support such managers with the right information at the right time. A fundamental goal is to enhance the communication between corporate and business unit executives. (4) Providing personal computers and Internet access to management accountants at a low cost and adopting innovative methods of payment. (5) Eliminating all obstacles that prevent adopting the ABC system particularly through conducting training courses with practitioners who have experience in designing and applying ABC projects.

6.3 Relationship (B): The role of cost information in strategic planning

Managerial accounting has an important role to play by providing precise cost and performance information. Companies must understand the nature and sources of costs and must develop systems that capture both variable and fixed costs accurately (Larson et al 2002 and Van Triest 2000[7]). The subsequent analysis explains the role of cost information in a number of functions and applications in the selected sample.

Table 6.7: Likert Scale analysis (functions and applications for cost information)

Functions	M	*Applications*	M
(A) The following functions use cost information for the decision-making process:		(B) Cost information can be used in the following purposes:	
		1. Pricing decisions	4.48
1. Design engineering	2.39	2. Make or buy decisions	3.75
2. Marketing	4.13	3. Product mix decisions	3.30
3. Corporate finance	2.38	4. Adding or deleting products	2.93
4. Production	3.30	5. Customer profitability analysis	4.23
5. Top management	4.23	6. Elimination of non-value added activities	2.38
		7. Performance measurement	4.13

As shown in table 6.7, cost information can contribute to providing top managers with the appropriate information they require to make a number of decisions in both production and marketing functions (*Notice in the left side:* item 5 with M 4.23, item 2 with M 4.13 and item 4 with M 3.30). The cost information system can support top management by supplying information that helps top managers make strategic decisions concerning marketing activities (M: 4.13) and production activities (M: 3.30). According to Egypt Magazine (2002), the modernization of Egyptian industry involves upgrading management development so as to achieve an actual revolution in management in general and in development in particular. On the other hand, McWatters et al (2001) argue that cost information plays a major role in adding or deleting products because this decision should be made based on a comparison of the incremental costs and incremental revenues. If incremental revenues are higher than incremental costs, a new product should be added. Unfortunately we can observe that this decision has a low mean (2.93). Therefore, management accountants should explain the incremental revenues and incremental costs that assist managers in this type of decision.

Furthermore, as shown in table 6.7, elimination of the non-value added activities has a low mean (2.93). Hilton et al (2003) identify several sources of the non-value added activities such as producing to build up an inventory, transporting workers to work sites, waiting for processing, producing defective products and moving products from place to place. If management accountants prepare reports that illustrate the cost of these sources, managers will have a clear image about the sources of non-value added activities and their costs, which enables them to make proper decisions. In addition, to modernize management in the

[7] Van Triest (2000) in his study indicated several strategic issues and events that are directly related to fixed costs, these issues include: overcapacity, entry barriers, mergers, and strategic alliances. See Van Triest (2000), p: 115, 116.

decision-making process, it is necessary to enhance the efficiency of administrative machinery by improving internal systems (including the cost system) and introducing modern management tools to be able to deal with internal and external challenges. Likewise, in line with AmCham in Egypt (2002), E-marketing could result in an improvement in getting sufficient information about the cost of some activities such as selling, serving customers, distribution and advertising. Providing adequate cost information coupled with using technology in marketing will have various benefits including an efficiency increase in traditional marketing functions and an increase in customer value, which in turn helps enhance the company's profitability[8].

Additionally, since ***the strategic planning process*** includes the programs that the organization will undertake and the estimated amount of resources that will be allocated to each program, ***cost information*** can be used in the majority of those programs. Accordingly, based on our research limitations along with the actual statistics outcome explained in the table above, we focus on three programs that will be discussed in accordance with the applications introduced in the right side in table 6.7 (*Notice*: item 1 with M 4.48, item 5 with M 4.23, and the remaining items 2, 3, 4, 6, 7 that are associated with short-term decisions). Hence, the following section discusses the role of cost information in: ***the pricing policy, customer profitability analysis and decision management.***

6.3.1 Cost information for pricing decisions

Cole (2004) points out that setting the product's price makes up one of the most important elements that managers should focus on, and as price is an essential element in achieving profits. In addition, price is very crucial in a number of situations. These situations might include: launching new products to the market, introducing existing products to new markets, a change in competitor's' pricing due to market pressures and during periods of raising production costs. Based on the interviews that have been conducted with some managers in the private sector, they have confirmed that "cost-plus pricing" is the most widely used method of pricing a product.

Selling Price = ***Cost*** + (a percentage mark-up to provide a reasonable level of profit)

Managerial accountants should scrutinize carefully the product cost and explain comprehensively which method is already used to establish cost in the previous formula (total cost, manufacturing cost or variable/incremental cost). They also have to provide managers with reports that draw attention to the advantages and disadvantages of each method that help managers increase or decrease a percentage mark-up, which in turn has a remarkable influence on the overall profitability. In the pharmaceutical sector, the Ministry of Health requires pharmaceutical firms to present documents that explain the cost of a drug's raw materials, overhead, production costs, sales costs and desired profit margin. After reviewing these data, the ministry's pricing committee sets the price that will be

[8] American Chamber Of Commerce In Egypt, committees- Briefing 2002- Marketing Committee.

communicated to every pharmacy in order to sell the product at that price. If the committee rejects the price suggested by the company, many negotiations can be made to reach to the final retail price[9]. Of the 8000 drugs registered with the Ministry of Health, almost 7600 are manufactured locally. Drug makers point out that one of their major challenges is the government's pricing policy that has failed to keep up with the rising costs of imported raw materials. In this effect, the president of Amoun pharmaceuticals, one of Egypt's oldest private drug makers, (AmCham, business monthly, April, 2005) says, *"Egypt doesn't manufacture any of the chemical components that are needed for the production of pharmaceuticals. This means that we have to import them and we pay for them in dollars".*

6.3.2 Cost Information for Customer Profitability Analysis (CPA)

CPA is a cost management tool that identifies the costs and benefits of serving customers with the purpose of improving the company's profitability by reaching two main goals. These goals involve measuring customer profitability and making a clear distinction between effective and ineffective customer activities (Hilton et al, 2003). Furthermore, Ward (1992) has pointed out that CAP (Customer Account Profitability) can accomplish enormous benefits that are highly associated with strategic planning and the decision-making process since it provides adequate knowledge of profitable and unprofitable customers. Consequently, a company can increase its efforts to devote additional resources to retain profitable customers and either drops those who could not increase profits or serves them in a way that can generate profits. According to Hilton et al (2003), the majority of organizations measure profitability depending on regions or product lines, but many organizations would prefer to increase market share and improve customer satisfaction without understanding the costs of doing so. Moreover, some organizations incur costs to satisfy their customers but often they are not acquainted with whether these efforts generate revenues that exceed such costs. Customer's costs may include:

Table 6.8: Customer's Costs (Hilton et al, 2003)

- ***Selling***: sales personnel, telephone order system and sales administration.
- ***Marketing***: marketing management, market research, advertising, incentives and catalogue development.
- ***Distribution***: costs of packing, shipping and delivering products or services to customers.
- ***General and administration***: particularly R&D costs.

Managerial accountants should build up their internal reports to support managers with different categories of the costs mentioned above, in order to help them determine the profitable and unprofitable customers that are involved in the decision-making process. To adopt this new tool in Egypt, the cost accounting system should improve the documents and procedures that are associated with customers such as customer profiles, appropriate customer groupings and customer profitability statement. This statement indicates revenues and costs of customers and provides managers with the required information to decide

[9] AmCham, April 2005.

whether to continue with the customer drop the customer, increase the efficiency of serving one customer or decrease operating activity costs for all customers. Figure 6.9 shows this statement.

Figure 6.9: Customer profitability statement[10]

Customer Profitability	Customers		
	1	2	3
Sales revenue			
Less: Direct costs			
Contribution margin (1)			
Operating costs:			
(1) Selling			
(2) Marketing			
(3) Distribution			
(4) General and administrative			
Total operating costs (2)			
Operating income (1-2)			
Return on Sales (operating income/sales)			

Activity-based costing management (ABCM) enables companies to carry out customer and product profitability analysis more effectively, as well as addressing a number of questions such as: Why is a customer or product unprofitable? What efforts should be made to avoid unprofitable customers or products? Which activities can we avoid? Which activities can we develop? What is the role of top management in this process? What is the role of cost accountants in this process?

6.3.3 Cost Information for different types of decisions

The United States Agency for International Development (USAID) and the Government of Egypt (GOE) have developed a new strategic plan which pays special attention to internal and external trade and investments in an attempt to develop the private sector's performance and upgrade its competitive advantage (USAID/Egypt 2000-2009 strategy). Management accounting information plays a major role in promoting investments within the organization. This has a constant effect on the organization's overall profitability by identifying the costs and benefits of special short-term planning decisions, which enable managers to make better choices in the hope of enhancing the organization's value.

Table 6.10: Different types of decisions and their costs

Decisions	***Costs***
1. Sourcing and outsourcing	i.e., direct materials, direct labor, variable manufacturing overhead, fixed manufacturing overhead and the costs of activity analysis.
2. Add or drop product	
3. Product mix	
4. Eliminate non-value added activities	

Managers utilize cost information to select the best alternative, but this information should be relevant and useful to help them make better decisions that might have an influence on the entire organization's productivity and profitability (Barfield et al 1991,

[10] The idea of the tables 6.8 and 6.9 has been adapted from Hilton et al (2003), p: 235.

Garrison et al 2003, Atrill and McLaney 2002). The Chartered Institute of Management Accounting (CIMA) defines relevant costs as: *"the costs appropriate to a specific management decision"*. Making short-term decisions is a complicated task of a manager, particularly if a company is facing a mixture of internal and external challenges. However, this type of decisions requires a comprehensive understanding of capacity utilization, because utilizing capacity is a very significant feature of managerial planning and control. According to Raiborn et al (1993), managers should preserve a kind of consistency between these types of decisions and capacity utilization by modifying work schedules, determining production constraints, controlling the movement of resources through the production or service process, maintaining value-added activities and eliminating non-value-added activities. Consequently, the role of management accountants is very important in providing managers with useful data that are related to the diversity of products, complexity of operations, suppliers, the profitability of current production lines and fixed manufacturing overhead that influences capacity utilization.

