A Strategic Approach for IT Use in the Egyptian Banking Industry

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ABSTRACT

An empirical study that explored the information intensive Egyptian banking industry is featured in this project. Information Technology (IT) use in the Less Developed Countries (LDCs), has drawn some research attention in the last decade. However, few studies have examined the organisational issues of IT use in these countries. The aim of this study was to identify the organisational practices that contribute to and enhance the level of sophistication of IT use, at the business unit (the firm) level in a LDC context.

Multiple sources of information were used to collect data about IT use and its organisational context from the major firms dominating the Egyptian banking industry. Sources included written and interview based information; all the available planning documentation; reports; and financial statements of these firms. Evidence was sought for the relationship between the level of sophistication of IT use and seven selected organisational factors. The selected organisational factors (the independent variables) and their constructs were identified through a literature review and refined by a pilot study.

The study revealed that "chief executive support" was the central organisational factor enabling these firms to achieve their current levels of IT use, and also had an influence in some other significant organisational factors such as: "IT management climate" and "IT managerial knowledge". Some other factors, which have been considered important by the research community such as: "firm-wide planning", "IT organisational design", "IT planning", and "the integration between IT and business groups" were found to contribute in an insignificant way to the degree of IT use in these firms. The study concluded with a working model that conceptualises the organisational context of IT use in terms of its components and behaviour in the different levels of IT-based transformation process.

The framework developed in this thesis has implications for both researchers and practitioners. For researchers, the conceptual model extends understanding of the components of the organisational context of IT use in the Egyptian banks as a LDC case study. It suggests the nature of the relationships between the organisational variables and the IT use variable. Practitioners, on the other hand, can use the model to refine their thinking about IT use activities and their related organisational practices. In particular, the model could be used as a starting point for building the required information systems capabilities for strategic IT use in organisations.

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To the memory of my father

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CHAPTER ONE

Introduction

The significant impact of Information Technology (IT) on business, on government, on the economy and on organisational life, has drawn much attention in the last decade. Porter, M. (1985) asserts that "the power of technology as a competitive variable lies in its ability to alter competition through changing industry structure." Many writers have built upon Porter's work to examine the importance of IT on competitive strategy.

In the late seventies, the role of IT had been to help organisations solve critical business problems or deliver new services by collecting data, turning data into information and turning information into knowledge quickly enough to reflect the time value of the knowledge (Cole, R., 1991). In the eighties, a second role was pursued for information technology systems, in which IT was used mainly to provide strategic opportunities for competitive advantage (Cole, R., 1991; Bergeron, F., et al., 1991). In the nineties, a third role is envisaged for IT. It is argued that IT should be considered as the heart of strategic business thinking and the basic functions of the organisation (Venkatraman, N., 1994). It is believed therefore that IT can enable executives to formulate flexible capabilities to outpace their competitors in creating competitive advantages by radically reshaping their organisations.

In their Search for empirical evidence for this new role of IT, researchers have quoted many examples of information technology systems that have been described as strategically important. One of the earliest was the airlines' use of IT to create Computerised Reservation Systems (CRSs) in order to provide customers with faster and more accurate reservation information. What started as a field automation project became a strategic capability in the airline environment (Copland, D. and Mckenny, J., 1988; Keen, P., 1988).

Likewise the Analytic System/Automatic Purchasing (ASAP) of the American Hospital Supply Corporation[1] grew to become one of the major systems in the hospital distribution industry. Today this system is in its ninth generation of technology update and is shifting from a dedicated multi-vendor platform to its customers, to a business network integrator and value-added partner. This is through re-conceptualising its business scope to constitute "just in time" materials management, to its customers (Short, J. and Venkatraman, N., 1992; Sviokla, J., 1992).

Another example is the Frito-Lay company[2], which is the leader in the salty-snack food market in the USA. The company is in the tenth year of rollout of its new information infrastructure based around its order management system. It has implemented a hand-held computer in its 10,000-person field delivery/sales force. This technology is an example of how IT affects the basics of time and place in the organisation. By using this system - providing sales personnel with access to the company's data base and to an expert system for sales and price decision making - the organisation has changed to become more time, place and person independent (Applegate, L., et al., 1993). Other examples can be found in Kettinger, W., et al. (1994), in which more than thirty "classic" cases of strategic use of information technology, are reviewed.

The role of IT in business became important as the previous cases show, a radical move by a whole industry to an electronic market - the case of airline industry, a transformation in business scope - the case of Health Care industry, or a radical change in the basics of the organisation - the case of Frito-Lay. Changes such as these resulted in a dramatic increase in IT spending in the eighties. Some statistics from the USA showed that "Each worker in the service sector is now

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[1] Later acquired by Baxter Health Care Inc.

[2] Frito-Lay is a major division of PepsiCo Inc.

supported by an average of $9000 of computing power, and IT is now the largest item in the capital spending budget of Corporate America, almost a third of all expenditures" (Schnitt, D., 1993).

These developments in IT practices resulted in the proliferation of frameworks, tools, and dedicated software packages for assisting executives in the exploitation of IT. Most of these frameworks[3] tried to help firms identify which information systems offer the potential for Competitive Advantage (CA). Overtime however, it became clear that competing firms could eventually copy most IT applications and that the CA from any particular application would be short-lived (Ross, J., et al., 1996).

The main problem of these frameworks is that they seemed to view the process of IT use as context independent (Mentazas, G., 1997). IT use practices or the decisions concerning acquiring, deploying, exploiting and sustaining computer based information systems, are dependent on intervening variables associated with the organisational context. Recent studies, concerned with the strategic aspect of IT use, have highlighted these intervening roles of the organisational context of IT use (Wastell, D. and Seward, A., 1995; Grant, G., 1996; Broadbent, M. and Weill, P., 1993).

The main theme behind these studies is that the challenge of using IT strategically to achieve sustainable CA lies in understanding and managing the interdependence between the domain of IT use and the related organisational practices in the firm. Deliberate and superior management of the relationships between IT use practices and their related organisational context help build the organisational capabilities required to gain sustainable CAs.

Based on the above discussion, this project will concentrate on the organisational context of IT use practices in order to develop a strategic approach that could provide executives with the guidelines required to build IT-related organisational capabilities in a Less Developed Country (LDC) case study.

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[3] Please refer to chapter two, section 2.6 for more details

1.1 Research Problem

Many studies in LDCs have recommended that models and frameworks developed from the western industrialised countries should not be automatically applied to LDCs environment. Jaeger, A. and Kanungo, R. (1992) see that "Management theories and techniques employed in western industrialised countries are often difficult to apply in the context of the third world, and the challenges managers face in a developing country are very different from those facing their counterparts in the developed world". Consequently research studies in IT use in LDCs should, in the first instance, critically assess how the traditional IT management theories, frameworks and tools (developed from the western experiences) have already been applied in LDCs. The insights gained from these assessment studies should help to overcome the application problems, refine the original frameworks or develop new ones.

Reviewing the current literature on IT use in LDCs, it has been noticed that most of the studies have concentrated on the national and macroeconomics context issues of IT use (Al-Shamari, M. and Al-Shaik, F., 1993; Bhatnager, S., 1992; Bhatnager, S. and Bjorn-Anderson, N., 1990; Odedra, M., 1990). Few researchers have examined the organisational practices of the Business Unit (BU) or the organisational context of IT use. As a result, the work presented in this thesis has concentrated on identifying the organisational practices that contribute to and enhance the level of Sophistication of IT Use (SITU) at the BU level in Egypt as a LDC case study.

At the present time the Egyptian business environment is undergoing some radical economic changes. The Egyptian administration is practising a transition to the market economy, a gradual privatisation policy and a liberalisation of foreign trade. These dramatic changes will challenge the executives of the Egyptian BUs to deal with new managerial issues, which they have not previously encountered.

Earl, M. (1989) states that IT has become mostly needed for firms facing economic changes, such as transitions from industrial to service industry, liberalisation and deregulation of service sectors, and globalisation of industrial markets. He also argues that IT is both a cause of sector changes and a requisite response to them, therefore management should analyse their forces for change and look to IT as a key strategic tool for survival.

The research question posed in this thesis is: Is there evidence to support the development of propositions about the relationship between the level of SITU and the firms' organisational practices such as: firm-wide-planning; Chief Executive (CE) support; IT planning; organisational designs; IT managerial knowledge; IT and business groups integration; and IT management climate.

1.2 Research Objective

The main purpose of this research is to develop a conceptual framework that could help BUs to strategically improve their patterns of IT use. It was thought that examining some carefully selected IT-related organisational practises among the Egyptian major banking firms, could provide grounded propositions about IT use in a LDC case study. These propositions could then be grouped into a conceptual framework that could be used to evaluate the role of the selected organisational factors in current IT use levels and provide insights for the future practices.

To achieve the main purpose of the study, the research has involved:

1 Evaluating the patterns of IT use of the leading banking firms in Egypt and studying their levels of SITU.

2 Identifying the main organisational factors that explain the levels of SITU in these firms. The literature on the related subjects was reviewed in order to identify the main influential organisational practices. This initial framework of factors derived from the literature, was refined through a pilot study and then elaborated through a multiple case study protocol.

3 Evaluating the role of these organisational practices in the current pattern of IT use in order to provide an analysis of the management implications and requirements for action to enhance these firms' levels of IT use.

1.3 Research Methodology

The purpose of this hypothesis-generating study is to contribute to a theory of the organisational context of IT use, by examining the relationships between IT use and some organisational factors at the BU level in a LDC case study. The study does not attempt to completely describe or confirm these relationships, but uses exploratory data analysis to suggest certain attributes of them. *A multiple-case study* research design was used in this project, because of the lack of a

cumulative theoretical base, the need to examine complex phenomena in depth, terminological variations and the sensitive nature of the data that had to be collected.

1.3.1 Research Design

The multiple case study design allows for a replication logic that is the logic of treating a series of cases as a series of experiments, in which each case study serves to confirm or deny the inferences drawn from previous ones. A sample of business units from the banking industry in Egypt was selected to theoretically represent the research population. The methodology used, involved multiple sources of data collected in a structured manner. It attempts to combine the richness of case analysis necessary to study the qualitative and complicated variables, and the rigour of empirical analysis required to detect the statistical differences in the quantitative variables. Case-oriented methodologies are traditional in IT studies and organisation's environment research and have been used for examining similar issues (Yin, R., 1989).

One of the major challenges in case study research is to ensure that data collection and analysis meet tests of reliability, construct validity, and external and internal validity (Yin, R., 1989). *Reliability* means that the operations of a study - such as the data collection procedures - can be repeated, with the same result. This will be ensured by:

(1) Using a case study protocol in which all business units and all informants will be subjected to the same sequence of procedures. This will be described in more detail in section 1.3.3.

(2) Creating similarly organised case databases for each business unit.

Construct validity means establishing correct operational measures for the concepts being studied. This will be ensured by using multiple sources of evidence and by establishing a chain of evidence as each case is concluded. *External validity*, means establishing the domain to which a study's findings can be generalised. This will be addressed by the multiple case research design itself, whereby all cases are BUs from the same industry.

Finally, *internal validity* means establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships. This will be addressed by the "pattern matching" data analysis method described by Yin, R., (1989).

1.3.2 Research Sample

1.3.2.1 The Egyptian Context

In their study of IT in the local administration in Egypt, Nidumolu, S., et al., (1996) explained that Egypt was chosen because:

1 It is in Africa, long considered "the lost continent" of information technologies, where the infrastructure for using information to support decision making has been inadequate. Egypt therefore provides important lessons for IT implementation in difficult settings.

2 As a key player in the Arab and Middle Eastern world, Egypt's approach to implementing IT affects other Arab or African countries, often through highly trained Egyptians who work abroad. Although its influence in the region has somewhat diminished, its role as a "barometer" and even cause of change in the Arab World continues to be potent.

3 The economic and political history of Egypt is an interesting context for the study. Egypt is similar to many LDCs such as China, India, Brazil, and Indonesia, which were formerly socialist or government-controlled economies and making a difficult transition to market-controlled economies.

An Economic Profile of Egypt[4]

"After decades as a sinkhole for foreign aid, Egypt is beginning to blossom into a vibrant emerging market" (The Economist, March, 1997). Egypt is the second largest market in the Arab world with a GDP of $67.5 billion at market prices (1996 Fiscal Year 'FY') which, if adjusted for purchasing power, would multiply fourfold. Located at the crossroads between Europe, Africa and Asia, Egypt could act as a natural hub for the Middle East and the Arab world.

<u>Growth Prospects</u>

Since the beginning of the 1990s the government has brought its budget deficit down from 17% of GDP to 2.5% of GDP in 1996 and to an estimated below 2% in 1998. After a four-year-period of stagnation due to anti-inflationary policies and demand management, successful stabilisation has led to GDP growth rising from 2.5% in 1993 FY to 3.9% in 1994 FY, and from 4.7% in 1995

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[4]This profile was developed through using the following sources: El-Ahli bank, 1997; Law no. 203/1991; Ministry of State for International Co-operation, 1995;96;97, Gardener, D., 1995)

FY to 4.9% in 1996 FY. The administration expects this rate to increase to 7-8% in the next few years.

Inflation Prospects

Inflation for 1996 was almost 7%, down from 8.6% in 1995 and over 20% in 1991. It has been estimated that it will fall to 6% in the period 1997-98, although the government target is 4-5%.

Currency Prospects

The exchange rate has been stable and a key element of the anti-inflationary program. The government remains adamant that it will not voluntarily devalue the currency, since the lack of a current account deficit and US$18bn of foreign exchange reserves argue that market pressure on the currency will be limited. However, the low export levels and the volatility of tourism receipts could leave Egypt exposed as it brings down its still very high levels of protectionism.

Progress on Privatisation

The Egyptian privatisation programme of the massive state sector, started in 1991 as an important component of the administration's reform programs. As of end 1995, 24 privatisation transactions had been effected worth $768 million. These included full divestiture of four state-owned enterprises, the sale of shares in another twenty, and ten cases of liquidation. In January 1996, the Egyptian president Hosni Mubarak brought in a new economic team, naming Kamal El-Ganzouri Prime Minister to accelerate the privatisation process. Thus, by the end of July 1996, 28 companies had been majority privatised (each having a private share holding of greater than 50 percent) with total book value of $1,103m. Partial privatisation of 17 other companies had also occurred (each company having a private shareholding of less than 50%). The total book value of these 17 companies is $2049m representing 10% of the total book value of the state owned enterprises. Another 11 affiliated companies are under liquidation with book value of $160m.

1.3.2.2 The Egyptian Banking System[5]

The banking sector was chosen as banks operate in Information Systems (IS) environment. This is because financial institutions are critically dependent on IS activity for daily operations. Banks are information-intensive and highly dependent on information technology as their core technology. Therefore the reason for choosing this sector is to guarantee some significant IT use practices.[6]

The banking system in Egypt is large and well developed. With Egypt's steady progress towards becoming an emerging big market, this sector is showing extremely good prospects for expansion and diversification. There are 62 banks operating in Egypt, of which 27 are commercial banks, 22 are branches of foreign banks, 4 are specialised banks, and two are unregistered banks (one of them - Manufacturers Hanover Trust Company - is working in the free zone in Port-Said and the other -Arab International Bank - is working under an exceptional Arab agreement).

Foreign banks in Egypt are entitled to representative offices or branches and may own non-controlling shares – although this state of affairs is undergoing some change at the present time - in joint venture banks. Commercial banks are entitled to operate as universal institutions undertaking banking and investment operations.

The Central Bank of Egypt (CBE) is responsible for controlling the country's banking system. It directs monetary credit and general banking policies, using the standard tools of discount rates, liquidity and reserve ratios, open market operations and other investments.

There are four state-owned commercial banks in Egypt. These are the National Bank of Egypt, Banque Misr, Banque Du Caire, and Bank of Alexandria. International banks, such as Barclays Bank, Societe Generale, Bank of America, Credit Commercial de France, Chemical Bank, Credit Suisse, American Express, Societe National de France, Banca di Roma and Banque National de

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[5]The profile of the Egyptian banking system was developed using the annual bulletins of news and statistics of the Central Bank of Egypt (1994; 95; 96; 97).

[6]In the beginning of this study, the food industries in Egypt was selected as the main population area, but unfortunately the level of SITU in this sector was not high enough to help examine the related IT issues.

Paris, have been operating locally either as joint ventures with the four state-owned commercial banks or as independently wholly owned branches. Several other local private banks have been operative since 1974 and engage in activities similar to those performed by joint venture banks.

Specialised banks in Egypt include the Industrial Development Bank, the Export Development Bank, the Real-Estate Development Bank, and the Bank of Development and Agricultural Credit. Apart from the Export Development Bank these are public banks. The Bank of Development and Agriculture Credit consists of one Principal bank in Cairo and another 17 county banks located in the main agricultural counties in Egypt, therefore it is always considered as 17 separate banks.

The banking sector includes some of Egypt's largest firms, with the number of employees in each of the five major banks (the four state-owned commercial banks and the agricultural bank) ranging from over 9000 to over 30,000 (1996 figures).

The past seven years have seen a rapid change in the banking system and finance sector as the industry has moved from a relatively high level to a low level of regulation. Fierce competition after deregulation led to a slashing of interest rates, and competition was further increased when foreign banks became entitled to deal in Egyptian currency. Moreover, the administration is planning at the present time to gradually privatise the four dominant public sector commercial banks.

Selecting the Research Sample

The main sampling criteria was to select the main banks in the population. Initially, the four commercial public sector banks and the agricultural bank were targeted to form the research sample. However due to the fact that not all of these banks were willing to participate in the study, the sample was extended by a further six banks. These banks are the largest banks after the previous public sector banks. They are the Arab International Bank, the Commercial International Bank, the Misr International Bank, the Egyptian American Bank, the Suez Canal Bank and the Miser Exterior Bank.

These eleven banks account for more than 80% of the total assets of the banks operating in Egypt. The four commercial public sector banks alone account for almost 70%. Of the eleven banks, eight agreed to participate in the study: Banque Du Caire (BDC), Banque Misr (BM),

National Bank of Egypt (NBE), Arab International Bank (AIB), Bank of Development and Agricultural Credit (BDAC), Misr Exterior Bank (MEB), Commercial International Bank (CIB), and Miser International Bank (MIB). However, data collected from MEB, CIB and MIB, in particular that gathered from the questionnaire responses, was insufficient for the purposes of the research. Therefore this study reports on results from five banks only: BDC, NBE, BM, AIB and BDAC.

1.3.3 Data Gathering

As explained in section 1.1, the key research question to be addressed is: Is there evidence to support the development of propositions about the relationship between the level of SITU and the organisational practices of businesses. A literature review study will be conducted to establish what Eisenhardt, K., (1989) terms "a priori specification of constructs" to help measure the research variables accurately. These constructs will form the initial framework that the study seeks to develop.

The initial theory adopted at the beginning of the study was that levels of SITU are influenced by the following organisational determinants:

1. Firm-wide planning. This variable could be measured by collecting data items about: the existence of firm-wide planning, experience in this kind of planning, planning time frames, planning focus, etc.
2. Degree of strategic orientation of IT. This variable could be measured by collecting data items about: the existence of a written IT strategy, its components, methodologies used, etc.
3. IT and the organisation. This variable could be measured by collecting data items about: the types of organisational practices used by the firms, their degree of suitability to the firms' strategies, types of IT organisations, etc.
4. IT and management groups' integration. This variable could be measured by collecting data items about the degree to which IT missions, objectives and plans support and are supported by business missions, objectives and plans.

An initial questionnaire was designed to help collect these data. Then, a convenient pilot study was conducted to test and refine this initial questionnaire. The questionnaire was directed to three officials in BDC and then followed by some open interviews to understand the major problems in the initial constructs of the research and the questionnaire.

As a result of the pilot study it was decided that:

- some other factors needed to be added to the framework such as Chief Executive (CE) support, IT management climate and IT managerial knowledge.
- many questions needed to be reworded to suit the current terminology used in these banks.
- the constructs used needed to be redesigned.
- the interviews needed to be redesigned to suit only the employees in the IT department. The banks refused to allow interviews to be conducted in other departments or with top management. This is one of the limitations of the study as some information were required from the management for analysis of variables such as firm-wide planning, and the strategic orientation of IT planning.

As a result, another literature review study was conducted to review the constructs of the study. The details of the refined research theoretical framework and the study main constructs are explained in chapter three. This refined framework was used to establish the data that needed to be collected and in designing the main questionnaire.

1.3.3.1 Data Sources

Data was collected by means of:

- Questionnaire: a written questionnaire was directed to 30 officials in the IT department in each bank, i.e. there were 150 potential interviewees in total from the five banks in the sample. The main consideration was to direct the questionnaire to the most senior managers and officials in the department. In all, 107 responses were available for the research analysis. This represented a response rate of 73%. Reponses breakdown was as follow: 22 responses from BDC, 21 from BM, 26 from NBE, 15 from AIB and 23 from BDAC. The standard questionnaire used was designed to reflect the main constructs and parameters of the conceptual framework of the study. Each section in the questionnaire was directly related to a specific variable in the study. For example it contained a section to evaluate the level of SITU in the bank (the dependent variable). The questions asked in this section aimed to establish the main features of the bank's IT infrastructure, the relative position of the bank compared to the rivals, the level of efficiency of IT services provided, etc. (please see questionnaire in appendix 1 and the framework of the research in chapter three for more details).

- Open interview sessions: these interviews were conducted with 3-5 IT managers in each bank. The issues raised in these sessions were the organisational practices that constitute the main framework of the research. Open interviews did not use the standard questionnaire. Instead, a list of issues were raised and discussed with each IT executive. However the sources of data and list of issues were not fixed and they were adjusted at data collection time. Eisenhardt, K., (1989) explains that "a key feature of theory-building case research is the freedom to make adjustments during the data collection process, such as the addition of data sources and/or questions to take advantage of special opportunities, which may present themselves in a given situation." The main issues that formed the main points of reference for the interview sessions are as follows:

1- IT infrastructure, brief description (hardware, software, and communication components/ historic and recent developments).

2- Firm-wide and IT organisational design issues (formal and informal IT groupings, integration mechanisms, etc).

3- Software development activities.

4- Description of firm-wide and IT planning processes (documentation, procedures, focus, etc).

5- Relationships with business groups

6- Influential players in the IT history in the bank.

- Annual reports and the organisational documentation: a content analysis was used of the available annual reports and the firms' documentation concerning IT plans, firm-wide plans, and organisational structures and responsibilities.

1.4 Research Limitations

The selected research design and sampling units for this project, as presented in section 1.3, could limit the extent of generalisation of the research findings. This section will discuss the reasons behind selecting the study's research design, sampling units and level of analysis. It will also explain how these affect or limit the degree of generalisability of the research results.

1.4.1 The Case Study Approach

The case study approach was selected in this project for the following reasons:

1- It was difficult to select a relatively big random sample in the field study from the Egyptian banks' population. An adequate response rate for the questionnaire was not guaranteed, as most of the banks consider their data very confidential. Moreover, gathering data from the Egyptian business environment usually depends on the research student's personal contacts in the case studies selected.
2- There were many parameters in the study that needed to be examined through some in-depth approach. Therefore, it was better to concentrate on a few cases where an in-depth study was possible, rather than studying a bigger sample with some superficial measuring technique.
3- The literature suggests that this methodology is always preferred whenever there is a need to build a relatively new conceptual framework (Eisenhardt, K, 1989; Yin, R., 1989).

The main limitation of the case study approach is that it does not allow statistical generalisation of the research results. This implies that it is not safe to use the research results to prove or deny the study's hypothesis. However, the case study approach permits theoretical generalisation. This means that the research results could be used to generate hypothesis that need to be tested.

1.4.2 Selecting the Banking Sector

As indicated in the research methodology, the banking sector was selected to guarantee some significant IT use practices in the field study. Cross-industry studies have consistently shown that the financial services area is relatively mature in its information strategy development processes. Broadbent, M. and Weill, P., (1993) explained that banks are more likely than firms in most other sectors to have information systems strategies and implementation processes linked to the business aims of the firm. They also showed that limiting the study to one leading-edge industry could help avoid the problem of cross-sectional studies by minimising the effect of moderating variables and facilitating the analysis of multiple sources of evidence.

Although this might limit the ability to generalise the results of this study to other sectors, it is believed that the results could be pertinent to other industries where IT plays an increasing strategic role. Moreover, as most of the cases selected in the field study are public sector banks, the research results could be relevant to the public sector BUs in Egypt in general. This is

because these units have unified organisational designs, accounting systems and management practices in areas such as personnel policies, purchasing, and warehousing and also because they report to the same controlling governmental agencies and authorities.

1.4.3 Selecting Egypt

As explained in section 1.3.2, Egypt was selected as a LDC for the study, because its economic and political history provides an interesting context for the study. Although it is not safe to generalise the research results of the Egyptian case on all the LDCs, as their population is not homogeneous, the study conclusions could be pertinent to similar LDCs, or at least help to generate hypotheses for them for future research. Egypt is similar to many LDCs such as China, India and Indonesia, which were formerly socialist or government-controlled economies and are making a difficult transition to market-controlled economies

1.5 Structure of Thesis

The thesis will be organised as follows:

Chapter One

Introduction

The research problem, objective, methodology, limitations, and structure have been presented in this chapter.

Chapter Two

The Impact of Information Technology on Business Practices

This chapter will firstly provide an economic overview of the information revolution from a historical perspective. Next, the impact of IT on business will be introduced in four parts: a presentation of electronic markets and hierarchies as important mechanisms adopted by IT applications; an analysis of the characteristics of the new IT driven organisation; a discussion of how IT has changed the rules of competition in the 1990s; and lastly the role of IT in developing business and IT strategies. Then, a brief discussion of the main frameworks of IT use will be given. The last section will discuss the need for a strategic framework that takes into account the organisational context of IT use.

Chapter Three

Developing the Research Framework

The purpose of this chapter is to present and define the constructs and research propositions of which the initial conceptual framework is composed. The framework is used to determine the factors that affect the level of SITU in the Egyptian banks, which are an example of an information technology dependent organisation in a LDC case study. It also describes how these factors were measured, analysed and related to the IT use factor, which is the dependent variable of the framework. First an introduction to the development of the research framework and propositions will be presented. Then the main constructs of the framework that is the dependent variable (the degree of sophistication of IT use) and the independent variables (firm-wide planning, IT planning, CE support, managerial IT knowledge, IT and business integration, organisation and IT management climate) will be discussed.

Chapters Four to Eight

These chapters contain the case studies of each of the banks considered as part of this study namely: Banque Du Caire (BDC), Banque Miser (BM), National Bank of Egypt (NBE), Arab International Bank (AIB) and Bank of Development and Agricultural Credit (BDAC).

In each chapter the pattern of IT use in the particular bank being considered is examined together with the role of certain organisational practices on its level of SITU. Each chapter begins with a profile of the bank being considered and a discussion of its level of SITU. Subsequent sections discuss firm-wide planning, IT-planning, CE support, level of managerial knowledge, degree of integration between IT and business groups, organisational design of IT and the management climate of IT within the particular bank. Finally an analysis of some strategic issues of IT use in each case will be presented.

Chapter Nine

Research Findings

This chapter will present and discuss the results of the field study for all the case studies. The purpose of carrying out this comparative analysis is to understand the common patterns of IT use in the Egyptian banks. The organisation of this chapter will be: a discussion of the banks' level of

SITU; the banks' firm-wide planning; IT planning; CE support; level of managerial knowledge; the degree of integration between IT and business groups; the IT organisational structure in these banks; and the IT management climate.

Chapter Ten

Conclusions and Implications

This chapter sets out the main conclusions and management implications of the study. It commences with an analysis of the pattern of IT use in the five case studies selected from the Egyptian banks and their relative positions in terms of their levels of SITU. Next is a discussion of the possible reasons for this IT positioning, obtained by analysing the related organisational practices of the banks participating in the study. The chapter concludes with a discussion of the proposed working model of the conceptual framework of the organisational context of IT use.

Chapter Eleven

Generalisations and Future Research

This chapter will discuss the possible generalisations that could be made from the research and its wider contributions. It will also highlight the main limitations of the research results and discuss possible future research.

CHAPTER TWO

The Impact of Information Technology on Business Practices

In this decade, it is generally agreed that the impact of Information Technology (IT) has changed from automating current business operations to radically changing organisations, strategic thinking and competition rules. The aim of this chapter is to present a comprehensive picture of the role of IT in the current business practices of the developed countries and to review the main methods employed in these countries for IT use. The discussions in this chapter will be based on a simple conceptual analysis through critically reviewing the literature.

The chapter commences with an economic overview of the information revolution from a historical perspective. Next, the impact of IT on business will be discussed in four parts: the emergence of electronic markets and hierarchies as important mechanisms adopted by IT applications, an analysis of the characteristics of the new IT driven organisation, a discussion of how IT has changed the rules of competition in the 1990s, and the role of IT in developing business strategies. Then a brief discussion of the main methods of IT use will be presented. The

last section will discuss the need for a strategic framework that takes into account the organisational context of IT use.

2.1 IT: an Economic Evolution Framework

Technological advances, organisational innovations and new ways of thinking transform economies. From the 1770s to the 1830s, steam engines and textile mills produced the industrial revolution. Further technological advances in the form of the spread of electric power and mass production occurred during the period from the 1830s to the 1950s (Farrel, C., 1994). As the 21st century approaches a great transformation is taking place. It began in the late 1950s, when some economic studies showed that, for the first time, the information labour outnumbered the production labour (Jonscher, C., 1994; Port, O., et al., 1994; Naisbitt, J., 1982).

This was the beginning of the post industrial era, in which society and the economy is based on generating, dealing and distributing information rather than on industrial and physical transformation activities (Applegate, L., 1988). Naisbitt, J., (1982) has summarised this progression as follows: "During the agricultural period, the game was man against nature, in the industrial society it was man against fabricated nature, but in the information society the game is people interacting with other people".

Table 2.1 The Evolution of the Role of Information Technology

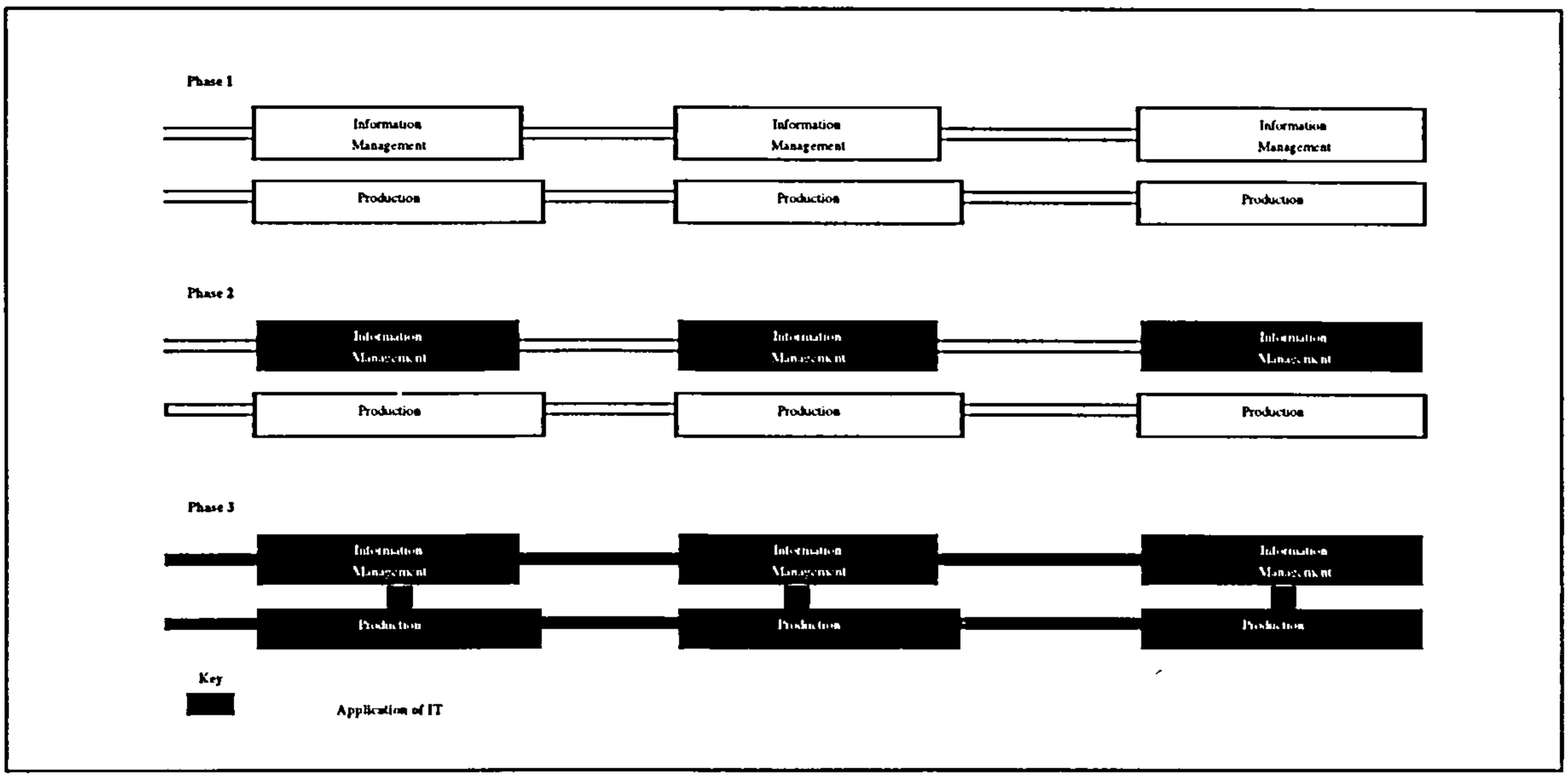
Phase	Measures and timing	Driving technology	Manifestations
1. Growth of information management	Ratio of information labour to production labour costs passed 1:1 circa 1960	Production machinery (stand alone)	Mass production Growth of large clerical bureaucracies Growing average firm size
2. Growth of information technology	Ratio of information Technology to production technology costs passed 1:1 circa 1990	Information systems (stand alone)	Mass production and mass marketing Automation of large clerical bureaucracies Stable firm size
3. Integration	---	Integrated networked information production systems	Programmed production Electronic markets Falling average firm size

Source: Jonscher, C. "An Economic Study of the Information Technology Revolution," in Information Technology and the Corporation of the 1990s, by Scott Morton, M. and Allen, T., N Y, Oxford University Press, 1994, p. 27.

This change caused a rapid increase in communication (via phones, memos, faxes, etc.) and an increase in the numbers of white-collar workers and the costs of the growing information sector. It became clear therefore, that the economy was in need of a new technology to control and reduce the information float within this sector. The change that IT made was fast and radical as compared to the technologies adopted in the pervious era. Indeed it has been suggested that the current era is already drawing to a close and that we are approaching the beginning of a new one (Jonscher, C., 1994). The evolution of the economic role of IT in terms of its perceived phases, driving technologies and manifestations was summarised in table 2.1.

As can be seen from the table, the changes in the economy brought about as a result of the industrial revolution took almost a century to come into effect. This is in contrast to the changes in the economy brought about as a result of the introduction of IT, which took only thirty years to come into effect. This latter period, that is between the 1950s to the 1990s, is characterised by the growth of stand-alone information systems (Jonscher, C., 1994). Although there were good advances in networks and communications, the way in which IT was used was restricted to the streamlining of operations. The application of IT in this way resulted in mass production, mass marketing, automation of large clerical bureaucracies, and stable firm size.

Fig. 2.1 The Pattern of Adoption of Information Technology, Phases 1, 2 and 3



Source: Jonscher, C. "An Economic Study of the Information Technology Revolution," in Information Technology and the Corporation of the 1990s, by Scott Morton, M. and Allen, T., New York, Oxford University Press, 1994, p. 29

In the 1990s integration is the main driving force and its manifestations are programmed production, electronic markets and falling average firm size. It is the phase where it will be difficult to distinguish between the information worker and the production worker (Jonscher, C., 1994). Figure 2.1 presents the pattern of adoption of information technology through the different phases identified by Jonscher, C. (1994).

The reason why it took only thirty years to reach the point at which we are now is that the information handling process is a homogenous sector in the economy, which is in contrast to the production sector of the economy which is heterogeneous in its nature. This means that there is a larger volume of applications for practitioners to work upon, which in turn means that the rate of learning is much faster than would be the case in a heterogeneous area. The fact that both production and information activities are now being integrated by one technology - leading to a blurring of the differences between office and factory - together with the growth in expertise of practitioners, means that IT costs will decrease rapidly.

2.2 Electronic Markets and Hierarchies

The previous economic overview showed that integration will be the main driving force in business practices. Electronic markets and hierarchies are electronic mechanisms for integrating value added steps internal to a particular business or for integrating adjacent steps of the value added system of one business with those of other businesses.

Jonscher, C., (1994) claims that the process of integration has two dimensions: first the integration of information technology with production technology linking office and factory, second the integration of those internal to business with those external to business. The fastest growing kind of integration systems is in the area of Electronic Data Interchange (EDI). "Doing business without EDI will soon be like doing business without the telephone"; an IBM vice-president commented (Jonscher, C., 1994).

Benjamin, R., et al., (1990) have introduced a clear classification of the different types of electronic linkages, referred to as Inter-Organisational Systems (IOS). After reviewing several dozen of the systems mentioned in the literature, the researchers identify that they do one of two things: (1) routine transaction processing, such as order entry or invoicing, or (2) provide non-

routine task support for managerial, analytic and design functions that contribute to decision making. On another dimension, these systems are applied either: (1) in electronic hierarchies, that is, integrating tasks and functions across a pre-determined set of organisational boundaries, or (2) in electronic markets where multiple buyers and sellers conduct business by means of an electronic intermediary.

According to their analysis, Benjamin, R., et al (1990) present table 2.2 to depict the different classes of IOS applications together with an example of each. American Hospital Supply (Cell 1) and American Airlines Sabre System (Cell 2) are examples that have already been discussed in chapter one. However it is important to note that these cases are not as representative of the transaction processing dimension as they might previously have been. American Hospital Supply now provides information-intensive products, which allow their customers to perform purchasing management tasks, while American Airlines Sabre System now provides information services, which assist their customers to perform marketing decisions in the hotel and rental industries.

In Cell 3, CIGNA Corporation's Risk Information Services enable its corporate customers to access their files on the insurer's computer to do analysis that may help reduce insurance bills. In Cell 4, Planning Research Corporation's Realty System provides an electronic network that allows real estate agents to search for listings that they need for their customers. The system also provides a range of capabilities, which can identify potential buyers, calculate closing costs and analyse sales.

Table 2.2 IOS Classification and Examples

	Electronic Hierarchies	**Electronic Markets**
Transaction Processing	Cell 1 American Hospital Supply (AHS)	Cell 2 American Airlines Sabre System (AASS)
Task Support	Cell 3 CIGNA's Risk Info Services	Cell 4 Planning Research Corporation's Realty Systems

Source: Benjamin, R., et al. "Electronic Data Interchange: How Much Competitive Advantage?" Long Range Planning (23:1), Feb.1990, p. 31.

According to this study EDI systems are those which only do *transaction processing* and are applied as an *electronic hierarchies* mechanism. The ability to distinguish between these four classes of applications has solved the problem of loosely describing the electronic linkages by academics and practitioners (Benjamin, R., et al., 1990).

In an attempt to reason about electronic integration, Malone, T., et al., (1994) have introduced a framework to explain this phenomenon. Their framework analyses the cost dynamics behind adopting the market and/or hierarchy mechanism and how the decision depends on the trade off between "co-ordination costs" and "production costs". *Co-ordination costs* include the transaction costs of all the information processing necessary to co-ordinate the work of people and machines that perform the primary processes. These cost items could be selecting suppliers, negotiating contracts, paying bills for the "market mechanism", or managerial decision-making, accounting, and planning for "the hierarchies mechanism". *Production costs* include the physical or other primary processes necessary to create and distribute the goods and services being produced.

They have also introduced the concepts of "asset specificity" and "complexity of product descriptions" as factors influencing the trade off process. For *asset specificity*, it is said for example that the asset is site specific if it is available only at a certain location. In this case it is more likely to be acquired through hierarchical co-ordination than through market co-ordination. The *complexity of product description* refers to the amount of information needed to specify the attributes of a product in enough detail to allow potential buyers to make a selection decision.

The framework also shows how applying information systems or electronic linkages affects the behaviour of the cost items and the factors mentioned above in favouring one mechanism over another. The model illuminated why electronic connections change cost structures. This is done by introducing:

(1) the "electronic brokerage effect" concept that results from adopting the electronic markets scheme, which reduces co-ordination costs and

(2) the "electronic integration" concept that results from adopting the hierarchy scheme, which reduces production costs.

The electronic brokerage effect happens by introducing an electronic agent, which can contact many potential buyers and suppliers, screen out inappropriate suppliers and compare products quickly, conveniently and inexpensively. On the other hand, *electronic integration* uses IT to change - and leads to tighter coupling of - the processes that create and use the information.

Using IOS in business achieved a breakthrough in organisation theory, as it created what is called a "border-less organisation". The electronic linkages phenomenon is only one of the important phenomena resulting from advances in IT which caused changes in organisational practices. In the next section, a more general discussion of the effects of IT on the organisation will be presented.

2.3 IT and The Organisation

It is generally known that the effect of IT is always on time and place basics. The basics of any organisation are time and location features such as: departments, documents, branches, reporting systems, administrative procedures, managing across time zones, division of labour, management hierarchies, and organisational structures (Keen, P., 1993). If the role of IT is simply to reduce the information float, the organisation can be seen as an information machine designed to capture all the flow of information for communication, co-ordination, control, and the rest of the organisational functions (Peters, T., 1992). This is why business organisations at the present time are undergoing a profound reshaping process. Indeed it is probably the first time that such a fundamental change has occurred since the introduction of the "divisional organisational" which is still seen as typifying the modern organisation. This type of organisation has a command and order shape where the organisation consists of departments and divisions and in which there is an emphasis on decentralisation, central service staff, personnel management, etc. This scheme was first adopted in the 1920s by companies such as General Electric and DuPont and by the 1950s had become the standard for most organisations (Drucker, P., 1988).

By studying the recent usage patterns of IT applications and business organisation practices, it becomes possible to identify some of the features of the organisation of the future. These newer business practices have been pursued in order to overcome some of the main disadvantages of the traditional organisation model. The impersonality and excess weight of middle management, the rigid definitions of jobs, and the hierarchical and vertical communication lines are some of the

features that slowed down the flow of value in these organisations, and suppressed their flexibility towards their environment (Ostroff, F. and Smith, D. 1992).

According to recent literature descriptions, the organisation of the future will have the following characteristics:

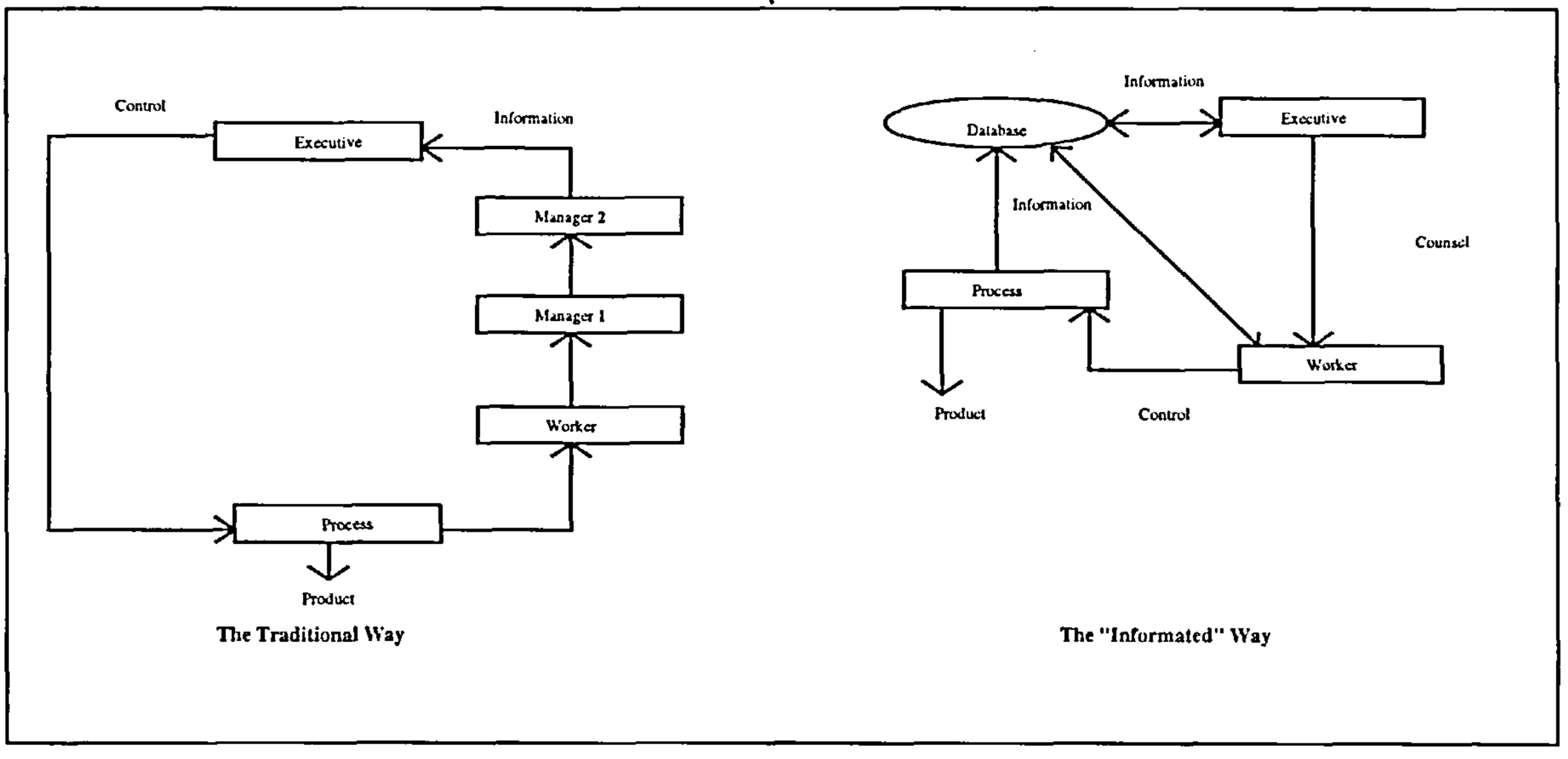
- It will be an information-based organisation (Drucker, P., 1988), in which the design will be centred around the flow of information. The flow will only go to those who need to be informed. Therefore there will be no need for middle levels to relay the data. This will reduce the levels of organisation by removing the excess levels that do not add value (Pinsonneault, A. and Kraemer, K., 1993).
- It will be a business processes centred organisation, rather than a functional departments driven one. The work in these processes will be done by teams carrying out their tasks in projects (Stewart, T., 1992; Piore, M., 1994; Teng, J., et al., 1994).
- It will be an organisation consisting of knowledge workers, in which the worker will be a generalist rather than a specialist (Smith, G., 1994). He/she will be able to do any kind of task in his/her project. This means that the organisation will be an unstable collection of people who have less loyalty to their departments (Carlyle, R., 1990; Drucker, P., 1988; Applegate, L., 1988).
- Learning, not control as in the traditional organisation, will be the main method of managing the organisation (Engardio, P., 1994). All the traditional departments will become training centres for the knowledge workers, whose needs for training will increase to keep up to date with the variable project tasks to be performed by the organisation.

These changes have been brought about due to advances in IT. For example:

(1) All the new ideas concerning reducing the middle levels and rationalising disseminating power - i.e. information - in the information based shape is obtained through avoiding giving power to those who do not need to be informed. These ideas could not have been put into practices without IT. IT makes it possible to deskill jobs, upgrade them, reshape workers distribution and drastically reduce the communication, co-ordination, and control functions which have up till now been the responsibility of the middle levels (Attewell, P. and Rule, J., 1984; Peters, T., 1992).

In order to demonstrate the main differences between the traditional organisation and the modern one, Benjamin, R. and Levinson, E. (1993), introduced figure 2.2 to discuss what they term "the informated organisation".

Fig. 2.2 Organisation: the Traditional and the Informated way.



Source: Benjamin, R. and Levinson, E., "A Framework for Managing IT-Enabled Change," Sloan Management Review, 34, Summer 1993, P. 24.

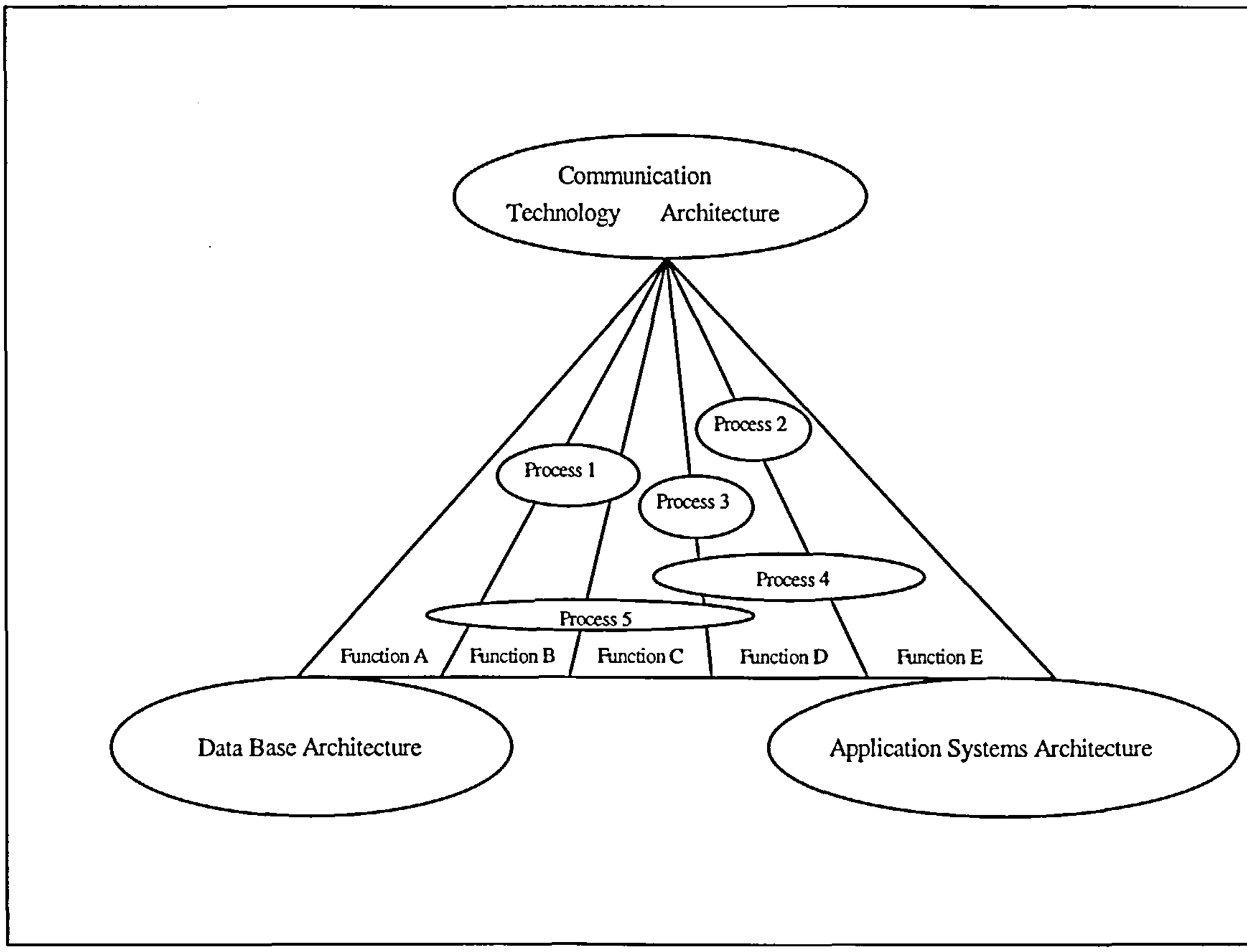
This has been further discussed by Gurbaxani, V. and Whang, S., (1991), by examining the impact of IT on organisation size. Their framework is built on some existing organisation theories such as the "agency theory" and "transactions cost economies". *Agency theory* views the organisation as an agency relationship built on a set of contracts among self-interested agents (employees). As a result of this agency status different agency costs are incurred such as monitoring, bonding, and residual loss. *Transactions cost economies*, analyse the relationship between the organisation and the market, and the costs resulting from this relationship. The framework shows how IT affects the cost structure and behaviour of "agency" and "transaction" in a way that gives the organisation the ability to reduce its size while keeping the same - or more - economies of scale levels.

(2) A process-project scheme of organisation is inconceivable without an IT platform that provides the monitoring and communication functions required to support this kind of flexibility. This kind of organisation has a continuously changing policy towards its

information access rights, communications channels, and decision empowering schemes. This would not be possible in a traditional organisational structure. The system needed here might need a time, place and people independent configuration, which is one of the unique achievements of IT. The purpose of having such a flexible shape is to make it possible to adapt to any circumstances. The high level of decision-making decentralisation aims to give the knowledge worker the power to act fast when it is needed.

Figure 2.3, as presented by Teng, J., et al. (1994) to model the planning for business process redesign, shows how IT architecture helps achieve the multi-functions business processes organisation.

Fig. 2.3 A Model for Planning Business Process Redesign



Source: Teng, J., et al. "Redesigning Business Processes Using Information Technology," Long Range Planning, (27:1), Feb. 1994, p.99.

The Gurbaxani, V. and Whang, S. (1991) study mentioned earlier also explains the impact of IT on the allocation of decision making authority. Their framework discusses two effects of IT on

decision allocation. First, since IT enables organisations to process decision-relevant information in a more cost effective way, decision rights might move *upward* in the organisational hierarchy, leading to a more *centralised* management. Second, since IT provides the ability to improve monitoring and performance measurement, decision rights might move *downward*, leading to a more *decentralised* organisation.

(3) One of the important characteristics of the new organisation model is its fluid borders. This concept has been discussed in the previous section about electronic connections. There is a growing opinion now that organisations, due to IT capabilities, will always be a part of a bigger organisation or contains some smaller ones (Stewert, T., 1992; Konsynski, B., 1993; Konsynski, B. and McFarlan, F., 1991).

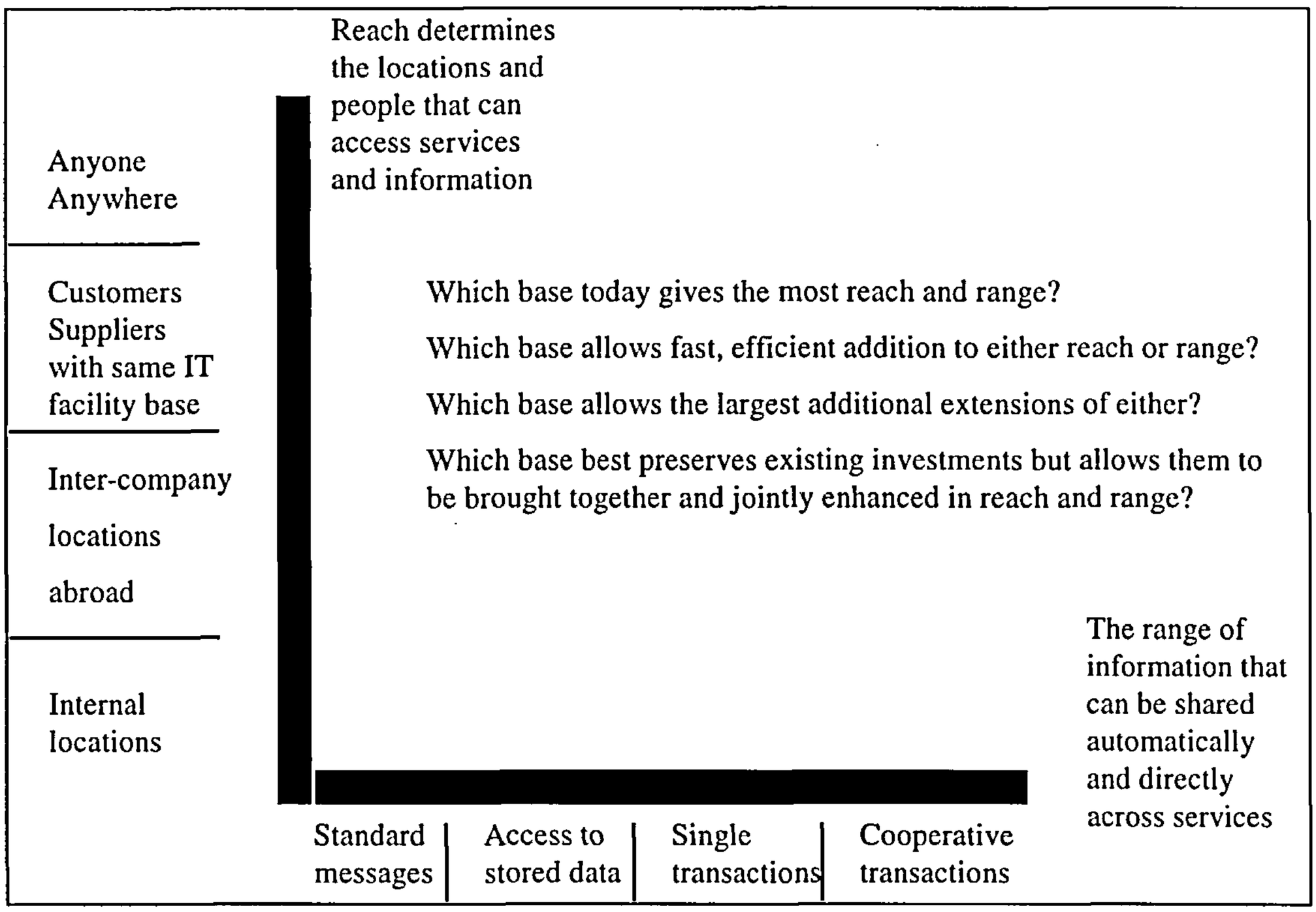
(4) Workers, leaving aside for the moment the menial aspects of their job, will be concerned with capturing the conceptual content of their tasks in IT algorithms, and merging the information activities with those concerned with production ones. They will become so called knowledge workers. Their role will be to lead the technology. This will not be easy, because the infrastructure that they will deal with will contain all the knowledge and expertise of the workers of the organisation and the history of the organisation. Their work will be more in creative decision making together with returning information to the system after turning it into more knowledge.

It becomes clear why the learning process will be the corner stone of the organisation of the future. Keen, P., (1993) claims that organisation design will be a function in the IT infrastructure. In supporting this claim, he has introduced the concept of "the extent of reach and range", as an IT design tool, that underpins the functions of the organisation. As in figure 2.4, *the reach dimension* determines the locations and the people that can access services and information. *The range dimension* determines the information that can be shared automatically across services and systems.

This may mean that in order to bring a change into an organisation, it will be necessary to change its policy towards IT since it is this that captures all the communication, monitoring, and co-ordination functions. It is also important to notice that having this flexible information based structure, as discussed in the previous analysis, in order to support a divisional hierarchical

organisation style means having two schemes for the same functions which means at best, more bureaucracy (Crownstone, K. and Malone, T., 1994; Von Simon, E., 1990).

Fig 2.4 Reach and Range Dimensions of the IT Infrastructure



Source: Keen, P. "Information Technology and the Management Difference: a Fusion Map," IBM Systems Journal (32:1), Jan. 1993, pp. 17-39.

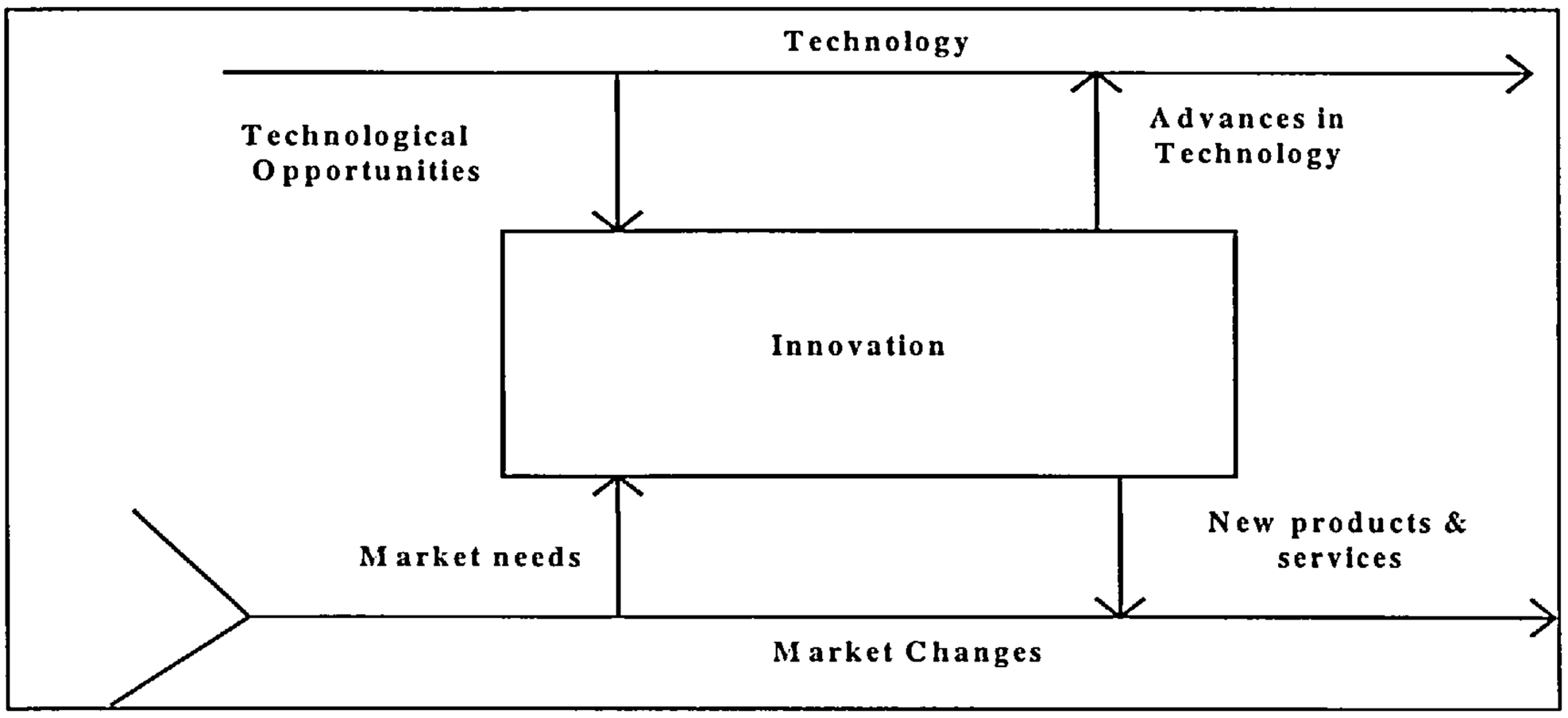
2.4 IT and Competition

The aim of this section is to discuss the main changes in the present nature of competition in order to understand the challenges facing businesses on the one hand, and the role of IT in these changes on the other.

Scott Morton, M. and Allen, T. (1994), claim that the rate of change in information technology has been estimated to be 20 - 30 percent per year. It is this fast pace that made the horizon so close. As mentioned in the economic overview (section 2.1), the changes brought about in the economy as a result of industrialisation took almost a century to come into effect while those brought about as a result of the introduction of IT took only 30 years to come into effect. It is

also generally agreed that markets are changing at a rate rarely experienced before. Needs and tastes are changing and entirely new markets are opening in both established geographic areas and entirely new ones.

Fig 2.5 Innovation as a Response to Changes in Market and Technology



Source: Scott Morton, M. and Allen, T., Information Technology and the Corporation of the 1990s, New York, Oxford University Press, 1994.

Scott Morton, M. and Allen, T. (1994), showed that the two factors previously mentioned, technology and market changes, as shown in figure 2.5, are the driving factors to more innovative organisations. As markets change, firms are driven to innovate with new products and services. On the other hand, changes in technology create new opportunities to be exploited. The business practices that resulted from these kinds of innovative responses – which further complicated competition - are described below.

- At the present time business units tend to rely more on IOS developments and alliances to enhance their competitive positions. Companies using IOS increased from 6% a year to around 22% (Main, J., 1988). Such arrangements can make small companies look, feel and act big, reaching for customers beyond their grasp. Also, it makes large companies feel small and close, enabling them to target and service custom markets (Konsynski, B., 1993). This trend will intensify competition for many reasons. For example using electronic markets and/or hierarchies will reduce the number of vendors that companies deal with, as buying behaviour will be more rational. It will also lead to a more service oriented competition. The

borders between industries will blur as these systems provide the capabilities for more products and services that are information intensive.

- As IT made the horizon closer, time became one of the main factors in competition. IT reduced the time taken in decision making, organisational learning and in adapting to the environment. Haeckel, S. and Nolan, R., (1993) claim that IT infrastructures speed up the sensing and orienting phases in the decision making cycle and enable management to empower people in the front line of the organisation to accelerate the act phase of the decision making cycle. "The successful competitors in this kind of competition are those who move quickly in and out of products, markets and sometimes even entire businesses- a process more akin to an interactive video game than to chess" Peters, T., (1992) explains.

- All these technological practices have changed the approach of management when formulating corporate and business strategies. The classic competitive strategies framework of Porter, M. (Porter, M. and Millar, V., 1985) - "cost leadership", "differentiation" or "focus advantage" - might not be the way that executives of the nineties should think as was the case in the eighties. Venkatraman, N. (1994) in discussing this point states that: "I have a growing feeling that the business logic of the 1970s and 1980s - exploiting experience curve effects for achieving low relative cost through vertical integration - may be inadequate for the 1990s and beyond, because the emerging business environment calls for a strategy based on three intertwined elements: low cost, high quality, and fast and flexible response to customer needs."

Porter's schemes, in this - what is sometimes called - "ephemeral environment" (Peters, T., 1992), might be like designing a perfect strategy for an unsuitable changing environment. The new line of thinking now is in developing flexible capabilities to pursue a new generation of strategies such as "customisation" or "continuous improvement" (Boynton, A., et al., 1993; Boynton, A. and Victor, B., 1991; Boynton, A., 1993).

2.5 IT and Business Strategy.

The aim of this section is to discuss how IT affects the way executives think about their firms' business strategy. The earliest ways of dealing with IT, was to bring the technology to the organisation first and then think about how to use it (Carroll, J. and Perin, C., 1994). This

approach was adopted because it was thought that IT would be effective in helping firms at any rate, in their information activities. However it proved to be very costly. After a while it became clear that what was needed first was commitment on the part of top management. Only then could an IT strategy be formulated to support the business. A new style of information executives was then sought, which resulted in the requirement for a "chief information officer" (Keen, P., 1993). Now a far more interdependent alignment between business planning and IT planning is called for.

The awareness of the radical nature of IT, as discussed previously, brought many new ideas to the area of business strategy. Haeckel, S. and Nolan, R. (1993) claim that IT makes it possible for management to replace the traditional "make and sell" pattern, the business philosophy of the industrial era, to "sense and respond" to the changing environment. By introducing this new way of thinking business strategy has become what Haeckel, S. and Nolan, R., call "managing the business informational representation".

Following this line of thinking a fusion must be made between business, technology, and people to achieve this "sense and respond" mode. Thus, instead of designing a business vision to the firm and, in a later step, passing it to the IT executives to help achieve it, it will be imperative to design a more comprehensive vision. IT knowledge anchors must be in the mind of any executive when formulating business strategy since this is a more appropriate view of IT alignment (Henderson, J. and Venkatraman, N., 1994; Henderson, J. and Venkatraman, N., 1993; Keen, P., 1993; Broadbent, M. and Weill, P., 1993).

The new approaches adopted by society and organisations and by those concerned with competition and strategy have resulted in a new wave of studies focusing on reviewing current thinking in some business areas such as re-engineering business processes and re-designing organisational structures (Keen, P., 1993). These studies have a different purpose from those carried out previously. They do not seek to enhance current operations or structures as in Organisational Development (OD) studies, instead they may require the actual removal of existing structures so that totally new process designs may be considered (Hammer, M., 1991). It is clear from the literature, that there is an interdependency between business and IT thinking. IT is the driving force of this era only because people involved in business have started to understand its role and capabilities.

2.6 IT use Frameworks

In the previous sections of this chapter, the significant role of IT in business has been established especially its capability of achieving a strategic impact. However statistical measurements of the relationships between IT investments and productivity did not show much improvement in the eighties (Schnitt, D., 1993; Gross, N., et al., 1995). The reason behind this is in the way IT was deployed at this time. For example "A computer for each desk", was one of the slogans adopted. If the overselling and inappropriate application of IT caused such difficulties in developed countries, the impact could be worse in LDCs, where such expensive trials cannot be absorbed so easily. In the following sections, therefore, the concerns will be on how IT can produce strategic advantage and what frameworks and principles are available to guide practitioners in exploiting IT and avoiding these pitfalls.

2.6.1 Classical Methods

These are the methods commonly known in the literature and/or used in industry (Lederer, A. and Sethi, V., 1992; Premkumar, G. and King, W. 1991; Boynton, A. and Allen, B., 1991; Goldsmith, N., 1991).

- Rockart, J. (refer to Sprague, J. and McNurlin, B., 1993), identifies a set of organisational issues that are viewed by senior managers as *Critical Success Factors (CSFs).* These can be used to prioritise IT resource allocations as well as to identify new opportunities for the use of IT to support major organisational endeavours.

- Porter, M. and Millar, V. (1985), reused Porter's frameworks (Porter, M., 1980; 1985), namely: The Value-Chain, the Industry's Five Competitive Forces, and the classification of Competitive Strategies. *Value-Chain* views an organisation as a series of input, transformation and output stages, where it maybe possible to enhance an organisation's competitive position This is achieved by identifying "information intensive" locations on the value-chain, and using IT to enhance them.

- McFarlan, F. (refer to Ives, B. and Learmonth, G., 1984), used *Porter's Industry's Five Forces Analysis*: customers, suppliers, substitutes, potential entrants, and rivals, to look for IT opportunities through analysing them.

- Wiseman, C., (1988), developed *The Theory of Strategic Thrusts*. This uses a grid known as a generator of IT strategic options that allows a manager to analyse three strategic targets: suppliers, clients, and competitors, with five paths to competitive advantage: differentiation, cost reduction, innovation, growth, and alliance.

- Ives, B. and Learmonth, G. (refer to Sviokla, J., 1992), introduced the *Consumer Resource Life Cycle* as a model for analysing all the phases of the relationship between the firm and its customers.

2.6.2 IT Planning Methodologies

Due to the need for a means of implementing these methods, the support by a computer environment to handle the ream of reports, charts, drafts, etc and the possible need for synthesising more than one traditional method, many vendors developed software packages for this purpose. Some of the famous ones were identified by (Hackathorn, R. and Karimi, J., 1988; Lederer, A. and Sethi, V., 1991). These are:

- *IBM's Business System Planning (BSP)* develops an organisation's data architecture based on existing data flows and repositories. BSP can be used to identify an organisation's fundamental data-related opportunities, needs or bottlenecks. Opportunities for both short-term and long-term information systems are identified. The management of the organisation is included in the planning process and is required to deal with the prioritisation issues related to the allocation of IT resources (Sprague, J. and McNurlin, B., 1993).

- *Information Engineering (IE)* by Knowledge Ware, is one of the most commonly used packages. It provides techniques for building enterprise models, data models and process models. These help form a comprehensive knowledge base, which can be used as a basis for creating and maintaining information systems (Martin, J., 1989; 1990).

- *Method/1* by Anderson Consulting, consists of ten phases to facilitate a comprehensive life cycle that addresses information planning, design, implementation, and maintenance (Reed, M., 1993).

- *PROplanner*, by Holland Systems Corp., analyses major functional areas within an organisation and then defines a business functional model. A data architecture is derived from the business functions requirements, into generic data entities and broad data bases (Lederer, A. and Sethi, V., 1991).

2.6.3 Business Process Re-engineering

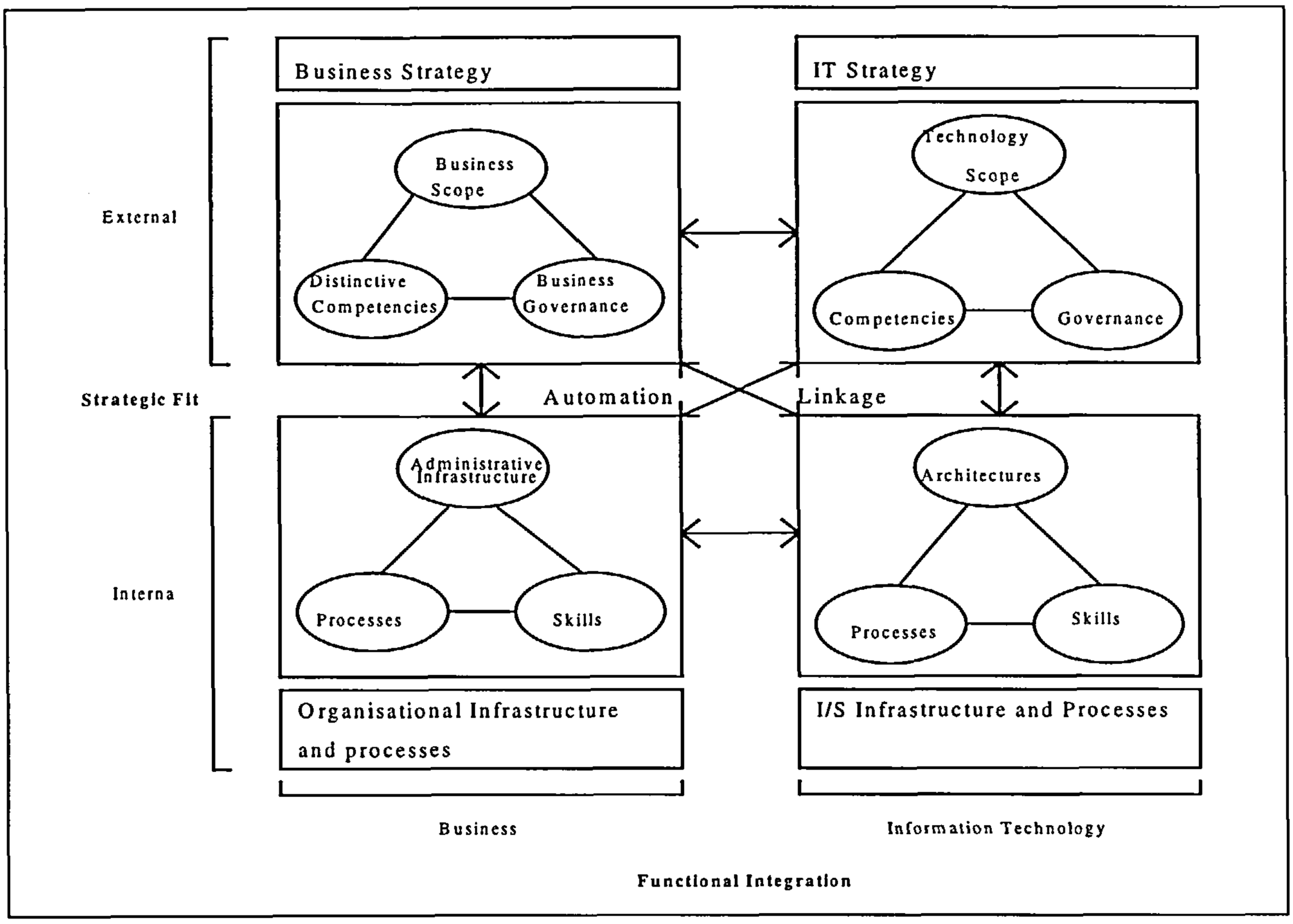
Re-engineering is a distinguished approach that can bring about radical improvements in business processes. The main difference in re-engineering is its focus on business processes rather than functions, as is the case with the other methodologies in the literature. By determining the steps or tasks carried out in a process wherever their functions are, the data flows between them and the outcome of the process, IT-enabled ideas can then be used to reduce the number of steps in the process, increase control and collaboration, and reduce the number of employees involved (Hammer, M., 1991; Schnitt, D., 1993; Grover, V., et al., 1994; Taylor, R., 1993).