In addition, these kinds of decisions should be carried out after analyzing, explaining and preparing a number of reports that help managers acquire adequate information about different levels of production activity and their suitability as the denominator of the predetermined fixed overhead application rates. Barfield et al (1991) identify four alternatives of capacity that can be used to compute the fixed overhead rate. These alternatives include; theoretical capacity (ideal capacity), practical capacity, normal capacity and expected capacity[11]. Hence, management accountants should prepare clear-cut reports, which clarify the major differences among these alternatives in an attempt to assist managers in choosing the best one. Barfield et al (1991, P. 78) state, *"management should take care in selecting the capacity measure used for determining the fixed overhead application rate, understand the consequences of each selection, and choose the measure that most accurately and rationally represents true product cost"*.

6.4 The potential role of management accounting in the Egyptian firms

The Egyptian political leadership has initiated the modernization program to develop industry in order to push Egyptian companies forward to a position where they will be able to cope with changes and challenges of the new millennium (SIS Publications, Egypt Magazine 2002 and The Ministry Of Foreign Trade & Industry). The modernization program involves increasing productivity, encouraging innovation, improving the quality of products, adopting modern managerial techniques and increasing domestic and international competition. Accordingly, several efforts should be made in the private sector to deal with those challenges. One of the most significant efforts is improving the accounting information system that will provide accurate, understandable and reliable data to strategic decision makers with regard to production, marketing, purchasing, human resources, distribution and customer services. Therefore, this section addresses a number of contemporary management accounting techniques and how the Egyptian business

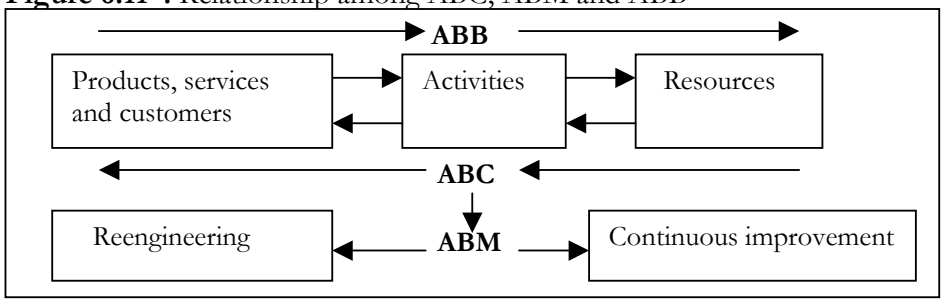
[11] The discussion of these alternatives is covered in Barfield et al (1991), pp: 75-78.

environment would benefit from these techniques, enhancing the ability of both private and public sectors to overcome the increasing internal and external challenges. These techniques include[12]: (1) activity based techniques, (2) performance measurement techniques and (3) cost management techniques.

6.4.1 Activity-based techniques

Activity-based techniques refer to different techniques for various purposes, those rely on activities performed through analyzing, classifying, estimating and reporting. The starting point is Activity-Based Costing (ABC), which is introduced by Kaplan and Cooper, as an alternative to traditional accounting techniques (Kaplan and Atkinson, 1998). A number of researchers have formulated definitions for ABC from various perspectives (Soin et al 2002, Armstrong 2002, Kim and Han 2003, Lee 1999). ABC is a cost management approach that provides more accurate data about the activities, in order to determine the product cost based on the cost of those activities. Therefore, activity analysis is very important to companies that have been taking preliminary steps in adopting ABC. ABC is considered a foundation to developing both Activity-Based Management (ABM)[13]and Activity-Based Budgeting (ABB). This is represented in figure 6.11.

Figure 6.11[14]: Relationship among ABC, ABM and ABB



ABM considers the outcome of ABC analysis a foundation. It is a management tool that enables managers to identify and classify activities as value added and non-value added by conducting an investigation that allows managers to find out opportunities to improve value added activities and reduce non-value added activities (Maccarrone 1999, Swenson and Barney 2001, Armstrong 2002). On the other hand, ABB seeks to develop the traditional approach of budgeting by specifying the activities required for products and services along

[12] We selected these techniques for two reasons: (1) this study is not able to cover all contemporary management accounting techniques, as it needs a separate study for each one and (2) these new techniques are related to the basic research's idea that indicates the mutual relationship between cost information and the strategic planning process.

[13] As part of this study, 750 manufacturing and service organizations were invited to participate in a survey. One hundred and sixty-six responded by completing a 20-page questionnaire. The survey's purpose was to gather information about the ways in which companies implement and use ABC/M and to identify the characteristics of those firms, which experienced positive results from using ABC/ M. For further details about this survey and more information about ABC/ M, see for example; Swenson and Barney 2001 (for survey results), Ben-Ariech and Qian 2003, Rasmussen et al 1999 and Gupta and Galloway (2003).

[14] This figure has been designed after reviewing: Burch (1994) and Hilton et al (2003).

with estimating the financial and other resources that will be considered necessary to carry out those activities. Horngren et al (2000, P. 193) state, *"ABB typically requires more detailed information than does budgeting based purely on output-based cost drivers. The more detailed information, however, can lead to more insight into ways companies can better manage their future costs"*. As previously mentioned, according to USAID/Egypt, Management Development Initiative (MDI) provides Egyptian companies with competitive business practices that help strengthen the managerial abilities through several programs such as an executive development program, leadership development program, corporate development program and training partnership program.

6.4.2 Performance measurement techniques

Most companies in Egypt rely on financial perspectives to measure the performances that enable them to assess the entire organization's profitability along with identifying departments that do not attain profits and require particular concern for improvement. To measure performance, numerous tools have been introduced to implement a combination between financial and non-financial aspects. ***Balanced Scorecard (BSC)*** is an example that was developed in the early 1990's by Kaplan and Norton. It generates a synchronization between the company's strategy and performance measurement through regularly translating the strategy into performance measures, which focus on several perspectives including customer, internal business processes and learning and growth (Atrill and McLaney 2002). ***Benchmarking*** is an additional pattern. It is a management tool that helps the organization develops its processes by identifying, understanding and applying the best methods from local or international organizations so as to recognize the overall organization's performance and find ways to enhance it.

6.4.3 Cost management techniques

The Industry Modernization Program (IMP) in Egypt seeks to modernize the industrial sector through adopting modern tools that help improve its manufacturing processes along with utilizing the available opportunities to acquire various competitive advantages. ***Kaizen Costing***[15] is the process of continuous enhancement through minor improvements rather than major drastic improvements, for example through reengineering or JIT. ***Target Costing*** is a different example that seeks to establish the desired cost of a product depending on market research that has been conducted to recognize the selling price and a reasonable level of profit. In line with Atrill and McLaney (2002), we believe that as soon as a company adopts that approach, it should make a number of efforts in the production process in order to reach the target cost. These efforts might involve modifying the design, selecting suppliers who provide low-priced raw materials and constantly promoting R&D.

[15] Kaizen is a Japanese word that implies small changes to reduce the unit product cost. For further details about such tool, see Atrill and McLaney (2002), Louderback and Holmen (2003). Kaizen budgeting can be also used as an approach to prepare budgets based on incremental improvements in efficiency and cost reductions rather than budgets that are based on past performance (Garrison et al, 2003).

6.4.4 Application requirements

To implement the above-mentioned techniques in the Egyptian business environment effectively and efficiently, there are several requirements to create an appropriate atmosphere, which plays a major role in attaining the best results from those techniques. The following section discusses briefly a number of requirements that are recommended to Egyptian firms.

Education and Scientific Research (ESR)

ESR is a bridge towards an informed society and produces graduates who will have adequate capabilities to perform on the world stage. In accordance with Egyptian Universities Network (EUN, 2004), scientific research in Egypt represents 0.026% of the state's annual budget, which is a very small percentage when compared to other developing countries that invest 2.5% of their budgets in research. The private sector is responsible for 75% of all investments in Egypt; only 10% of the private sector companies are able to finance scientific research. The remaining 25% of investment comes from foreign donations and scholarships, but it is restricted to specific research sectors such as agriculture or environment and health. Government funding for scientific research comes only from the two ministries of finance and planning. EUN (2004) recently raised the question: if the government dose not have the ability to finance Egypt's scientific research, will the private sector take up the responsibility? Several researchers and ministers (Edied, Rashid, Khorshid, 2003) believe that there has been no real contribution from the private sector up until now in scientific research and that the Egyptian companies do not provide the necessary funding even for researching issues that would have a direct impact upon their own industries. As pointed out by Khorshid (Deputy President of Cairo University), the universities' scientific research budget should be increased to provide researchers with financial backing before they can receive funds for other projects. Sabry (former Minister of planning, EUN, 2005) says, *"It is not the job of the researcher to market himself-it is rather the state's responsibility to provide funding for him, or provide research opportunities. A good example of this is in the European Union where scientific research is advertised for".*

Ongoing Change Management (OCM)

ABC/M/B implementation requires taking into consideration several factors that contribute to the success or failure of that project. According to KPMG/Egypt, scientific "change management" offers strategies for coping with change in order to improve the business processes. This can be done through preparing numerous programs including good communication throughout the organization, extensive training courses to the labor force and organizational surveys to evaluate the consequences of the changes. Additionally, the American Chamber of Commerce in Egypt (AmCham, Egypt) could play a fundamental role in achieving the desired results from change management by conducting various workshops to managers and employees in both private and public sectors. These workshops might be composed of: introduction to change management, leadership, challenges, organizational

change, SWOT analysis, human resources, market competition and competitive advantage. The next table indicates a six steps proposal; each step contains major activities that are suggested for an ABC/M/B change management program.