Davenport, T. and Short, J. (1990) were the first to introduce an elaborated framework to conduct an IT-enabled re-engineering project, which they called "The New Industrial Engineering". This framework consists of five steps: develop business vision and process objectives, identify processes to be redesigned, understand and measure existing processes, identify IT levers, and design and build a prototype of the process.

Teng, J., et al. (1994) introduced another model to analyse the corporate strategic planning, and the organisational and cultural contexts of the re-engineering process. Fiedler, K., et al., (1994), added two new tools: one to measure the *degree of mediation*, which is the extent of such sequential flow of inputs and outputs among the participating functions in the business process and one to measure the *degree of collaboration*, which is the information exchange and mutual adjustments between the different steps in the process. Venkatraman, N. (1994) and Davidson, W. (1993), showed the importance of classifying the different levels of business transformations beyond re-engineering. For example Venkatraman, N., identified a five level model for this process. According to the model: "localised exploitation" and "internal integration" are the first two levels that can be achieved within the borders of the firm. Most of the transformation cases introduced in the literature were in these two levels. The other three levels that enable the firm to achieve a transformation across its borders, are "business process redesign", "business network redesign" and "business scope redefinition".

2.6.4 Alignment Models

Fig 2.6 Strategic Alignment Model's Domains

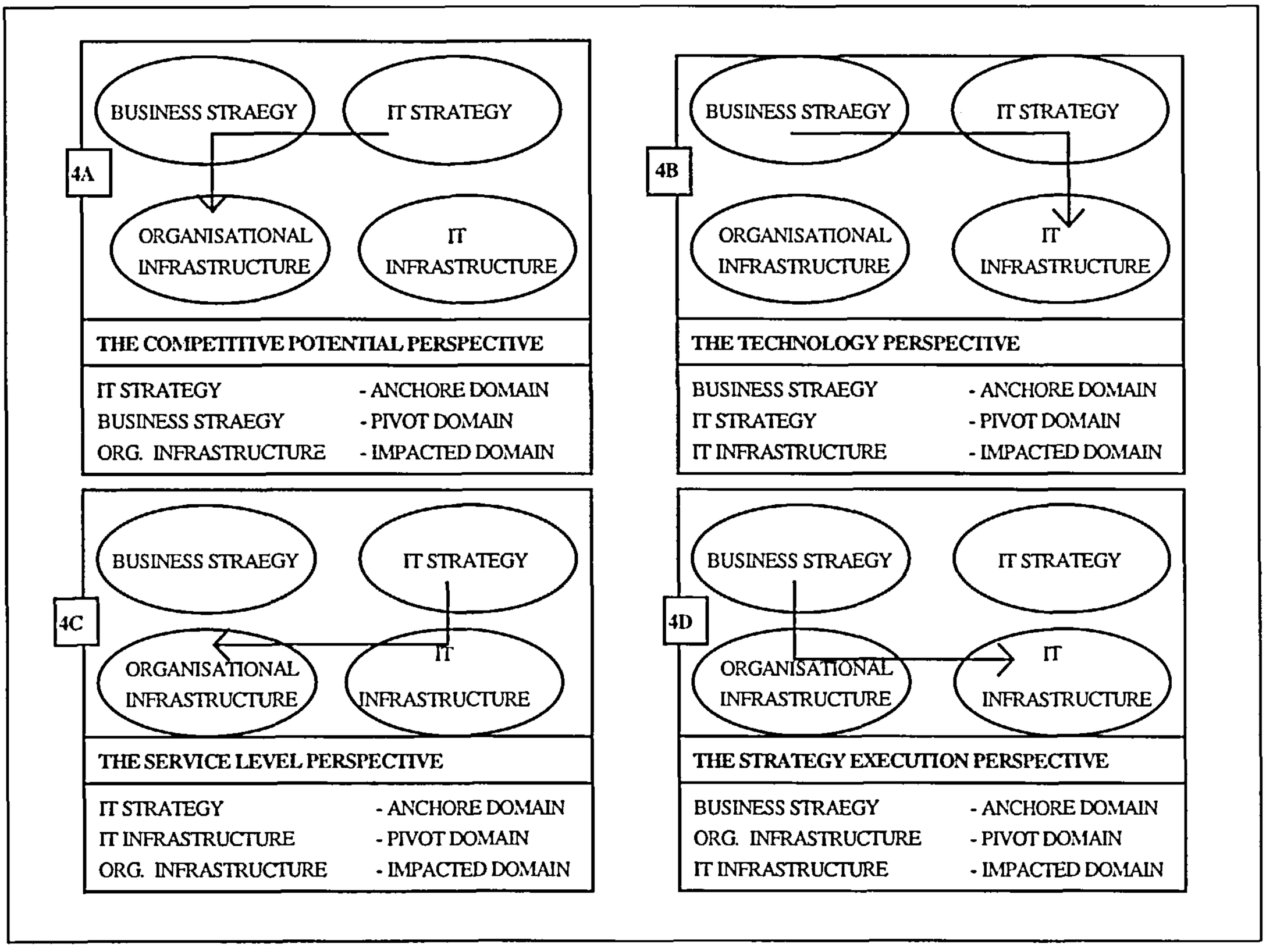


Source: Henderson, J. and Venkatraman, N. "Strategic Alignment-Leveraging Information Technology for Transforming Organisations," IBM Systems Journal (32:1), Jan. 1993, p.7

As it became clear that the alignment between business strategy and IT strategy is a critical success factor to any IT planning methodology, more focus was directed toward this point. Many models were introduced (Earl, M., 1989; Broadbent, M. and Weill, P., 1993; Henderson, J. and Venkatraman, N., 1993; 1994) to address this issue. For example, Henderson, J. and Venkatraman, N., (1993) in their *Strategic Alignment Model*, determined four fundamental domains of strategic choice: business strategy, information technology strategy, organisation infrastructure, and information technology Infrastructure.

Figure 2.6 presents these domains and their components. From these domains they derived four perspectives of alignment as depicted in figure 2.7: strategy execution (box 4D) and technology transformation (box 4B) as business led perspectives; then competitive potential (box 4A) and service level (4C) as technology driven perspectives.

Fig 2.7 Strategic Alignment Model's Perspectives

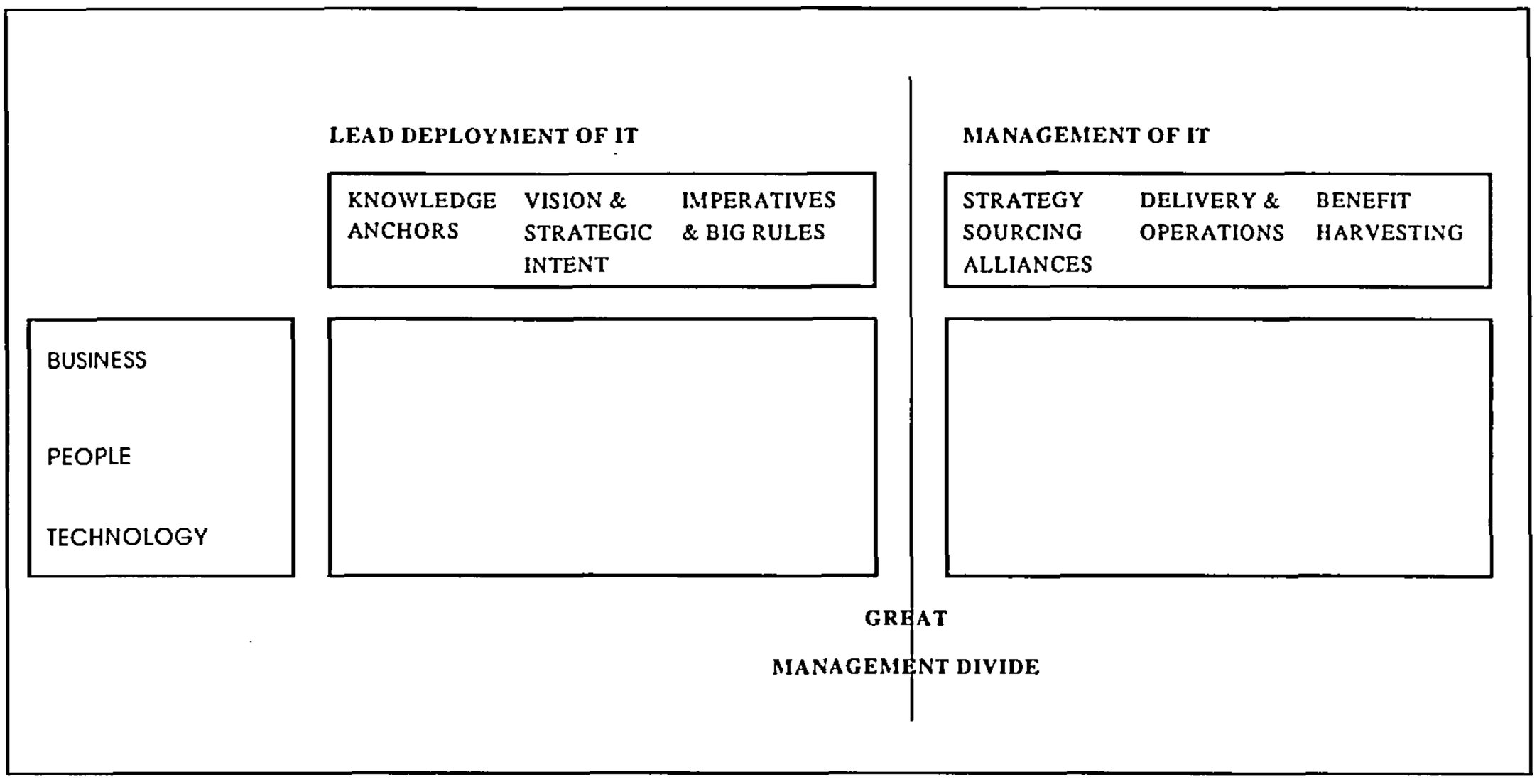


Source: Luftman, J., et al. "Transforming the Enterprise: the Alignment of Business and Information Technology Strategies," IBM Systems Journal (32:1), Jan. 1993, p. 202.

The distinction between the business led alignment path and the technology led perspective, as modelled by Henderson, J. and Venkatraman, N. (1993), is widely accepted in the literature (Earl, M., 1989; Broadbent, M. and Weill, P., 1993), as many of the success stories of IT-enabled competitive advantage were not products of strategic planning. Although the IT led alignment perspective (sometimes called the serendipity approach) sometimes works, it supposed not to be modelled as a way of thinking.

Drucker, P. (1994) claims that a sudden unexpected success, as in the case of using the serendipity approach, most probably means that the top management's "theory of business" needs to be changed. The theory of business is the combination of the top management assumption about the environment – of which technology is one component - the company's mission, and the core competence that management sees necessary to pursue to achieve the mission of the organisation.

Fig 2.8 The Fusion Map

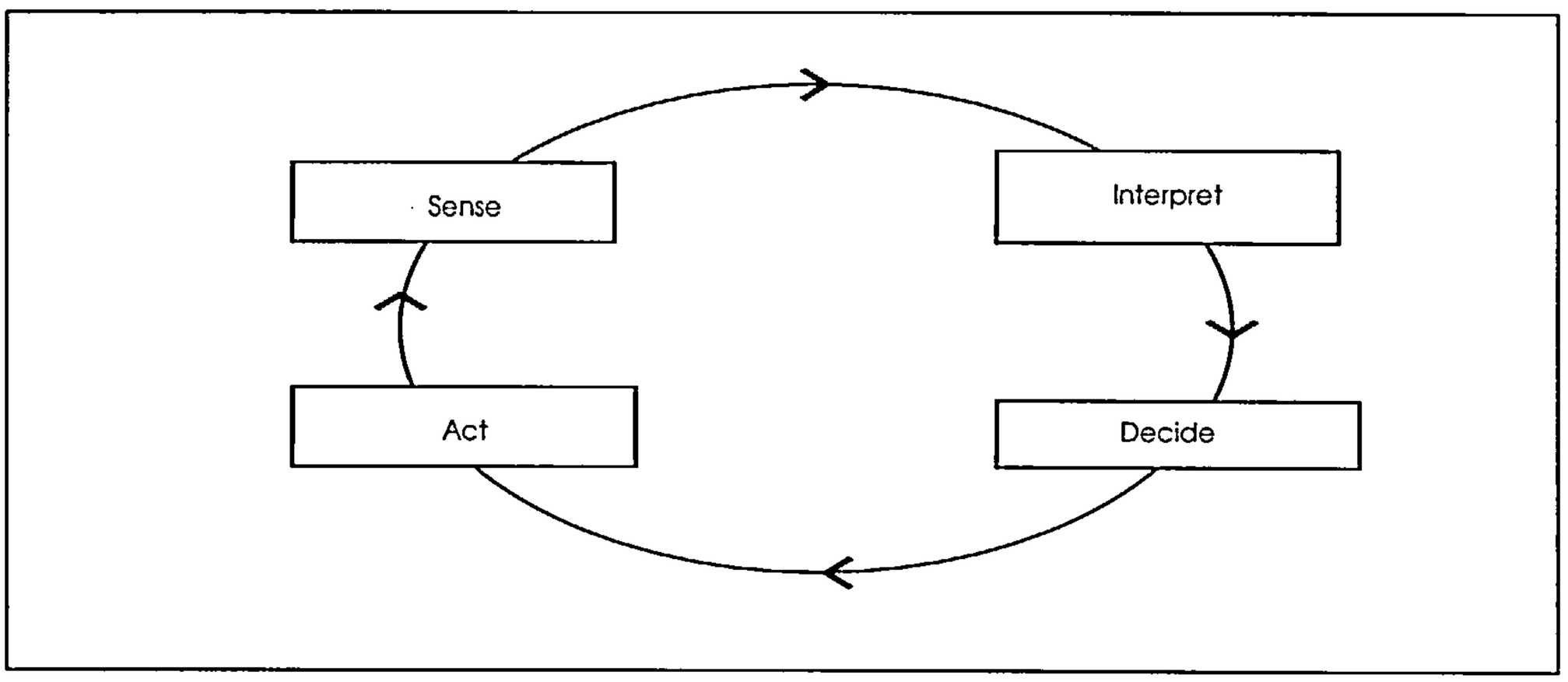


Source: Keen, P. "Information Technology and The Management Difference: A Fusion Map," IBM Systems Journal (32:1), Jan. 1993, p. 20

Keen, P. (1993), introduced the" *Fusion Map"*, in which he sees that people, business, and technology must be fused together in leading and deploying IT. This fusion must be in the knowledge anchors of top management, when they think about the vision and the strategic intent of the corporation as shown in figure 2.8. In this model, Keen has brought the idea of "strategic intent" into the area of information technology, which will move IT planning focus to building the capabilities required to outpace competitors in creating a series of competitive advantages, not only looking for an IT opportunity to achieve a single competitive advantage at a time (Hamel, G. and Prahalad, C., 1989).

Hackel, S. and Nolan, R. (1993) see IT as the enabling technology required to enhance managing the firm as a whole. They adapted the learning loop used in the organisational learning studies (Which focus on the way people in a company learn) as shown in figure 2.9, to introduce the concept of "institutional learning". They define this concept as being "the process by which information change, be they data models, forecasting models, or procedural models". From this approach, Hackel, S and Nolan, R. (1993) recommend analysing the "degree of complexity" facing the organisation, which is a function of how many information sources it needs, how many business elements it must co-ordinate and the number and type of relationships that exist among those elements.

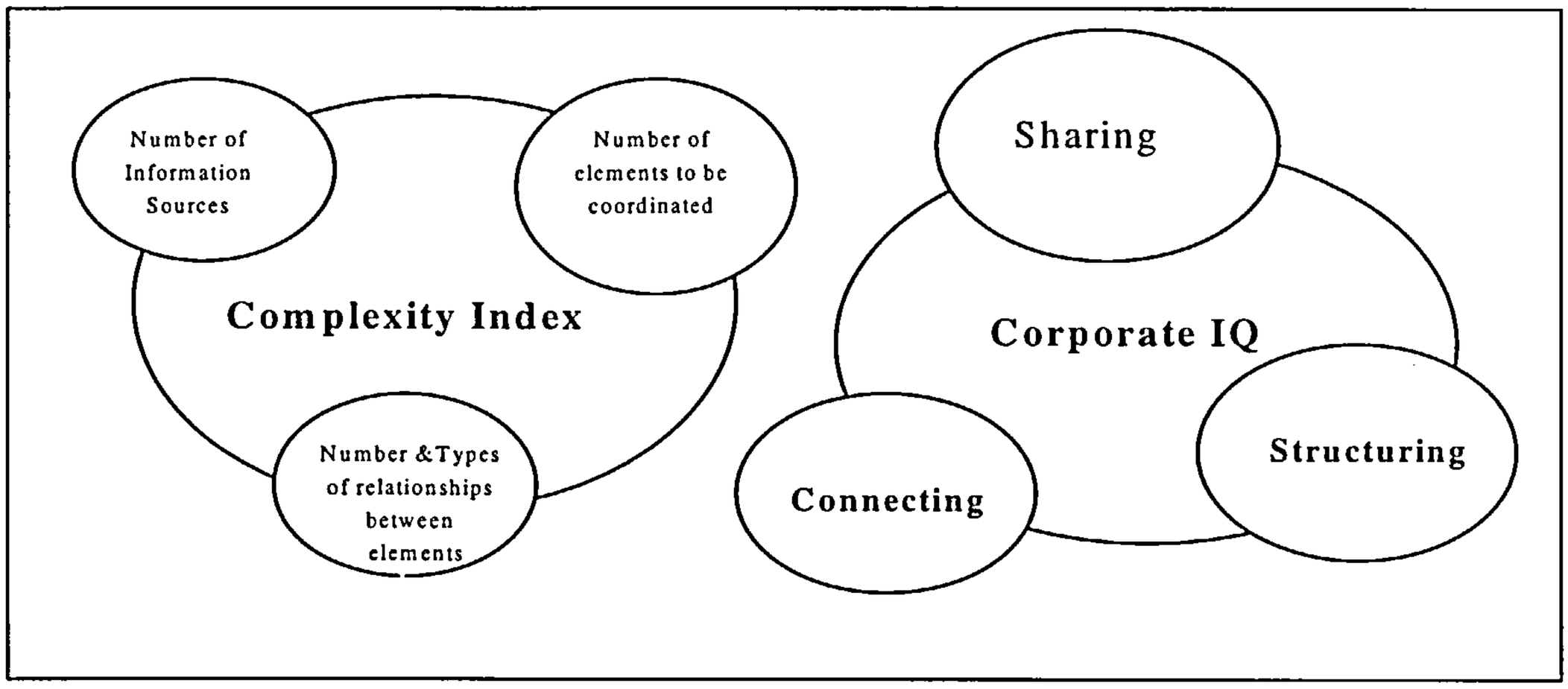
Fig 2.9 The Learning Loop



Source: Haeckel, S. and Nolan, R. "Managing By Wire", Harvard Business Review, Sept.-Oct. 1993, p. 207

The role of IT as shown in figure 2.10, in their model is to create an institutional ability - they called it "corporate IQ" - to cope with the degree of complexity mentioned earlier. Corporate IQ in this model, was explained in terms of connecting, sharing, and structuring abilities. *Connecting* means the degree to which the IT platform links information sources, media, locations, and users. *Sharing* means the degree to which the IT platform facilitates the co-ordination of team works, integration, and extended scope. *Structuring* means the way in which the IT platform classifies, organises, relates, models, and uses data in a meaningful way that help human beings become capable of thinking.

Fig 2.10 The Complexity Index and Corporate IQ



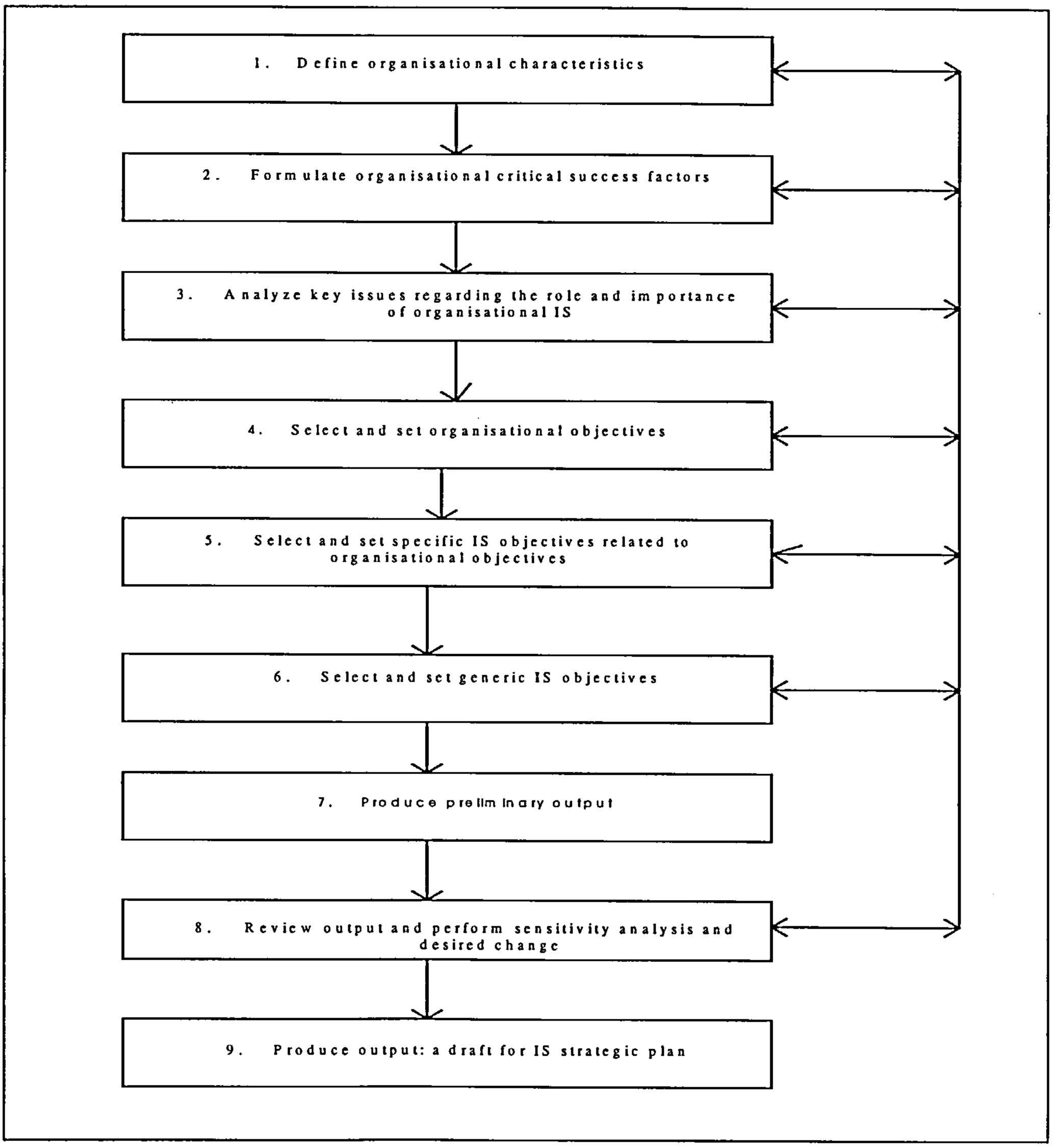
Source: Haeckel, S. and Nolan, R. "Managing By Wire", Harvard Business Review, Sept.-Oct. 1993, p. 209

2.6.5 Frameworks of the Frameworks

Another trend, is to form a framework out of synthesising more than one of the pervious models. Zviran, M. (1990), introduced a framework called Information System Strategic Planning Support System (ISSPSS). The framework is a simple decision support tool that managers can use to review a group of IT planning issues and methods in pre-defined steps. For example as in figure 2.11, the framework could help executives review their organisational characteristics, critical success factors, their business location in the McFarlin Strategic Grid[1] then the company's strategic objectives, and so forth.

[1] This grid helps to determine the significance of IT to a specific business (see McFarlan, F., et al., 1983)

Fig 2.11 Information System Strategic Planning Support System (ISSPSS)

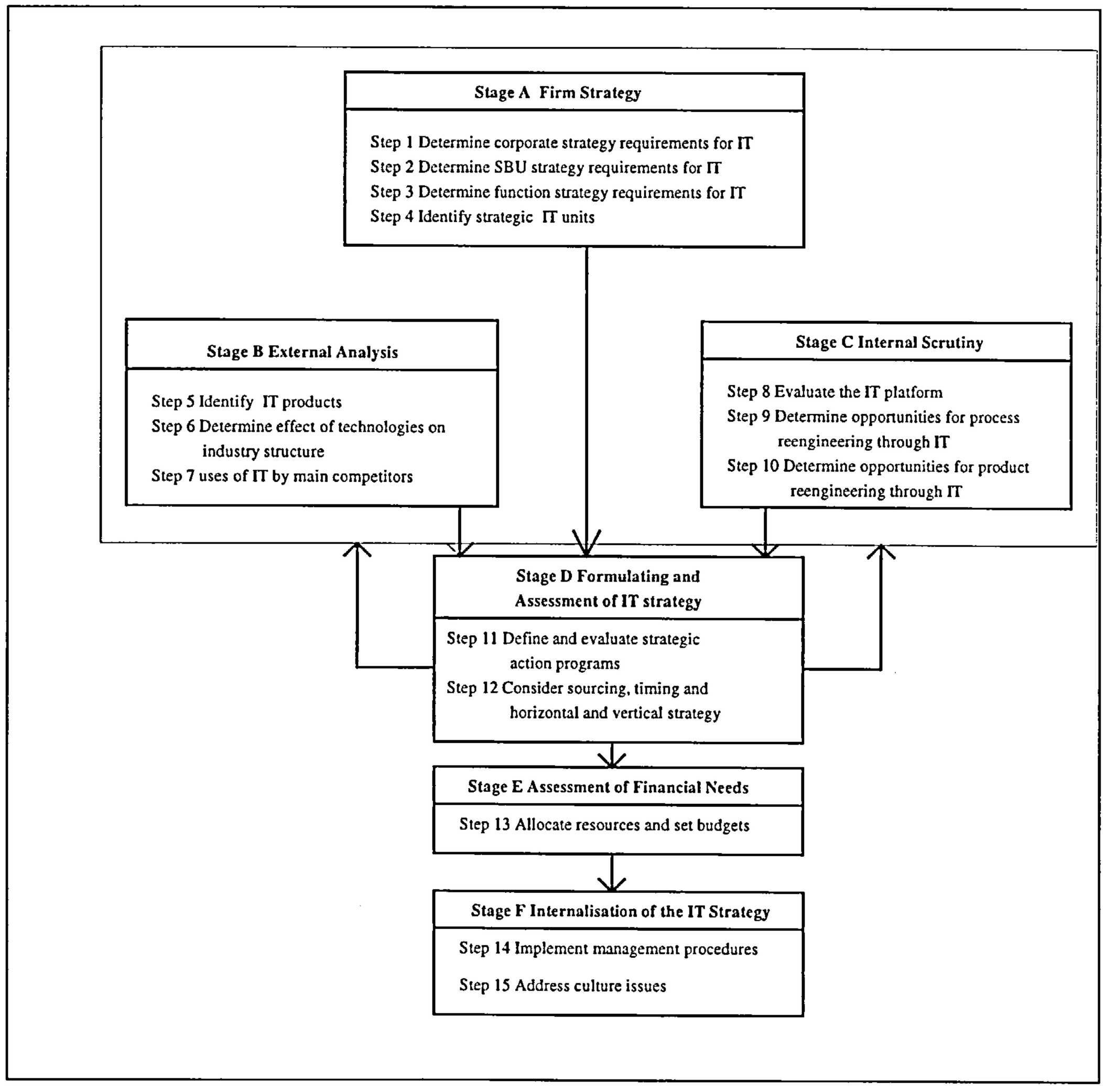


Source: Zviran, M. "ISSPS: A Decision Support System for Information Systems Strategic Planning," Information and Management, 19, 1990, p. 347

Kovacevic, A. and Majiluf, N. (1993), have assembled another framework from a number of methodologies for IT strategy management. As in figure 2.12, it consists of six stages: firm

strategy, external analysis, internal scrutinising, formulation and assessment of IT strategy, assessment of financial needs, and internalisation of IT strategy.

Fig 2.12 An IT Strategy Management Framework



Source: Kovacevic, A. and Majiluf, N. "Six Stages of IT Strategic Management," Sloan Management Review, Summer 1993, p. 79

2.7 Developing a Strategic Framework: The Need for the Organisational Context.

Many models or frameworks have been presented in this chapter. The intention has been to understand how IT can produce strategic advantage. Most of the frameworks presented have proved useful in practice and research areas. Obviously some may appeal differently for different managers and each may vary in its appropriateness for different firms or sectors. The previous presentation of IT use frameworks demonstrated that IT can be exploited for strategic advantage in two main ways:

- IT can support business strategy. For example, IT applications can be aligned with one of Porter's three generic strategies (Porter, M., 1980).
- IT can create strategic options. For example, applications can spearhead quite revolutionary approaches to either the market place or internal operations.

However the question now is: to what extent can we guarantee a strategic use of IT, if we apply these models? A strategic use of IT here means that the decisions concerning acquiring, deploying, exploiting and sustaining computer-based information systems are aligned with the firm-wide strategy. The main concern of these models and frameworks is to provide guidelines that help to identify the information systems that have the potential to achieve a strategic competitive position for the business unit. However the present business environment poses many challenges (as explained in sections 2.3 - 2.5) that complicate the process of IT use. An important strategic concern that has not been explicitly addressed in these frameworks, is the organisational context of IT use. Therefore, merely searching for IT-enabled strategic applications may oversimplify the process by ignoring this crucial organisational context.

As a consequence, the starting point for a framework-based strategic development process should be an understanding of the organisational context of IT use, and a framework that itself helps to achieve this understanding in a LDC context is a key concern in this thesis. In the next chapter the main IT-related organisational practices and their influences on the levels of SITU will be explored. Previous studies relating to this issue will be presented and the conceptual prior-construct of the framework of this thesis will be discussed.

CHAPTER THREE

Developing the Research Framework

The purpose of this chapter is to present and define the constructs and research propositions of which the initial conceptual framework is composed. The framework is used to determine the factors that affect the level of SITU in the Egyptian banks, which are an example of an information technology dependent organisation in a LDC case study. It also describes how these factors were measured, analysed and related to the IT use factor. First an introduction to the development of the research framework and propositions will be presented. Then the main constructs of the framework that is the dependent variable (the degree of sophistication of IT use) and the independent variables (firm-wide planning, IT planning, CE support, managerial IT knowledge, IT and business integration, IT organisational design and IT management climate) will be discussed.

3.1 Development of Research Framework and Propositions

As shown in the previous chapters, a significant change in the role of IT in business, from merely being a tool for processing transactions to a critical resource that can be used to enhance the organisation's strategic position, has been recognised and acknowledged by most managers. Consequently, levels of SITU have increased significantly. However, these levels of IT use have varied among organisations for many reasons. Many researchers have attempted to identify what the causes of these variations might be. For example, Grant, G., (1996) explained that "Because of the natural heterogeneity of business firms and other organisations, it should not be surprising

that the results of IT investments are asymmetrical across firms. Firms have differential capabilities to absorb and assimilate IT".

Recent studies in the strategic use of IT have devoted much effort to exploring the capabilities required for IT-enabled competitive advantage to be sustained (Ross, J., et al, 1996; Mata, F., et al., 1995). Most of the research studies relied on the "resource-based view of the firm" in order to understand how organisations build IS capabilities.

The resource-based view of the firm is based on two underlying assertions, as developed in strategic management theory (Teece, D., et al., 1997; Mata, F., et al., 1995):

(1) that the resources and capabilities possessed by competing firms may differ (resource heterogeneity);
(2) that these differences may be long lasting (resource immobility).

This theory is useful in the field of strategic management, which is a discipline concerned with the study of the sources of sustained competitive advantage for businesses.

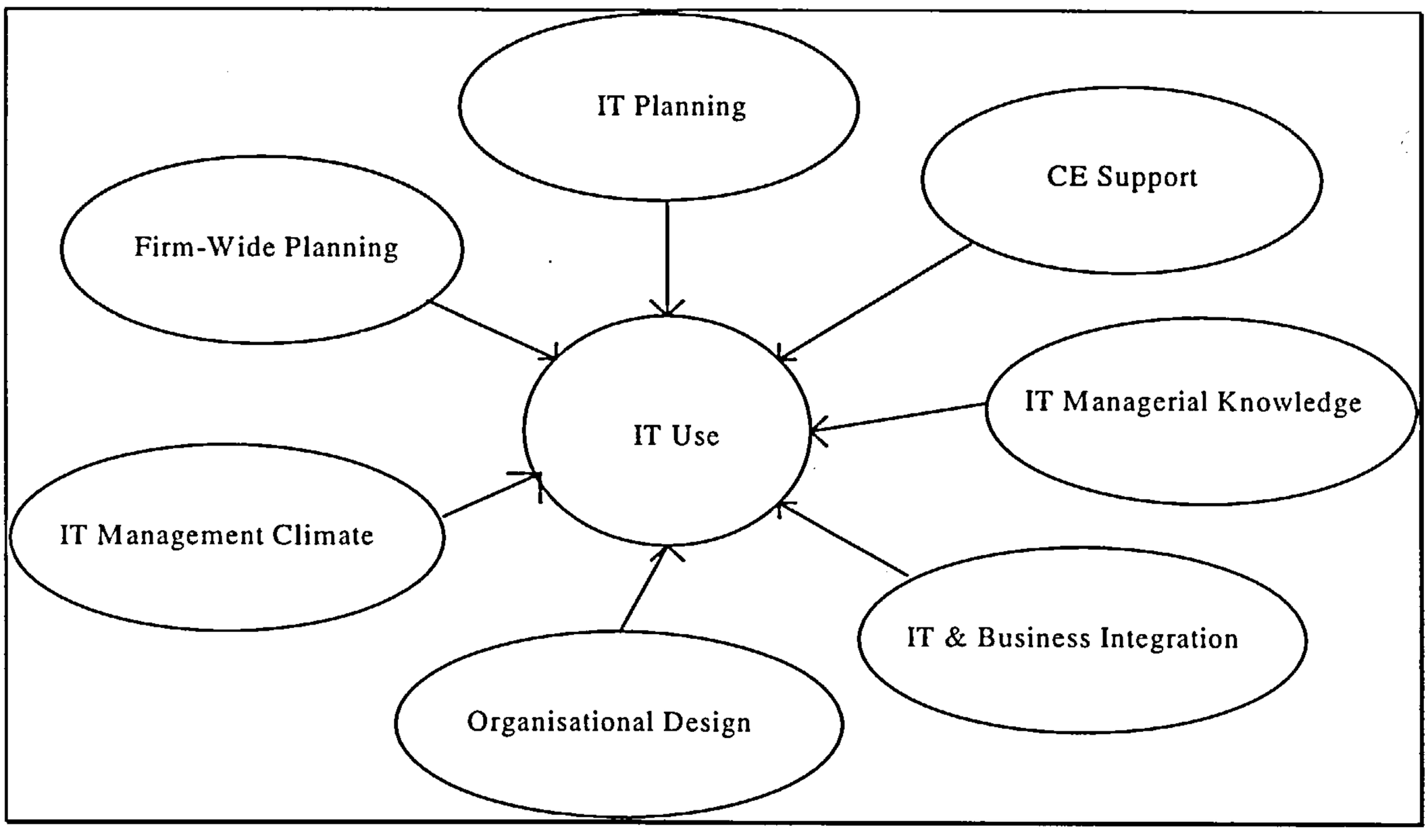
This is because the conditions of resource heterogeneity and resource immobility are connected to the sustainability of Competitive Advantage (CA) in the following way. If a firm possesses a resource or capability that is possessed by numerous other competing firms then that resource can not be a source of CA. On the other hand, if a firm possesses a resource or capability that is not currently possessed by competing firms, the condition of *resource heterogeneity* is met and a firm may obtain at least a temporary CA. This advantage could be sustainable if the second resource-based condition, the condition of *resource immobility*, is met as well.

As mentioned earlier, many researchers in the IS field have used this theory to help executives build their organisational IS capabilities. However it was noticed that there is no solid consensus on the difference between the two terms, resources and capabilities. For example, Clemons, E. and Michael, R. (1991) defined resources as any long-lived productive capabilities. Consequently, resources may be physical, such as plant and equipment, or intangible, such as customer relationships and know-how. Others however have concentrated on the organisational abilities required to accomplish specific organisational tasks. Grant, G., (1996) explained that "Organisational capabilities represent resources accumulated overtime through non-market

activities. These capabilities are embedded in the organisational principles and routines of the organisation". The exploration of the organisational practices related to IT use will be the key concern when developing the conceptual framework of this study. The intention is that the framework should enable executives to build the organisational capabilities required for *strategic* IT use.

Reviewing the related literature, it was found that many study efforts have tried to evaluate the experiences of organisations in applying IT to explain the reasons behind these variations in IT use, and provide the theoretical insights required to enable managers to deploy IT successfully (Wastell, D. & Seward, A., 1995; Blanton, J., et al., 1992; Johnston, H. & Carrico, S., 1988).