Table 6.12: ABC/M Change Management Program

1.Envision and Focus	Launch project team, project startup communications, identify critical implementation issues and change history, build leadership strategy, develop and deploy communication plan, conduct organization readiness assessment.
2.Conceptual Design	Discuss future organization, evaluate assessment results, discuss workforce transition strategy and identify potential barriers, discuss workshops.
3.Detail Design	Discuss employee training plan, identify quick wins, discuss methods to manage public relations and communication including feedback on implementation issues, discuss the educational objectives so that all levels of the organization understand the purpose and benefits of ABC/M.
4.Build and Test	Develop employee training plan, addressing transition issues, deliver initial training to project team and steering committee during planning phase and assess value.
5. Deploy	Deliver training; assess organizational readiness for ABC/M and beyond.
6. Enhance	Discuss lessons learned, update change management plan for future application.

Source: KPMG, Egypt[16]

Human Resource Development (HRD)

Human resources are the real wealth of a country, particularly in developing countries where people make up the key factor in industrial development. At the present time, Egypt's population is approximately 70 million and is expected to reach to 123 million in 2029 (based on CAPMAS estimates, Egypt). As mentioned in chapter four, the labor force has increased from 20.106.000 in 2003 to 20.703.000 in 2004 including both males and females. Hence, USAID/Egypt (2002) explained the growing requirement of a well-trained workforce that has the ability to regularly increase and improve managerial and IT skills through participating in a variety of training programs. Training programs encourage Egyptian managers and accounting staff to obtain extensive experience in developing business processes by acquiring an adequate understanding of modern business practices such as ABB, ABM, BSC and Benchmarking.

Activity Analysis (AA)

AmCham in Egypt (2003) mentioned that the Egyptian economy faces three competitive challenges: countries within the MENA (Middle East and North Africa) region, European transition economies and the East Asian economies including the large, skilled, labor abundant, low wage economies such as China and India. Hence, Egyptian companies need to increase their efforts to be able to face such rigorous competition by modernizing their internal operations. One of the most effective ways to do that is through the adoption of activity-based techniques. The ABC/M/B approach involves identifying and classifying the

[16] We have permission from a consultant who is working at the KPMG branch in Cairo to quote this program in order to introduce such experience to the Egyptian companies.

activities performed within the organization which help accounting staff and managers put ABC/M/B into practice through sufficient information about the type and cost of activities production and service activities. Activity analysis is the starting point in applying ABC/M/B in the organization. A number of interviews can be conducted with the managers and employees to collect sufficient information on the process under analysis. Figure 6.13 provides a sample of the interview questions that could be used to help Egyptian companies collect information about the activities performed, which also helps create an activity list.

Figure 6.13: Interview questions for activity analysis[17]

1. What are your basic job functions and responsibilities?
2. Within each function, what are the major activities you perform?
3. How much time and resources do you devote to each activity?
4. How is performance measured for each activity? How much or how often is the activity performed (volume)? How well is the activity performed (productivity)?
5. Who are the customers for each activity, and what do they expect? What does the activity produce, or what are its outcomes?
6. How do you check that customers' expectations are met for each activity (appraisal process)?
7. What preventive measures are in place to keep errors from occurring for each activity?
8. Within each activity, how much time is devoted to prevention, appraisal, rework, or essential work?
9. Do you know of any resources of empirical data about activity categories or percentages?

Source: Ittner (1999, p. 494)

[17] There are a lot of preceding studies that explained in depth the analysis of activities and how to apply ABC based on such analysis, see for example: Gunasekaran et al (1999), Gupta and Galloway (2003), Gunasekaran and Singh (1999), Baxendale (2001), Soin et al (2002), Ittner (1999) and Innes et al (2000).

6.5 Conclusions

The basic purpose of this chapter has been to introduce the central idea of the research, which describes the interdependent relationship between cost information system and the strategic planning process along with explaining the potential role of management accounting in strategic planning. The chapter begins with describing the mutual relationship between the cost information system and strategic planning in two major relationships. Relationship (A) indicates the role of strategic planning in the cost information system. This part involves using Likert Scale analysis to illustrate to what extent companies are interested in the process of strategic planning in terms of several programs. These programs include: adopting the ABC system, production and sales activities, market analysis and internal & external environmental analysis. A cost information system makes up one of the most important factors that should be considered when analyzing the internal business environment throughout formulating a strategy, which should set "developing the cost information system" as a central objective. The strategic planning process is then established to achieve that strategy by introducing a number of suggestions to the Egyptian business environment to carry out the strategic planning process effectively.

In the following part of this chapter, attention is focused on describing the relationship (B), which shows the role of the cost information system in strategic planning through indicating the functions and applications in which the cost information system can play a major role. As stated in this part, based on research limitations and the actual statistical outcome, we focused on three programs in order to illustrate the role of cost information in the strategic planning process. These programs are pricing policy, customer profitability analysis and different types of decisions. The last part of this chapter is concerned with briefly addressing a number of modern techniques that could be adopted and applied in order to modernize the cost information system. These techniques include: ABC, ABM, ABB, BSC, Benchmarking, Kaizen Costing and Target costing. In addition, numerous application requirements have been recommended to Egyptian companies including ESR, OCM, HRD and AA.

Chapter Seven

General Findings, Limitations and Recommendations for future research

7.1 Introduction

In the final chapter of this thesis, research findings, limitations and recommendations for future research will be discussed. The chapter proceeds as follows: section 7.2 of this chapter presents general findings of the research, section 7.3 discusses the limitations, recommendations for future research will be presented in section 7.4 and lastly section 7.5 concludes the study.

7.2 General findings of the study

In chapter one, five research questions were introduced with the aim of answering them in chapters 2, 3, 4, 5 and 6. The next section points out brief answers to each question.

Research question (1): What are the theoretical criticisms of the traditional management accounting tools? We found that standard costing is one of the tools that has been used the longest. Several researchers have discussed the wide-ranging use of standard costing in manufacturing companies in order to evaluate a company's performance by comparing actual costs with standard costs. We found that there are several drawbacks related to standard costing, these drawbacks include: the variances calculated are too aggregated and come too late to be useful, the system focuses on cost minimization rather than improving product quality or customer satisfaction and the focus on cost and efficiency of direct labor becomes an insignificant aspect of production after extensive use of technology (Horngren et al, 2002; Blocher et al, 2002). The analysis has also pointed out that there are some aspects of budgets starting from non-financial measures that are not incorporated into the budgeting process. This leads to excessive reliance on extrapolating past trends along with fluctuations in foreign currency exchange rates, which might create unique budgeting problems. The study has demonstrated that the greatest danger in depending on cost-volume-profit (CVP) analysis is when a manager tries to increase the volume that lies out of the relevant range as he or she has to consider the anticipated changes in selling prices, fixed costs and the sales mix.

Research question (2): How do internal and external factors (organizational, technological, environmental) affect the relationship between cost data and the strategic planning process? We found that Egypt's pharmaceutical market is the biggest in the Middle East. This industry faces several strengths and weaknesses. The analysis concluded that the industry's strengths are: it is the largest market in the MENA region, it has quick access to Arabian and African markets and it has the advantage of having low

labor costs and an adequate supply of doctors and pharmacists. The weaknesses are the insignificance of R&D, lack of product quality and problems of implementing governmental regulations reliably (AmCham, 2001). Additionally, the study found that according to industry officials drug in Egypt lacks transparency. For example, public sector companies price some at one Egyptian Pound, while private companies sell the same item for 10 Egyptian Pound. To re-price, it is necessary to have accurate information on international prices for drug components. We suggested that R&D activities are very essential for developing the pharmaceutical industry in order to update the information that helps create pricing policies as well as to acquire the highly advanced techniques necessary to operate in the pharmaceutical industry (OTC Healthcare in Egypt, 2004).

The study further discussed several issues in the packaging sector. We found that production complexity plays an essential role in the packaging industry (information for agriculture development in Africa, Caribbean and Pacific countries, ACP, 2002). We also pointed out that many Western nations are decreasing the amount of material and energy used in packaging, while at the same time respecting hygiene laws. The use of non-recyclable plastics is being minimized with recyclable materials such as cloth and non-wood paper being preferred. In the foodstuffs sector, the study indicated that food processing is the second largest industry next to textiles with an annual production valued at $US 3.5 billion and a strong annual growth rate of 20%. We found that 32 companies (26 are big companies, 6 of them are medium to small sized companies) in this sector are already applying the HACCP system (Hazard Analysis and Critical Control Point). Most of the food sector's companies have been exerting extensive efforts to apply this system to ensure food safety, to anticipate possible hazards, to prevent problems and to accomplish competitive advantages internally and externally.

Research question (3): What are the specific characteristics of the Egyptian private sector? Our investigation found that the government of Egypt (GOE) transferred 125 enterprises from public ownership into private ownership (IPR, Middle East, 2002) in order to create internal and external opportunities for investments. The study also found that the Egyptian IT market has increased by a rate of 17.1% from 1999 and by 33% from 1998. The total number of companies working in the IT field reached 565 companies, indicating a 141% growth from 363 in December 2000. In addition, we also discovered that the Egyptian foodstuff industry produces a wide variety of products that contribute to the rapid development of the Egyptian economy. The study also found that the Egyptian companies have attempted to adopt modern improvement programs such as TQM and JIT. The major objective being to develop Egypt's industrial capabilities in an open world characterized by competitiveness, which in turn can boost Egyptian industrial exports. The study posed this question, "what does TQM mean to Egyptian managers?" We found that the basic idea of TQM was focused on two elements to maximize profits, quality of product and customer satisfaction. Alternatively, there are several difficulties that Egyptian businesses face when adopting and applying the JIT inventory and production system. Adopting this system

requires considerable modifications in the accounting system along with improving the workforce's skills to understand and successfully apply this system.

As a result of the study, we further discovered that the cost information system used was the generally accepted system in the manufacturing companies. The average of overhead as a percentage of total costs is 35% of sales revenues. The study also found that cost information can be used to provide top management and marketing departments with information required to make various decisions. The questionnaires and interviews have also shown that there are three major programs that can be of great benefit, namely, pricing policy, customer profitability analysis and some short-term decisions. We also found that the concept of ABC is almost completely unknown in Egypt. Of the forty firms, only two indicated that they are working on implementing it. All other firms did not reply to any of the questions concerning ABC, this while the questionnaire part on ABC contained 12 questions. However, the study highlights the trend towards urgently developing internal systems (including cost accounting and management systems) to respond to local and international challenges. We found that 32 companies (80% of the sample) have a desire to improve their internal systems if all financial and non-financial resources will become available.