Fig. 3.1 Proposed Research Framework



In the search for the main organisational practices that might have the potential to explain variations in the levels of SITU amongst firms, the first models to be considered, for the purpose of the framework, were the alignment models of IT use presented in chapter two. This is because alignment studies were among the first to present the relationships between the IT and the business domains. Using this as a starting point, four organisational practices were identified as the independent factors in the study. These factors are: firm-wide planning; IT planning; organisational designs (for both firm-wide and IT domains); and the integration between IT and

business groups. However after conducting a pilot study (discussed in section 1.3.3) three other factors were added to the conceptual framework. These factors are CE support, IT management climate, and IT managerial knowledge.

Based on the above discussion, the study's conceptual focus is presented in figure 3.1, which shows the seven organisational factors identified for the study. The remainder of this chapter defines the components of this conceptual framework, articulates the research propositions to be explored through the empirical analysis and give details of the research model to be examined.

3.2 Level of Sophistication of IT Use

Evaluating IT use in organisations has been examined in many IT research efforts, sometimes as a dependent variable and in other cases as a topic in itself (Al-Shamari, M. & Al-Shaikh, F., 1993; Li, E. & Rogers, J., 1991; Wilson,T, 1989;1991). Li, E. and Rogers, J. (1991) introduced the term "Information Systems (IS) Profile" of a company to denote the characteristics of the IS organisation and its functions. These characteristics are defined in terms of a broad range of technical and organisational factors.

In their study, Li, E. and Rogers, J. (1991) developed a broad ranging instrument for assessing a company's IS profile based on Nolan's "stages of growth" framework (Nolan, R., 1991). Their empirical study used many of Nolan's benchmarks such as IS expenditures, technological infrastructure, applications portfolio, IS organisation, user awareness and IS planning and control. Many IT researchers used the same approach to measure the degree of SITU. Wastell, D. and Sewards, A., (1995) supplemented these core measures with an ad-hoc suite of factors covering organisational and policy issues (for example, the existence of a separate IT department, the existence of an IT plan), software development approaches (for example, the degree of end-user computing), and infrastructure (for example, the presence of networks and office automation).

The concept of IS sophistication is closely linked with the "stages of growth" hypothesis of IS evolution, namely the idea that organisations pass through a series of "developmental stages" in their deployment and management of information systems. Originally formulated as a four-stage model, Nolan's model comprises the following six stages of IS growth: initiation, contagion, control, integration, data administration and maturity. It is argued that moving through these

stages, reflects a pattern of organisational learning in which the organisation shifts from a reactive, technology-focused orientation to a mature and business oriented philosophy.

Some other research efforts have used "IT support effectiveness" as an approximation for the degree of SITU. According to Blanton, J., et al. (1992), IT support could be defined as those services and products provided by IT groups. In a comprehensive examination of IT support effectiveness, Hamilton, S. and Chervany, N. (1981) propose a conceptual framework for evaluating IT support effectiveness. This framework comprises four main categories of IT services. These are data processing and telecommunication, software services, office services and user liaison, and end-user computing services. In their empirical study of the relationship between the organisational structure of IT groups and the effectiveness of IT support, Blanton, J., et al. (1992) used these four categories to measure IT support effectiveness as a dependent variable.

Other studies reduced the complexity of measuring the SITU variable, by directly measuring the perceptions of the employees about the level of SITU of their company. For example, Boynton, A., et al. (1994) simply used a five-point scale question to enable respondents to rate their level of sophistication of their company's IT application.

Broadbent, M, and Weill, P. (1993) added what could be an important factor for measuring the level of SITU, which is the strategic aspect of IT use. According to their study, strategic IT use is defined as the extent to which business objectives are enabled, supported and stimulated by information systems strategies. Evidence for strategic use in their study, was sought in the use of information or information technology or both, which provided a comparative advantage to an organisation over its competitors. Such uses were referred to as Information Based Competitive Advantages (IBCAs). Organisations with more extensive and strategy-enabling IBCAs were seen to have a higher level of strategic IT use than those with fewer strategy-enabling IBCAs.

Broadbent, M. and Weill, P. (1993), used two questions in their questionnaire to measure the employees' perceptions about advantages in relation to the use of IT strategically by the organisation. The first question asked managers to rate how well their firm made use of IBCAs for the organisation as a whole compared to competitors on a Likert scale. In the second question, executives and officials were presented with a list of 15 areas of potential IBCAs,

drawn from the literature. Managers were asked to indicate in which of these areas their firm had gained some advantage over their competitors by utilising IT.

It is clear that the degree of sophistication of IT use is a complex variable to measure as it covers a broad range of issues. Therefore in this project a comprehensive approach, consistent with all the previous studies, was used to measure the SITU variable. To ensure the comprehensiveness of evaluation, four dimensions of measurement were employed. These are examining IT profile, evaluating IT support effectiveness, evaluating IT infrastructure from the employees perspectives and analysing the extent to which the banks made use of some expected information technology based competitive advantages (an IBCAs analysis). Multiple sources were used such as employees' responses to questionnaires, open interviews with executives and written documents including the banks plans and annual reports. The aim of this measurement process is to evaluate the differences in the degree of SITU in the five banks participating in this project as the dependent variable of the study.

3.3 Firm-Wide Planning

There can be no doubt that the process of well-developed firm-wide planning is essential in the reduction of uncertainty and ambiguity. Sound planning processes constitute institutional learning, where the process is more important than the product, as in the banks and most of the information intensive industries. This planning lays the ground work for the clarity and specificity of business strategy from which the information strategy of the organisation can be concurrently planned and realised. Most of the research efforts addressing the issue of IT and business practices alignment process, have examined the role of firm-wide planning (Earl M., 1989; Henderson, J. & Venkatraman, N., 1993; 1994; Keen, P., 1993). This variable was selected to be studied, as it is expected to contribute in the degree of SITU.

This project will examine the firm-wide planning variable in two major dimensions. These are the nature of the banks' strategy-formation processes (experience, focus and participation) and their strategic orientation characteristics (consensus, clarity and consistency).

The main proposition to be evaluated when studying the nature of firm-wide planning is whether high levels of SITU would be facilitated by the following:

- Longer experience of firm-wide strategic planning. It is logically expected that the length of experience in firm-wide planning in a bank will bring with it greater confidence, competence and increased involvement and participation across the firm.
- Planning that focuses on critical and long-term issues.
- More extensive participation in firm-wide planning. In the information systems context, participation is more effective in developing a sound understanding of the top management objectives than simply communicating its strategy at later date. On the other hand, executives in some empirical studies indicated a concern with confidentiality in involving employees in the strategy-formation process as it evolved and in more widespread communication of strategy thrusts and developments within their firms (Broadbent, M. & Weill, P., 1993).

When examining strategic orientation characteristics, many research efforts have shown that organisations in LDCs are unlikely to have formal written strategic plans (Odedra, M. 1990; Jaeger, A. & Kanungo, R., 1992). Therefore, as part of this research the "realised or actual strategic thrusts" will be used to understand the degree of alignment between the actual business strategic thrusts of the Egyptian banks and their IT use patterns. The conceptual basis for the "realised strategy approach" is built upon the framework of Mintzberg, H. and Waters, J. (1982). Realised strategy consists of two components: (1) the part of the planned or intended strategy, which is achieved and (2) the emergent strategy, which is developed in response to unanticipated situations. The concept of "strategic orientations", drawn from "theory of strategic thrusts" (Wiseman, C., 1988), has also been used as a part of this research.

The responses of the executives to the questionnaire, the field-notes gathered from the open interviews and the available documentation were used to determine the banks' main strategy types and assess the levels of consistency, clarity and consensus of the banks' strategic thrusts. The typology of strategy patterns developed by Miles, R. and Snow, C. (1978), was used to determine the banks strategies' types. This typology classifies organisations into one of the following categories according to their strategy type: defenders, prospectors (creators), analysers, and reactors as the basic strategic types of organisations.

A defender is an organisation with a conservative competitive strategy and engages in little or no new product development. It has: (a) a tendency to rely on both a centralised decision-making and an autocratic management style; (b) a tendency to structure its activities around basic

business functions; and (c) an orientation towards efficiency (cost-saving). A defender relies on centralised control and a bureaucratic organisation to ensure both high quality and low prices for its products.

A prospector is an organisation with an aggressive competitive strategy that attempts to pioneer in product/market development. It has: (a) a tendency to rely on both a decentralised decision-making and a participative managerial philosophy; (b) a tendency to structure its activities around product/market divisions; and (c) an orientation toward effectiveness (profit-making). In order to change its product/market rapidly, a prospector has a decentralised control structure with minimal bureaucracy.

An analyser is an organisation with a moderate competitive strategy that makes fewer and slower product/market changes than a prospector and is less committed to stability than a defender. It has: (a) a tendency to rely on a balanced decision-making structure; (b) a tendency to subscribe to a matrix form of organisational structure; and (c) an orientation toward a combination of efficiency and effectiveness. An analyser enjoys a control structure that is less centralised than that of a defender and more centralised than that of a prospector.

Finally, *a reactor* is an organisation with no distinct competitive strategy. It makes decisions in a random fashion, and its actions are taken in a reactive rather than a proactive mode.

3.4 IT-Planning

The significant shift in IT use from simple data processing to strategic use, as explained in chapter two, has a great impact on IT planning processes. IT planning practices have had progressed significantly from purely quantitative and operational applications to systems designed for qualitative, competitive and strategic purposes.

However, Reponen, T. (1995) claims that competitive advantages arise from a good understanding and management of the whole IT field and not only from the competitive applications of IT. Advantages may be just as likely to accrue from appropriate utilisation of routine software as from technically advanced applications. This is why in this study, the "IT planning" variable will not be studied from only its strategic aspect. It is important to understand

the selected case studies pattern of practices in IT planning from all the possible aspects. The two aspects of IT planning that will be studied as part of this research are as follows:

1. IT planning nature (experience, horizon, planning approaches, and organisational levels' participation). Since the measurement of the nature of IT planning is broadly similar to the measurement of the nature of firm-wide planning, many of the remarks made in section 3.3 apply here.
2. IT architecture appropriateness (i.e. suitability for the generation of required information products and services). Broadbent, M. and Weill P. (1993) introduced the "Appropriateness of IT Architectures for IT Planning", as an important parameter for explaining IT planning capabilities. The main problem in studying this issue is that there is no optimal status for this parameter as IT is always in continuous development, which means that organisations are also continuously developing their IT architectures. Multiple sources of information were used such as employees' responses to questionnaires, open interviews with executives and written documents including the banks plans and annual reports.

3.5 Chief Executive Support

Since the advent of Management Information Systems (MIS), executive support has been considered necessary to fully exploit the benefits of IT. As IT began to be viewed as central to business strategy, many research efforts have recommended that IT development should not be left solely in the hands of technicians. For example Izzo, J. (1987) cautioned top management to take an active stance in guiding and shaping the role of information technology in helping the firm to attain its goals. Executive support has been frequently documented in the case study literature. For example, Stoddard, D. (1986) chronicled how chief operating officer George David personally championed Otis Elevator's development of a centralised customer service centre for dispatching elevator services personnel. Bob Crandall, Chairman of AMR, has been presented as a prime force behind the Sabre reservation system, American Airlines' frequent flyer program, and the airline's use of yield management software (Harrar, G., 1986). Executive support has also been described for major systems implemented at Frito-Lay (Linder, J., 1986), Lockheed-Georgia (Houdeshel, G. and Watson, H., 1987), USAA (Elam, J., 1988), Buick (Vitale, V., 1988), and Phillips 66 (Applegate, L. and Osborn,, C., 1988).

As part of this research, the variable "Chief Executive (CE) support" will be studied to understand how it affects the degree of SITU in the Egyptian banks. The main focus was on the CE - the leader of the top management team - and his role in IT management. Jarvenpaa, S. (1991), used the term "executive support" to encompass both " executive participation" and "executive involvement", which have been used interchangeably in much of the IT literature. According to his study, executive participation is used to refer to the CE's activities or substantive personal interventions in the management of IT. On the other hand, executive involvement is concerned with the mind-set of the CE reflecting the degree of importance placed on IT by the CE.

Using the definitions of CE support suggested by Jarvenpaa, S. (1991), six aspects of CE participation and four aspects of CE involvement were measured. These are as follows:

1- CE participation is measured through: CE's personal participation in firm's use of IT, CE's role in corporate IT steering committee, CE's knowledge of competitors' use of IT, CE's informal contacts with IT management, CE's knowledge of IT opportunities in the firm, and number of levels between IT head and CE.
2- CE involvement is measured through: CE's prevailing thinking about IT spending, CE's perception of IT importance to the firm, CE's vision for IT, and CE's endorsement of applications not meeting traditional criteria.

3.6 IT Managerial Knowledge

In their paper, studying the key factors affecting IT use in large and complex organisations, Boynton, A., et al. (1994) found that managerial knowledge is a dominant factor in explaining high levels of IT use. Their study draws upon the "absorbing capacity" concept, as the theoretical basis for explaining variations in IT use. An organisation's absorbing capacity reflects its capability to absorb through its internal knowledge structures, information regarding appropriate innovations so that these innovations can be applied in support of operational or strategic activities. Boynton, A., et al. (1994), used this variable, the level of managerial IT knowledge, to examine the (ideally) overlapping know-how of IT and line managers, in particular the knowledge that IT managers possess about the business and strategic issues within the firm and the knowledge that line managers possess about the potential opportunities of applying IT within their business domain.

Consequently it became important in this study, to examine the "managerial knowledge" in the Egyptian banks as an independent variable, to understand its effects on the banks' levels of SITU. Guided by the approach of Boynton, A., et al. (1994), two aspects of this variable were measured: IT managers' knowledge of the banking business and line managers' knowledge of the value and potential of IT. Two separate questions were constructed, using Likert scale and the results were combined to give an overall assessment of each bank's managerial knowledge from the point of view of the senior IT officials.

3.7 IT and Business Groups Integration

Establishing integration linkages between business and IT objectives has been consistently reported as one of the most important concerns of IT and business managers (Reich, B. & Benbasat, I., 1996; Brown, C. and Magill, S., 1994). One of the major problems facing IT management is to co-ordinate the relationships between the business domain and IT domain. The concept of linkage emanates from an IT planning perspective. Therefore when measuring these linkages, the main planning vocabularies such as: missions, objectives and plans should be used. Consequently, linkages could be generally defined as the degree to which the IT mission, objectives and plans support and are supported by the business mission, objectives and plans.

Reich, B. and Benbasat, I. (1996) have introduced a comprehensive instrument to measure the linkage parameter. Their construct made a distinction between the intellectual and social dimensions of the linkages as previously recommended in the literature (Horovitz, J., 1984). The *social dimension* of linkage is defined as being the level of mutual understanding of and commitment to the business and IT mission, objectives and plans, The *intellectual dimension* of linkage is defined as being the state in which IT and business objectives are consistent and valid.

Guided by the previous instrument, two time frames were used to measure the intellectual dimension of linkages: the short term and the long term. Table 3.1 shows the scale used to rate the short-term linkage and table 3.2 for the long term. Multiple sources of data were used to measure this dimension such as interviews and the banks formal documents such as plans and annual reports. Other parameters, which concentrate on the social aspect, such as mutual understanding of objectives and the intensity of communication between IT and business groups, were measured by scale questions in the questionnaire.

Table 3.1 Scale Used to Measure Linkage in Written One-Year Plans

Linkage Rating	
High	Two plans are in existence: the short-term business plan references the current IT objectives and the IT plan references the current business objectives, or One integrated business and IT plan: The plan is formatted such that either: (1) the IT objectives are placed under business unit goals, or (2) the IT objectives are contained in a separate section in the business plan but are articulated in terms of business unit objectives. Example of high linkage within a business plan: "implement an electronic application that will (a) reduce unit costs in support of the new business process, (b) make it easier for the agent to sell the product, (c) provide the client with enhanced services including..."
Moderate	Two plans are in existence: either the short-term business plan references the IT projects or the IT plan references the business objectives. One of the plans may be missing or One integrated IT and business plan: The IT objectives are contained in a separate section of the plan but are not articulated in terms of business goals.
Low	The short-term business plan does not reference the IT projects and the IT plan does not reference the business objectives.
No Plans	There is no short-term plan for the business unit and no short-term plan for the IT function within the business unit.

Source: Reich, B. and Benbasat, I. "Measuring the Linkage Between Business and Information Technology Objectives," MIS Quarterly, March 1996, p. 62.

Table 3.2 Scale Used to Measure Linkage in Written Five-Year Plans

Linkage Rating	
High	The long-term business plan identifies general ways that IT will be used in support of business goals, and the IT plan places its objectives into the context of business objectives or performance.
Moderate	Either the long-term business plan gives IT some direction, or the long-term IT plan exhibits knowledge of and support for the long-term business plan. One of the plans may be missing. Example of a high level of cross referencing in a business strategy document: "efficiency will have to be combined with more timely and responsive transaction activity. The introduction of the system to allow agents to instantly issue contracts will be a real enhancement to compete at lower unit costs...the use of software to help agents plan clients' portfolios will be important..." There was no five-year IT plan and so the overall linkage rating was moderate.
Low	The long-term business plan does not refer to IT and the long-term IT plan does not mention business objectives.
No Plans	There is no five-year business plan and no five-year IT plan that is operative within the business unit.

Source: Reich, B. and Benbasat, I. "Measuring the Linkage Between Business and Information Technology Objectives," MIS Quarterly, March 1996, p. 62.

3.8 IT Organisational Design

The level of sophistication of IT use is influenced to a great extent by the way IT activities are organised in the firm. In the past, companies could organise IT activities autonomously because early applications were limited to transactions-oriented functions, requiring only limited integration with the activities of other groups within the organisation. Today however, IT is not simply a tool to record transactions and process data, it has been suggested that IT can be a weapon that can affect an organisation's competitive position. Because of this change, previous organisational structures for IT groups may no longer be adequate.

One of the issues often referred to in the organisational design literature is the need to link strategy and structure. An empirical study conducted by Tavakolian, H. (1989) showed that IT structure, as measured by the locus of responsibilities for IT, is strongly related to competition strategy. For example, an organisation with a conservative competitive strategy possesses a more centralised IT function than an organisation with an aggressive strategy.

The "organisational fit" concept - that is the conformity between IT structure and overall organisational context variables, including competition strategy - is one consistent thread spanning the previous studies in the field (Blanton, J., et al., 1992; Boynton, A., et al., 1994; Tavakolian, H., 1989). Proponents of this concept argue that the variation in IT structures is attributable to the difference in overall organisational context variables within corporations. They maintain that to avoid causing organisational friction, an organisation should structure its IT systems to conform to its overall organisational context variables, such as organisational decision-making structure, managerial philosophy, organisational form, and organisational competitive strategy.

IT organisational structures' solutions are traditionally classified as being of centralised, decentralised or hybrid designs. Within the literature there also appears to be general agreement about the primary organisational trade-offs: centralisation affords greater efficiencies (economies of scale) and standardised controls as well as organisational integration, while decentralisation provides local control and ownership of resources as well as greater responsiveness to business unit needs.

However, recent progress in IT has enabled user departments to assume an increasing share of responsibilities for their information technology systems. Zmud, R., et al. (1986) introduced the notion of "information economy within a business", in which information resources are owned and managed by business units as well as a central IT organisation. Within the information economy of a firm a "federal government role" is prescribed for the central IT organisation that is responsible for the " transportation architecture" (processors, databases, and networks), while the business units provide information products and services (which means that they plan, build and run their own application systems).

For the purposes of measurement, organisational structures can be defined in terms of two processes: *Differentiation*- the process of dividing the organisation into groups that deal with different components of the organisation's external environment, and *Integration*-the process of co-ordinating the interrelated activities of these groups in order to obtain unity of effort (Blanton, J., et al., 1992). Some research investigations found that in the dynamic environment, the higher-performing companies were those that developed organisational structures with higher states of differentiation and integration (Blanton, J., et al., 1992). Therefore, they concluded that the increased information processing demands created by the dynamic environment were better satisfied by organisational structures with high states of differentiation and integration, thus leading to better organisational performance.

Organisations use portfolios of integration mechanisms to co-ordinate groups with interdependent activities. Based on previous definition of IT organisational structure, three components of IT organisational structures were studied in this project: the organisation of IT functions, the IT application planning and development process, and IT management controls and operating procedures. These components illustrate the forms of differentiation and types of integration mechanisms used for the IT groups. Moreover, in order to understand the context of IT structures in the Egyptian banks, some other variables were studied such as the overall organisation of the banks and their competitive strategies.

3.9 IT Management Climate

One of the issues often studied in research concerned with examining the variations in IT use levels, is the enabling role of an appropriate culture for the delivery of effective IT practices. This issue becomes even more important when examining the differences between the IT

management practices of different countries. It is to be expected that differences in the human environment in which an organisation operates affect the management process. Hofstede, G. (1994) defines culture as "the collective programming of the mind (or mental software) which distinguishes the members of one group or category of people from those of another".

According to Denison, D. (1994), this collective programming means a set of shared norms, values and assumptions that have been built up and accumulated over a number of years. On the other hand, he distinguishes between "culture" and "climate", which are interchangeably used in the literature. The main difference is in the level of depth of the human environment. For example culture concentrates on the development of the social systems over time, while climate concentrates on the influences of the organisation practices on a group of people through their observed perceptions, attitudes and behaviours. Therefore, climate studies are more related to the surface life of the organisation.

In this thesis, the IT management climate, at the organisation's level, was examined to understand its influences on the levels of SITU. Tomline, R. (1991) has highlighted the strategic factors demanding positive attitudes to IT. These factors have been used in this research to guide the measurement of the IT management climate of the Egyptian banks. The major factors studied are described below:

1- The role of the top management in creating a supportive climate to IT management. This factor was measured in terms of three parameters: (a) employees' perceptions about the understanding of top management of how IT contributes to business; (b) employees' opinions about the willingness of top management to devote sufficient time to make IT projects successful; and (c) employees' perceptions about the extent to which top management considers IT as a strategic factor.

2- The existence of a clear long-term vision for the role of IT in business. This factor was examined through investigating the banks' written plans and through the interviews with senior executives.

3- Communication climate between IT and business groups. The degree of satisfaction with the nature of this communication was measured using a question formulated using a Likert scale.

4- Degree of satisfaction with the role of IT in business. This factor was measured in terms of three parameters: (a) satisfaction with the current level of contribution of IT in business; (b) the level of certainty of employees that current IT practices were being used in most effective way to achieve maximum benefit; and (c) expectation of leading the banking industry in IT use.

5- Degree of satisfaction with the current IT training programs. This was measured using a question formulated using a Likert scale.

CHAPTER FOUR

Case 1: Banque Du Caire

This chapter will present the Banque Du Caire (BDC) case study. It examines the pattern of IT use in this bank and the role of some selected organisational practices in its level of SITU. The organisation of this chapter will be as follows: a presentation of the bank profile; a discussion of the level of SITU in BDC; firm-wide planning; IT planning; CE support; level of IT managerial knowledge; the degree of integration between IT and business groups; the organisational design of IT; and IT management climate in BDC. Finally an analysis of some strategic issues of IT use in BDC will be presented.

4.1 Banque Du Caire: The Bank Profile[1]

BDC was formed in May 1952. It was the third bank to be registered in the Central Bank of Egypt in January 1957 shortly after the implementation of law no. 22/1957, which regulated the banking industry at the time. It was nationalised by the Egyptian government at the beginning of the sixties. At the present time BDC is one of the biggest commercial banks in Egypt. BDC completed the Fiscal Year (FY) 1995/96 positioned third amongst the Egyptian banks in terms of the following:

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[1] Please refer to section 1.3 (Research Methodology) for more details about the process of data gathering and its validity.

- The book value of BDC's total assets was £E27bn in the FY ending June 1996. This rates BDC as the third biggest bank in Egypt in terms of total assets.
- Total loans and advances recorded £E13.6bn, while letters of credit amounted to only £E3bn in that FY.
- BDC's total deposits amounted to £E21.2bn in the same FY to keep the bank third amongst the Egyptian banks in terms of its ability to attract and mobilise savings and deposits.
- The average Return On Investment (ROI) achieved on the 30th of June 1996 by BDC was approximately 0.26% which was the highest rate of all the public sector banks. This is while net profit was £E70mn according to the profit and loss account of the 1995/96 FY. This rated BDC second amongst the public sector banks in terms of the amount of profits achieved in that year.
- BDC employs 11,665 employees, which accounts for 27% of the employees in the four Egyptian public sector commercial banks. Therefore BDC has the greatest labour intensity per branch compared to these banks.

At the present time BDC has 230 branches and twelve affiliates located throughout all the counties of Egypt. Moreover it has some important international (especially Arabic) presence via five full branches in the United Arab of Emirates (UAE), a branch in Bahrain, two representative offices in Ukraine and Zimbabwe, and three international affiliates in Uganda (Cairo International Bank/Kampala); Saudi Arabia (Cairo Saudi Bank); and Oman (Cairo Oman Bank).

BDC offers a full range of commercial, personal, trust and other financial services through its country-wide network of branches. In addition to offering the traditional mix of products, BDC also works as an investment bank. It has directly contributed in 64 companies and 15 banks (inside and outside Egypt). Moreover BDC has established a "mutual fund" project to enable its customers to invest easily in the Egyptian stock market. The total investments of BDC in securities and projects accounts for £E5bn.

BDC follows the traditional strategic thrusts of any public sector bank in Egypt. Therefore, its long-term plans directly follow those of the government. Apart from this commitment, BDC concentrates on continuously increasing its branches to achieve the greatest possible coverage of Egypt, increasing its clients regardless of their business or wealth, and continuously broadening

its products and services mix. All the four commercial public sector banks in Egypt adopt these three main thrusts.

4.2 Level of Sophistication of IT Use

4.2.1 Acquisition of Computers

BDC had its first organised plan for utilising IT in its business, in 1986. The main vision of its top management for using IT at the time was to massively deploy computers and communication networks for automating the bank's business. This move was triggered because of the success achieved by Banque Miser (BM) in establishing the first big IT infrastructure in the Egyptian public sector banks. BDC was not the only one to try to emulate BM. NBE and Bank of Alexandria (the other two public sector commercial banks) were making similar moves at the time. Based on the main vision outlined above, BDC's top management developed an initial five-stage long-term plan to gradually deploy IT in the bank. Differences between stages were mainly in the numbers of branches to be automated and the degree of connectivity between them. ICL had a great contribution in developing and implementing this plan as it was the bank's main computer vendor even before this plan had been developed.

BDC started to implement its automation plan by acquiring 3 mini computers (ICL DRS400) for its three main branches located in down-town Cairo, (Adly, Kaser El-Nile and El-Alfy), as they are the busiest branches. At the end of the eighties the number of computerised branches increased to more than 12. Most of these branches were in the three major cities of Egypt: Cairo, Giza and Alexandria. These computerised branches were working stand-alone at that time that is no communication connections were installed between branches.

At the beginning of the nineties, Mr. M. Abu-El-Fatih was appointed as the CE for BDC. Since that time, computerisation in BDC has been accelerated, thanks to the great support of the new CE. At the present time BDC has nearly 120 mini computers, a communication network that connects branches to their regional centres and a small ATM network.

4.2.2 The Current IT Infrastructure

BDC's infrastructure consists of 120 ICL mini-computers. Most of these computers are DRS6000 super-server; DRS6000; DRS6000 team-server; and DRS 400 models. Each branch has a number

of dummy terminals ranging from 12 for small branches up to 64 for large branches. This is in addition to a small number of PCs for each branch (from 5 - 7). Some of these PCs are used for secretarial word processing while the others are connected to the server and operate as dummy terminals. A few years ago each branch had a small internal PC network, mainly for the "signatures verification" process. These networks have been cancelled for most of the branches and PCs have been added to the main ICL servers.

These computers cover most of the bank's branches except for some small ones such as the savings units and representative bureaux in hotels and airports. Some small branches are equipped with the old models of ICL computers, which were moved from large branches, or by some PCs connected with the nearest big branch by a dial-up connection. BDC uses a mixture of leased lines provided by the national authority for telecommunications and x.25 lines from the Egypt-Net Company. Moreover BDC is experimenting at the present time using a new satellite system for communication. The bank is now installing Geographical (regional) Nodes (GNs) to ease cross-branch transactions. Up to now, five GNs have been installed to serve Cairo, Giza, Alexandria and some branches in the Delta of the Nile. No nodes have been installed in the south because of the poor national telecommunication infrastructure in this area and also because Egypt-Net does not cover this region efficiently.

4.2.3 ATM Network

In addition to the networking system described above BDC has its own sub-network of ATMs. The bank owns 50 machines (ATMs) located in the larger branches of the bank. This network is still in its early stages of development. Only 20 machines are working at the present time serving the clients of Cairo area. However the bank is currently experimenting with the rest of the machines. BDC is planning to complete this network to cover all its branches and some of the important shopping areas in Egypt. Two ICL DRS6000 SUPER-SERVER machines are dedicated to this network using the mirroring technique for back-up. The bank uses a software package called ESP (Electronic Switched Platform) for this application.

Egyptian Banks Union, one of the governmental agencies, has recently launched a project for connecting all the ATMs of the Egyptian banks. The union will have a central switch for directing all ATM messages to the related banks for a specified commission. Only BDC and "Egyptian British Bank" have agreed to connect their machines to the project. Experiments for

testing compatibility of ATM's messages between the central switch and BDC's machines have been conducted recently. BDC's executives expect that most of the Egyptian banks will participate in this project.

BDC has six other ATMs working outside Egypt. One of them is working in El-Manama branch in Bahrain, which is connected to the Bahrain national ATM network. The other five machines are working in the three branches of the bank in UAE. The bank is now planning to connect these branches to the branches within Egypt.

4.2.4 Applications

BDC's main software applications are data bases developed using the Informix data base management system software package. These applications were developed to automate many of the bank's business processes such as customers' accounts, credit and lending, letters of credit and letters of guarantee. This DBMS has also been used to implement a complete accounting system. In addition, BDC uses some specialised software for communication such as SWIFT for international funds transfer transactions. Most of these applications were developed by ICL in Egypt except for the communication software, some specialised software such as the ATM software, and the software for PC's.

4.2.5 IT Officials' Opinions about BDC's IT Infrastructure.

IT officials' opinions about BDC's IT infrastructure were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low : 5 = very high, question 1, App. 1) and was followed up by interview sessions. BDC had a general average score (by its officials) equal to 3.6 with 0.80 std. This means that the overall degree of IT architecture efficiency, in BDC is above "average".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT infrastructure in terms of five major aspects. The IT officials' ratings for these aspects are as follows:

(1) *Compatibility of computer sites* scored a "high" grade (avg. = 4, std = 0.6). This score was expected as all the branches of the bank rely on one major vendor for purchasing computers and software. The bank's initial IT plan has clearly stated that compatibility of IT facilities is one of its important objectives.

(2) *Coverage of geographical locations* scored a "high" grade (avg. = 4.3, std = 0.6). This is because BDC has successfully computerised its main branches. One of the executives stated that "We have computerised about 90 % of the bank's branches up to now. Only the small units are working manually at the present time."

(3) *Coverage of functional divisions* scored an "average" grade (avg. = 3.0, std = 0.5). In the interview sessions executives showed that BDC does not have the same level of skills in software development as its main rivals NBE and BM. Therefore, "applying new systems in the bank's functional departments is a little bit slow" as one of the executives said. BDC relies heavily on external sources for software especially from ICL.

(4) *Appropriateness with their firm's long-range plans* scored a "high" grade (avg. = 4.0, std = 0.5). Although executives, in the interview sessions, indicated that they do not know whether a formal process for strategic planning is pursued by the bank or not, they have firm confidence in the appropriateness of their IT plans with the bank's strategic plans. This is because of the significant support given by the CE to IT use.

(5) *Integration of customers' data bases* scored a "low" grade (avg. = 2.4, std = 1.0). This is for two reasons: first, systems were applied in the bank to be branch specific. However, the bank is considering at the present time, integrating its data bases across its branches by re-engineering them to be more global. Second, the main purpose of automation in BDC was to decrease the efforts spent in accounting work. Therefore, software systems were product-oriented to suit the accounting processes and routines.

4.2.6 Efficiency of IT Services

IT officials' opinions about the level of efficiency of IT support services in BDC were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low : 5 = very high, question 4) and was followed up by the interview sessions. BDC had a general average score by its officials equal to 2.9 with 0.4 std. This means that the degree of IT services efficiency in general in BDC is almost "average".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT services efficiency in terms of four major categories of IT support services. The IT officials' ratings for these categories are as follows:

(1) Data Processing and Telecommunication (DP&T) scored a slightly above "average" grade (avg. = 3.5, std = 0.82). Table 4.1 lists the statistics of DP&T items.

Table 4.1 Evaluation of Data Processing & Telecommunication in BDC

	AVG	*STD*
Install & maintain data communication equipment	3.0	1.2
Produce & distribute paper reports	3.0	1.3
Produce & distribute microfiche reports	2.6	1.3
Access to consumer & business data files	4.2	0.8
Accuracy of consumer & business files	4.8	0.5
Response time of on-line systems	3.4	0.7
General Average (overall score)	3.5	0.82

Executives in the interview sessions indicated that BDC does not have organised systems for producing and distributing paper or microfiche reports which confirms the data in the previous table. On the other hand they were satisfied with the other categories bearing in mind the current state of the national telecommunication infrastructure.

(2) Software Services (SS) scored almost an "average" grade (avg. = 2.9, std = 0.74). Table 4.2 lists the statistics of SS items.

Up to now BDC has not been able to build skills in software development as became apparent from the interview sessions. Most of the systems in use, were purchased from external sources. This is why ratings for these items as shown in table given above were not high.

Table 4.2 Evaluation of Software Services in BDC

	AVG	*STD*
Develop new software applications	2.0	1.2
Enhancements to application software	2.6	0.7
Maintenance of application software	3.2	0.7
Meet production time frames	3.8	0.7
Software Services SS	2.9	0.74

(3) Office Services & User Liaison (OS&UL) scored a "low" grade (avg. = 2.5, std = 1.4). Table 4.3 lists the statistics of OS&UL items.

BDC does not use electronic-mail or teleconferencing applications in its business, as is clear from the above table. Ratings for the other categories were average or high.

Table 4.3 Evaluation of Office Services & User Liaison in BDC

	AVG	*STD*
Install & maintain voice communication equipment	3.1	0.6
Electronic mail	1.1	0.3
Production level word processing	3.3	0.6
Teleconferencing	1.0	0.0[2]
User liaison assistance/trouble calls	4.1	0.9
Office Services & User Liaison OS&UL	2.5	1.4

(4) End-User Computing Services (EUCS) scored a "low" grade (avg. = 2.7, std = 0.84). Table 4.4 lists the statistics of EUCS items.

Table 4.4 Evaluation of End-User Computing Services in BDC

	AVG	*STD*
Technical: trouble shooting, database extraction, etc.	3.0	1.1
Research: hardware & software products	1.5	1.0
Consulting: hardware & software products, etc.	3.0	0.4
Training & education	3.4	0.6
End-user Computing Services EUCS	2.7	0.84

It was understood from the interview sessions that EUC in general is not a major concern in BDC. This is because end-users only use the system for data entry. Therefore this category should have had lower ratings than it was actually given by BDC's officials. One of the weak points of this bank, as far as the needs of end user are concerned, is in the area of research. BDC does not have any formal way of carrying out research into IT products.

4.2.7 Level of Sophistication of IT Use: Employees' Perceptions

Perceptions of IT officials in BDC about their bank's level of SITU, were sought through the questionnaire. Using Nolan's "stages of growth" model (Nolan, R., 1991), officials were presented with a definition of each stage and then asked to indicate which definition best described their IT use pattern in BDC (please see question 3 section 3.2 in chapter three). Responses showed that BDC's level of SITU is in the "integration stage". Although the level of SITU is a complex variable, this result is consistent with the general descriptive data about IT use in BDC presented in this chapter. Intuitively BDC's level of SITU is not in the early (the reactive) stages, that is to say the "introduction" or "contagion" stages. On the other hand nor is it

[2]The value here has been judgmentally set. This judgmental score will be used in the study whenever it is felt to be appropriate.

in the mature and business oriented stages such as "data administration" and "maturity" stages. Therefore, it is fair to say that IT use is somewhere in the middle stages (the technology-focused ones), that is to say the "control" and "integration" stages.

4.2.8 Strategic Use of IT in BDC

Two questions in the questionnaire were used to measure the degree of strategic use of IT compared to the bank's main competitors (questions 5 and 7). The first question, using a five-point scale, sought IT officials' perceptions about the bank's degree of success in utilising IT for attaining competitive advantages. BDC was rated almost "average" by its officials with a high level of variance (avg. = 2.9, std = 1.2). Therefore, according to BDC's IT officials, the bank was no better than its competitors in utilising IT for attaining some business competitive advantage. In the second question, interviewees were presented with a list of 15 areas of potential Information Based Competitive Advantages (IBCAs). They were then asked in a five-point scale question, to rate how well their firm made use of these areas to gain some advantage over its competitors (questions 7-10). Table 4.5 shows the employees' responses to this question:

Table 4.5 Responses for IBCAs Analysis in BDC

	AVG	*STD*
Integration of customer data	2.6	1.0
Centralised transaction processing centre	2.9	1.0
Consolidation of applications onto uniform product base	4.4	0.6
Number & availability of ATMs	3.3	0.8
ATM interchange links with other institutions	1	0.0
Market analysis, marketing	1	0.0
Differentiated customer services & products	4.5	0.8
Electronic fund transfer / Point-of-sale terminals	2	1.4
Risk management techniques	1	0.0
Competitor intelligence	1	0.0
MIS planning & control	3.3	0.9
Electronic home banking	3.1	1.0
Internal networking systems	3.9	0.7
Cost accounting	2.8	1.2
Investments & financial planning	3.8	0.8

According to the above table, the responses indicate the following:

1- The bank has achieved competitive advantages over its competitors in two areas:

(a) In the consolidation of applications onto uniform product base; and

(b) In offering differentiated customer services and products.

However this result had not been expected. This bank is not much better in integrating its applications and globalising its data bases than its competitors as was made apparent by the executives in the open sessions. Also using IT in differentiating the bank's services and products is the same as in its main two competitors, namely NBE and BM.

2- BDC did not spend much effort in four important areas of IBCAs. These areas are: ATM interchange links with other institutions; market analysis, marketing; risk management techniques and competitor intelligence. These areas have not had much attention devoted to them by BDC's competitors either.

3- Three areas have drawn much effort from BDC:

(a) number and availability of ATMs;

(b) electronic home banking; and

(c) investments and financial planning.

However the results did not show any clear IBCAs achieved in these areas as ratings by the interviewees were "average". Executives explained that these areas would be important IBCAs for BDC in the near future.

4.3 Firm-Wide Planning in BDC

Formally, BDC practices three types of firm-wide planning: (1) firm-wide annual budgeting; (2) capital budgeting; and (3) operational planning. BDC started using these types of planning at the beginning of the sixties as they were made mandatory by the government for all public sector companies. Several questions were designed to examine this point in the questionnaire (questions 11 - 16). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of a firm-wide planning process in their firm. However most of them do not know the details of this planning process.

2- Formal planning procedures were started in the sixties. The interviewees consider it as an annual routine process prepared to satisfy the above governmental agencies' control requirements.

3- Although no documents were available for long-term and strategic planning in BDC, interviewees indicated that this type of planning is there in some unstructured or unorganised way.

The top management of BDC practices strategic planning through developing plans for the bank's critical issues. These issue-based long-term plans are developed by the CE directly

through the board meetings, and/or the higher level committees. For example the bank has long-term plans for IT, training and the bank's mutual funds project. However executives indicated that most of these issues are derived from the government's main directions and instructions.

As no documents were available to study the bank's current type of strategy, a four-choice question was used to identify the bank's main strategy type (question 17). The question was based on the Miles R. and Snow C. (1978) typology of strategies, which are as follows: defensive, creative, analytic, and reactive (see also section 3.2 in chapter three). Officials classified their bank as an "analyser". This result is consistent with many characteristics of the way BDC is doing business. BDC comes after NBE and BM (the leaders of the banking industry in Egypt) in introducing new products/markets mixtures or changing current ones. However BDC has a very centralised organisation structure which is more suitable for defensive strategies.

4.4 IT Planning

As mentioned previously, BDC's top management developed the bank's first IT plan in 1986. The main vision adopted at the time was to comprehensively deploy computers on all the bank's branches and business processes. ICL in Egypt had a great contribution in developing and implementing this plan. Mr. M. Abu El-Fatih has declared the main objectives of the bank in deploying IT as follows:

- Enhancing customer services
- Introducing new products
- Decreasing costs per unit. This is through increasing sales without increasing employees.
- Introducing distinguished services to the important clients
- Building an integrated data base to support decision making whether to top management or to decision makers at the branches.
- Catching up with the international developments in using modern IT systems in banking .
- Decreasing the amount of monotonous clerical work and saving the bank's officials' efforts for enhancing customer services.
- Achieving higher levels of return on investments.

Several questions were designed to examine this variable in the questionnaire (questions 35 - 42). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of an IT planning process.

2- There was no clear consensus between interviewees concerning the starting date of IT planning in the bank. This might be because of the limited participation of the officials in planning. Only the general manager and his associates know the bank's IT projects, their priorities and their details. IT officials begin to know about any IT project only at the time of its implementation, as executives explained in the interviews.

3- Interviewees showed that three time-frames of planning are practised in BDC (short, medium and long-term).

4- Although interviewees indicated that the computer department relies on both approaches of IT project planning, that is to say top-down and bottom-up approaches, the top-down approach is the most commonly used. Lower levels only participate in minor ways through formal requests for updating machines or extending some systems' functionality.

5- One of the questions (question 40) sought the officials' opinions about the degree of participation of each level of the organisation in IT planning. Table 4.6 lists the results of this question.

Table 4.6 Degree of Participation of the Different Organisational Levels in BDC

	AVG	*STD*
Top management	4.3	0.6
Managers of the functional departments	3.1	1.4
Employees of the functional departments	3.0	1.4
IT managers	4.3	0.7
Systems analysts	3.8	1.4
Programmers	3.6	1.3
End-users	3.0	1.2
Vendors	4.2	0.9
Consultants	4.0	1.0

Responses to question 40 are consistent with the above mentioned observations about participation in IT planning in BDC. Top management level, IT executives, vendors, and consultants had "high" scores with the lowest levels of variance in the degree of participation by the IT officials, while the rest of the organisational levels had "average" scores with greater levels of variance.

4.4.1 Appropriateness of IT Architecture for IT Planning.

In the interview sessions BDC's executives showed that the bank is at an important stage, in building its IT infrastructure. As explained earlier, most of the branches have been computerised,

and many of the important branches have been connected to allow on-line communication across branches. The major limitations of planning for IT products in BDC are as follows:

- The national telecommunication infrastructure is poor in the south compared to the rest of Egypt at the present time. BDC's executives explained that this limits their systems to being branch specific. However the bank is experimenting at the present time with a satellite system for communication to solve this problem completely. Moreover the national authority for communication is working hard to build a suitable telecommunication infrastructure in the south of Egypt.
- BDC is not competent in software development. It relies mainly on external sources for software systems, especially from ICL.
- There is no organised activity for studying new IT products. Therefore, BDC is extremely dependent on ICL in applying any system in the bank.

4.5 CE Support in BDC

CE support was studied in this project, through two dimensions: CE participation and CE involvement. Each dimension was measured through a set of parameters. The following sections discuss the results of this measurement process.

4.5.1 Degree of CE Participation in IT

Several questions were designed to examine this point in the questionnaire (questions 18 – 23). Table 4.7 shows the averages and standard deviations of the IT officials' responses to these questions.

Table 4.7 Statistics of the CE Participation in BDC

	AVG	*STD*
Personal participation	3.6	0.7
CE role in IT committee	4.5	0.6
CE communication intensity with IT department	4.4	0.6
CE knowledge of IT opportunities	4.7	0.6
CE knowledge with IT use of competitors	4.6	0.6
CE personal IT use	3.4	1.1
CE participation (overall score)	4.2	0.55

BDC had a "high" degree of CE participation in general, according to the employees' opinions (avg. = 4.2, std = 0.55). Most of the results of the sub-items had "high" scores as well. Only "CE

personal participation" and "CE personal IT use" had "average" scores. Interview sessions confirmed these results to a great extent. Executives showed that the CE of BDC is personally championing the process of utilising IT in the bank's business since he took up his position at the beginning of the nineties. They explained that he devotes much of his time to participating in IT activities such as leading the higher committee for IT, following up the installation processes, and keeping a good level of communication with IT executives.

4.5.2 Degree of CE Involvement in IT

Several questions were designed to examine this point in the questionnaire (questions 24 – 27). Table 4.8 shows the results of this measurement process.

Table 4.8 Statistics of the CE Involvement in BDC

	AVG	*STD*
CE prevailing thinking about IT spending	4.5	0.7
CE perception of IT importance	4.6	0.5
CE vision for IT	4.7	0.7
CE endorsement of non traditional applications	4.6	0.8
CE involvement (overall score)	4.6	0.11

As in the CE participation level, BDC had a "high" degree of CE involvement in general, according to the employees opinions (avg. = 4.6, std = 0.11). In this dimension, all the sub-items had "high" scores as shown in table 4.8. The results in the table could be explained, according to the choices allowed for answering the questions directed to the interviewees, as follows:

- The CE's prevailing thinking about IT spending is that IT is a strategic investment and not just an expense to be controlled.
- The CE's perception of IT's importance to the firm is that IT is a critical factor for the firm.
- The CE has a strong generic vision for IT.
- The CE's endorsement of applications not meeting traditional criteria tends to be "frequently".

Based on the two dimensions discussed in sections 4.5.1 and 4.5.2, the CE's support to IT activities in BDC is "high", (general avg. = 4.4).

4. 6 Managerial IT Knowledge in BDC

The aim of this section is to study the overlapping know-how of IT and line managers (in particular, the knowledge that IT managers possess about the business and strategic issues within the firm, and the knowledge that line managers possess about the potential opportunities from applying IT within their business domain). Therefore two dimensions were used to measure this variable: IT managers knowledge and line-managers knowledge.

4.6.1 IT Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate their managers' knowledge about business operations and corporate strategies (questions 28 and 29). Table 4.9 lists the results of this measurement process.

Table 4.9 Statistics of IT-Managers Knowledge in BDC

	AVG	*STD*
Knowledge degree of business operations	4.4	0.7
Knowledge degree of the corporate strategy	4.1	0.4
IT-managers Knowledge (overall score)	4.3	0.22

IT managers' knowledge in BDC could be rated as "high" in overall, as shown in the table given above. In the interview sessions executives stated that the officials in the IT department came from different functional departments within the bank. Therefore they had a good business background.

4.6.2 Line-Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate line-managers' knowledge about the potential of IT as a competitive weapon and a tool to decrease clerical work (questions 30 and 31). Table 4.10 lists the results of this measurement process.

Table 4.10 Statistics of Line-Managers Knowledge in BDC

	AVG	*STD*
Knowledge of IT potential as a competitive weapon	3.0	0.5
Knowledge of IT as a tool to decrease clerical work	3.9	0.7
Line-managers Knowledge (overall score)	3.5	0.58

From this table it is clear that line-managers' knowledge about IT is rated as "average". Executives indicated that when IT was first introduced into the different branches in the bank the

computer department[3] had many problems resulting from the low level of IT knowledge of the line-managers. Having carried out the work manually over a long period of time line-managers were reluctant to rely on IT. "We spent a lot of our time and effort in resistance problems" one of the executives explained. However the resistance lessened once the line-managers had gained experience of the systems being used and understood how they operated. BDC's officials see that the bank's training emphasis and the support from top management helped to increase the IT knowledge of line-managers.

Table 4.11 Statistics about some Exchange Mechanisms in BDC

	AVG	*STD*
Mutual official movements	3.1	1.4
Mutual training	3.8	1.3
Joint team-work	4.1	1.2

Mutual official movements, mutual training, and joint team-work are some of the exchange mechanisms that can be used to increase the level of IT managerial knowledge in a firm. Three related questions were directed to the IT department's officials to detect the degree of existence of these kinds of mechanisms. Table 4.11 lists the results of this measurement process. It is clear from the above table that these mechanisms do exist in the bank. Joint team-work are used in BDC to a "high" extent (avg. = 4.1, std = 1.2) while mutual officials movements and mutual training are used to an " average" degree.

4.7 IT and Business Groups Integration

The degree of integration between business and IT groups was examined in this study through two dimensions: the intellectual dimension and the social dimension.

4.7.1 The Intellectual Dimension

Two time-frames were used when measuring the intellectual dimension: the short-term frame and the long-term frame. According to the measurement method explained in chapter 3, business and IT plans (for short and long-term frames) were examined in order to rate the degree of integration between them.

[3]The terms "computer department", "IT department", or "computer sector", will be used interchangeably to denote the organisational unit responsible for IT activities.

As regards the *short-term frame*, BDC has plans in the IT and business areas, but there is no clear cross-referencing between them. Therefore, the degree of integration could be said to be "average", as explained in section 3.7 in chapter three.

As regards the *long-term*, BDC has long-range plans for IT only. This plan, as all the executives of BDC explained, concentrates on automating the entire bank's branches as its most critical objective, and introducing some of the IT-enabled banking products and services such as ATM and credit cards. Therefore BDC's long-term level of integration between IT and business, in terms of the intellectual dimension, could also be rated as "average" as well.

In addition to the analysis given above, two five-point scale questions were used to enable IT officials in this bank to indicate their perceptions about the level of integration between IT and business in their bank (questions 32 and 33). The parameters used to measure the intellectual dimension were: line-managers understanding of IT objectives; and IT-managers understanding of business objectives. Table 4.12 lists the results of this measurement process.

Table 4.12 Statistics about The Intellectual Dimension

	AVG	*STD*
Line-managers understanding of IT objectives	3.0	0.5
IT-managers understanding of business objectives	3.3	0.9

It is clear from this table that all the responses circle around the "average" score. This result is consistent to a great extent with the analysis discussed above, for the short-term and long-term frames.

4.7.2 The Social Dimension

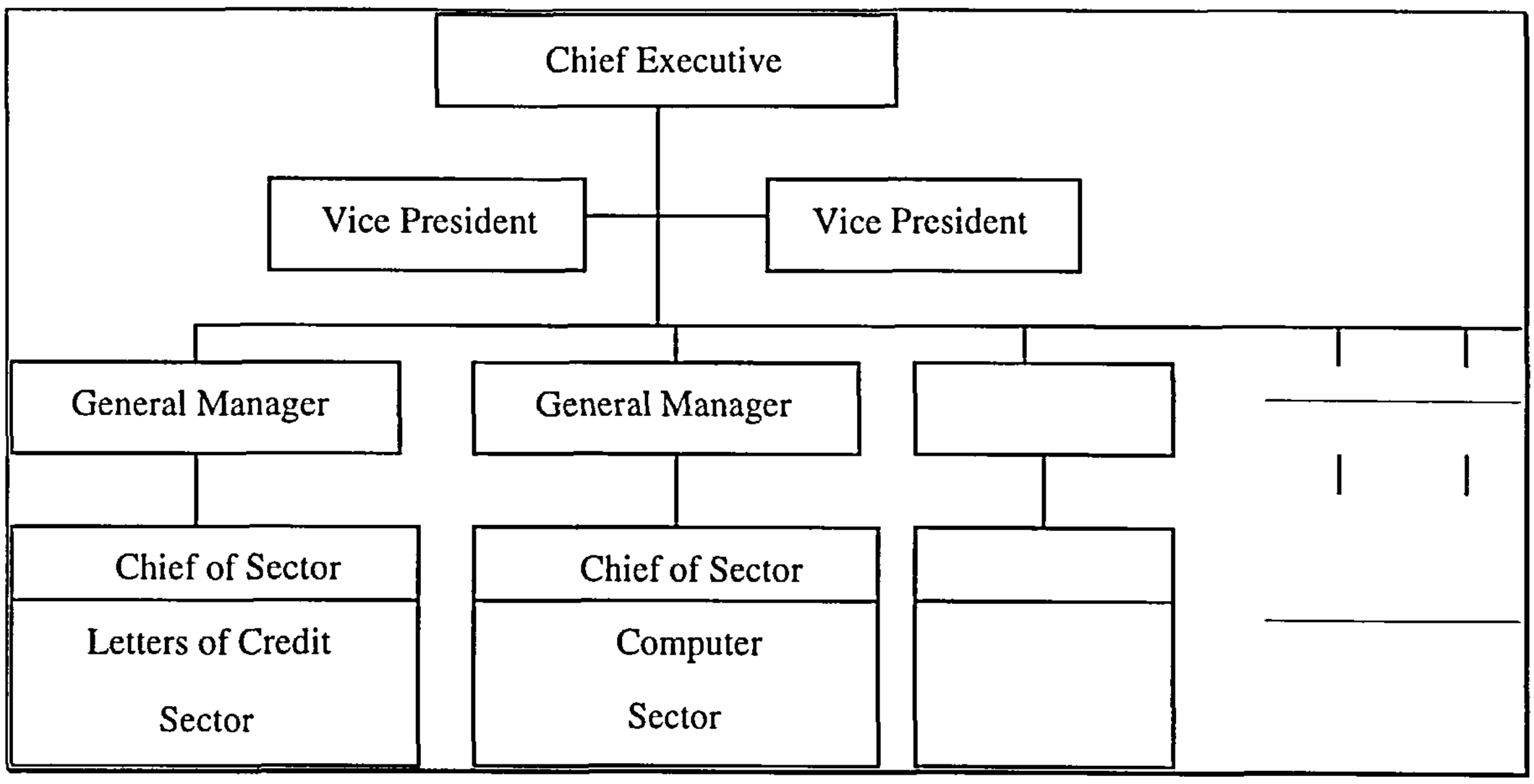
A five-point scale question was used to enable IT officials in BDC to rate the level of "intensity of communication", between IT and business groups, as an approximation for the social dimension of integration (question 35). According to the officials opinions, intensity of communication could be rated as above "average" (avg. = 3.8 & std = 0.9).

4.8 IT Organisational Design in BDC

4.8.1 Firm-Wide Organisational Structure

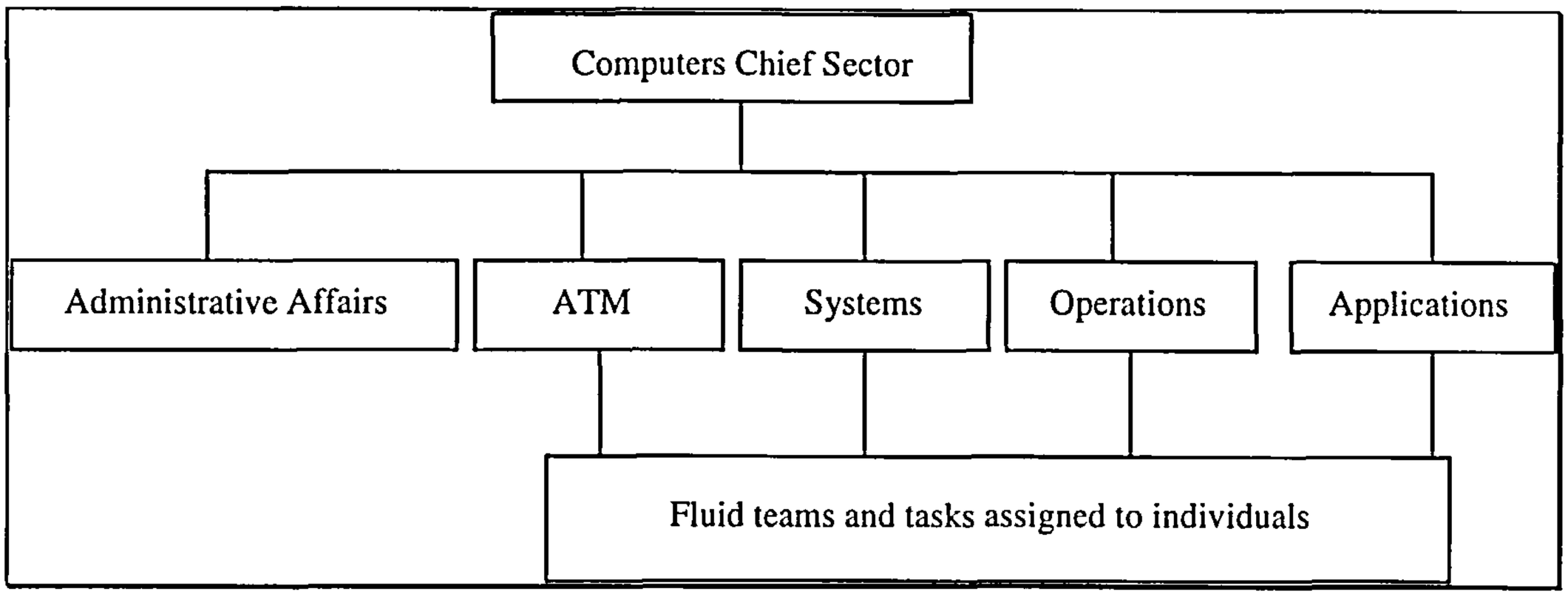
BDC's organisational structure follows the traditional functional structures. Each banking function has a separate organisational unit (a sector or a general administration). The following figure depicts an overview of this structure.

Figure 4.1 BDC Organisational Structure



4.8.2 IT Organisational Structure

Figure 4.2 IT Organisational Structure of BDC



The IT organisational unit in BDC was established in 1983 as a general administration (computer administration) and then upgraded to the "computer sector" in 1986. As in figure 4.2, IT organisational structure follows the same type of functional structures as in the general organisation of a firm. A separate department is designated to each one of the three traditional IT functions: systems development, operations and communication, and applications. In addition to these organisational units a separate unit is designated to encompass the ATM, Internet, and electronic home banking applications. An additional unit has recently been introduced for administrative affairs.

The systems development department is responsible for planning and developing new software systems. This organisational unit is a central unit located in the main branch of the bank (Adley branch). Because most of the software used in BDC is from external sources, this department only develops small software projects (less than 300 hours projects). These projects are mainly enhancements or additions to currently used applications. Data bases applications are the main types of systems developed by this department.

The operations and communication department's activities are related to the operation of existing machines and networks in all the branches of the bank. The employees and operators of this department are responsible for day-to-day back-ups, preparing and following up the networks, managing output production and distribution, and providing end-user support for relevant problems. Each branch has one or two operators. All the operators report directly to the central computer department in Adley.

The applications department is considered as the front line of the computer department against the end-users. It is responsible for training the end-users on the new applications and trouble shooting the simple day-to-day problems experienced in using these applications.

4.8.3 Integration Mechanisms

a. Integration with top management

BDC uses two IT committees as the main integration mechanism between the computer department, top management and the functional departments. The bank depends on these two committees to discuss, communicate and audit the bank's main IT plans and installation projects. Regardless of the IT committees, the great interest shown by the CE in IT has made

communication between the two levels intensive and productive. Besides the scheduled meetings of the two committees other formal and informal meetings also take place especially with the bank's consultants and vendors.

b. Integration with the functional departments

All the IT resources are fully owned by the computer sector in BDC and few resources have been allocated to end-user computing in the functional departments. For this reason, IT officials (specially in the applications department) spend much of their time in phone calls and regular and ad-hoc visits for trouble shooting tasks. Apart from these day-to-day integration mechanisms formal correspondences and requests are the most common way for integration in the bank. These correspondences are often for enquiries, requests for additional capacities, etc. Joint team-work and presentation sessions are also commonly used in software development or purchasing projects. One of the two IT committees mentioned above in (a), has been assigned the role of enhancing the integration process between IT and the other departments in the bank.

c. Internal integration mechanisms

Due to the strong centralisation of this bank's IT organisational structure, integration mechanisms within the IT organisational structure, are also very formal and centralised. Formal directives, assignments and decisions are the main integration mechanisms in BDC. The bank does not have some organised list of formal meetings in the IT department. The department occasionally uses this way of integration when implementing important projects in order to discuss work assignments and follow up the day-to-day performance.

4.9 IT Management Climate

The aim of this section is to discuss the extent to which the climate of IT management in BDC, is positive and supportive. Five main aspects of IT climate were studied: the role of top management in creating a supportive climate for those concerned with IT management; the existence of a clear long-term vision for the role of IT in business; communication climate between IT and business groups; degree of satisfaction with the role of IT in business; and degree of satisfaction with the current IT training programs.

4.9.1 The Role of Top Management in the IT Management Climate

Three main items were measured to examine this aspect of IT management climate: (a) employees' perceptions about top management's understanding of how IT contributes to business; (b) employees' opinions about top management's willingness to devote sufficient time to make IT projects successful; and (c) employees' perceptions about the extent to which top management considers IT to be a strategic factor. Five-point scale questions were used to enable IT officials to express their opinions regarding these issues (questions 44, 45 and 50). Table 4.13 lists the results of this measurement process.

Table 4.13 Statistics of Top Management Contribution to IT Management Climate in BDC

	AVG	*STD*
Top management understanding of how IT contributes to business	4.5	0.5
Top management willingness to devote sufficient time to make IT projects successful	4.3	0.7
The extent to which top management considers IT as a strategic factor	4.6	0.5
Top management contribution to IT management climate (overall score)	4.5	0.12

As shown in the table, BDC's IT officials expressed "high" satisfaction with the supportive role played by their top management (avg. = 4.5, std = 0.12). The results in this category (both AVGs and STDs) were very close, which reflect the level of confidence in the officials' answers to the questions.

4.9.2 The Existence of a Clear Long-Term IT Vision

In the interview sessions all the executives indicated that BDC has some clear specific objectives for IT. These objectives are stated in the bank's long-range plan for IT (see IT planning section). The bank's CE always puts great emphasis on these objectives on every occasion. It is clear that top management support; the existence of formal and organised IT planning process; and the existence of communication and integration mechanisms between top management and the computer department provide IT officials with a great sense of purpose and vision for IT.

4.9.3 Communication Climate Between IT and Business Groups

A five-point scale question was used to study the officials' opinions about this issue (question 49). BDC had a "high" rating according to its officials, in terms of their satisfaction with the communication climate between IT and business groups (avg. = 4.0 & std = 0.6).

4.9.4 Degree of Satisfaction with the Current IT Training Programs

Another five-point scale question was used to study the officials' opinions about this issue (question 51). The degree of satisfaction of the officials with the bank's IT training programs was "high" (avg. = 4.6, std = 0.5).

4.9.5 Degree of Satisfaction with the Role of IT in Business

From the results of the above categories, officials have an overall "high" degree of satisfaction with the current role of IT in their business (avg. = 4.3 & std. = 0.1). Table 4.14 shows the details of this indicator (see also questions 46 – 48).

Table 4.14 Statistics of the Degree of Satisfaction with IT Role in Business in BDC

	AVG	*STD*
Satisfaction with the current role of IT in the bank	4.3	0.6
Expectation for having the highest benefits from IT	4.4	0.7
Expectation for leading the industry in IT use	4.4	0.6
Satisfaction with IT role in business (overall score)	4.3	0.1

In the light of the above, it is safe to say that IT management climate in BDC is positive and the officials have a high degree of satisfaction with all the aspects of this climate such as the training programs; communication with business groups; top management role; and their expectations for the future.

4.10 BDC Case Study: Strategic Issues

Having presented and analysed the IT use activities of this bank and the relationship of these activities within the organisational context, it is important to discuss some of the important conclusions that can be drawn in relation to strategic issues. BDC could strategically position itself as one of the leading banks in Egypt. However in terms of its perceived strategic behaviour, it works as a "follower" of the two leaders in the Egyptian banking industry: NBE and BM (please refer to section 4.3 for more details). BDC usually avoids the risk that the leaders – usually called the "rule makers" – take to make new initiatives in the market. Having this "analyser" type of strategy made BDC therefore, more profitable than the leaders, as the study results showed.

Concerning IT strategy, BDC adopted the same strategic behaviour, as it did in its firm-wide strategy. It significantly launched its first move into IT use, just after BM had done so and proved its competitive necessity. Moreover, it seems that BDC adopted its main competitors' objectives of IT use.

As the results of measuring the level of SITU in BDC showed, the level of IT use of the bank could be described as intermediate. It could build some significant computing and communication power, and automate its important business processes. However, the results also showed that the bank could not until now, gain clear IT-enabled CAs. The main strategic focus of IT use in BDC was to automate its business processes and support its basic functions and activities. In other words, it concentrated on overlaying the technology on the same business processes, organisational designs and workflow. The bank needs therefore, to shift its strategic focus to addressing explicitly using IT for CAs.

Studying BDC's pattern of organisational practices related to IT use, it was found that it concentrated on three main organisational factors: the role of the CE in supporting IT use practices; enhancing the bank's IT managerial knowledge; and creating a supportive IT management climate. However from a strategic point of view, these three factors alone cannot guarantee building the IS organisational capabilities required to raise the bank's level of SITU beyond the current intermediate level. The bank's firm-wide and IT planning practices were short term and operationally focused. The integration between IT and the firm-wide domains needs to be strengthened. Moreover, BDC's centralised organisational designs, were not consistent with its "analyser" type of strategy.

It is believed that BDC's main pattern of strategic thinking – working as a follower – affected the bank's pattern of IT use. As will be shown in the next chapters, the two leaders used the same three organisational factors to achieve almost the same level of SITU. BDC however, enjoys an advantage that the leaders have lost in the past few years, which is the role of the CE. It is thought that BDC could lead the industry in using IT as a competitive weapon, if it changed its traditional strategic thinking and enhanced all the seven organisational practices, identified in the study's conceptual framework, to build some long-lived organisational IS capabilities.

CHAPTER FIVE

Case 2: Banque Miser

This chapter will present the Banque Miser (BM) case study. It examines the pattern of IT use in this bank and the role of some selected organisational practices in its level of SITU. The organisation of this chapter will be as follows: a presentation of the bank profile; a discussion of the level of SITU in BM; firm-wide planning; IT planning; CE support; level of IT managerial knowledge; the degree of integration between IT and business groups; the organisational design of IT; and IT management climate in BM. Finally an analysis of some strategic issues of IT use in BM will be presented.

5.1 Banque Miser: The Bank Profile

In 1920, Talaat Harb - an Egyptian entrepreneur - established BM, to be one of the most important economic institutions in Egypt. During the period 1920 to 1960 the bank established 26 companies covering a wide range of integrated economic activities including textiles, insurance, transportation, aviation and cinema. These companies were the pioneers or the first to establish (early entrants) their whole industries. This is why BM is always considered as one of the most important economic institutions in Egypt's history. The bank was nationalised by the Egyptian government at the beginning of the sixties. At the present time BM is the second biggest commercial bank in Egypt as the 1995/96 FY indicates in terms of the following:

- The book value of BM's total assets was £E47bn in the FY ending June 1996. This rates BM as the second biggest bank in Egypt in terms of total assets.
- Total loans and advances recorded £E21.3bn, while letters of credit amounted to only £E6bn in that FY.
- BM's total deposits amounted to £E39.2bn in the same FY to put the bank first amongst the Egyptian banks in terms of its ability to attract and mobilise savings and deposits.
- The average Return On Investment (ROI) achieved on the 30th of June 1996 by BM was approximately 0.13%. This is while net profit was £E64mn according to the profit and loss account of the 1995/96 FY. This rated BM third amongst the public sector banks (after BDC and NBE) in terms of the amount of profits and ROI achieved in that year.
- BM employs 12,320 employees which accounts for 29% of the employees in the four Egyptian public sector commercial banks. Therefore BM has the greatest labour's amount compared to the four public sector commercial banks.

At the present time BM has 415 branches and offices located throughout all the counties of Egypt. This is in addition to offering some affiliates, such as Miser International Bank (MIB) and Miser Exterior Bank (MEB) which are ranked from the top 10 banks in Egypt. The bank also expanded geographically by establishing banks and branches in several Arabic and European countries.

BM offers a full range of commercial, personal, trust and other financial services through its country-wide network of branches. In addition to offering the traditional mix of products BM also works as an investment bank. The bank participated in 18 banking and financial projects, 20 industrial projects, 11 tourism projects, 6 housing projects, 16 food industry projects and 17 services industry projects. Moreover BM has established two of the largest mutual funds in Egypt. The total investments of BM in securities and projects account for £E9bn.

As explained in BDC's case, BM follows the traditional strategic thrusts of any public sector bank in Egypt. Therefore, its long-term plans directly follow those of the government. Apart from this commitment, BM concentrates on continuously increasing its branches to achieve the greatest possible coverage of Egypt, increasing its clients regardless of their business or wealth, and continuously broadening its products and services mix. All the four commercial public sector banks in Egypt adopt these three main thrusts.

5.2 level of Sophistication of IT Use

BM has a reputation of being the pioneer in massively using IT in its business. The bank started significantly building its systems in 1980, when Mr. M. Hafiz, was appointed as a CE for the bank. He personally championed the process of building BM's IT systems, to be the largest system in the Egyptian banking industry. However, when Hafiz passed away (1992), replacing and updating the current systems have slowed down. This is while the competitors could approach BM's advantages in using IT in the banking business. BM gave the other three public sector commercial banks a successful and suitable model for IT use to be followed, as most of the executives of BDC, NBE and BM explained.

5.2.1 The Current IT Infrastructure

BM's infrastructure consists of five main-frame computers, more than 100 mini-computers and more than 2000 personal computers. Although BM deals with many IT products and machines' vendors in Egypt, it relies upon NCR as its main source of computers. Only 27 branches (out of 415 branches) still working manually, and the rest are covered by the above mentioned computers. BM uses a mixture of leased lines from the national authority for telecommunications, x.25 lines from Egypt-Net company and a satellite system for communication.

In addition to the networking system described above, BM has its own sub-network of ATMs. The bank owns 68 machines (ATMs) located in the larger branches of the bank. Launched in 1983, this network is the oldest, biggest and the most efficient ATM system in Egypt. The system has been connected successfully to 10 kinds of credit and debt cards. BM's affiliate banks such as Miser Exterior Bank and Miser International Bank, are allowed to use this system.

5.2.2 Applications

BM's main software applications are data bases developed using the Oracle data base management system software package. The bank uses more than 20 applications to automate most of its business processes such as customers' accounts, credit and lending, letters of credit and letters of guarantee. This DBMS has also been used to implement a complete accounting system. In addition, BDC uses some specialised software for communication such as SWIFT for

international funds transfer transactions. Most of these applications were completely developed by the bank's own software engineers, except for the communication software, and some specialised software such as ATM software.

5.2.3 IT Officials' Opinions about BM's IT Infrastructure.

IT officials' opinions about BM's IT infrastructure were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low : 5 = very high, question 1, App. 1), and was followed up by interview sessions. BM had a general average score (by its officials) ratings equal to 3.7 with 0.69 std. This means that the overall degree of the efficiency of IT architecture, in BM is slightly above "average".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT infrastructure in terms of five major aspects. The IT officials' ratings for these aspects are as follows:

(1) *Compatibility of computer sites* scored a "high" grade (avg. = 4.0, std = 0.6). This score was expected as all the branches of the bank rely on one major vendor for purchasing computers. Moreover, it was clear from the interviews that BM's IT executives are very aware of the importance of the compatibility of computer sites.

(2) *Coverage of geographical locations* scored a "high" grade (avg. = 4.2, std = 0.7). This is because BM has successfully computerised its main branches. As mentioned earlier, only 27 branches (mainly small units) are working manually at the present time, and the bank is considering covering this gap in the near future.

(3) *Coverage of functional divisions* scored an "average" grade (avg. = 3.7, std = 0.9). Although this score is slightly above the other banks' scores, it was expected to be higher than only an "average". This is because BM has good experience in system development. BM executives showed that one of the bank's early objectives is to build competencies in this area. Therefore most of its systems are developed in-house.

(4) *Appropriateness with their firm's long-range plans* scored a "high" grade (avg. = 4.0, std = 0.7). Although the bank does not have formal written long-term plans, BM's executives showed that building the current IT infrastructure was one of the bank's most important strategic objectives.

(5) *Integration of customers' data bases* scored a "low" grade (avg. = 2.5, std = 0.7). It was made apparent from the interview sessions that BM's systems - like the other public sector banks - are product-specific and not customer oriented.

5.2.4 Efficiency of IT Services

IT officials' opinions about the level of efficiency of IT support services in BM were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low : 5 = very high, question 4) and was followed up by the interview sessions. BM had a general average score by its officials equal to 3.4 with 0.96 std. This means that the degree of efficiency of IT services in general in BM is "average".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT services efficiency in terms of four major categories of IT support services. The IT officials' ratings for these categories are as follows:

(1) Data Processing and Telecommunication (DP&T) scored above "average" grade (avg. = 3.8, std = 0.66). Table 5.1 lists the statistics of DP&T items.

Table 5.1 Evaluation of Data Processing & Telecommunication in BM

	AVG	*STD*
Install & maintain data communication equipment	3.4	0.6
Produce & distribute paper reports	3.2	0.5
Produce & distribute microfiche reports	3.2	0.8
Access to consumer & business data files	4.4	0.7
Accuracy of consumer & business files	4.8	0.4
Response time of on-line systems	3.8	0.8
General average (overall score)	3.8	0.66

(2) Software Services (SS) scored a "high" grade (avg. = 4.2, std = 0.18). Table 5.2 lists the statistics of SS items. As mentioned before, BM could build some competencies in software development, as made apparent by the interview sessions. It is clear that table 5.2 supports this.

Table 5.2 Evaluation of Software Services in BM

	AVG	*STD*
Develop new software applications	4.4	0.7
Enhancements to application software	4.1	0.6
Maintenance of application software	4.0	0.5
Meet production time frames	4.2	0.5
Software Services SS	4.2	0.18

(3) Office Services & User Liaison (OS&UL) scored a "low" grade (avg. = 2.6, std = 1.02). Table 5.3 lists the statistics of OS&UL items.

Table 5.3 Evaluation of Office Services & User Liaison in BM

	AVG	*STD*
Install & maintain voice communication equipment	2.9	1.0
Electronic mail	2.1	1.1
Production level word processing	3.4	0.7
Teleconferencing	1.0	0.0
User liaison assistance/trouble calls	3.4	0.7
Office Services & User Liaison OS&UL	2.6	1.02

BM does not use electronic-mail or teleconferencing applications in its business, as is clear from the above table. Ratings for the other categories were average.

(4) End-User Computing Services (EUCS) scored a "low" grade (avg. = 3.0, std = 0.95). Table 5.4 lists the statistics of EUCS items.

Table 5.4 Evaluation of End-User Computing Services in BM

	AVG	*STD*
Technical: trouble shooting, database extraction, etc.	3.8	0.8
Research: hardware & software products	1.7	1.1
Consulting: hardware & software products, etc.	3.0	1.0
Training & education	3.6	0.7
End-user Computing Services EUCS	3.0	0.95

As made clear from the interview sessions, EUCS in general is not a major concern in BM (and all the cases studied). This is because end-users only use the system for data entry. Therefore this category should have had lower ratings than it was actually given by BM's officials. One of the weak points of this bank, as far as the needs of end-users are concerned, is in the area of research. BM does not have any formal way of carrying out research into IT products.

5.2.5 Level of Sophistication of IT Use: Employees' Perceptions

Perceptions of IT officials in BM about their bank's levels of SITU were sought through the questionnaire. Using Nolan's "stages of growth" model (Nolan, R., 1991), officials were presented with a definition of each stage and then asked to indicate which definition best described their IT use pattern in BM (please see question 3 and section 3.2, chapter three).