In terms of the study's findings, we found that Egyptian firms have been using the surcharge cost accounting system that has been criticized from numerous perspectives. Firstly, the objectives still focus on analyzing cost information over products and services, calculating the cost of inventory and identifying trends in the way costs are incurred. We recommend that Egyptian firms should also create their cost systems to focus on performed activities and the costs of such activities. In this regard, we found out that the most salient detail is the almost total absence of activity-based costing usage in the Egyptian business environment. Secondly, our survey results have shown that the selected companies measure their performance to a great extent based on financial measurements. Therefore, we advise Egyptian firms to combine financial and non-financial perspectives with the purpose of compiling a comprehensive image of the company's performance which should be evaluated based on measurements more than money; for example, those such as customer satisfaction, learning/development and internal business processes (Balanced Scorecard).

Research question (4): What is the impact of control variables on the basic relationship of the study (the relationship between cost information and the strategic planning process? We found that Egyptian firms need to consider their cost systems when drawing up and setting their strategies. This can enable them to determine whether the company applies low cost, differentiation, prospectors and defenders. The study also found that adopting a flat structure is more appropriate to achieve a very high degree of solidarity between cost system teamwork and managers who carry out programs and settle on the funds that will be allocated to each program. With respect to the company size, the study found that the pharmaceutical companies are somewhat bigger. In addition, we found that the chemical industry is very diverse, and there is a high degree of complexity in its

operations. Chemical companies are facing a difficult environment, input costs fluctuate dramatically, demand is softening and customers required increased service and lower prices. Therefore, this industry allocates 4-6% of their annual sales for R&D in order to overcome such challenges in this industry.

Research question (5): How does the interdependent relationship between cost information and strategic planning work? How do Egyptian firms utilize the recent management accounting techniques for business success? We found that Egyptian firms should formulate a strategy that sets up "developing the cost information system" as a fundamental strategy. Then they could establish a number of programs in order to achieve the desired goals of that strategy. For example, increasing the degree of synchronization between management accountants and managers, convincing Egyptian top managers of the essential role of the strategic planning process in improving cost information in order to provide useful information for decision-making, conducting some training courses for the cost accounting staff with the purpose of assisting them in dealing with cost information in a proper way and trying to solve all difficulties associated with the ABC costing system.

With respect to the possibility of adopting the contemporary management accounting techniques, we found that Egyptian firms are still facing more than a few problems adopting the contemporary management accounting techniques such as ABC, ABM, ABB and Balanced Scorecard (BSC) that would help provide managers with useful, reliable and timely information during the strategic planning process. These problems are attributed to several causes. Firstly, most of these techniques (we can say all rather than most) are exclusively taught in the form of theoretical courses at universities and private institutions without practical experience. Secondly, these techniques are highly sophisticated and any alteration requires supplementary expenditures directed to other activities, such as adding new product lines or opening a new branch in another geographical region; and thirdly, the lack of experts who have already acquired experiences with those techniques. Egyptian firms have dealt partially with one technique without knowing that they already adopted it (this is the Balanced Scorecard: by asking several managers to what extent they can evaluate performance based on customer satisfaction, customer complaints, employee participation in the decision-making process, trend analysis of sales, delivery time of products and the quality of training sessions provided to labor force; the responses were positive). Lastly, the lack of scientific research skills, even among educated people working in universities or in well-known private companies. The last problem, along with our experience in dealing with Egyptian people regarding postal interviews, caused us to experience a lack of control over the arrangement of questions and a lack of ability to control the context of question answering, due to additional people around the respondents who might have a great influenced their answers. Furthermore, some respondents were unable to respond to written-mail questionnaires because they did not understand the concepts of some the questions.

7.3 Limitations of the Study

All research studies have several limitations; this study is no exception. As previously emphasized several times in this thesis, the analysis of the data, interpretations of the findings and the conclusions of the research were subject to a number of limitations. In this section of the final chapter, the limitations of this study are identified. A number of researchers have discussed the definitions of the strategic planning process in an organization (Hodgetts and Luthans 2003, Thompson et al 2004, Dessler 2004). However, the central idea of strategic planning is defined as the process of deciding on the programs that the organization will undertake and the expected amount of resources that will be allocated to each program in the light of the overall organization's mission and objectives. Based on time constraints, along with the actual research outcome, we focused on three programs that have been discussed in accordance with the applications that were introduced in the empirical study. Consequently, the role of cost information in the strategic planning process has been explained with regard to these three programs. These programs include; pricing policy, customer profitability analysis and different types of short-term decisions.

As far as methodology is concerned, we couldn't measure some variables properly. For example, we introduced several questions that are related to the business unit's strategy in order to measure the type of strategy adopted by the company, but we failed to determine the strategy derived from these questions. In addition, we have attempted to use ANOVA analysis to explore the differences among the four sectors concerning a number of variables such as strategy, organizational structure, production process, organizational size and competition, but we did not obtain an accepted statistical outcome. This could be attributed to a number of reasons: (1) designing the questionnaire was based on a number of studies that have been conducted in an environment which is extremely different from the Egyptian environment, (2) the lack of experience in the Egyptian companies with respect to dealing with scientific research and (3) the large gap between the academic research that has been taught in the universities and what has already been applied in practice.

In addition, several other limitations should also be noted when interpreting the results of this study. As noted in chapters five and six, interpretations of the results have been linked only with the four industries mentioned in chapter one (pharmaceuticals, chemicals, foodstuffs and packaging and wrapping), and we couldn't apply such link to all industries in the Egyptian private sector (we excluded the public sector companies from our study). Finally, as this study is basically a field survey, the general limitations pertaining to a survey strategy apply here. Therefore, one must be careful in generalizing the findings of this study to be applicable to other countries and to other industries, as these findings are specific to four industries in the Egyptian setting (private sector).

7.4 Recommendations for future research

The current study presented has explained several key issues, both with regard to management accounting and the strategic planning process, which need to be clarified by future research. In this section, several issues and directions for future research are identified.

This study is about the role of management accounting in the strategic planning process and also what the role is of strategic planning in developing the cost information system in Egypt. There are some conclusions from the study. The question now is how to conduct this interdependent relationship in other industries in Egypt. Moreover, comparative studies, particularly among developing countries, are highly recommended in order to understand the variations in applying traditional management accounting techniques (especially surcharge accounting system) along with adopting the contemporary management accounting techniques. Additionally, the concept of activity-based costing is almost completely unknown in Egypt. Of the forty firms, only two indicated that they are working on implementing it. All other firms did not reply to any of the questions regarding ABC, this while the questionnaire part on ABC contained 12 questions. We suggest that future research should be carried out to investigate the costs and benefits from applying such a system (cost-benefit analysis). Further research also needs to investigate differences between the private and public sector in terms of the documents and procedures of the cost information system in developing countries.

As we have argued, developing the cost information system is a long-term investment and consumes time, money and effort. It requires extensive hard work and supplementary financial and nonfinancial resources. For instance, in addition to attending workshops and formal training seminars, Egyptian firms should exchange information with international firms in order to find out the most recent techniques that can be used in developing the cost information system. However, the costs of carrying out this exchange of information vary according to various factors such as company size, company's activity, the degree of complexity in the business's operations, the tendency toward development within the firm, the nature of relationships with the international companies and the logistic problems that might hamper accessing the required information. In addition, Egyptian firms should exchange information in terms of applying the strategic planning process and how a company can achieve positive results from such an application, particularly when comparing high and low technology. In this respect, O'Regan and Ghobadian (2003, p1) state *"the level of technology deployed will impact on the overall strategic planning process and its main drivers: leadership and organizational culture resulting in differing levels of corporate performance."* Therefore, it would be interesting to exchange information with international firms in the EU and USA and to evaluate the benefits. Since it is beyond the scope of this thesis, we leave this question for future research.

Nevertheless, strategic planning is also not an easy task. Managerial accountants and managers need special communication skills, particularly when developing the cost information system and when formal bodies such as government departments/agencies, non-governmental agencies and other private firms adopt strategic planning. The quality of this development is also highly dependent upon the personal characteristics of managers and managerial accountants. When studying the cost information system and its relationship with strategic planning process, future research should not only consider organizational, technological and environmental factors, but should also take into account personal characteristics of managers and managerial accountants. Thus, future research on the impact of these characteristics would deepen our understanding of the relationship between the cost information system and strategic planning process.

We now live in a high-technological world characterized by the explosive growth of the Internet, extensive competition in many industries, and innovation in products and services and E-commerce (Garrison and Noreen, 2003). Because of the Internet (high-technology), there is no space for information barriers, no space for transaction costs and no barriers to entry (The Economist, April, 2000). In this regard, the E-government project in Egypt plans to improve the performance of governmental departments to enable them to catch up with the IT revolution and narrow the digital divide between Egypt and more advanced countries. Several contracts have been made to implement applications in the fields of planning for resources and management, such as inventories, governmental purchases, budgets, accounts and personnel affairs (Economics, Egypt, October 2003). What is the role of the cost information system in adopting E-government? What is the role of strategic planning in carrying out E-government's programs? What is the impact of technological, organizational and environmental factors on the E-government's objectives? Future research should be conducted in these directions as well.

From a methodological point of view, it is difficult to define what the causal relationship between cost information system and strategic planning is without a longitudinal study. In fact, several practitioners argue that a number of firms in the Egyptian private sector ask for and receive external support services from the governmental and nongovernmental agencies. For instance, without a longitudinal study, establishing the performance of the cost information system before they receive financial and nonfinancial support, it is difficult to clearly discover whether the improved performance of the cost information system is due to the direct effects of external support or due to a good strategic planning process. In this regard, Saunders et al (2000, P. 96) argue that the basic question in the longitudinal studies is *"has there been any change over a period of time?"* Therefore, exploring the interdependent relationship between cost information and the strategic planning process requires observing the changes in the internal factors and external factors along with the development of this relationship within the time period. Therefore, from a methodological point of view, there are limitations in cross-sectional quantitative research designs. Cross-sectional studies such as this one, cannot determine the causal relationship. Longitudinal and experimental studies would provide such information.

7.5 Conclusions

The purpose of the study has been to analyze the interdependent relationship between cost information and the strategic planning process in the Egyptian private sector. However, the concept of this relationship cannot easily be explained due to, on the one hand, an array of different definitions of strategic planning found in the literature, and on the other hand, the fact that cost information has been used in different areas of studies by different researchers in different perspectives. In this study, cost information has been viewed as an effective vehicle for obtaining necessary information that managers need in order to help them carry out the decision-making process properly. The study found that firms that maintain regular formal and informal meetings with their managers and managerial accountants are more likely to be successful in their decision-making process because such meetings increase the degree of harmonization that generate appropriate decisions and enhance the overall performance of the organization.

The thesis contributes to management accounting studies in five ways. Firstly, the study analyzes the traditional management accounting techniques from the point of view of critics. Secondly, the recent studies in this area are largely focused on the experiences of developed countries. Hardly any study has been available in the field of management accounting and strategic planning in developing countries, particularly in Africa. This study focuses on private sector companies in Egypt, one of the developing countries in the Middle East. Thirdly, the study evaluates the traditional cost accounting system and explains the problems that face such system in providing useful and reliable information. Fourthly, the study uses a survey research approach in four industries that have not been combined together before in Egypt. Fifthly, the study introduces a new relationship that describes the correlation between cost information and the strategic planning process. Overall, this study contributes to the literature by showing how private sector companies in Egypt use cost information in providing managers with the information they need, to identify the problems of the accounting information system and finally to provide some suggestions for change.

The findings of this study will, without doubt, be useful to cost accountants, production managers, executive directors, researchers, financial organizations and other industries in the Egyptian private sector, as well as to various institutions in the Egyptian public sector.

To summarize, there are many conclusions from the study, but the major conclusion is that cost information can provide a useful, timely, valuable and adequate information if its system is effectively developed and supported by financial and nonfinancial resources. In addition, the contemporary management accounting techniques are essential for the private sector to improve its skills in preparing suitable information for the decision-making process particularly in developing countries such as Egypt. This empirical study has further suggested the need for more in-depth comparative studies before generalizing the results.

Appendix

Letter April 2004
Questionnaire
Protocol for interview

Dear "Aanhef" "Naam"

In April 2004 the Financial Management and Business Economics department at the University of Twente launched a research project into the relationship between cost accounting system and strategic planning. The project has local scope and will be applied in Egypt. The goal of the research is to indicate the role of management accounting in strategic planning in the Egyptian private sector. The more focus of the research is to highlight the relationship between cost information system and strategic planning process in four sectors in Egypt (pharmaceuticals, chemical, foodstuffs and packaging/wrapping). A colleague, Mr. Mohamed Elshahat, will use the research results as the basis for his doctoral dissertation.

I would very much appreciate your taking part in this project by completing the enclosed questionnaire. It was designed to take as little of your time as possible, and should take no more than 20 to 30 minutes to complete.

I personally guarantee that your input will be treated with the utmost confidence and will remain completely untraceable to you or your organization should it appear in any future applications.

Please return the questionnaire before 15 May 2004 in the enclosed reply envelope.
Thank you in advance for your co-operation.

Yours sincerely

Prof. dr. Jan Bilderbeek

Enclosures:
Questionnaire, Postage paid reply envelope

Purpose of the questionnaire:

The purpose of this questionnaire is to collect general information regarding your firm's activity, size, competition, technological equipment, new management philosophies and functions/applications that use cost information. In addition, the questionnaire will collect information about firm's strategy, IT department, diversity/complexity, environmental issues, production process, organizational structure, ABC system and the strategic planning process.

This information will be used in two ways. Firstly, it will direct the executor of this research project in selecting the proper questions for the interviews that will take place later. Secondly, it will help to categorize and associate data during the analysis.

Return address and information:

Please return the filled out questionnaire to the address mentioned below. If you have any questions concerning this questionnaire, please contact the researcher at the following addresses:

In Netherlands
Mohamed Fathy Elshahat
University of Twente
Faculty of Technology and Management
P.O. Box 217
7500 AE Enschede
The Netherlands
E-mail: m_fathy_elshahat@hotmail.com

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Mohamed Fathy Elshahat
26 Hashem Street
Benha
Elkalyobia Province
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Structure of the Questionnaire

Section (1): Information about the company
Section (2): Information about the costing system in the company
Section (3): Firm's strategy
Section (4): The organizational structure
Section (5): Firm's IT
Section (6): Perceived environmental uncertainty
Section (7): Complexity, diversity and intra company transactions
Section (8): The strategic planning process
Section (9): The using and implementing of the ABC system

The following scale will be used in answering the questions:

1- Extremely disagree
2- Highly disagree
3- Somewhat disagree
4- Somewhat agree
5- Highly agree
6- Extremely agree

Section (1): Information about the firm.

1- The activity of the firm is presented in … (Please mention the basic activity of the company)

	Frequency	Percent
1. Pharmaceutical sector		
2. Foodstuffs sector		
3. Chemical sector		
4. Packing and wrapping sector		
Total		

2- The size of the firm expressed by the assets value for the sales value is….

	Frequency	Percent
• Small		
• Medium		
• Large		

3- The production operation in the firm depends on…

	To a very great extent	Great extent	Medium	Weak	Don't use
The employment					
The machinery					
The employment & machinery					

4. The firm uses mechanical technological equipment:

Very advanced ---------- Advanced ---------- Normal -------- Less than normal ----------

5. What is the importance of using advanced technology for the firm?

Very important ---------- Important ---------- Unimportant ----------

6. The firm faces competition:

Local -------- International ---------- Local & international ----------

7. The degree of competition the firm faces is:

Very big --------- Big -------- Normal --------- Weak ------ No competition ----------

8. Computers are used in the administration and financial aspects of the firm:

Yes --------- No -------

9. The firm produces a variety of products:

Yes	No
---	---

10. The products differ from each other (i.e., use different resources):

To very great extent	to a great extent	to a medium extent	Few extent
---	---	---	---

11. The range of applying the following theories in the firm.

	Already applied	Working on applying it	Considering to apply it	Is not applied
• Total Quality Management (TQM)				
• Just In Time (JIT)				

12. Functions and applications of cost information in the firm:

	1	2	3	4	5	6
1. The following functions routinely use the cost information for decision-making: • Design engineering • Marketing • Corporate finance • Production • Top management						
2. Cost information can be used for the following purposes: • Pricing decisions • Make or buy decisions • Product mix decisions • Adding or deleting products • Customer profitability analysis • Elimination of non-value-added activities • Performance measurement						

Section (2): Information about the costing system in the firm.

13. The existing cost system of the firm could be described as:
    1. Specially designed to match the nature of the firm's activity. ------
    2. In accordance with the nature of the firm's operations to a great extent. ------
    3. In accordance with the firm to some extent. ------
    4. Is the generally accepted system in the manufacturing companies. ------

14. The percentage of the overhead within the cost structure is…
    (Please mention an approximate percentage)

	Frequency	Percent
Less than 24%		
From 24% ---------- 45.9%		
More than 45.9%		

15. Is overhead assigned to sectors?
    Yes No
    ----- -----

16. The cost information system contains:
    - One cost pool
    - Two cost pools
    - Three cost pools
    - More than that (please mention the number)

17. The cost information system uses:
    - One allocation basis to assign the overhead
    - Two allocation bases to assign the overhead
    - Three allocation bases to assign the overhead
    - More than that (please mention the number)

18. The cost measurement units are (you may select more than one)
    - The product
    - The client
    - The production line
    - The department or job

19. The level of the information accuracy produced by the cost information system is:

Completely accurate	Accurate	Medium	Has some slight faults	Inaccurate
----------	----------	----------	----------	----------

20. The degree of acceptance of the management levels, which use the cost information, is:
    - Completely convinced by it, as it satisfies its needs of accuracy.
    - Satisfied with it
    - It is accepted because it is the available.
    - Refuse to depend on it.
    - Refusal with a demand of slight improvements.
    - Refusal with a demand of essential improvements.
21. Do you want to develop the cost information system of your firm?

Yes	Gradually	Not now	No
---	---	---	---

Section 3 was included in order to explain the type of strategy that the company uses to achieve its targets. This section includes several questions that were planned to cover Porter's Model (we select Porter's Model to classify the responses as it is related to cost information, which makes up one of the two basic research's variables). This model classifies strategy into three types: cost leadership, differentiation and focus.

Section 4 was intended to measure the organizational structure of the company from three major perspectives. These perspectives are (1) hierarchical levels, which indicate the number of levels below the CEO, (2) formalization and standardization, which identify to what extent jobs are standardized within the firm and (3) centralization and decentralization, which involve establishing thirteen different decisions that were presented in order to select the level of management that has the authority to carry out these decisions.

Section 5 was designed to indicate the level of IT in the company. Several items have been introduced to respondents to specify to what extent their firms have the ability to make use of IT as this advantage smoothes the progress of business activities and contributes to increasing the organization's profitability.

Section 6 was added to evaluate the external environment of the company that might have an influence on the accomplishment of the decision-making process.

Section 7 was formulated to measure the diversity and complexity in the company in order to highlight a number of issues. For example: the number of product lines, adding improvements to products and the number of intra company transactions among departments.

Section 8 was reserved to the strategic planning process, which represents the most important variable in this study. Several questions have been formulated to evaluate the strategic planning process from four different perspectives. These perspectives include: adopting the ABC system, sales and production activities, market analysis and environmental analysis.

Section 9 was intended to point out what is the possibility of using and implementing the ABC system in the selected sample?

Section (3): Firm's strategy.