Responses showed that BM's level of SITU is in the "data administration stage". This response was not mostly expected as the data administration stage is one of the very high stages in Nolan model. It is believed that BM's IT use is not as mature and business focused as this result indicates. BM still suffers from lack of integration between its branches, as its communication system does not allow all its computerised sites to be on-line. Also, its cross-branch and cross-banking transactions are very limited to the branches located in the capital and some of the big cities. Moreover, its data-bases are product-oriented and not customer-oriented . However, it is believed that this result reflects the degree of confidence that IT officials in BM have as they are the first in this field.

5.2.6 Strategic Use of IT in BM

Table 5.5 Responses for IBCAs Analysis in BM

	AVG	*STD*
Integration of customer data	2.2	0.8
Centralised transaction processing centre	2.8	0.7
Consolidation of applications onto uniform product base	4.1	0.5
Number & availability of ATMs	4.5	0.6
ATM interchange links with other institutions	1	0.0
Market analysis, marketing	1	0.0
Differentiated customer services & products	4.3	0.8
Electronic fund transfer / Point-of-sale terminals	2.6	1.2
Risk management techniques	1	0.0
Competitor intelligence	1	0.0
MIS planning & control	3.9	1.2
Electronic home banking	3.2	1.2
Internal networking systems	4.1	0.8
Cost accounting	3.4	1.3
Investments & financial planning	3.7	1.0

Two questions in the questionnaire were used to measure the degree of strategic use of IT compared to the bank's main competitors (questions 5 and 7). The first question, using a five-point scale, sought IT officials' perceptions about the bank's degree of success in utilising IT for attaining competitive advantages. BM was rated "high" by its officials (avg. = 4.5, std = 0.6). Therefore, according to BM's IT officials, the bank is better than its competitors in utilising IT for attaining business competitive advantages. This is consistent with their opinions about the location of their bank in Nolan's curve. In the second question, interviewees were presented with a list of 15 areas of potential Information Based Competitive Advantages (IBCAs). They were

then asked, in a five-point scale question, to rate how well their firm made use of these areas to gain some advantages over its competitors (questions 7-10). Table 5.5 shows the employees' responses to this question.

According to the above table, the responses indicate the following:

1- The bank has achieved four competitive advantages over its competitors:

(a) in the consolidation of applications onto uniform product base and;

(b) in the number and availability of ATM machines;

(c) in offering differentiated customer services and products; and

(d) in the internal networking systems.

2- BM did not spend much effort in four important areas of IBCAs. These areas are: ATM interchange links with other institutions; market analysis, marketing; risk management techniques and competitor intelligence. These areas have not had much attention devoted to them by BDC's competitors either.

3- Three areas have drawn much efforts from BM:

(a) MIS planning and control;

(b) electronic home banking; and

(c) investments and financial planning.

However the results did not show any clear IBCAs achieved in these areas, as ratings by the interviewees were "average". Executives explained that either BM has already gained some IBCAs in them or they will be important IBCAs for BM in the near future.

5.3 Firm-Wide Planning in BM

There is no big difference in firm-wide planning practices between any public sector commercial bank in Egypt. Therefore this section will be the same as the other public sector banks' cases. Formally, BM practices three types of firm-wide planning: (1) firm-wide annual budgeting; (2) capital budgeting; and (3) operational planning. BM started using these types of planning at the beginning of the sixties as they were made mandatory by the government for all public sector companies. Several questions were designed to examine this point in the questionnaire (questions 11 - 16). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of a firm-wide planning process in their firm. However, most of them do not know the details of this planning process.

2- Formal planning procedures were started in the sixties. However interviewees consider it as an annual routine process prepared to satisfy the above governmental agencies' control requirements.
3- Although no documents were available for long-term and strategic planning in BM, interviewees indicated that this type of planning is there in some unstructured or unorganised way.

Exactly as in the previous case, the top management of BM practices strategic planning through developing plans for the bank's critical issues. These issue-based long-term plans are developed by the CE directly through the board meetings and/or the higher level committees. For example the bank has long-term plans for its Islamic banking products, and the bank's two mutual funds project. However, executives indicated that most of these issues are derived from the government main directions and instructions.

As no documents were available to study the bank's current type of strategy, a four-choice question was used to identify the bank's main strategy type (question 17). The question was based on the Miles, R. and Snow, C. (1978) typology of strategies, which are as follows: defensive, creative, analytic, and reactive, (see also section 3.2 in chapter three). Officials classified their bank as a "prospector". This result is consistent with many characteristics of the way BM is doing business. BM and NBE are the leaders of the banking industry in Egypt. They always come first in introducing new products/markets mixtures or changing the current ones. However as in all the public sector business units, BM has a very centralised organisation structure, which is more suitable for defensive strategies.

5.4 IT Planning

As mentioned previously, BM's top management developed the bank's first IT plan in 1980. Executives explained that the CE at the time - Mr. M. Hafiz - developed for the first time a long run strategy or "intent" to be used as a guide for the bank's long; medium; and short-term plans. He formed the "higher committee for machines" to discuss, communicate and review the decisions concerning buying all the components of the bank's IT systems. Although, no documents were available - or allowed - for these plans, the main vision adopted at that time, as explained by the bank's executives, was to comprehensively deploy computers and IT products

on all the bank's branches and business processes. The bank chose NCR to be its major vendor and consultant in developing and implementing this plan.

Several questions were designed to examine this variable in the questionnaire (questions 35 - 42). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of an IT planning process.
2- Although there was no clear consensus between interviewees concerning the starting date of IT planning in the bank, most of them indicated some date in the beginning of the eighties. In the open interview sessions, executives showed that real IT planning started in 1980 when Hafiz took over.
3- Interviewees showed that three time-frames of planning are practised in BM (short, medium and long-term).
4- Although interviewees indicated that the computer department rely on both approaches of IT project planning that is to say top-down and bottom-up approaches, top-down approach is the most commonly used. Lower levels only participate in minor ways through formal requests for updating machines or extending some systems' functionality.
5- One of the questions (question 40) sought the officials' opinions about the degree of participation of each level of the organisation in IT planning. Table 5.6 lists the results of this question.

Table 5.6 Degree of Participation of the Different Organisational Levels in BM

	AVG	*STD*
Top management	4.0	0.6
Managers of the functional departments	3.1	0.7
Employees of the functional departments	2.6	1.1
IT managers	4.3	0.8
Systems analysts	4.3	0.8
Programmers	4.0	0.8
End-users	3.1	0.7
Vendors	2.7	1.0
Consultants	2.4	1.1

Responses to question 40 in the above table, showed that top management level, IT executives, system analysts, and programmers had "high" scores with the lowest levels of variances concerning their degree of participation in IT planning, while the rest of the organisational levels had "low" or "average" scores with greater levels of variance. Executives explained in the open interviews that planning for IT is mainly contained in the computer department with financial

participation from the top management. Also they showed that IT planning in BM became less dependent on vendors and consultants as it was in the eighties.

5.4.1 Appropriateness of IT Architecture for IT Planning.

Two major differences exist between BM and BDC in IT planning: BM has better skills in software development and it has better experience in IT planning in general. Therefore, BM is less dependent on the external sources for its software. However BM and BDC - and probably all the banks in Egypt - suffer from one common important limitation in their IT infrastructures, which is the lack of efficiency of the Egyptian national telecommunication infrastructure in some areas in the country, especially in the south. This limits the systems developed to be branch specific.

5.5 CE Support in BM

CE support was studied in this project, through two dimensions: CE participation and CE involvement. Each dimension was measured through a set of parameters. The following sections discuss the results of this measurement process.

5.5.1 Degree of CE Participation in IT

Table 5.7 Statistics of the CE Participation in BM

	AVG	*STD*
Personal participation	2.0	0.5
CE role in IT committee	1.2	0.9
CE communication intensity with IT department	3.1	0.5
CE knowledge of IT opportunities	3.1	0.8
CE knowledge with IT use of competitors	3.1	1.1
CE personal IT use	3.0	0.4
CE participation (overall score)	2.6	0.82

Several questions were designed to examine this point in the questionnaire (questions 18 – 23). The table given above shows the averages and standard deviations of the IT officials' responses to these questions.

BM had a "low" degree of CE participation in general, according to the employees' opinions (avg. = 2.6, std = 0.82). However, most of the results of the sub-items had "average" scores. Only

"CE personal participation" and "CE role in the IT committee" had "low" and "very low" scores respectively. Interview sessions confirmed these results to a great extent. The executives showed that the present CE of BM - unlike his predecessor - does not have significant intents for IT use in BM.

5.5.2 Degree of CE Involvement in IT

Several questions were designed to examine this point in the questionnaire (see questions 24 – 27). The following table shows the averages and standard deviations of the IT officials' responses to these questions.

Table 5.8 Statistics of the CE Involvement in BM

	AVG	*STD*
CE prevailing thinking about IT spending	3.4	0.6
CE perception of IT importance	3.4	0.5
CE vision for IT	3.7	1.1
CE endorsement of non traditional applications	3.0	0.0
CE involvement (overall score)	3.4	0.27

BM had an "average" degree of CE involvement in general, according to the employees' opinions (avg. = 3.4, std = 0.27). In this dimension, all the sub-items had "average" scores as shown in table 5.8. The results in the table could be explained, according to the choices allowed for answering the questions directed to the interviewees, as follows:

- The CE's prevailing thinking about IT spending is that IT is an important function or activity.
- The CE's perception of IT's importance to the firm is that IT has an average importance for the bank.
- The CE has a general functional vision for IT.
- The CE's endorsement of applications not meeting traditional criteria tends to be "frequently".

Based on the above two dimensions discussed in sections 5.5.1 and 5.5.2, the CE's support to IT activities in BM is "average", (general avg. = 3.0).

5. 6 Managerial IT Knowledge in BM

The aim of this section is to study the overlapping know-how of IT and line managers (in particular, the knowledge that IT managers possess about the business and strategic issues within

the firm, and the knowledge that line managers possess about the potential opportunities from applying IT within their business domain). Therefore two dimensions were used to measure this variable: IT managers knowledge and line-managers knowledge.

5.6.1 IT Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate their managers' knowledge about business operations and corporate strategies (questions 28 and 29). Table 5.9 lists the results of this measurement process.

Table 5.9 Statistics of IT-Managers Knowledge in BM

	AVG	*STD*
Knowledge degree of business operations	4.0	0.4
Knowledge degree of the corporate strategy	3.8	0.6
IT-managers Knowledge (overall score)	3.9	0.17

IT managers' knowledge in BM could be rated as almost "high" in overall, as shown in the table given above. Although IT department did not have its officials from the different functional departments in the bank as in BDC, they have high knowledge in business operations as the statistics indicate. Executives explained that they could gain some experiences in the bank's activities, as we rely on our software development teams in developing our systems.

5.6.2 Line-Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate line-managers' knowledge about IT potential as a competitive weapon and a tool to decrease clerical work (questions 30 and 31). Table 5.10 lists the results of this measurement process. From this table, it is clear that line-managers' knowledge about IT is rated "average".

Table 5.10 Statistics of Line-Managers Knowledge in BM

	AVG	*STD*
Knowledge of IT potential as a competitive weapon	3.3	0.8
Knowledge of IT as a tool to decrease clerical work	3.9	0.7
Line-managers Knowledge (general score)	3.6	0.37

Mutual official movements, mutual training, and joint team-work are some of the exchange mechanisms that can be used to increase the level of IT managerial knowledge in the firm. Three

related questions were directed to the IT department's officials to detect the degree of existence of these kinds of mechanisms. Table 5.11 lists the results of this measurement process.

Table 5.11 Statistics about some Exchange Mechanisms in BM

	AVG	*STD*
Mutual officials movements	1.8	1.0
Mutual training	2.2	1.2
Joint team-work	4.3	1.2

It is clear from the above table that BM does not rely much on the first two items (mutual movements and mutual training) as they had "very low" and "low" scores respectively. Joint team-work are used in BM to a "high" extent (avg. = 4.1, std = 1.2).

5.7 IT and Business Groups Integration

The degree of integration between business and IT groups was examined in this study through two dimensions: the intellectual dimension and the social dimension.

5.7.1 The Intellectual Dimension

Two time-frames were used when measuring the intellectual dimension: the short-term frame and the long-term frame. According to the measurement method explained in chapter 3, business and IT plans (for short and long-term frames) were examined in order to rate the degree of integration between them. As regards the *short-term frame*, BM has plans in the IT and business areas, but there is no clear cross referencing between them. Therefore, the degree of integration could be said to be "average", as explained in section 3.7 in chapter three.

As regards the *long-term frame*, BM does not have formal written long-range plans for IT or business. Therefore BM's long-term level of integration between IT and business, in terms of the intellectual dimension, could be rated as "very low".

In addition to the analysis given above, two five-point scale questions were used to enable IT officials in this bank to indicate their perceptions about the level of integration between IT and business in their bank (questions 32 and 33). The parameters used to measure the intellectual dimension were: line-managers understanding of IT objectives; and IT-managers understanding of business objectives. Table 5.12 lists the results of this measurement process.

Table 5.12 Statistics about The Intellectual Dimension

	AVG	*STD*
Line-managers understanding of IT objectives	3.2	0.5
IT-managers understanding of business objectives	3.0	0.6

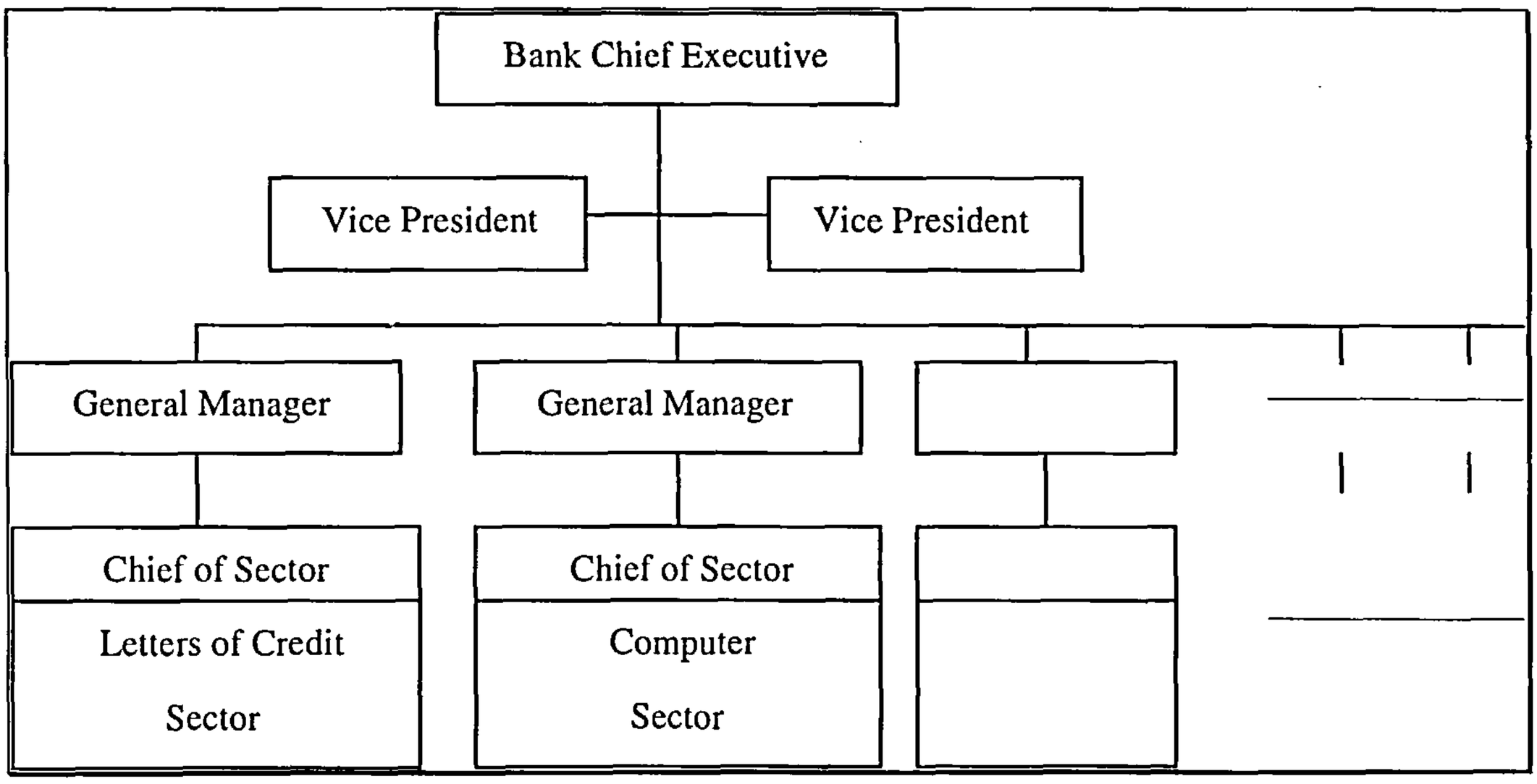
It is clear from this table that all the responses circle around the "average" score. However, this result is not consistent with the analysis discussed above, for the long-term frame.

5.7.2 The Social Dimension

A five-point scale question was used to enable IT officials in BM rate the level of "intensity of communication", between IT and business groups, as an approximation for the social dimension of integration (question 35). According to the officials' opinions, intensity of communication could be rated as above "average" (avg. = 3.9, std = 0.5).

5.8 IT Organisational Design in BM

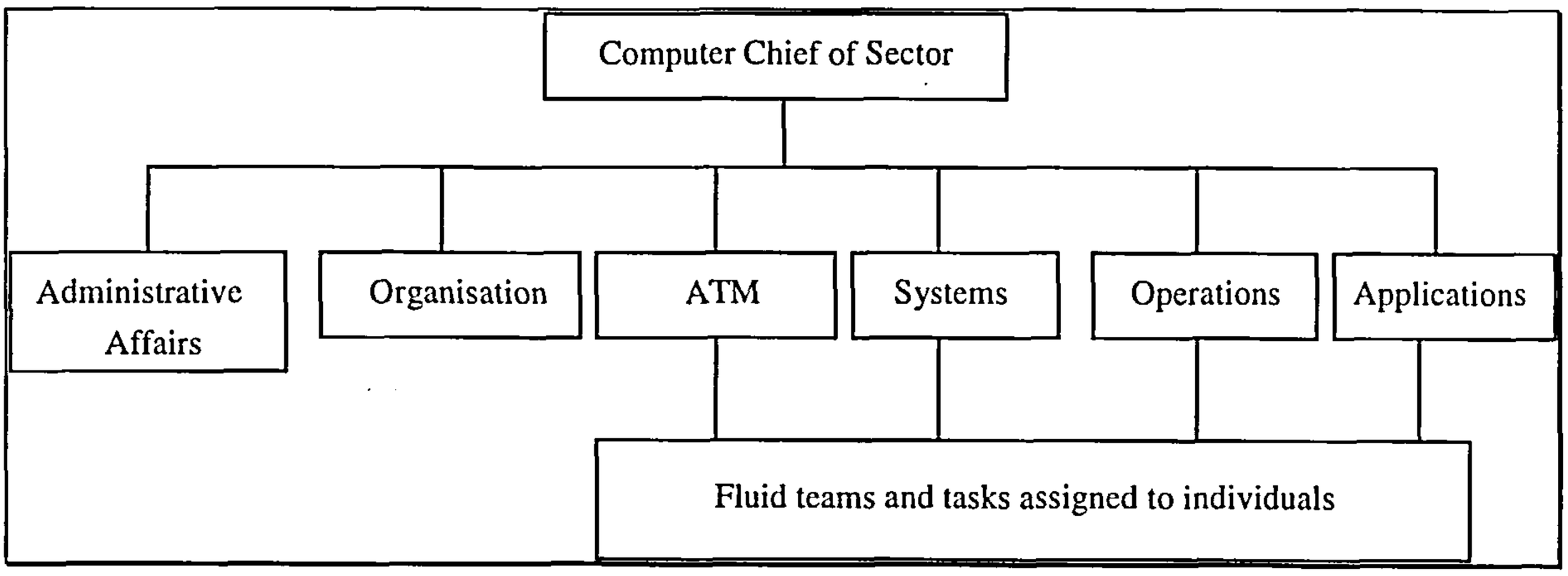
Figure 5.1 BM Organisational Structure



5.8.1 Firm-Wide Organisational Structure

BM's organisational structure follows the traditional functional structures (which is followed in all the public sector banks). Each banking function has a separate organisational unit (a sector or a general administration). Figure 5.1 depicts an overview of this structure.

Figure 5.2 IT Organisational Structure of BM



5.8.2 IT Organisational Structure

As in figure 5.2, the IT organisational structure follows the same type of functional structures as in the firm-wide organisation of a firm. A separate department is designated to each one of the three traditional IT functions: systems development, operations and production, and applications. In addition to these organisational units, a separate unit is designated to encompass the ATM and credit cards called "cards centre". Two additional administrative units have been added recently for the administrative and organisation affairs.

The systems development department is responsible for planning and developing new software systems. This organisational unit is a central unit located in the main branch of the bank. BM has about 60 officials working in this department most of them are well trained programmers.

The operations and communication department's activities are related to the operation of existing machines and networks in all the branches of the bank. The employees and operators of this department are responsible for day-to-day back-ups, preparing and following up the networks, managing output production and distribution, and providing end-user support for the relevant

problems. Each branch has one or two operators while the central department is in the main branch. All the operators report directly to the central computer department in the main branch.

The applications department is considered as the front line of the computer department against the end-users. It is responsible for training the end-users on the new applications and trouble shooting the simple day-to-day problems experienced in using these applications.

5.8.3 Integration Mechanisms

a. Integration with top management

In the eighties BM used to have one IT committee (the higher committee for machines) as the main integration mechanism between the computer department; top management and the functional departments as well. However, this committee did not have organised schedules for meetings for a long time. Therefore, integration at this level depends on the chief of sector of the computer department and his relations with the CE and the members of the board in its regular meetings to pass his proposals and projects.

b. Integration with the functional departments

All the IT resources are fully owned by the computer sector in BM and few resources have been allocated to end-user computing in the functional departments. For this reason, IT officials (specially in the applications department) spend much of their time in phone calls and regular and ad-hoc visits for trouble shooting tasks. Apart from these day-to-day integration mechanisms formal correspondences and requests are the most common way for integration in the bank. These correspondences are often for enquiries, requests for additional capacities, etc. Joint team-work and presentation sessions are also commonly used in software development or purchasing projects. No dedicated committee was formed for the integration at this level.

c. Internal integration mechanisms

Due to the strong centralisation of this bank's IT organisational structure, integration mechanisms within the IT organisational structure are also very formal and centralised as well. Formal directives, assignments and decisions are the main integration mechanisms in BM. The bank does not have some organised list of formal meetings in the IT department. The department occasionally uses this way of integration when implementing important projects in order to discuss work assignments and follow up the day-to-day performance.

5.9 IT Management Climate

The aim of this section is to discuss the extent to which the climate of IT management in BM, is positive and supportive. Five main aspects of IT climate were studied: the role of top management in creating a supportive climate for those concerned with IT management; the existence of a clear long-term vision for the role of IT in business; communication climate between IT and business groups; degree of satisfaction with the role of IT in business; and degree of satisfaction with the current IT training programs.

5.9.1 The Role of Top Management in the IT Management Climate

Three main items were measured to examine this aspect of IT management climate: (a) employees' perceptions about top management understanding of how IT contributes to business; (b) employees' opinions about top management willingness to devote sufficient time to make IT projects successful; and (c) employees' perceptions about the extent to which top management considers IT to be a strategic factor. Five-point scale questions were used to enable IT officials to express their opinions regarding these issues (questions 44, 45 and50). Table 5.13 lists the results of this measurement process.

Table 5.13 Statistics of Top Management Contribution to IT Management Climate in BM

	AVG	*STD*
Top management understanding of how IT contributes to business	3.4	0.7
Top management willingness to devote sufficient time to make IT projects successful	4.2	0.4
The extent to which top management considers IT as a strategic factor	3.9	0.5
Top management contribution to IT management climate (overall score)	3.8	0.5

As shown in the table, BM's IT officials showed "average" satisfaction with the supportive role played by their top management (avg. = 3.8, std = 0.5).

5.9.2 The Existence of a Clear Long-Term IT Vision

In the interview sessions all the executives indicated that BM is implicitly working under the same IT objectives adapted by the previous CE and his associates. It was understood, from the interview with the chief of sector of computer, that the bank has passed the time of working hard

for the bank's infrastructure and training its employees. Therefore the department goals are mostly short-run and limited to completing and enhancing the current infrastructure.

5.9.3 Communication Climate Between IT and Business Groups

A five-point scale question was used to study the officials' opinions about this issue (question 49). BM had a "high" rating according to its officials in terms of their satisfaction with the communication climate between IT and business groups (avg. = 4.0, std = 0.3).

5.9.4 Degree of Satisfaction with the Current IT Training Programs

Another five-point scale question was used to study the officials' opinions about this issue (question 51). The degree of satisfaction of the officials with the bank's IT training programs was "high" (avg. = 3.8 & std = 0.5).

5.9.5 Degree of Satisfaction with the Role of IT in Business

From the results of the above categories, officials have an overall "high" degree of satisfaction with the current role of IT in their business (avg. = 4.2 & std. = 0.52). Table 5.14 shows the details of this indicator (see also questions 46 – 48).

Table 5.14 Statistics of the Degree of Satisfaction with IT Role in Business in BM

	AVG	*STD*
Satisfaction with the current role of IT in the bank	4.2	0.5
Expectation for having the highest benefits from IT	4.1	0.4
Expectation for leading the industry in IT use	4.3	0.6
Satisfaction with IT role in business (overall score)	4.2	0.52

In the light of the above, it is safe to say that IT management climate in BM is positive and the officials have high degree of satisfaction with all the aspects of this climate such as the training programs; communication with business groups; top management role; and their expectations for the future.

5.10 BM Case Study: Strategic Issues

BM is one of the leaders in the Egyptian banking industry. The bank's initiatives and strategic moves – besides NBE's – affect to a great extent the rules of competition in the Egyptian financial market. For example BM was the first to introduce full range of Islamic banking

products in the business and also the first to massively use IT in the banking industry. According to the results of this case study, BM's strategy was classified as "creative" strategy (please refer to section 5.3 for more details).

Concerning IT strategy, BM as mentioned earlier is the first to introduce IT significantly in the banking business. Its pattern of IT use has been considered as the safest model of how to use IT in a leading bank in the Egyptian business environment.

As the results of measuring the level of SITU in BM showed, the level of IT use of the bank could be described as intermediate. BM could build some significant computing and communication resources, and automate its important business processes. However, the results also showed that the bank could not until now, gain clear IT-enabled CAs. The main strategic focus of IT use in BM was to automate its business processes and support its basic functions and activities. In other words, it concentrated on overlaying the technology on the same business processes, organisational designs and workflow. The bank needs, therefore, to shift its strategic focus to explicitly using IT for CAs.

Studying BM's pattern of organisational practices related to IT use, it was found that it concentrated on three main organisational factors: the role of the CE in supporting IT use practices; enhancing the bank's IT managerial knowledge; and creating a supportive IT management climate. However from a strategic point of view, these three factors alone cannot guarantee building the IS organisational capabilities required to raise the bank's level of SITU beyond the current intermediate level. The bank's firm-wide and IT planning practices were short term and operationally focused. The integration between IT and the firm-wide domains needs to be strengthened. Moreover, BM's centralised organisational designs, were not consistent with its "creative " type of strategy.

It is clear that the pattern of IT use and its related organisational context in BM are similar to its main rivals-NBE and BDC. The main difference, however, is that BDC still enjoys the supportive role of the CE, while BM and NBE have lost this important factor in the last few years. Nevertheless the results showed that BM has better IT skills due to the fact that it began to use the technology earlier than the others. Moreover it is believed that BM's IT infrastructure is

more effective than the others are, because it has a longer experience in this field. For example the study results showed that BM's ATM network is the most reliable network in Egypt.

However, since BM has lost the role of the CE in supporting IT use, the bank strategic focus towards IT has lost its enthusiasm and/or commitment. It is believed therefore, that BM needs to regain this commitment as a starting point to raise its level of SITU. This commitment should consider IT use as a long-lived journey that is needed to improve all the seven organisational practices identified in the study's conceptual framework, to build some long-lived organisational IS capabilities.

CHAPTER SIX

Case 3: National Bank of Egypt

This chapter will present the National Bank of Egypt (NBE) case study. It examines the pattern of IT use in this bank and the role of some selected organisational practices in its level of SITU. The organisation of this chapter will be as follows: a presentation of the bank profile; a discussion of the level of SITU in NBE; firm-wide planning; IT planning; CE support; level of IT managerial knowledge; the degree of integration between IT and business groups; the organisational design of IT; and IT management climate in NBE. Finally an analysis of some strategic issues of IT use in NBE will be presented.

6.1 National Bank of Egypt: The Bank Profile

In June 1998 NBE celebrated its centenary. NBE is always described as the "flagship" bank in Egypt as it is always ranked number one. It commands almost 25% of the market share of loans and deposits. The bank served as a central bank during the period 1957-1963. At the present time NBE completed the 1995/96 FY positioned as the biggest commercial bank in Egypt in terms of the following:

- The book value of NBE's total assets was £E52.2bn in the FY ending June 1996. This rates NBE as the biggest bank in Egypt in terms of total assets.

- Total loans and advances recorded £E26.5bn, while letters of credit amounted to £E18.1bn at that FY. NBE holds almost one third of the letters of credits' market share in Egypt.
- NBE's total deposits amounted to £E39bn in the same FY to keep the bank as the leader of the Egyptian banks in terms of its ability to attract and mobilise savings and deposits.
- The average Return On Investment (ROI) achieved on the 30th of June 1996 by NBE was approximately 0.25% which was almost the highest (slightly after BDC) rate of all the public sector banks. This is while net profit was £E130mn according to the profit and loss account of the 1995/96 FY. This rated NBE first amongst the public sector banks in terms of the amount of profits achieved in that year.
- NBE employs 9595 employees which accounts for 22% of the employees in the four Egyptian public sector commercial banks. However NBE has the lowest labour intensity per branch compared to these banks.

At the present time NBE has 320 branches and offices located throughout all the counties of Egypt, in addition to three affiliates. One of them (Commercial International Bank CIB) is one of the top 10 banks in Egypt. Moreover the bank maintains an international presence via the National Bank of Egypt International Ltd., London (NBEI), and a representative office in Johannesburg.

NBE offers a full range of commercial, personal, trust and other financial services through its country-wide network of branches. As in the previous public sector banks' case studies, NBE offers many non-traditional products. It directly contributes in the capital of many companies and enables its customers invest easily in the Egyptian stock market through its mutual funds projects. The total investments of NBE in securities and projects account for £E7bn.

NBE follows the traditional strategic thrusts of any public sector bank in Egypt. Therefore, its long-term plans directly follow those of the government. Apart from this commitment, NBE concentrates on continuously increasing its branches to achieve the greatest possible coverage of Egypt, increasing its clients regardless of their business or wealth, and continuously broadening its product and services mix. These three main thrusts are adopted by all the four commercial public banks in Egypt.

6.2 level of Sophistication of IT Use

As in BDC case, NBE had its first organised plan for utilising IT in its business, in 1986. The main vision of its top management for using IT at the time was to massively deploy computers and communication networks for automating the bank's business. This move was triggered because of the success achieved by Banque Miser (BM) in establishing the first big IT infrastructure in the Egyptian public sector banks. NBE was not the only one to try to emulate BM. BDC and Bank of Alexandria, the other two public sector commercial banks, were making similar moves at the time. In 1988, the bank appointed Mr. W. El-Aggan - who came from out side the bank - to be the first chief of sector of the computer department. El-Aggan put the organisation, the plans, the projects and the main philosophy of work for IT use in the bank during the period 1988 - 1992. Executives in the bank indicated that El-Aggan was the real "champion" behind introducing IT in NBE.

6.2.1 The Current IT Infrastructure

NBE's infrastructure consists of four IBM main-frame regional computers; more than 120 IBM AS400 mini-computers; and more than 2000 personal computers. These computers cover most of the bank's branches except for some small branches and units such as the savings units and representative bureaux in hotels and airports. NBE uses a mixture of leased lines from the national authority for telecommunications, x.25 lines from the Egypt-Net Company; and its satellite system for communication across the bank's branches.

6.2.2 ATM Network

In 1995 NBE started building its ATM network. The bank purchased few NCR and IBM machines for experimenting the network. They were only 8 machines, put in the main branches: Sherief branch; Naser city; El-dokki; El- Borg; Alexandria; Sarwat and Miser El-Gideeda. However, after this experimentation, the computer sector chose to buy 60 machines from a different vendor and began to install them. Up to now, only a few of the machines have been installed and the project suffers from some software problems.

6.2.3 Applications

NBE rely heavily on its system development administration in developing its software. Therefore, 90 % of its systems are built in-house. Thanks to El-Aggan, NBE could have a great

reputation in software development. Traditionally, the bank develops software applications using data-bases' systems and COBOL language to automate many of the bank's business processes such as customer accounts, credit and lending, letters of credit and letters of guarantee. DBMS has also been used to implement a complete accounting system. In addition, NBE uses some specialised software for communication such as SWIFT for international funds transfer transactions.

6.2.4 IT Officials' Opinions about NBE's IT Infrastructure.

IT officials' opinions about NBE's IT infrastructure were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low : 5 = very high, question 1, App. 1) and was followed up by interview sessions. NBE had a general average score (by its officials) equal to 3.7 with 0.80 std. This means that the overall degree of the efficiency of IT architecture in NBE is above "average".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT infrastructure in terms of five major aspects. The IT officials' ratings for these aspects are as follows:

(1) *Compatibility of computer sites* scored a "high" grade (avg. = 4.3, std = 1.0). This score was expected, as all the branches of the bank rely on one major vendor for purchasing computers and software. Most of the banks put this item into consideration while choosing their vendors.

(2) *Coverage of geographical locations* scored a "high" grade (avg. = 4.6, std = 0.6). This is because NBE has successfully computerised most of its branches.

(3) *Coverage of functional divisions* scored an "average" grade (avg. = 3.3, std = 0.8). In the interview sessions, executives showed that NBE could automate most of the traditional banking business processes.

(4) *Appropriateness with their firm's long-range plans* scored an "average" grade (avg. = 3.6, std = 0.8). NBE - like the rest of the public sector commercial banks - does not have written formal strategic plans. Therefore the awareness of the interviewees of the bank's main strategic thrusts and their relationships to IT plans were not clear.

(5) *Integration of customers' data bases* scored a "low" grade (avg. = 2.6, std = .6). As in the previous cases, this was for two reasons. Firstly, systems were applied in the bank to be branch specific. However, the bank is considering at the present time, integrating its data bases across its branches by re-engineering them to be more global. Secondly, the main

purpose of automation in NBE is to decrease the efforts spent in accounting work. Therefore, software systems were product-oriented to suit the accounting processes and routines.

6.2.5 Efficiency of IT Services

IT officials' opinions about the level of efficiency of IT support services in NBE were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low : 5 = very high, question 4) and was followed up by interview sessions. NBE had a general average score by its officials equal to 3.3 with 0.91 std. This means that the degree of efficiency of IT services in general in NBE is "average".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT services efficiency in terms of four major categories of IT support services. The IT officials' ratings for these categories are as follows:

(1) Data Processing and Telecommunication (DP&T) scored a slightly above "average" grade (avg. = 3.8, std = 0.74). Table 6.1 lists the statistics of DP&T items.

Table 6.1 Evaluation of Data Processing & Telecommunication in NBE

	AVG	*STD*
Install & maintain data communication equipment	3.7	0.6
Produce & distribute paper reports	3.7	1.0
Produce & distribute microfiche reports	2.4	0.9
Access to consumer & business data files	4.3	0.7
Accuracy of consumer & business files	4.5	0.5
Response time of on-line systems	4.0	0.9
General Average (overall score)	3.8	0.74

Executives in the interview sessions indicated that NBE probably has the best computer and communication network in any business firm in Egypt. Therefore, they implicitly see that DP&T should have had a "high" score.

(2) Software Services (SS) scored a "high" grade (avg. = 4.0, std = 0.15). Table 6.2 lists the statistics of SS items.

As mentioned before, NBE could build some competencies in software development. Therefore, most of the systems applied, are developed in-house. Officials in the computer sector in NBE have great confidence in the bank's skills in this field. They indicated that NBE's software

engineers are always wanted from the competitors and from the banks in the neighbouring Arabic countries. This is why ratings for these items in the following table were "high".

Table 6.2 Evaluation of Software Services in NBE

	AVG	*STD*
Develop new software applications	3.9	0.6
Enhancements to application software	3.8	0.6
Maintenance of application software	3.9	0.6
Meet production time frames	4.2	0.7
Software Services SS	4.0	0.15

(3) Office Services & User Liaison (OS&UL) scored a "low" grade (avg. = 2.4, std = 0.79). Table 6.3 lists the statistics of OS&UL items.

Table 6.3 Evaluation of Office Services & User Liaison in NBE

	AVG	*STD*
Install & maintain voice communication equipment	2.3	1.1
Electronic mail	1.7	1.0
Production level word processing	3.0	1.3
Teleconferencing	1.5	0.9
User liaison assistance/trouble calls	3.3	1.3
Office Services & User Liaison OS&UL	2.4	0.79

NBE does not use electronic-mail or teleconferencing applications in its business, as is clear from the above table. Ratings for the other categories were average.

(4) End-User Computing Services (EUCS) scored a "low" grade (avg. = 3.1, std = 0.85). Table 6.4 lists the statistics of EUCS items.