	1	2	3	4	5	6
1. One of our objectives is to be the low cost producer in our industry.						
We choose to specialize in a particular: 2. Market segment. 3. Geographic area.						
We are constantly developing: 4. New products. 5. Technological improvements to existing products.						
6. We offer a broad product line to appeal to as many potential customers as possible.						
7. Product innovation is the most important aspect of our business.						
8. We seek to maintain brand identification rather than compete mainly on price.						
9. Management sets targets for learning improvements.						
We invest in technology to: 10. Develop low-cost processes. 11. Facilitate automation. 12. Develop low-cost product design.						
13. My firm has a very diverse customer group.						
14. My firm allocates many resources to marketing activities.						
In our firm, management encourages: 15. Innovation 16. Risk-taking 17. Frugality						
18. My firm responds to environmental changes concerning products and markets.						

Section (4): the organizational structure.

(1) Vertical differentiation: How many hierarchical levels exist between senior management and team leaders in your firm? (Please provide a specific number.)

(2) Formalization: The following questions relate to the degree to which jobs are standardized within your firm.

Written job descriptions exist for:

a) Operation level employees.

b) Team leaders.

c) Production line managers.

d) Production managers.

YES	NO

	1	2	3	4	5	6
(1) Where written description exists, at what level are employees monitored to ensure compliance with standards set in the job description?						
(2) What is the degree of flexibility given to employees to deviate from the standards?						
(3) Team leaders and production line managers are free to exercise their judgment when they make decisions.						

(3) Centralization: What is the lowest level of management in the group below that has the authority to make the following decisions in your firm? (Scale: Supervisor, production manager, plant manager, HR manager, head office manager, purchasing manager, sales manager, financial manager).

	Supervisor	Production manager	Plant manager	HR Manager	Head Office Manager	Purchasing Manager	Sales Manager	Financial Manager
1. Decide to design a new product								
2. Establish the budget level								
3. Select suppliers								
4. Determine sale prices								
5. Dismiss direct workers								
6. Choose the methods of work to be used								
7.Determine labor force requirements.								
8.Decide what type of costing system will be applied.								
9.Determine personnel rewards								
10. Select machinery or equipment to be used for a job								
11. Choose methods for marketing products								
12. Add a new product line								
13. Select type or brand for new equipment.								

Section (5): firm's IT.

	1	**2**	**3**	**4**	**5**	**6**
1. Your firm is using automated machines in collecting and interpreting cost data.						
2. The quality of your cost management system is excellent.						
3. Sales and operating data are available.						
4. The information system offers data about several activities in your firm (value-added and non-value-added activities).						
5. In your firm, there is a specific department for IT and your firm provides several training programs to IT employees.						

Section (6): perceived environmental uncertainty

For each of the following elements of your firm's external environment, please indicate by circling the appropriate number below, to what extent the elements are of importance to the success or failure of your firm.

	1	2	3	4	5	6
1. Suppliers' actions						
2. Customer demands (tastes and preferences)						
3. Intensity of competition						
4. Production/ technologies						
5. Government regulations and policies						
6. Economic environment						
7. Industrial (workplace) relations						
8. International technology developments						

Section (7): the complexity, diversity and intra company transactions.

	1	2	3	4	5	6
1. There are major differences in volumes between products.						
2. Costs of support departments are similar for each product.						
3. There are more than two product lines in your firm.						
4. Within product lines, products require similar processes to design, manufacture and distribute.						
5. There are a large number of intra company transactions among departments.						
6. Your firm constantly adds developments to products.						

Section (8): the strategic planning process.

	1	2	3	4	5	6
1. Your firm explains the mission statement to everybody in it.						
2. Your firm usually eliminates some activities that are unnecessary to the organization.						
3. Your firm adds new product lines to support production process.						
4. Your firm decides to manufacture a component internally instead of buying it.						
5. Your firm is constantly revising the product pricing policy in line with the market.						
6. Your firm makes trend analysis for sales periodically.						
7. Your firm uses competitor appraisal based on published financial statements.						
8. Your firm measures the performance based on the number of complaints received from customers.						
9. Your firm measures the performance based on customer satisfaction as measured by survey results.						
10. Your firm evaluates the performance based on percentage of sales from new products.						
11. ABC is tied to the competitive strategies of the firm.						
12. Your firm adopts the ABC information system to improve the cost information system.						
13. Your firm takes actions in long-term goals (i.e., investments in building and land, acquisition equipment to support operations)						
14. Your firm usually assesses the external environment (such as competitors, investors, customers, economic regulations and suppliers).						
15. Your firm usually evaluates the internal environment (cost system, marketing policy, pricing strategy, the profitability of some products, the efficiency of some internal operations and the quality costs classifications).						

Section (9): the using and implementing of the ABC system

	1	2	3	4	5	6
1. ABC receives active support from top management.						
2. Management has provided adequate resources to ABC efforts.						
3. The implementation team is cross functional (marketing, engineering, consultants, production)						
4. Adequate training is provided from implementing ABC.						
5. ABC is integrated into operating information systems.						
6. ABC is strongly linked to our competitive strategy.						
7. The benefits of ABC exceed the costs.						
8. ABC is more costly to maintain if compared with the traditional cost system.						
9. In our firm, you should have two cost systems; one for internal use and one for external use.						
10. ABC is tied to the competitive strategies of the firm						
11. Your firm adopts an ABC information system to improve the cost information system.						
12. Adequate training is provided for using ABC.						
13. The following functions routinely use the ABC information for decision-making: 1. Design engineering. 2. Manufacturing engineering. 3. Top management. 4. Marketing. 5. Corporate finance.						
14. ABC is used for the following purposes: 1. Pricing decisions. 2. Make or buy decisions. 3. Product mix decisions. 4. Customer profitability. 5. Eliminations of non-value added activities. 6. Performance measurement.						

Protocol for interview about: ABC system, cost information and strategic Planning process in the Egyptian private sector

(1) General information about the firm

- company history (age, number of products, management philosophy in general)
- financial statements prepared
- markets (domestic/international)
- strategy (cost leadership/differentiation)
- complexity of products/diversity
- the importance of labor force/machines in running the company's operations
- the type of competition
- acquisition highly-advanced equipment
- product profitability/customer profitability
- pricing policy (the method used/why/by whom was decided to develop this policy)
- R/D activities (financial resources/department/personal skills)

(2) Activity-Based Costing system (ABC)/Balanced Scorecard (BSC)

- what does Activity-Based Costing (ABC) system mean
- the differences between ABC and traditional costing system
- obstacles of adopting (resistance to change, sophisticated system to understand, GAAP rules, extensive resource requirements)
- suggestions for implementing in the near future
- performance measures (profits/customer survey/quality costs/training sessions for employees, delivery time of products)
- do you have enough knowledge about the term "Balanced Scorecard"

(3) Cost information system

- the distinction between cost accountant and management accountant
- overhead (percentage/classification/how was predetermined overhead rate calculated/the common allocation bases/who were involved in calculating the unit product cost)
- recording/keeping cost information (manual/computerized/both)
- using of cost information (functions/applications)
- does IT department provide sufficient cost information
- coordination/conflict between accountants and managers
- the need for development (how long will it take and who will be involved)

(4) Strategic planning process

- the difference between strategy and strategic planning
- who is/are responsible for establishing the company's objectives
- who were involved in setting up strategy
- the amount of financial/non-financial resources for future programs
- how linked with budget
- how linked with evaluating internal/external environment

References

Abernethy, M.A., Chua, W.F., Luckett, P.F. and Selto, F.H. (1999), "Research in managerial accounting: learning from other's experiences", Accounting and Finance, Vol. 39, pp. 1-27.

Agriculture-led Export Business (ALEB) Project Office. (2003), Dokki, Giza, Egypt.

Akhter, S.H. (2003), "Strategic planning, hypercompetition and knowledge management", Business Horizons.

Al-Ahram Weekly Newspaper. (2005), Egypt.

American Chamber of Commerce in Egypt, (AmCham).

Anderson, D.R., Sweeney, D.J. and Williams, Th.A. (2002), "Statistics for business and economics", South-Western, USA.

Anderson, S. and Sedatole, K. (1998), "Designing quality into products: the use of accounting data in new product development", Accounting Horizons, Vol. 12, No. 3, PP. 213-233.

Ansari, Sh. and Lawrence, C. (1999), "Management accounting: a strategy focus, cost measurement systems, traditional and contemporary approaches", McGraw-Hill Companies, Inc, USA.

Ansari, Sh., Bell, J., Klammer, T. and Lawrence, C. (1997), "A modular series: management accounting, a strategic focus", McGraw-Hill Companies, Inc, USA.

Anthony, R.N. and Govindarajan, V. (1995), "Management control systems", Richard D.Irwin, Inc, USA.

Armstrong, P. (2002), "The costs of activity-based management", Accounting, Organizations and Society, Vol. 27, PP. 99-120.

Association of the British Pharmaceuticals Industry (ABPI).

Atrill, P. and McLaney, E. (2002), "Management Accounting for Non-specialists", Pearson Education Limited, United Kingdom.

Barfield, J., Raiborn, C.A. and Dalton, M.A. (1991), "Cost accounting: traditions and innovations", West Publications Companies, Inc, USA.

Baxendale, S.J. (2001), "Activity-based costing for the small business: a primer", Business Horizons, Vol. 44, No. 1, PP. 61-68.

Ben-Ariesh, D. and Qin, L. (2003), "Activity-based cost management for design and development stage", International Journal of Production Economics, Vol. 83, No. 2,11, PP. 169-183.

Blocher, E.J., Chen, K.H. and Lin, TH.W. (2002), "Cost management: a strategic emphasis", McGraw-Hill Companies, Inc, New York.

Boyd, B.K. and Reuning-Elliott, E. (1998), "Research notes and communications: A measurement model of strategic planning", Strategic Management Journal, Vol. 19, PP. 181-192.

Brock, D.M. and Barry, D. (2003), "What if planning were really strategic? Exploring the strategy-planning relationship in multinationals", International Business Review, Vol. 12, pp. 543-561.

Burch. J.G. (1994), "Cost and management accounting: a modern approach", West Publishing Company, USA.

Cagwin, D. and Bouwman, M.J. (2001), "The association between activity-based costing and improvement in financial performance", Management Accounting Research, PP. 1-39.