Table 6.4 Evaluation of End-User Computing Services in NBE

	AVG	*STD*
Technical: trouble shooting, database extraction, etc.	4.0	0.7
Research: hardware & software products	2.0	0.8
Consulting: hardware & software products, etc.	3.0	1.0
Training & education	3.5	0.8
End-user Computing Services EUCS	3.1	0.85

As made clear from the interview sessions, EUCS in general is not a major concern in NBE. This is because end-users only use the systems for data entry. One of the weak points in this bank, as

far as the needs of end-users are concerned, is in the area of research, NBE does not have any formal or informal way of carrying out research into IT products.

6.2.6 Level of Sophistication of IT Use: Employees Perceptions

Perceptions of IT officials in NBE about their bank's level of SITU were sought through the questionnaire. Using Nolan's "stages of growth" model (Nolan, R., 1991), officials were presented with a definition of each stage and then asked to indicate which definition best described their IT use pattern in NBE (please see question 3 and section 3.2, chapter three). Responses showed that NBE's level of SITU is in the "integration stage".

6.2.7 Strategic Use of IT in NBE

Two questions in the questionnaire were used to measure the degree of strategic use of IT compared to the bank's main competitors (questions 5 and 7). The first question, using a five-point scale, sought IT officials' perceptions about the bank's degree of success for utilising IT in attaining competitive advantages. NBE was rated "average" by its officials with a high level of variance (avg. = 3.5, std = 0.9). Therefore, according to NBE's IT officials, the bank was no better than its competitors in utilising IT for attaining some business competitive advantages. In the second question, interviewees were presented with a list of 15 areas of potential Information Based Competitive Advantages (IBCAs). They were then asked, in a five-point scale question, to rate how well their firm made use of these areas to gain some advantage over its competitors (questions 7 - 10). Table 6.5 shows the employees' responses to this question.

According to the table given below, the responses indicate the following:

1- The bank has achieved competitive advantages over its competitors in three areas:

(a) in the consolidation of applications onto uniform product base;

(b) in offering differentiated customer services and products; and

(c) in the internal networking systems.

However this result had not been expected. This bank is not much better in integrating its applications and globalising its data bases than its competitors, as was made apparent by the executives in the open sessions. Also using IT in differentiating the bank's services and products is the same as in its main two competitors, namely BM and BDC.

2- NBE did not spend much effort in four important areas of IBCAs. These areas are: ATM interchange links with other institutions; market analysis, marketing; risk management

techniques; and competitor intelligence. These areas have not had much attention devoted to them by NBE's competitors either.

2- Three areas have drawn much efforts from NBE:

(a) number and availability of ATMs;

(b) electronic home banking; and

(c) investments and financial planning.

However the results did not show any clear IBCAs achieved in these areas as ratings by the interviewees were "average". Executives explained that these areas will be important IBCAs for NBE in the near future.

Table 6.5 Responses for IBCAs Analysis in NBE

	AVG	*STD*
Integration of customer data	2.7	0.7
Centralised transaction processing centre	3.1	0.8
Consolidation of applications onto uniform product base	4.4	0.7
Number & availability of ATMs	3	0.9
ATM interchange links with other institutions	1	1.2
Market analysis, marketing	1	1.0
Differentiated customer services & products	4.2	0.8
Electronic fund transfer / Point-of-sale terminals	2.4	0.9
Risk management techniques	1	1.2
Competitor intelligence	1	1.2
MIS planning & control	3.5	1.0
Electronic home banking	3.2	1.2
Internal networking systems	4	1.0
Cost accounting	3.4	1.2
Investments & financial planning	3.9	1.0

6.3 Firm-Wide Planning in NBE

As explained in the previous case studies, there is no big differences in firm-wide planning practices between any public sector commercial bank in Egypt. Therefore this section will be the same as the other public sector bank cases. Formally, NBE practices three types of firm-wide planning: (1) firm-wide annual budgeting; (2) capital budgeting; and (3) operational planning. NBE started using these types of planning at the beginning of the sixties as they were made mandatory by the government for all public sector companies. Several questions were designed to examine this point in the questionnaire (questions 11 - 16). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of a firm-wide planning process in their firm. However most of them do not know the details of this planning process.
2- Formal planning procedures were started in the sixties. However interviewees consider it as an annual routine process prepared to satisfy the above governmental agencies' control requirements.
3- Although no documents were available for long-term and strategic planning in NBE interviewees indicated that this type of planning is there in some unstructured or unorganised way.

Exactly as in the previous case, the top management of NBE practices strategic planning through developing plans for the critical issues. These issue-based long-term plans are developed by the CE directly through the board meetings and/or the higher level committees. For example the bank has long-term plans for some of the great national projects, and also for its mutual funds project. However, executives indicated that most of these issues are derived from the government main directions and instructions.

As no documents were available to study the bank's current type of strategy, a four-choice question was used to identify the bank's main strategy type (question 17). The question was based on the Miles R. and Snow C. (1978) typology of strategies, which are as follows: defensive, creative, analytic, and reactive (see also section 3.2 in chapter three). Officials classified their bank as a "prospector". This result is consistent with many characteristics of the way NBE is doing business. NBE is always known as the flagship bank in the Egyptian banking industry or the leader in this business.

6.4 IT Planning

Unlike the previous two cases, the first comprehensive IT plans did not come from the CE of the bank directly. The first moves in NBE came from the sector of computer and from Mr. El-Aggan, as mentioned before. However the starting vision was not different than in BM. The bank concentrated on building a big suitable computer and communication systems; and competencies in software development. Mr. El-Aggan had a great power, as the current executives explained, in passing all his projects and plans. Thanks to El-Aggan, the bank could catch up with its main rival in four years, especially in many of BM's IT-based advantages.

Several questions were designed to examine this variable in the questionnaire (questions 35 - 42). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of an IT planning process.
2- Most of the interviewees chose the late eighties to be the starting date of IT planning in the bank. This might be because it is almost the time of forming the computer sector and the arrival of El-Aggan to be its first chief of sector.
3- Interviewees showed that three time-frames of planning are practised in NBE (short, medium and long-term). However, the executives showed in the open interview sessions that the short-term planning is the most widely used at the present time. The other two kinds were used in the time of El-Aggan.
4- The top-down approach is the main approach used in planning. This result was expected, as introducing IT in the bank was championed by a "dictator" - as the executives described El-Aggan.
5- One of the questions (question 40) sought the officials' opinions about the degree of participation of each level of the organisation in IT planning. Table 6.6 lists the results of this question.

According to the table, only IT managers had "high" rate of participation in IT planning. Consultants, top management and system analysts had "average" ratings by the officials' responses, while the rest had "low" grades.

Table 6.6 Degree of Participation of the Different Organisational Levels in NBE

	AVG	*STD*
Top management	3.4	0.7
Managers of the functional departments	2.7	1.4
Employees of the functional departments	2.4	1.4
IT managers	4.1	0.8
Systems analysts	3.1	1.4
Programmers	2.9	1.5
End-users	2.4	1.2
Vendors	2.6	1.4
Consultants	3.8	1.0

6.4.1 Appropriateness of IT Architecture for IT Planning.

As in the previous case, two major differences exist between NBE and BDC in IT planning: NBE has better skills in software development and it has better experiences in IT planning in general. Therefore, NBE is less dependent on the external sources for its software. However NBE and BDC - and probably all the banks in Egypt - suffer from one common important limit in their IT

infrastructures, which is the lack of efficiency of the Egyptian national telecommunication infrastructure in some areas in the country, especially the south. This limit systems developed to be branch specific.

6.5 CE Support in NBE

CE support was studied in this project, through two dimensions: CE participation and CE involvement. Each dimension was measured through a set of parameters. The following sections discuss the results of this measurement process.

6.5.1 Degree of CE Participation in IT

Table 6.7 Statistics of the CE Participation in NBE

	AVG	*STD*
Personal participation	2.8	0.7
CE role in IT committee	2.4	1.0
CE communication intensity with IT department	3.2	0.8
CE knowledge of IT opportunities	3.7	0.9
CE knowledge with IT use of competitors	3.8	0.8
CE personal IT use	3.6	0.9
CE participation (overall score)	3.2	0.57

Several questions were designed to examine this point in the questionnaire (questions 18 - 23). The above table shows the averages and standard deviations of the IT officials' responses to these questions.

NBE had an "average" degree of CE participation in general, according to the employees' opinions (avg. = 3.2, std = 0.57). Most of the results of the sub-items had "average" scores as well. Only "CE personal participation" and "CE role in IT committee" had "low" scores.

6.5.2 Degree of CE Involvement in IT

Several questions were designed to examine this point in the questionnaire (questions 24 - 27). The following table shows the averages and standard deviations of the IT officials' responses to these questions.

Table 6.8 Statistics of the CE Involvement in NBE

	AVG	*STD*
CE prevailing thinking about IT spending	4.0	0.4
CE perception of IT importance	4.0	0.3
CE vision for IT	4.0	0.7
CE endorsement of non traditional applications	3.1	0.4
CE involvement (general score)	3.8	0.47

As in the CE participation level, NBE had an "average" degree of CE involvement in general, according to the employees' opinions (avg. = 3.8, std = 0.47). In this dimension, all the sub-items had "high" scores as shown in table 6.8, except for "CE endorsement of non traditional applications", which had an "average" score. The results in the table could be explained according to the choices allowed for answering the questions directed to the interviewees, as follows:

- The CE's prevailing thinking about IT spending is that IT is an important resource or a strategic investment and not only an expense to be controlled.
- The CE's perception of IT's importance to the firm is that IT is a critical factor for the firm.
- The CE has an strong generic vision for IT.
- The CE's endorsement of applications not meeting traditional criteria tends to be "frequently".

Based on the two dimensions discussed in sections 6.5.1 and 6.5.2, the CE's support to IT activities in NBE is "average", (general avg. = 3.5).

6. 6 Managerial IT Knowledge in NBE

The aim of this section is to study the overlapping know-how of IT and line managers (in particular, the knowledge that IT managers possess about the business and strategic issues within the firm, and the knowledge that line managers possess about the potential opportunities from applying IT within their business domain). Therefore two dimensions were used to measure this variable: IT managers knowledge and line-managers knowledge.

6.6.1 IT Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate their managers' knowledge about business operations and corporate strategies (questions 28 and 29). Table 6.9 lists the results of this measurement process.

Table 6.9 Statistics of IT-Managers Knowledge in NBE

	AVG	*STD*
Knowledge degree of business operations	3.6	1.0
Knowledge degree of the corporate strategy	3.7	1.0
IT-managers Knowledge (overall score)	3.7	0.05

IT managers' knowledge in NBE could be rated as "average" in overall, as shown in the table given above. In the interview sessions executives stated that the officials in the IT department did not have its officials from different functional departments within bank. Most of them have only IT back-ground.

6.6.2 Line-Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate line-managers' knowledge about the potential of IT as a competitive weapon and a tool to decrease clerical work (questions 30 and 31). Table 6.10 lists the results of this measurement process. From the table it is clear that line-managers' knowledge about IT is rated as "average".

Table 6.10 Statistics of Line-Managers Knowledge in NBE

	AVG	*STD*
Knowledge of IT potential as a competitive weapon	3.2	1.0
Knowledge of IT as a tool to decrease clerical work	3.8	0.7
Line-managers Knowledge (overall score)	3.5	0.49

Mutual official movements, mutual training, and joint team-work are some of the exchange mechanisms that can be used to increase the level of IT managerial knowledge in a firm. Three related questions were directed to the IT department's officials to detect the degree of existence of these kinds of mechanisms. Table 6.11 lists the results of this measurement process.

Table 6.11 Statistics about some Exchange Mechanisms in NBE

	AVG	*STD*
Mutual officials movements	1.9	1.2
Mutual training	2.6	1.3
Joint team-work	4.0	1.3

It is clear from the table that NBE does not rely much on the first two items (mutual movements and mutual training) as they had "very low" and "low" scores respectively. Joint team-work is used in NBE to a "high" extent (avg. = 4.0, std = 1.3).

6.7 IT and Business Groups Integration

The degree of integration between business and IT groups was examined in this study through two dimensions: the intellectual dimension and the social dimension.

6.7.1 The Intellectual Dimension

Two time-frames were used when measuring the intellectual dimension: the short-term frame and the long-term frame. According to the measurement method explained in chapter 3, business and IT plans (for short and long-term frames) were examined in order to rate the degree of integration between them. As regards the *short-term frame*, NBE has plans in the IT and business areas, but there is no clear cross referencing between them. Therefore, the degree of integration could be said to be "average", as explained in section 3.7 in chapter three.

As regards the *long-term frame*, NBE does not have formal written long-range plans for IT or business. Therefore, NBE's long-term level of integration between IT and business, in terms of the intellectual dimension, could be rated as "very low".

In addition to the analysis given above, two five-point scale questions were used to enable IT officials in this bank to indicate their perceptions about the level of integration between IT and business in their bank (questions 32 and 33). The parameters used to measure the intellectual dimension were: line-managers understanding of IT objectives; and IT-managers understanding of business objectives. Table 6.12 lists the results of this measurement process.

Table 6.12 Statistics about The Intellectual Dimension

	AVG	*STD*
Line-managers understanding of IT objectives	2.9	0.4
IT-managers understanding of business objectives	2.9	0.4

It is clear from this table that the responses are slightly below "average" score.

6.7.2 The Social Dimension

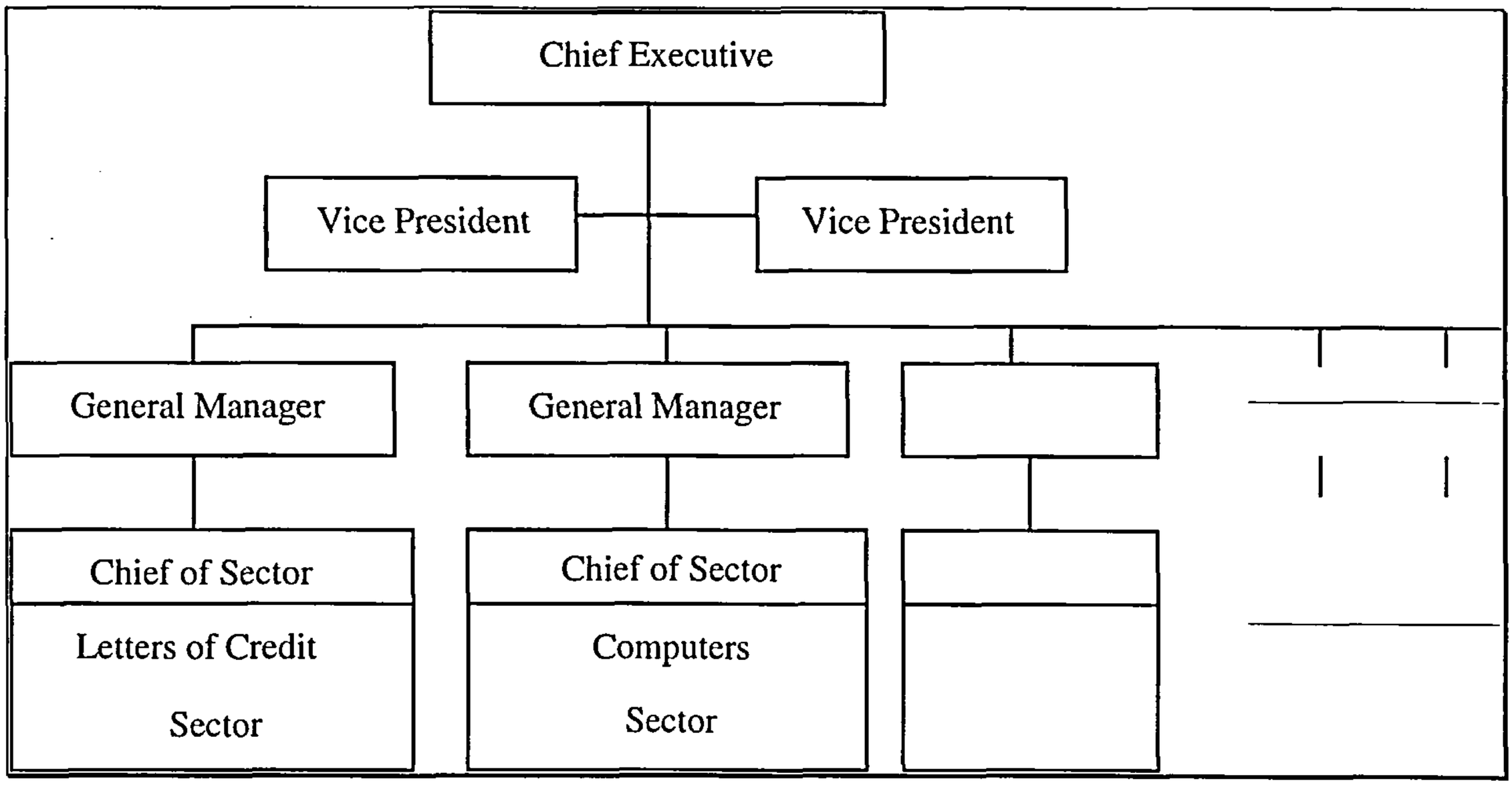
A five-point scale question was used to enable IT officials in NBE to rate the level of "intensity of communication", between IT and business groups, as an approximation for the social dimension of integration (question 35). According to the officials' opinions, intensity of communication could be rated as "average" (avg. = 3.4 & std = 0.6).

6.8 IT Organisational Design in NBE

6.8.1 Firm-Wide Organisational Structure

NBE's organisational structure follows the traditional functional structures. Each banking function has a separate organisational unit (a sector or a general administration). The above figure depicts an overview of this structure.

Figure 6.1 NBE Organisational Structure

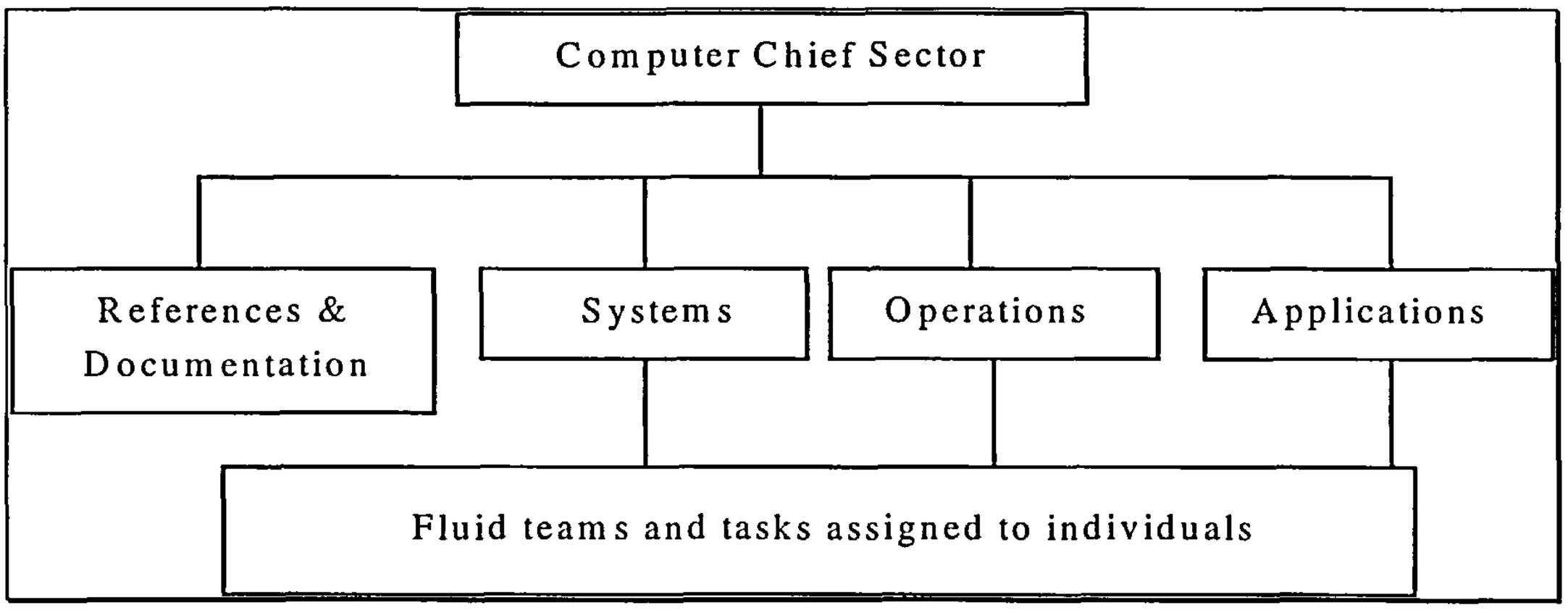


6.8.2 IT Organisational Structure

The IT organisational unit in NBE was upgraded to a separate sector in 1988. As in figure 6.2, NBE's IT organisational structure follows the same type of functional structures as in the general organisation of the firm. A separate department is designated to each one of the three traditional IT functions: systems development; operations and communication; and applications. In addition to these organisational units, a separate unit is added for references and documentation.

Employees working in the "operations" and "systems" administrations are grouped according to the kind of machine that they are specialised in. For example operators are grouped to operators for the AS400 machines and others for the main-frame, etc.

Figure 6.2 IT Organisational Structure of NBE



The systems development department is responsible for planning and developing the new software systems. This organisational unit is a central unit located in the main branch of the bank . NBE has about 30 officials working in this department most of them are well trained programmers.

The operations and communication department' activities are related to the operation of existing machines and networks in all the branches of the bank. The employees and operators of this department are responsible for day-to-day back-ups; preparing and following up the networks; managing output production; and distribution and providing end-user support for the relevant problems. Each branch has one or two operators. However all the operators report directly to the central computer department in the main branch.

The applications department is considered as the front line of the computer department against the end-users. It is responsible for training the end-users on the new applications and trouble shooting the simple day-to-day problems in experienced using these applications.

6.8.3 Integration Mechanisms

a. Integration with top management

In the late eighties, a higher level committee was formed as the main integration mechanism between the computer department; top management and the functional departments. However, this committee was only on papers. The chief of sector, at that time used to pass his proposals through the board of directors meeting directly. Purchase decisions were taken using the regular formal methods of purchasing in any public sector companies.

b. Integration with the functional departments

All the IT resources are fully owned by the computer department in NBE and few resources have been allocated to end-user computing in the functional departments. For this reason IT officials (specially in the applications department) spend much of their time in phone calls and regular and ad-hoc visits for trouble shooting tasks. Apart from these day-to-day integration mechanisms formal correspondences and requests are the most common way for integration in the bank. These correspondences are often for enquiries, requests for additional capacities, etc. Joint team-work and presentation sessions are also commonly used in software development or purchasing projects. No dedicated Committee was formed for the integration at this level.

c. Internal integration mechanisms

Due to the strong centralisation of this bank's IT organisational structure, integration mechanisms within the IT organisational structure are also very formal and centralised as well. Formal directives, assignments and decisions are the main integration mechanisms in NBE. The bank does not have some organised list of formal meetings in the IT department. The department occasionally uses this way of integration when implementing an important project in order to discuss work assignments and follow up the day-to-day performance.

6.9 IT Management Climate

The aim of this section is to discuss the extent to which the climate of IT management in NBE, is positive and supportive. Five main aspects of IT climate were studied: the role of top management in creating a supportive climate for those concerned with IT management; the existence of a clear long-term vision for the role of IT in business; communication climate between IT and business groups; degree of satisfaction with the role of IT in business; and degree of satisfaction with the current IT training programs.

6.9.1 The Role of Top Management in the IT Management Climate

Three main items were measured to examine this aspect of IT management climate: (a) employees' perceptions about top management understanding of how IT contributes to business; (b) employees' opinions about top management willingness to devote sufficient time to make IT projects successful; and (c) employees' perceptions about the extent to which top management considers IT to be a strategic factor. Five-point scale questions were used to enable IT officials express their opinions regarding these issues (questions 44, 45 and 50). Table 6.13 lists the results of this measurement process.

Table 6.13 Statistics of Top Management Contribution to IT Management Climate in NBE

	AVG	*STD*
Top management understanding of how IT contributes to business	3.8	0.9
Top management willingness to devote sufficient time to make IT projects successful	3.7	0.7
The extent to which top management considers IT as a strategic factor	3.7	0.9
Top management contribution to IT climate (overall score)	3.7	0.8

As shown in the table, NBE's IT officials showed "average" satisfaction with the role played by their top management (general avg. = 3.7, std = 0.8). The results in this category (both AVGs and STDs) were very close, which reflects the level of confidence in the officials' answers to the questions.

6.9.2 The Existence of a Clear Long-Term IT Vision

It was not clear from the executives in the open interview sessions, that NBE had a different vision for IT. They all have these automation, modernising of the current system, and introducing the important IT-based products objectives.

6.9.3 Communication Climate Between IT and Business Groups

A five-point scale question was used to study the officials' opinions about this issue (question 49). NBE had an "average" rating according to its officials, in terms of their satisfaction with the communication climate between IT and business groups (avg. = 3.4, std = 0.6).

6.9.4 Degree of Satisfaction with the Current IT Training Programs

Another five-point scale question was used to study the officials' opinions about this issue (question 49). The degree of satisfaction of the officials with the bank's IT training programs was "high" (avg. = 3.0, std = 0.7).

6.9.5 Degree of Satisfaction with the Role of IT in Business

From the results of the above categories, officials have an overall "average" degree of satisfaction with the current role of IT in their business (general avg. = 3.8 & std. = 0.6). Table 6.14 shows the details of this indicator (see also questions 46 – 48).

Table 6.14 Statistics of the Degree of Satisfaction with IT Role in Business in NBE

	AVG	*STD*
Satisfaction with the current role of IT in the bank	3.5	0.5
Expectation for having the highest benefits from IT	4.0	0.7
Expectation for leading the industry in IT use	3.8	0.7
Satisfaction with IT role in business (overall score)	3.8	0.6

In the light of the above that the degree of satisfaction of IT officials with IT management climate is "average".

6.10 NBE Case Study: Strategic Issues

NBE is usually called the "flagship" bank in Egypt as it is always ranked no one and is always considered as the financial arm of the Egyptian government. According to the results of this case study, NBE's strategy was classified as "creative" strategy (please refer to section 6.3 for more details).

Concerning IT strategy, NBE adopted the same strategic behaviour, as it did with the firm-wide one. It significantly launched its first move into IT use, just after BM had done so and proved its competitive necessity. Moreover, it seems that NBE adopted its main competitors' objectives of IT use.

As the results of measuring the level of SITU in NBE showed, the level of IT use of the bank could be described as intermediate. It could build some significant computing and communications power, and automate its important business processes. However, the results also

showed that the bank could not until now, gain clear IT-enabled CAs. The main strategic focus of IT use in NBE was to automate its business processes and support its basic functions and activities. In other words, it concentrated on overlaying the technology on the same business processes, organisational designs and workflow. The bank needs, therefore, to shift its strategic focus to addressing explicitly using IT for CAs.

Studying NBE's pattern of organisational practices related to IT use, it was found that it concentrated on three main organisational factors: the role of the CE in supporting IT use practices; enhancing the bank's IT managerial knowledge; and creating a supportive IT management climate. However from a strategic point of view, these three factors alone cannot guarantee building the IS organisational capabilities required to raise the bank's level of SITU beyond the current intermediate level. The bank's firm-wide and IT planning practices were short term and operationally focused. The integration between IT and the firm-wide domains needs to be strengthened. Moreover, NBE's centralised organisational designs, were not consistent with its "creative " type of strategy.

It is clear that the pattern of IT use and its related organisational context in NBE are similar to its main rivals-BM and BDC. The main difference, however, is that BDC still enjoys the supportive role of the CE, while NBE and BM lost this important factor in the last few years.

The main strategic implications for actions that could be recommended for NBE are similar to the previous case. Since NBE has lost the role of the CE in supporting IT use as in BM's case study, the bank strategic focus towards IT has lost its enthusiasm and/or commitment. Therefore it is believed that NBE needs to regain this commitment as a starting point to raise its level of SITU. This commitment should consider IT use as a long-lived journey that is needed to improve all the seven organisational practices identified in the study's conceptual framework, to build some long-lived organisational IS capability.

CHAPTER SEVEN

Case 4: Arab International Bank

This chapter will present the Arab International Bank (AIB) case study. It examines the pattern of IT use in this bank and the role of some selected organisational practices in its level of SITU. The organisation of this chapter will be as follows: a presentation of the bank profile; a discussion of the level of SITU in AIB; firm-wide planning; IT planning; CE support; level of IT managerial knowledge; the degree of integration between IT and business groups; the organisational design of IT; and IT management climate in AIB. Finally an analysis of some strategic issues of IT use in AIB will be presented.

7.1 Arab International Bank: The Bank Profile

AIB was formed in July 1974, according to a special Arab agreement. Five Arab countries are the main founders of this bank: Egypt (28% of the bank's capital); Libya (28%); Emirates (23%); Qatar (5%) and Oman (5%). The bank is not registered in the Central Bank of Egypt and not working under the laws and regulations that regulate all the activities of the other banks in Egypt, such as money and capital markets control, fund transfer, and taxation laws. The mission of the bank is to build a nucleus of an economic union between all the Arab countries. According to its agreement, the bank works only in the free currencies, and its financial statements should be measured in US Dollars. At the present time AIB is one of the biggest commercial banks in

Egypt. AIB completed the 1995/96 FY positioned fifth amongst the Egyptian commercial banks in terms of the following:

- The book value of AIB's total assets was £E7.7bn[1] (US$2.3bn) in the FY ending June 1996. This rates AIB as the fifth biggest commercial bank in Egypt in terms of total assets.
- Total loans and advances recorded £E1.2bn. Lending is not its major asset, as in the rest of the cases studied in this project. AIB tends to put more money in other international items such as "international bonds and deposit certificates" which amounted to almost £E3.0bn and "deposits in other banks" which recorded £E1.7bn in the 1996 FY.
- AIB's total deposits amounted to £E6.4bn in the same FY to keep the bank fifth amongst the Egyptian commercial banks, in terms of its ability to attract and mobilise savings and deposits.
- The average Return On Investment (ROI) achieved on the 30th of June 1996 FY, by AIB was approximately 1.5%, which was greater by far extent than all the four commercial public sectors banks in Egypt. Also net profit was £E112mn according to the profit and loss account of the 1995/96 FY.
- AIB employs 1120 employees. Although this is lower than any amount of labour in any public sector bank, AIB has a greater labour's intensity per branch compared to the four public sector banks.

At the present time AIB has six branches located in the big cities in Egypt, in addition to a branch in El-Manama, Bahrain and a representative office in Tripoli, Libya. The banks' branches in Egypt are Sarwat (the head office), Cairo; El-Tahrir, Cairo; Heliopolis, Cairo; Mohamdessin, Giza; Alexandria; and Port-Said branches.

Although AIB offers the traditional product mix introduced by any commercial bank, its products' forms are different. The bank does not offer any product in local currencies. It concentrates on the international activities, utilising the perks given to it according to its establishment agreement. Therefore its money is concentrated in foreign investments and international notes and bonds. The bank has very limited activities in establishing and financing new companies. It contributed in the capital of three companies, with total contribution amounts to US$150mn. AIB main strategic thrusts are as follows: (1) Building a good reputation and

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[1]The exchange rate is $1 = £E3.4.

competencies in the international financial activities, currencies trading and fund transfer. (2) Concentrating on few but very big clients. Therefore the bank does not expand geographically but concentrates on the big cities in Egypt. (3) Utilising its distinguished legal position to deal in what the other Egyptian banks cannot do. The last advantage made the bank very attractive for the big clients in Egypt.

7.2 level of Sophistication of IT Use

Few years after the bank has been formed, its business increased dramatically. AIB at that time became the only real rival to the big four public sector banks. Introducing computers to automate the day-to-day work was very important to absorb the work-load resulted from the increasing numbers of clients to the bank. The "branches and the inspection administration" began to purchase computers to the branches of the bank, by the end of the seventies. Each branch was solely responsible for planning for automating its activities with some financial supervision from the branches administration.

In the early eighties, the bank formed a central organisational unit for IT activities. Unlike the previous cases, AIB did not have any champion for introducing IT or accelerating its pattern of use in the bank. The bank used to treat IT as a separate traditional function in the bank.

7.2.1 The Current IT Infrastructure

AIB's infrastructure consists of two IBM AS400 mini-computers as the back-bone of the bank's network, using the mirroring technique for back-up. Each branch has a local area network consists of a file-server and a small group of PCs (from 12-20 PCs). The branches' networks are connected to the central computer in the main branch using modems and leased lines, forming a client/server architecture. Although AIB is very successful in issuing VISA and Master-Card credit cards, it does not have an ATM network.

7.2.2 Applications

AIB mainly depends on one comprehensive banking software package, produced by "Amidst Capiti", for automating its business processes. The package consists of a core unit, which contains an engine and a global data-base, and several separate banking modules that could be installed on the core engine according to the bank's demands. The package facilitates more than

50 modules. The bank purchased and applied only 6 modules for automating business processes such as: international currencies trading, clients' accounts, front office processes (or the tellers and cashiers processes), SWIFT and data exchange with international financial institutions.

7.2.3 IT Officials' Opinions about AIB's IT Infrastructure.

IT officials' opinions about AIB's IT infrastructure were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low - 5 = very high, question 1, App. 1) and was followed up by interview sessions. AIB had a general average score (by its officials) equal to 3.5 with 0.98 std. This means that the overall degree of the efficiency of IT architecture in AIB is above "average".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT infrastructure in terms of five major aspects. The IT officials' ratings for these aspects are as follows:

(1) *Compatibility of computer sites* scored a "high" grade (avg. = 4.0, std = 0.4). This score was expected, as all the branches of the bank rely on one major vendor for purchasing computers and software.

(2) *Coverage of geographical locations* scored above "high" grade (avg. = 4.9, std = 0.4). This is because AIB has successfully computerised all its branches. It is clear that this was not as hard as in any public sector commercial bank, because AIB has only six branches.

(3) *Coverage of functional divisions* scored a "low" grade (avg. = 2.3, std = 0.5). AIB does not develop its main applications internally. Therefore, it is dependent to a great extent on its software vendor for automating its business processes. However the manager of the computer department explained that "we have been effectively using IT in the critical processes in our business. And we are more efficient than many banks which might covered more processes than we did", He said.

(4) *Appropriateness with their firm's long-range plans* scored an "average" grade (avg. = 3.1, std = 0.6). Executives explained that the bank's long-term plans are very confidential. Even the manager of the computer department is not allowed to participate in the bank strategies.

(5) *Integration of customers' data bases* scored an "average" grade (avg. = 3.1, std = 0.5). However, the manager of the computer department showed that AIB is probably much better than any bank in Egypt in this point. "Unlike BM - for example - we can issue our financial statement or the statement of any client for any branch in-a-minute" he explained.

7.2.4 Efficiency of IT Services

IT officials' opinions about the level of efficiency of IT support services in AIB were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low - 5 = very high, question 4) and was followed up by interview sessions. AIB had a general average score by its officials equal to 2.9 with 1.31 std. This means that the degree of efficiency of IT services in general in AIB is almost "average" with a high level of standard deviation.

In the questionnaire, each IT official was asked to evaluate his/her bank's IT services efficiency in terms of four major categories of IT support services. The IT officials' ratings for these categories are as follows:

(1) Data Processing and Telecommunication (DP&T) scored above "average" grade (avg. = 3.5, std = 1.36). Table 7.1 lists the statistics of DP&T items.

Table 7.1 Evaluation of Data Processing & Telecommunication in AIB

	AVG	*STD*
Install & maintain data communication equipment	3.9	0.5
Produce & distribute paper reports	2.9	0.9
Produce & distribute microfiche reports	1.1	0.4
Access to consumer & business data files	4.7	0.5
Accuracy of consumer & business files	4.8	0.6
Response time of on-line systems	3.9	0.7
General average (overall score)	3.5	1.36

As in the previous cases, executives in the interview sessions indicated that AIB does not have organised systems for producing and distributing paper or microfiche reports, which confirms the data in the previous table. On the other hand, they were satisfied with the other categories bearing in mind the current state of the national telecommunication infrastructure.

(2) Software Services (SS) scored "low" grade (avg. = 2.4, std = 0.96). Table 7.2 lists the statistics of SS items.

Up to now AIB has not been able to build skills in software development, as was made clear in the interview sessions. Most of the systems in use were purchased from external sources. This is why ratings for these items were "low".

Table 7.2 Evaluation of Software Services in AIB

	AVG	*STD*
Develop new software applications	1.7	0.6
Enhancements to application software	1.7	0.5
Maintenance of application software	2.7	0.8
Meet production time frames	3.7	0.7
Software Services SS	2.4	0.96

(3) Office Services & User Liaison (OS&UL) scored a "low" grade (avg. = 2.7, std = 1.58). Table 7.3 lists the statistics of OS&UL items.

Table 7.3 Evaluation of Office Services & User Liaison in AIB

	AVG	*STD*
Install & maintain voice communication equipment	3.5	1.2
Electronic mail	1.0	0.0
Production level word processing	3.7	0.8
Teleconferencing	1.0	0.0
User liaison assistance/trouble calls	4.3	0.6
Office Services & User Liaison OS&UL	2.7	1.58

AIB does not use electronic-mail or teleconferencing applications in its business, as is clear from the above table. Ratings for the other categories were average or high.

(4) End-User Computing Services (EUCS) scored a "low" grade (avg. = 2.7, std = 1.32). Table 7.4 lists the statistics of EUCS items.

Table 7.4 Evaluation of End-User Computing Services in AIB

	AVG	*STD*
Technical: trouble shooting, database extraction, etc.	4.1	0.6
Research: hardware & software products	1.0	0.0
Consulting: hardware & software products, etc.	2.3	1.1
Training & education	3.3	0.5
End-user Computing Services EUCS	2.7	1.32

As in the previous cases, EUC in general is not a major concern in AIB. This is because end-users only use the systems for data entry. One of the weak points of this bank, as far as the needs of end-users are concerned, is in the area of research, AIB does not have any formal or informal way for carrying out research in IT products.