Carmona, S. and Gutierrez, I. (2003), "Vogues in management research", Scandinavian Journal of Management, Vol. 19, PP. 213-231.

Center of Institutional reform and the informal sector (IRIS).

Central Agency for Public Mobilization and Statistics (CAPMAS), Egypt.

Chenhall, R.H. and Langfield-smith, K. (1998), "The relationship between strategic priorities, management techniques and management accounting: an empirical investigation using a systems approach", Accounting, Organizations and Society, Vol. 23, No. 3, pp. 243-264.

Cole, G.A. (2004), "Management theory and practice", Thomson, London.

Costin, H. (1994), "Readings in total quality management", Harcourt Brace Company.

Cottenet and Mulder, (2001), "How far Egypt is from the technological frontier", chapter four.

Council of Saudi Chambers, (2002).

Culturosity (2003-2005)

Czaja, R and Blair, J. (1996), "Designing surveys: A guide to decisions and procedures", Thousand Oaks, Pine Forge Press.

De Wit, B. and Meyer, R. (2004), "Strategy: process, content, context. An international perspective", Thomson, London.

Dessler, G. (2004), "Management principles and practices for tomorrow's leaders", Pearson Prentice Education, Inc., Upper Saddle River, New Jersey.

Drury, C. (1996), "Management and cost accounting", International Thomson Business Press, Boston, USA.

Egyptian Businessmen's Association (EBA).

Egyptian Exporters Association (EEA).

Egyptian Organization for Standardization and Quality Control (EOS).

Egyptian State Information Center. (2002).

Egyptian State Information Service.

Egyptian Tourist Authority.

Egyptian Universities Network (EUN). (2004).

EIPICO. (2005).

El-Araby, Sh., Christopher, I. and Ashraf, L. (2005), "Investigating the applicability of adopting HACCP system in Egyptian food processing industry organizations", ASR'2005 Seminar, Instruments and Control, Ostrava, April 29, 2005.

Elshazly, T.A. (1999), "Quality and profits: seven lessons from the accounting field", Business & Economic Review, Vol. 22.

Environics, (2000), "Egypt/EU Free Trade Arrangement", Scooping of Environmental effects, Environics, Management of Environmental Systems, September 2000, Dokki-Giza, Egypt.

Essam El-Din, D. (1999), " 'Merge or Die' the opportunities and risks facing national industry in the context of a new commercial world order", Al-Ahram Weekly, February, PP. 18-24.

European Chemical Industry Council (CEFIC).

Farid, M.I. (1997), "Job characteristics, leadership and organizational commitment as perceived by managers in the Egyptian public and private sectors", Academy of Strategic and Organizational Leadership Journal, Vol. 1, No. 1.

Farrelly, F.A. and Brambilla, G. (2003), "Determination of uncertainty in environmental noise measurements by bootstrap method", Journal of Sound and Vibration, Vol. 268, PP. 167-175.

Fleisher, C.S. and Bensoussan, B.E. (2003), "Strategic and competitive analysis: methods and techniques for analyzing business competition", Pearson Education, Inc, New Jersey.

Flower, C.J. (1999), "The management accountant's role in quality management: a queensland perspective", International Journal of Applied Quality Management, Vol. 2, No. 1, PP. 41-57.

Folk, J.M., Garrison, R.H. and Noreen, E.W. (2002), "Introduction to managerial accounting", International edition, McGraw-Hill Higher Companies, Inc, New York.

Fourth annual global development conference theme, globalization and equity. (2003), "Egypt in a globalization world", Cairo, Egypt, 19-21 January.

Frey, K. and Gordon, L.A. (1999), "ABC, strategy and business unit performance", International Journal of Applied Quality Management, Vol. 2, No.1 PP. 1-23.

Fullerton, R.R. and McWatters, C.S. (2001), "The production performance benefits from JIT implementation", Journal of Operations Management, Vol. 19, PP. 81-96.

Gagnon, R.J. and Sheu, Ch. (2003), "Acquiring advanced engineering technologies under conditions of performance improvement", Computers & Industrial Engineering, Vol. 45, PP. 393-416.

Gamal, W. (2003), "Some pharmaceutical companies are at odds with the government over its drug pricing policy", Al-Ahram Weekly, Economy, Issue No. 563.

Garrison, R.H. and Noreen, E.W. (2003), "Managerial accounting", McGraw-Hill, Companies, Inc, New York.

Garrison, R.H., Noreen, E.W. and Seal, W. (2003), "Management accounting", European edition, McGraw-Hill Companies, Inc, New York.

Gill, J. and Johnson, PH. (1991),"Research methods for managers", Paul Chapman Publishing", London.

Global Development Network (GDN). (2003), fourth annual conference, day 1, January 19, Cairo, Egypt.

Gosselin, M. (1997), "The effect of strategy and organizational structure on the adoption and implementation of Activity-Based Costing", Accounting, Organizations and society, Vol. 22, No. 2, PP. 105-122.

Green Business Guide. (2002), the information and decision support system, Egypt, (IDCS).

Guilding, Ch. (1999), "Competitor-Focused accounting: an exploratory note", Accounting, Organizations and Society, Vol. 24, PP. 583-595.

Guilding, Ch., Cravens, K.S. and Tayles, M. (2000), "An international comparison of strategic management accounting practices", Management Accounting Research, Vol. 11, PP. 113-135.

Gunasekaran, A. and Singh, D. (1999), "Design of activity-based costing in a small company: a case study", Computers & Industrial Engineering, Vol. 37, No. 1-2, PP. 413-416.

Gunasekaran, A., Marri, H.B. and Grieve, R.J. (1999), Activity-based costing in small and medium enterprises", Computers & Industrial Engineering, Vol. 37, No. 1-2, PP. 407-411.

Gupta, M. and Galloway, K. (2003), "Activity-based costing/management and its applications for operations management", Technovation, Vol. 23, No. 2, PP. 131-138.

Haberberg, A. and Rieple, A. (2001), "The strategic management of organizations", Pearson Education Limited, England.

Hamdi, D. (2004), "Standards in Egypt", International Market Insight (IMI), Report date: 15/9/2004.

Hill, Ch.W.L. (2003), "Competing in the global marketplace", International edition, McGraw-Hill Companies, Inc, USA.

Hilton, R.W., Maher, M.W. and Selto, F.H. (2003), "Cost management: strategic for business decisions", McGraw-Hill Companies, Inc, New York.

Hodgetts, R.M. and Luthans, F. (2003), "International management: culture, strategy and behavior", McGraw-Hill Companies, Inc, New York.

Hopkins, W.E. and Hopkins, Sh.A. (1997), "Strategic planning-financial performance relationships in banks: A causal examination", Strategic Management Journal, Vol. 18, No. 8, PP. 635-652.

Horngren, Ch.T., Sundem, G.L. and Stratton, W.O. (1999), "Introduction to management accounting", Prentice-Hall, Inc, New Jersey, USA.

Houben, G., Lenie, K. and Vanhoof, K. (1999), "A knowledge-based SWOT analysis system as an instrument for strategic planning in small and medium sized enterprises", Decision Support Systems, Vol. 26, PP. 125-135.

Hourngren, Ch.T, Bhimani, A. Datar, S.M. and Foster, G. (2002), "Management and cost accounting", Prentice Hall International, Inc, New Jersey, USA.

Hussey, J. and Hussey, R. (1997), "Business research: a practical guide for undergraduate and postgraduate students", Palgrave, New York.

Industrial Modernization Center. (2003), Egypt.

Info-Product Research, Middle East, (2002).

Information and Decision Support Center (IDSC), Egypt.

Innes, J., Mitchell, F. and Sinclair, D. (2000), "Activity-based costing in the UK's largest companies: a comparison of 1994 and 1999 survey results", Management Accounting Research, Vol. 11, PP. 349-362.

International Council of Chemical Association (ICCA), Report to United Nations Environment Program (UNEP), "the ICCA chemical sector report to UNEP", for the world summit on sustainable development.

International Organization for Standardization (ISO).

Ittner, Ch. (1999), "Activity-based costing concepts for quality improvement", European Management Journal, Vol. 17, No. 5, PP. 492-500.

Ittner, Ch. and Larcker, D.F. (2001), "Assessing empirical research in managerial accounting: A value-based management perspective", Journal of Accounting and Economics, Vol. 32, PP. 349-410.

John, R., Grazia, I.G., Howard, C. and Nigel, G. (1997), "Global business strategy", International Thomson Business Press, London.

Jonsson, S. (1998), "Related management accounting research to managerial work", Accounting, Organizations and Society, Vol. 23, No. 4, pp. 411-434.

Kamel, Sh. (1997), "The birth of Egypt's information society", International Journal of Computer and Engineering Management, Vol. 5, No. 3, P. 4.

Kaplan, R.S. and Atkinson, A.A. (1998), "Advanced management accounting", International edition, Prentice Hall International, Inc. New Jersey.

Kazem, A.I. (2003), "Competitiveness of SMEs", DPA thesis, Maastricht School of Management, The Netherlands.

Keating, P. and Ansari, Sh. (1997), "Management accounting: a strategy focus, the organizational role of management accountants", McGraw-Hill Companies, Inc, USA.

Kim, K.J. and Han, I. (2003), "Application of a hybrid genetic algorithm and neural network approach in activity-based costing", Expert Systems with Applications, Vol. 24, PP. 73-77.

Kim, M.W. and Liao, W.M. (1994), "Estimating hidden quality costs with quality loss functions", Accounting Horizons, Vol. 8, No. 1, PP. 8-18.

Kim, Y.G., Yu, S.H. and Lee, J.H. (2003), "Knowledge strategy planning: methodology and case", Expert Systems With Applications, Vol. 24, Issue. 3, pp. 295-307.

KPMG, Egypt.

Laitinen, E.K. (2002), "Future management accounting", Strategic Management Accounting Research Unit, University of Vaasa, Levn institute.

Lane, H.W., DiStefano, J.J. and Maznevski, M.L. (1997), "International management behavior", Blackwell Publishers Ltd, Oxford, UK.

Larson, K.D., Wild, J.J. and Chiappetta, B. (2002), "Fundamental accounting principles", McGraw-Hill Higher Education, Inc, New York.

Lee, J.Y. (1999), "Managerial accounting", Hampton House, Santa Fe Springs.

Liedtka, J. (2000), "Strategic planning as a contributor to strategic change: a generative model", European Management Journal, Vol. 18, No. 2, PP. 195-206.

Lilja, R. "Challenges in cleaner production policy in Egypt", Egyptian Pollution Abatement Project (EPAP).

Louderback, J. and Holmen, J. (2003), "Managerial accounting", South-Western, a division of Thomson Learning, USA.

Maccarrone, P. (1999), "Using ABM to redesign corporate staff units", Business Process Management Journal, Bradford.

Market Reports and Industrial sector Analysis. (1998, Africa and Middle East).

Marshall, C. and Rossman, G.B. (1999), "Designing qualitative research", 3rd edition, Sage publications, Inc, California.

Matsuura, F. (1991), "International business: A new era", International edition, Harcourt Brace Jovanovich, Inc. San Diego.

McLaney, E. and Atrill, P. (2002), "Accounting: an introduction", Pearson Education Limited, England.

McWatters, CH., Morse, D. and Zimmerman, J.L. (2001), "Management accounting: analysis and interpretation", McGraw-Hill Companies, Inc, New York.

Mead, R. (1994), "International management: cross cultural dimensions", Blackwell Publishers. Cambridge.

Mehta, (2005), "Commentary: Globalized Uncertainty", Al-Ahram Weekly, 13-19 January, Issue No. 725. International, Cairo, Egypt.

Mendoza, C. and Bescoss, P. (2001), "An explanatory model of managers' information needs: implications for management accounting", The European Accounting Review, Vol. 10, No. 2, pp. 257-289.

Ministry of Communications & Information Technology (MCIT), Egypt, (1999).

Ministry of Industry and Foreign Trade, Egypt. (2004).

Ministry of Industry and Technological Development (MITD), Egypt, (2002).

Ministry of Public Enterprise, Public Enterprise Office, Privatization Unit, Egypt.

Ministry of Tourism, Egypt.

Mintzberg, H., Lamel, J., Quinn, J.B. and Ghoshal, S. (2003), "The strategy process: concepts, contexts and cases", Pearson Education Limited, United Kingdom.

Miraglia, R.A., Rissotti, D. and Leotta, A. (2003), "Production models and cost accounting methods", 6th manufacturing accounting research conference, Twentee University.

Muto, K. (2003), "Advanced technology for manufacturing engineering development: XML technology on a system that enables user to view required information from the workshop through a web browser", JSAE Review, Vol. 24, PP. 303-312.

Neigher, W.D. (2003), "The process is the plan: defining strategic community futures", Evaluation and Program Planning, Vol. 26, pp. 441-457.

Nilsson, F. and Olve, N. (2001), Control systems in multibusiness companies: from performance management to strategic management", European Management Journal, Vol. 4, PP. 344-358.

Nobes, Ch. and Parker, R. (2000), "Comparative international accounting", Pearson Education Limited, England.

Novartis Company, Egypt.

O'Leary-Kelly, S.W. and Floers, B.E. (2002), "The integration of manufacturing and marketing/sales decisions: impact on organizational performance", Journal of Operations Management, Vol. 20, PP. 221-240.

O'Neill, P. and Sohal, A.S. (1999), "Business process reengineering: a review of recent literature", Technovation, Vol. 19, PP. 571-581.

O'regan, N. and Ghobadian, A. (2003), "Strategic planning: A comparison of high and low technology manufacturing small firms", Technovation.

Oliver, J. and Qu, W. (1999), "Cost of quality reporting: some Australian evidence", International Journal of Applied Quality Management, Vol. 2, No. 2, PP. 233-250.

Parkin, M., Powell, M. and Matthews, K. (2003), "Economics", Pearson Education Limited, England.

Pearce II, J.A. and Robinson, Jr.R.B. (2003), "Formulation, implementation and control of competitive strategy", McGraw-Hill Companies, Inc. New York.

Pinson, S.D., Louca, J.A. and Moraitis, P. (1997), " A distributed decision support system for strategic planning", Decision Support Systems, Vol. 20, PP. 35-51.

Raiborn, C.A., Barfield, J.T. and Kinney, M.R. (1993), "Managerial accounting", West Publishing Company, USA.

Ranganathan, C. and Dhaliwal, J.S. (2001), "A survey of business process reengineering practices in Singapore", Information & Management, Vol. 39, PP. 125-134.

Rasmussen, R.R., Savory, P.A. and Williams, R.E. (1999), "Integrating simulation with activity-based management to evaluate manufacturing sell part sequencing", Computers & Industrial Engineering, Vol. 37, PP. 757-768.

Reed, R., Lemak, D. and Mero, N.P. (2000), "Total quality management and sustainable competitive advantage", Journal of Quality Management Science, Vol. 5, PP. 5-26.

Rees, W.D. and Porter, Ch. (2001), "Skills of management", TJ International, Padstow, Cornwall, Great Britain.

Robb, D. and Xie, B. (2003), "A survey of manufacturing strategy and technology in the Chinese furniture industry", European Management Journal, Vol. 21, No. 4, PP. 484-496.

Ryan, B., Scapens, R.W. and Theobald, M. (2002), "Research method & methodology in finance accounting", TJ International, Padstow, Cornwall.

Saunders, M., Lewis, PH. and Thornhill, A. (2000), "Research methods for business students", Pearson Education Limited, England.

Schoute, M. (2003), "Determinants of the adoption and use of activity-based-costing", University of Amsterdam, Faculty of Economics and Business Administration, Accounting department.

Schulz, A.K-D. (1999), "Experimental research method in a management context", Accounting and Finance, Vol. 39, pp. 29-51.

Shafik, N. (2003), "Global competition and the changing relations between the public-private sectors in the middle East and North Africa (MENA) Region.

Sharp, J.A. and Howard, K. (1996), "The management of a student research project", Gower Published Limited, England.

SIS Publications. (2002), "Moving towards a Modernized Egypt: Modernization of Egyptian Industry", Egypt Magazine, Issue No. 27.

Sjoblom, K.M. (1998), "Financial information and quality management- is there a role for accountants?", Accounting Horizons, Vol. 12, No. 4, PP. 363-373.

Soin, K., Seal, W. and Cullen, J. (2002), "ABC and organizational change: an institutional perspective", Management Accounting Research, Vol. 13, PP. 249-271.

Sutcliffe, N. (1999), "Leadership behavior and Business Process Reengineering (BPR) outcomes. An empirical analysis of 30 BPR projects", Information & Management, Vol. 36, PP. 273-286.

Swenson, D. and Barney, D. (2001), ABC/M: Which companies have success?", Journal of Corporate Accounting & Finance, Vol. 12, No. 3, PP. 35-44.

Taha, N. (2003), "ABC in Egypt", Master Thesis. Faculty of Commerce, Banha University, Egypt.

Tanabe, M., De Angelo, C.F. and Alexander, N. (2003), "The effectiveness of strategic planning: competitiveness in the Brazilian supermarket sector", Journal of Retailing and Consumer Services.

Tayles, M. and Walley, P. (1997), "Integrating manufacturing and management accounting strategy: case study insights", International Journal of Production Economics, Vol. 53, PP. 43-55.

Taylor, W.A. (1998), "TQM implementation: Organization practices and information infrastructure", International Journal of Management Science, Vol. 26, No. 6, PP. 715-727.

Teece, D., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", Strategic Management Journal, Vol. 18, No. 7, PP. 509-533.

The 15th International Conference of the International Union of Pure and Applied Chemistry (IUPAC), Chemical Education International, Vol. 1, No. 1, PP. 11-14, Published in August 31, 2000.

Thompson, A.A., Gamble, J.E. and Strickland III, A.J. (2004), "Strategy: winning in the marketplace core concepts, analytical tools and cases", McGraw-Hill Companies, Inc, New York.

United States Agency for International Development (USAID).

US Commercial Service. (2005), Egypt.

Van Triest, S. (2000), "The cost structure of firms: managing fixed versus variable costs", Twente University, May, chapters 2,3 and 4.

Villiers, J. (1997), "The distortions in Economic Value Added (EVA) caused by inflation", Journal, Economic and Business, Vol. 49, pp. 285-300.

Ward, K. (1992), "Strategic management accounting", Butterworth-Heinemann, a division of Reed Educational and Professional Publishing Ltd, Oxford.

Weetman, P. (1999), "Financial & management accounting: an introduction", Pearson Education Limited, England.

Welman, JC. and Kruger, SJ. (2001),"Research methodology", Oxford University Press, Southern Africa.

Wheelen, T.L. and Hunger, J.D. (2000), "Strategic management business policy", International edition, Prentice Hall International, Inc, USA.

Wherldon, B. and Ross, Ph. (1998), Reporting quality costs: improvement needed", Australian CPA, PP. 54.56.

Williams, J.J. and Seaman, A.E. (2001), "Predicting change in management accounting systems: national culture and industry effects", Accounting, Organizations and Society, Vol. 26, pp. 443-460.

Wilson, R. and Chua, W. (1998), "Management accounting: method and meaning", Nostrand Reinhold (International) Co, Ltd, London.

World Competitiveness Report. (1995).

Wortzel, V. and Wortzel, H. (1997), "Strategic management in the global economy", John Wiley & Sons, Inc. New York.

Wouters, M. and Verdaasdonk, P. (2002), "Supporting management decisions with Ex ante accounting information", European Management Journal, Vol. 20, No. 1, pp. 82-94.

Wright, D. (1994), " A practical foundation in costing", Routledge, London.

Wu, I. (2002), "A model for implementing BPR based on strategic perspectives: an empirical study", Information & Management, Vol. 39, PP. 313-324.

Young, S.M. (1999), "Field research methods in management accounting", American Accounting Association, Accounting Horizon, Vol. 13, No. 1, pp. 76-84.

Zimmerman, J.L. (1995), "Accounting for decision making and control", Richard, D. Irwin, Inc, USA.