7.2.5 Level of Sophistication of IT Use: Employees Perceptions

Perceptions of IT officials in AIB about their bank's level of SITU were sought through the questionnaire. Using Nolan's "stages of growth" model (Nolan, R., 1991), officials were presented with a definition of each stage and then asked to indicate which definition best described their IT use pattern in AIB (please see question 3 and section 3.2, chapter three). Responses showed that AIB's level of SITU is in the "control stage".

7.2.6 Strategic Use of IT in AIB

Two questions in the questionnaire were used to measure the degree of strategic use of IT compared to the bank's main competitors (questions 5 and 7). The first question, using a five-point scale, sought IT officials' perceptions about the bank's degree of success in utilising IT for attaining competitive advantage. AIB was rated almost "average" by its officials with a high level of variance (avg. = 2.8, std = 1.5). Therefore, according to AIB's IT officials, the bank was no better than its competitors in utilising IT for attaining some business competitive advantages. In the second question, interviewees were presented with a list of 15 areas of potential Information Based Competitive Advantages (IBCAs). They were then asked, in a five-point scale, to rate how well their firm made use of these areas to gain some advantage over its competitors (questions 7 - 10). Table 7.5 shows the employees' responses to this question:

Table 7.5 Responses for IBCAs Analysis in AIB

	AVG	*STD*
Integration of customer data	3.2	0.6
Centralised transaction processing centre	3.2	0.7
Consolidation of applications onto uniform product base	4.0	0.5
Number & availability of ATMs	1.0	0.0
ATM interchange links with other institutions	1.0	0.0
Market analysis, marketing	1.0	0.0
Differentiated customer services & products	1.0	0.0
Electronic fund transfer / Point-of-sale terminals	2.8	0.6
Risk management techniques	1.0	0.0
Competitor intelligence	1.0	0.0
MIS planning & control	2.3	0.8
Electronic home banking	1.0	0.0
Internal networking systems	3.6	0.9
Cost accounting	3.9	0.7
Investments & financial planning	4.0	0.5

According to the above table, the responses indicate the following:

1- The bank has achieved two competitive advantages over to its competitors in two areas:

(a) in the consolidation of applications onto uniform product base and

(b) in the Investment & financial planning.

However, it was made clear from the open interviews that the second IBCA means that the bank has an advantage in the international investments and not the local ones.

2- AIB did not spend much effort in seven (out of 15) important areas of IBCAs. These areas are: number and availability of ATMs; ATM interchange links with other institutions; market analysis, marketing; differentiated customer services & products; risk management techniques; electronic home banking; and competitor intelligence.

2- Four areas have drawn much efforts from AIB:

(a) integration of customer data;

(b) centralised transaction processing centre;

(c) internal networking systems; and

(d) cost accounting.

However, results did not show clear IBCAs achieved in these areas, as ratings by the interviewees were "average". Executives explained that these areas will be important IBCAs for AIB in the future.

7.3 Firm-Wide Planning in AIB

In the interview sessions, IT executives indicated that they do not really participate in a so called firm-wide planning. However they explained that the bank prepare annual plans to be submitted to the board of trustees in its annual meeting. Several questions were designed to examine this point in the questionnaire (questions 11 - 16). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of a firm-wide planning process in their firm. However most of them do not know the details of this planning process.

2- Formal planning procedures were started in the seventies. However, interviewees consider it as an annual routine process prepared to satisfy the requirements of the annual meeting of the board of trustees.

3- Although no documents were available for long-term and strategic planning in AIB, interviewees indicated that this type of planning is there in some unstructured or unorganised way.

Exactly as in the public sector banks, the top management of AIB practices strategic planning through developing plans for the critical issues. These issue-based long-term plans are developed by the CE directly through the board meetings and/or the higher level committees. As no documents were available to study the bank's current type of strategy, a four-choice question was used to identify the bank's main strategy type (question 17). The question was based on Miles R. and Snow C. (1978) typology of strategies which are as follows: defensive, creative, analytic, and reactive (see also section 3.2 in chapter three). Officials classified their bank as a "defender". This result is consistent with many characteristics of the way AIB is doing business. Unlike NBE or BM, AIB does not initiate things in the banking industry. It takes a niche of the market and serve it the best it can. This niche could be described as the specialisation in the international transactions and currencies trading, and the concentration on the big clients.

7.4 IT Planning

After Mr. Abd El-Monsif has been appointed as the manager of the computer department in January 1997, he developed a systematic discipline for planning for IT. His planning system concentrates on developing an annual plan for IT, to be translated into a specific detailed budget for the coming year. Preparation for this plan starts couple of months before the beginning of the fiscal year. The plan and the budget are then reported to the above organisational level - the general manager of international finance. Approving the plan, the department translates it into projects; activities and tasks to be assigned for the department's officials. This process is conducted through the department weekly meetings and the direct formal and informal communication between the department manager and his officials.

Several questions were designed to examine this variable in the questionnaire (questions 35 - 42). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of an IT planning process in the bank. The computer department has a written annual IT plan
2- There was no clear consensus between interviewees concerning the starting date of IT planning in the bank. This might be because many of the IT officials are new in the bank.
3- Interviewees showed that three time-frames of planning are practised in AIB (short, medium and long-term).

4- Although interviewees indicated that the computer department relies on both approaches of IT project planning that is to say top-down and bottom-up approaches, the top-down approach is the most commonly used. Lower levels only participate in minor ways through formal requests.

5- One of the questions (question 40) sought the officials' opinions about the degree of participation of each level of the organisation in IT planning. Table 7.6 lists the results of this question.

Table 7.6 Degree of Participation of the Different Organisational Levels in AIB

	AVG	*STD*
Top management	1.1	0.4
Managers of the functional departments	2.4	0.8
Employees of the functional departments	2.1	0.9
IT managers	4.0	0.9
Systems analysts	3.0	0.7
Programmers	3.0	0.7
End-users	2.7	0.5
Vendors	3.0	0.8
Consultants	3.2	1.0

Responses to question 40 are consistent with the description of the process of IT planning in AIB mentioned earlier. Only 'IT managers' had a "high" score concerning their degree of participation in IT planning. This is while IT officials, vendors and consultants had "average" scores. The rest of the organisational levels had low scores.

7.4.1 Appropriateness of IT Architecture for IT Planning.

The IT executives of the bank expressed their satisfaction with their IT infrastructure especially its appropriateness for planning for IT products. However, it was made clear from the interview sessions that this infrastructure is appropriate only in the light of the current "niche strategy" followed by the bank. Therefore, the bank would need greater computing, storage and communication power if it applied another non-niche strategy. For example, one of BDC's executives explained that our clients are different than those of the small, private or joint venture banks (such as AIB). For example, El-Azhar branch (of BDC) might need the computing and storage power of the IT infrastructure of a bank such as AIB. The branch is located in a very commercial area, which is full of small traders and manufacturers. Therefore the branch has a very large number of clients using the bank in small sizes of transactions.

7.5 CE Support in AIB

CE support was studied in this project, through two aspects: CE participation and CE involvement. Each aspect was measured through a set of parameters. The following sections discuss the results of this measurement process.

7.5.1 Degree of CE Participation in IT

Table 7.7 Statistics of the CE Participation in AIB

	AVG	*STD*
Personal participation	1.2	0.6
CE role in IT committee	1.2	0.6
CE communication intensity with IT department	1.0	0.0
CE knowledge of IT opportunities	1.5	1.0
CE knowledge with IT use of competitors	1.9	0.9
CE personal IT use	2.1	0.4
CE participation (general score)	1.6	0.49

Several questions were designed to examine this point in the questionnaire (questions 18 - 23). The table given above shows the averages and standard deviations of the IT officials' responses to these questions.

AIB had a "very low" degree of CE participation in general, according to the employees' opinions (avg. = 1.6, std = 0.49). Most of the results of the sub-items had "very low" scores. Interview sessions confirmed these results to a great extent. Executives showed that the CE of the bank rarely participate in IT activities. The bank does not have a committee for IT or any other organised mechanism for integration with the top management.

7.5.2 Degree of CE Involvement in IT

Several questions were designed to examine this point in the questionnaire (questions 24 - 27). The following table shows the averages and standard deviations of the IT officials' responses to these questions. AIB had a "low" degree of CE involvement in general, according to the employees' opinions (avg. = 2.2, std = 0.76).

Table 7.8 Statistics of the CE Involvement in AIB

	AVG	*STD*
CE prevailing thinking about IT spending	2.1	0.3
CE perception of IT importance	2.7	0.6
CE vision for IT	1.2	0.4
CE endorsement of non traditional applications	2.9	0.5
CE involvement (general score)	2.2	0.76

In this dimension, most of the sub-items had "low" scores as shown in table 7.8. The results in the table could be explained according to the choices allowed for answering the questions directed to the interviewees, as follows:

- The CE's prevailing thinking about IT spending is that IT is just an expense that should be controlled.
- The CE's perception of IT's importance to the firm is that IT has almost an average importance.
- The CE does not have a clear vision for IT.
- The CE's endorsement of applications not meeting traditional criteria tends to be below "average".

Based on the above two dimensions discussed in sections 7.5.1 and 7.5.2, the CE's support to IT activities in AIB is almost "low", (general avg. = 1.9).

7. 6 Managerial IT Knowledge in AIB

The aim of this section is to study the overlapping know-how of IT and line managers (in particular, the knowledge that IT managers possess about the business and strategic issues within the firm, and the knowledge that line managers possess about the potential opportunities from applying IT within their business domain). Therefore two aspects were used to measure this variable: IT managers knowledge and line-managers knowledge.

7.6.1 IT Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate their managers' knowledge about business operations and corporate strategies (questions 28 and 29). Table 7.9 lists the results of this measurement process.

Table 7.9 Statistics of IT-Managers Knowledge in AIB

	AVG	*STD*
Knowledge degree of business operations	4.1	0.5
Knowledge degree of the corporate strategy	2.9	0.8
IT-managers Knowledge (overall score)	3.5	0.85

IT managers' knowledge in AIB could be rated as "average" in overall, as shown in the table given above.

7.6.2 Line-Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate line-managers' knowledge about the potential of IT as a competitive weapon and a tool to decrease clerical work (questions 30 and 31). Table 7.10 lists the results of this measurement process. According to the table it is clear that line-managers' knowledge about IT is rated "low".

Table 7.10 Statistics of Line-Managers Knowledge in AIB

	AVG	*STD*
Knowledge of IT potential as a competitive weapon	1.4	0.7
Knowledge of IT as a tool to decrease clerical work	2.9	0.4
Line-managers Knowledge (general score)	2.1	1.04

Mutual official movements, mutual training, and joint team-work are some of the exchange mechanisms that can be used to increase the level of IT managerial knowledge in a firm. Three related questions were directed to the IT department's officials to detect the degree of existence of these kinds of mechanisms. Table 7.11 lists the results of this measurement process.

Table 7.11 Statistics about some Exchange Mechanisms in AIB

	AVG	*STD*
Mutual official movements	1.0	0.0
Mutual training	2.6	0.8
Joint team-work	5.0	0.0

It is clear from the table that AIB does not rely much on the first two items (mutual movements and mutual training) as they had "very low" and "low" scores respectively. Joint team-work issued in AIB to a "very high" extent (avg. = 5.0, std = 0.0).

7.7 IT and Business Groups Integration

The degree of integration between business and IT groups, was examined in this study through two dimensions: the intellectual dimension and the social dimension.

7.7.1 The Intellectual Dimension

Two time-frames were used when measuring the intellectual dimension of linkages: the short-term frame and the long-term frame. According to the measurement method explained in chapter 3, business and IT plans (for short and long-term frames) were examined in order to rate the degree of integration between them. As regards the *short-term frame*, AIB has plans in the IT and business areas, but there is no clear cross referencing between them. Therefore, the degree of integration could be said to be "average", as explained in section 3.7 in chapter three.

As regards the *long-term frame*, AIB does not have formal written long-range plans for IT or business. Therefore, AIB's long-term level of integration between IT and business, in terms of the intellectual dimension, could be rated as "very low".

In addition to the analysis given above, two five-point scale questions were used to enable IT officials in this bank, to indicate their perceptions about the level of integration between IT and business in their bank (questions 32 and 33). The parameters used to measure the intellectual dimension were: line-managers understanding of IT objectives and IT-managers understanding of business objectives. Table 7.12 lists the results of this measurement process. It is clear from the table that all the responses are "average" scores.

Table 7.12 Statistics about The Intellectual Dimension

	AVG	*STD*
Line-managers understanding of IT objectives	3.0	0.7
IT-managers understanding of business objectives	3.0	0.7

7.7.2 The Social Dimension

A five-point scale question was used to enable IT officials in AIB to rate the level of "intensity of communication" between IT and business groups, as an approximation for the social dimension of integration (question 35). According to the officials' opinions, intensity of

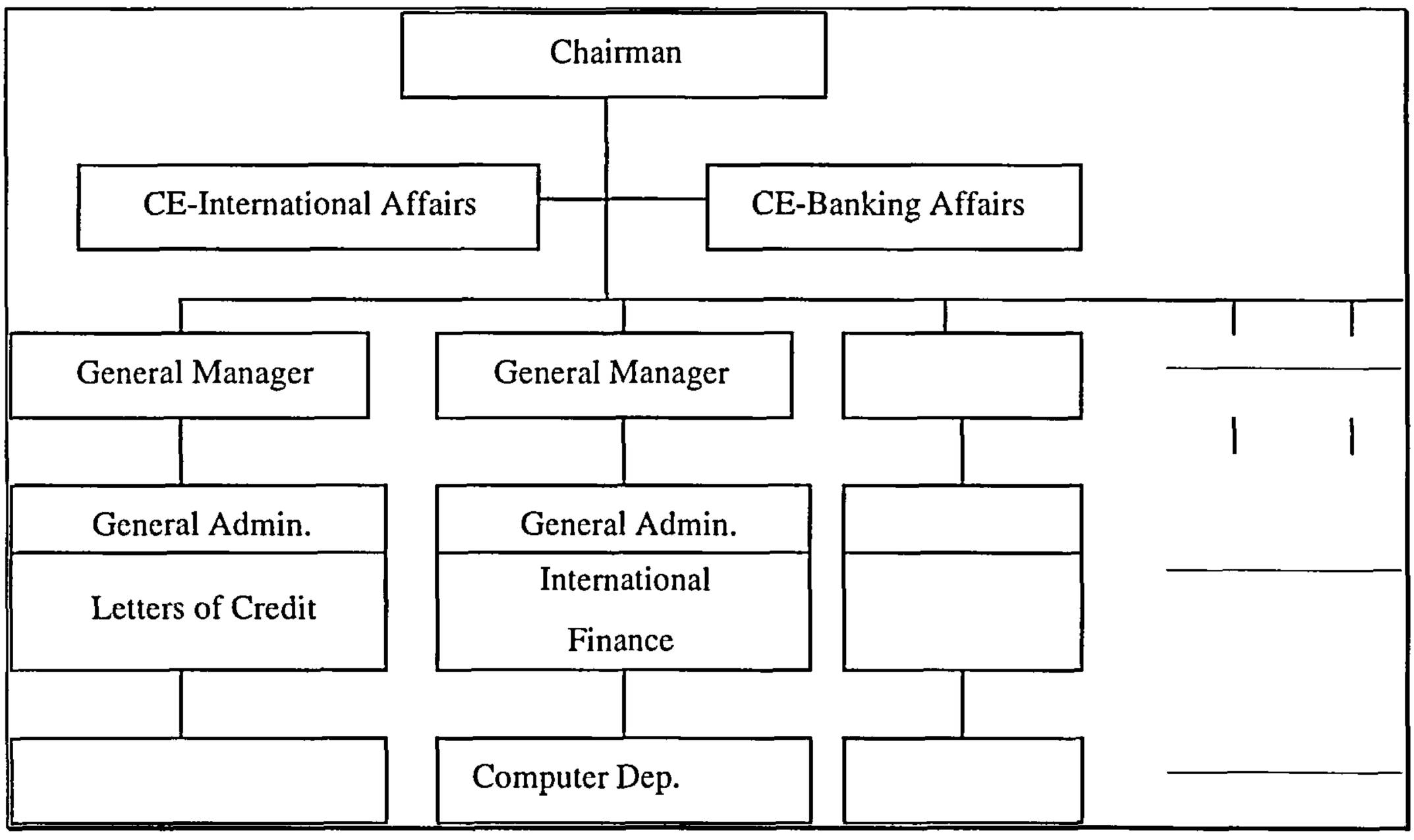
communication could be rated as "high" (avg. = 4.0 & std = 0.4). The manager of the computer department showed that keeping a good relationships and communication between the IT officials and the other departments is one of his priorities.

7.8 IT Organisational Design in AIB

7.8.1 Firm-Wide Organisational Structure

AIB's organisational structure follows the traditional functional structure as in all the public sector banks. Each banking function has a separate organisational unit (a sector or a general administration). Figure 7.1 depicts an overview of this structure.

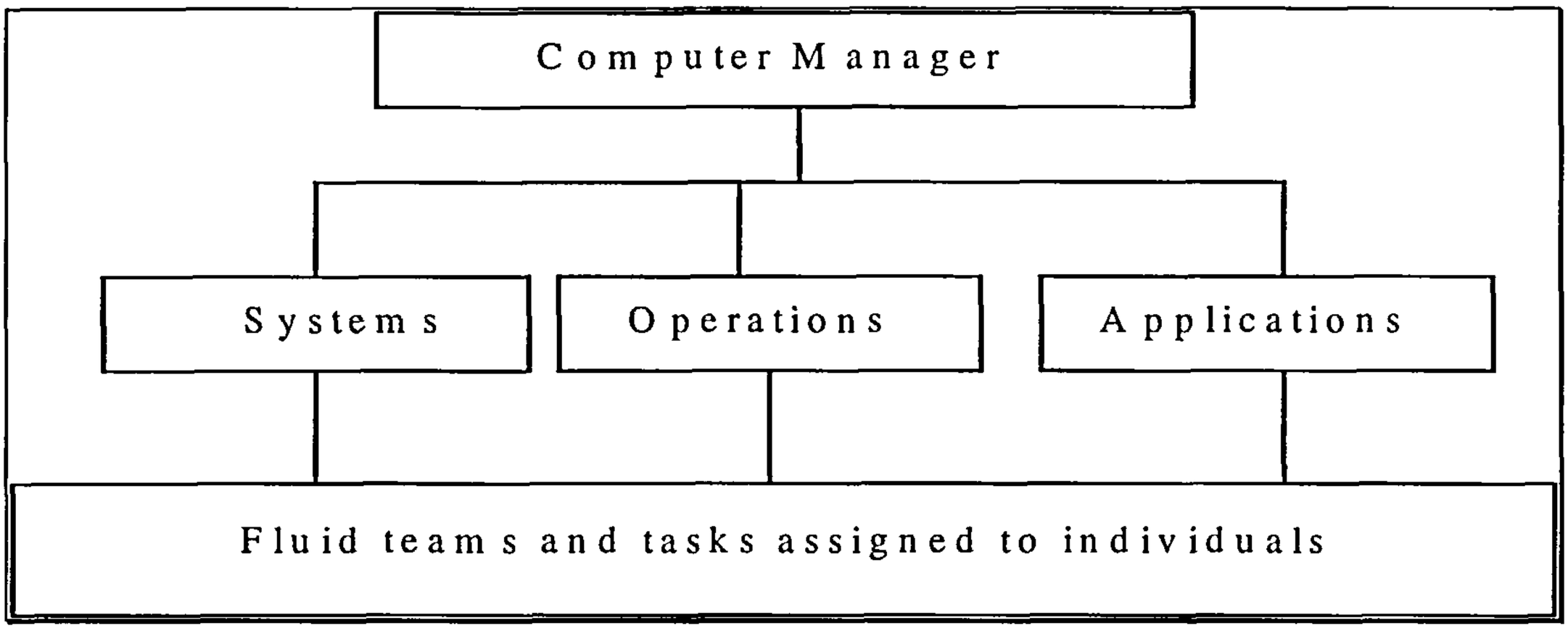
Figure 7.1 AIB Organisational Structure



7.8.2 IT Organisational Structure

The IT organisational unit in AIB was established in the early eighties as a general department (the computer department) to report directly to the general manager of international finance. As in figure 7.2, IT organisational structure follows the same type of functional structures as in the general organisation of a firm. A separate department is designated to each one of the three traditional IT functions: systems development, operations and communication, and applications.

Figure 7.2 IT Organisational Structure of AIB



The Systems development department is responsible for planning and developing the required software projects. This organisational unit is a central unit located in the main branch of the bank. Because most of the software used in AIB is from external sources, this department only develops small software projects (less than 500 hours projects). These projects are mainly enhancements or additions to currently used applications.

The Operations and communication department's activities are related to the operation of existing machines and networks in all the branches of the bank. The employees and operators of this department are responsible for day-to-day back-ups, preparing and following up the networks; managing output production and distribution; and providing end-user support for the relevant problems. Each branch has one or two operators. All the operators report directly to the central computer department.

The Applications department is considered as the front line of the computer department against the end-users. It is responsible for training the end-users on the new applications and trouble shooting the simple day-to-day problems experienced in using these applications.

7.8.3 Integration Mechanisms

a. Integration with top management and functional departments

The computer manager showed that his relationships with the top management is formally channelled through the general manager of "International Finance". No clear mechanisms exist

to integrate IT and top management except for the formal requests, proposals and reports. However the IT manager explained that his department keeps good informal relationships with all the managers and departments in the bank to ease getting the department's projects approved in the meetings of the board.

b. Internal integration mechanisms

Due to the strong centralisation of this bank's IT organisational structure, integration mechanisms within the IT organisational structure are very formal and centralised. Formal directives, assignments and decisions are the main integration mechanisms in AIB. The computer manager depend heavily on the weekly meeting as the main integration mechanism to discuss and review the day-to-day IT activities and tasks.

7.9 IT Management Climate

The aim of this section is to discuss the extent to which the climate of IT management in AIB, is positive and supportive. Five main aspects of IT climate were studied: the role of top management in creating a supportive climate for those concerned with IT management; the existence of a clear long-term vision for the role of IT in business; communication climate between IT and business groups; degree of satisfaction with the role of IT in business; and degree of satisfaction with the current IT training programs.

7.9.1 The Role of Top Management in the IT Management Climate

Three main items were measured to examine this aspect of IT management climate: (a) employees' perceptions about top management understanding of how IT contributes to business; (b) employees' opinions about top management willingness to devote sufficient time to make IT projects successful; and (c) employees' perceptions about the extent to which top management considers IT to be a strategic factor. Five-point scale questions were used to enable IT officials to express their opinions regarding these issues (questions 44, 45 and 50). Table 7.13 lists the results of this measurement process.

Table 7.13 Statistics of Top Management Contribution to IT Management Climate in AIB

	AVG	*STD*
Top management understanding of how IT contributes to business	2.4	0.6
Top management willingness to devote sufficient time to make IT projects successful	2.1	0.4
The extent to which top management considers IT as a strategic factor	3.0	0.0
Top management contribution to IT management climate (overall score)	2.5	0.3

As shown in the table, AIB's IT officials expressed "low" satisfaction with the role played by their top management (general avg. = 2.5, std = 0.3).

7.9.2 The Existence of a Clear Long-Term IT Vision

In the interview sessions, all the executives showed that AIB does not practice this kind of planning for IT. IT activities are planned within the boundaries of the computer department in a short-run orientation.

7.9.3 Communication Climate Between IT and Business Groups

A five-point scale question was used to study the officials' opinions about this issue (question 49). AIB had almost a "very high" rating according to its officials, in terms of their satisfaction with the communication climate between IT and business groups (avg. = 4.9, std = 0.4).

7.9.4 Degree of Satisfaction with the Current IT Training Programs

Another five-point scale question was used to study the officials' opinions about this issue (question 51). The degree of satisfaction with the bank's IT training programs was "high" (avg. = 4.6, std = 0.5).

7.9.5 Degree of Satisfaction with the Role of IT in Business

From the results of the above categories, officials have an overall "average" degree of satisfaction with the current role of IT in their business (general avg. = 3.1 & std. = 0.7). Table 7.14 shows the details of this indicator (see also questions 46 – 48).

Table 7.14 Statistics of the Degree of Satisfaction with IT Role in Business in AIB

	AVG	*STD*
Satisfaction with the current role of IT in the bank	3.2	0.6
Expectation for having the highest benefits from IT	3.4	0.7
Expectation for leading the industry in IT use	2.7	0.8
Satisfaction with IT role in business (overall score)	3.1	0.7

In the light of the above, it is clear that the degree of satisfaction of IT officials with IT management climate is "average".

7.10 AIB Case Study: Strategic Issues

AIB has a distinguished strategic position in the Egyptian banking Industry. The bank could significantly insulate itself from many of the competition problems in the Egyptian banking market. It was formed according to a special Arabic agreement and as a consequence, it enjoyed many exclusive strategic perks. For example, the bank is not registered in the Central Bank of Egypt and not working under the laws and regulations that regulate all the activities of the other banks in Egypt, such as money and capital markets control, fund transfer, and taxation laws.

AIB have the abilities to provide services and products that are restricted for all the competitors in areas such as international fund transfer. Moreover, as AIB does not pay taxes, its profitability situation is always healthy. The bank therefore, adapted a "niche" strategy to exploit its exclusive legal situation. This niche could be described as the specialisation in the international transactions, currencies trading and the concentration on the big clients and/or the wholesale market. Within this niche the bank pursue a "defensive" strategy as the case study results showed. Due to its distinguished location in the market, AIB could position itself as the fifth biggest commercial bank in Egypt.

Concerning IT strategy, AIB did not face the same challenges encountered by the other leading banks in the industry. Due to the fact that AIB has limited number of branches (there are six) and customers, it did not require acquiring large IT resources comparing to its main competitors. Also in the light of the bank's reasonable profitability situation, no significant pressures were there to use IT for achieving CAs. IT was applied in AIB, mainly to modernise its work environment and smooth its day-to-day activities.

However AIB level of SITU could be described also as intermediate. Its resources are sufficient to serve the needs of its branches, the number of customers and business processes. The main strategic focus of IT use in AIB was to automate its business processes and support its basic functions and activities. In other words, it concentrated on overlaying the technology on the same business processes, organisational designs and workflow. The bank needs, therefore, to shift its strategic focus to addressing explicitly using IT for achieving CAs.

Studying AIB's pattern of organisational practices related to IT use, it was found that the bank did not deliberately concentrate on specific organisational practices as in the previous cases to raise its level of SITU. The bank's firm-wide and IT planning practices were short term and operationally focused. The integration between IT and the firm-wide domains needs to be strengthened. Moreover IT use in AIB has never enjoyed a clear supportive CE. The rest of the organisational factors examined in the study (IT managerial knowledge, IT management climate, and IT organisational design) had average influence on the bank's level of SITU.

In the light of the bank's defensive strategy, AIB's current IT strategic behaviour could be appropriate at the present time. However more attention should be paid to its rivals' IT strategies in order to adapt the appropriate defensive responses. For example, it is thought that AIB should pay more attention to areas such as ATM and home banking services as its competitors are trying to gain CAs out of these areas. However, this strategy may make the bank vulnerable in the future, if its distinguished strategic position explained earlier, changed. In fact this change might happen in the near future, as the Egyptian banking industry is changing at the present time to be less regulated.

CHAPTER EIGHT

Case 5: Bank of Development and Agricultural Credit

This chapter will present the Bank of Development and Agricultural Credit (BDAC) case study. It examines the pattern of IT use in this bank and the role of some selected organisational practices in its level of SITU. The organisation of this chapter will be as follows: a presentation of the bank profile; a discussion of the level of SITU in BDAC; firm-wide planning; IT planning; CE support; level of IT managerial knowledge; the degree of integration between IT and business groups; the organisational design of IT; and IT management climate in BDAC. Finally an analysis of some strategic issues of IT use in BDAC will be presented.

8.1 Bank of Development and Agricultural Credit: A Profile

BDAC was formed in 1931. The bank is the biggest non-commercial bank in Egypt. BDAC completed the 1995/96 FY positioned as one of the biggest banks in Egypt in terms of the following:

- The book value of BDAC's total assets was almost £E10bn in the FY ending June 1996. This rates BDAC as the biggest non-commercial bank in Egypt and fifth after including the four public sector commercial banks.
- Total loans and advances recorded £E7.4bn.

- BDAC's total deposits amounted to £E5.3bn at the same FY. Unlike any other commercial bank, this amount of deposits is lower than the amount of loans given by the bank. It covers only two thirds of the amount of loans recorded in the same FY. Executives showed that the government fills the gap as most of these loans are directed towards some national agricultural projects of the government.
- The average Return On Investment (ROI) achieved on the 30th of June 1996 by BDAC was approximately 0.13%. This is while net profit was £E13mn according to the profit and loss account of the 1995/96 FY profit and loss account.
- BDAC employs more than 37,000 employees. BDAC therefore has the greatest labour amount compared to any Egyptian bank in Egypt.

At the present time BDAC has a huge cluster of units located throughout all the counties and the villages of Egypt. This cluster consists of the following: (1) a principal bank in Cairo; (2) 17 county banks which cover the main agricultural counties in Egypt; (3) 167 branches that follow the county banks; (4) 817 village banks which follow in turn the branches; and (4) 4353 representative offices in the villages.

The main mission of BDAC as an agricultural public sector bank is to support the strategies and plans of the Egyptian administration (specially the agricultural ministry) concerning the agricultural and country-side development. Therefore the bank's main strategic thrusts are developed directly by the Minster of agriculture and his associates. In order to achieve this mission, the bank established one of the most comprehensive and widespread network of branches and representative offices in any bank in Egypt. The bank offers the same product-mix offered by any bank in Egypt. However, its services and products' types and forms are customised for its specialised agricultural mission and tailored for the government strategic development moves. For example, all the lending products are assigned to agricultural activities or small businesses related to food industries. Moreover, BDAC offers some "Islamic" banking products, in some of its branches, as a way of attracting religious clients.

8.2 level of Sophistication of IT Use

8.2.1 IT Infrastructure

In 1986, the Egyptian agriculture ministry designated one of the grants, provided from the USA administration, to BDAC. The American government offered a comprehensive project to

transform the bank's business, by providing the expertise and the fund required. The project is called "the agricultural production and credit project". This project introduced IT for the first time into the bank's business. Therefore the first plan for significantly utilising IT in the bank was developed and implemented by an American expertise. Communix was the American consulting company responsible for this plan. In 1987, the bank established a new organisational sector - Information Systems Sector - to handle IT activities. Arab-Soft Co. (Arabic Software Engineering Company) - an Egyptian company - was responsible for training BDAC staff, and developing the initial software applications required.

The project ended in 1990, after spending about £E20mn, only in the IT part of the project. It left BDAC with an IT infrastructure that consists of the following:

- 18 AT&T mini-computers (AT&T500 & 700 models), for the principal bank in Cairo and the 17 county banks.
- 486 PCs for the 167 branches (almost 3 PCs for each branch).
- 200 PCs for a sample of the village banks.
- Some software applications developed by Arab-Soft, mainly for administrative processes such as personnel data bases, planning and follow up, etc.
- Although modems were installed in the mini-computers they have not been used up to now.

Since 1990, the bank has not replaced, added or modified anything in its hardware components, except for acquiring more PCs for the new branches and some of its village banks. However, it is considering at the present time, transforming the whole infrastructure. It assigned a £E40mn budget for this move to replace the current computers, add more to the branches and villages and install a reliable communication network.

The main changes in the bank's infrastructure, during the 1990s was in the software part. The bank used some Egyptian consultants to develop applications for its financial and banking business processes. It could also enhance its staff capabilities in software development. Executives showed that 30% of the applications used are developed by the bank's programmers. The current software portfolio covers some important banking processes such as the current accounts, saving books, deposits, and some accounting processes such as the general accounts (the ledger, banks current accounts, merchandise account, etc.).

8.2.2 IT Officials' Opinions about BDAC's IT Infrastructure.

IT officials' opinions about BDAC's IT infrastructure were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low - 5 =very high, question 1, App. 1) and was followed up by interview sessions. BDAC had a general average score (by its officials) equal to 2.2 with 0.54 std. This means that the overall degree of the efficiency of IT architecture in BDAC is "low".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT infrastructure in terms of five major aspects. The IT officials' ratings for these aspects are as follows:

(1) *Compatibility of computer sites* scored a "low" grade (avg. = 2.7, std = 0.6). Although BDAC relied on specific vendors for its computers and applications, this factor had a low score as the bank does not have a communication network to connect its county banks and branches.

(2) *Coverage of geographical locations* scored a "low" grade as well (avg. = 2.7, std = 0.6). In the interview sessions, executives showed their dissatisfaction with the current geographical coverage. They also indicated that the low level of geographical coverage is the most disappointing in the bank's IT infrastructure. Computerising the village banks and the branches, and connecting these sites to the county banks are very important issues to the bank's business. This is because the villages are the front lines of the bank's business. Most of the banking processes and transactions are initiated there. County banks are mostly doing the collective and aggregate manipulations for the transactions made at the villages' level.

(3) *Coverage of functional divisions* scored a "low" grade (avg. = 2.3, std = 1.0).

(4) *Appropriateness with their firm's long-range plans* scored a "low" grade (avg. = 2.0, std = 0.8). This item will be explored in "firm-wide planning", "IT planning" and "CE Support" sections.

(5) *Integration of customers' data bases* scored a "very low" grade (avg. = 1.4, std = 0.5). It is clear that the bank does not have efficient coverage of its functions and geographical sites. It is logical, therefore that its customer data bases can not be easily integrated.

8.2.3 Efficiency of IT Services

IT officials' opinions about the level of efficiency of IT support services in BDAC were identified through the responses to the questionnaire. A related five-point scale question was used (where 1 = very low - 5 = very high, question 4) and was followed up by interview sessions.

BDAC had a general average score (by its officials) equal to 2.6 with 0.8 std. This means that the degree of efficiency of IT services in general in BDAC is "low".

In the questionnaire, each IT official was asked to evaluate his/her bank's IT services efficiency in terms of four major categories of IT support services. The IT officials' ratings for these categories are as follows:

(1) Data Processing and Telecommunication (DP&T) scored a "low" grade (avg. = 2.3, std = 0.65). Table 8.1 lists the statistics of DP&T items. Of course this evaluation score was expected, as BDAC does not have a good communication network. The branches and village's banks have to send their books, records and disks to the county banks in order to key-in and process the data.

Table 8.1 Evaluation of Data Processing & Telecommunication in BDAC

	AVG	*STD*
Install & maintain data communication equipment	1.6	0.9
Produce & distribute paper reports	2.3	1.5
Produce & distribute microfiche reports	2.3	1.5
Access to consumer & business data files	2.7	0.6
Accuracy of consumer & business files	3.3	0.6
Response time of on-line systems	1.7	1.2
General average (overall score)	2.3	0.65

(2) Software Services (SS) scored an "average" grade (avg. = 3.8, std = 0.32). Table 8.2 lists the statistics of SS items.

Table 8.2 Evaluation of Software Services in BDAC

	AVG	*STD*
Develop new software applications	3.7	0.6
Enhancements to application software	4.0	1.0
Maintenance of application software	4.0	1.0
Meet production time frames	3.3	1.2
Software Services SS	3.8	0.32

Although BDAC does not really have great capabilities in software development, its executives were happy with the current capabilities. Most of the interviewees, who replied to the questionnaire, were programmers. Maybe this is why the results of this point seems biased.

(3) *Office Services & User Liaison* (OS&UL) scored a "low" grade (avg. = 1.9, std = 1.14). Table 8.3 lists the statistics of OS&UL items.

Table 8.3 Evaluation of Office Services & User Liaison in BDAC

	AVG	*STD*
Install & maintain voice communication equipment	1.1	0.5
Electronic mail	1.0	0.0
Production level word processing	3.2	0.5
Teleconferencing	1.0	0.0
User liaison assistance/trouble calls	3.0	0.4
Office Services & User Liaison OS&UL	1.9	1.14

(4) End-User Computing Services (EUCS) scored a "low" grade (avg. = 2.5, std = 0.43). Table 8.4 lists the statistics of EUCS items.

Table 8.4 Evaluation of End-User Computing Services in BDAC

	AVG	*STD*
Technical: trouble shooting, database extraction, etc.	2.7	1.5
Research: hardware & software products	2.0	1.0
Consulting: hardware & software products, etc.	2.3	1.2
Training & education	3.0	1.7
End-user Computing Services EUCS	2.5	0.43

It was made clear from the interview sessions that EUC in general is not a major concern in BDAC. This is because end-users only use the systems for data entry. One of the weak points of this bank, as far as the needs of end user are concerned, is in area of research, BDAC does not have any formal or informal way of carrying out research in IT products.

8.2.4 Level of Sophistication of IT Use: Employees' Perceptions

Perceptions of IT officials in BDAC about their bank's level of SITU were sought through the questionnaire. Using Nolan's "stages of growth" model (Nolan, R., 1991), officials were presented with a definition of each stage and then asked to indicate which definition best described their IT use pattern in BDAC (please see question 3 and section 3.2, chapter three). Responses showed that BDAC's level of SITU is in the "contagion stage". Although the level of SITU is a complex variable, this result is consistent with the general descriptive data about IT use in BDAC collected and presented in this chapter. Intuitively BDAC still needs to acquire more computers for its massive banking sites and establish a complicated network from scratch

to connect them. Many applications have to be developed. A lot of effort is needed to train the employees in the front line of the bank.

8.2.5 Strategic Use of IT in BDAC

Two questions in the questionnaire were used to measure the degree of strategic use of IT compared to the bank's main competitors (questions 5 and 7). The first question, using a five-point scale, sought IT officials' perception about the bank's degree of success in utilising IT for attaining competitive advantages. BDAC was rated "low" by its officials (avg. = 2.7, std = 0.6). Therefore, according to BDAC's IT officials, the bank was no better than its competitors in utilising IT for attaining some business competitive advantages. In the second question, interviewees were presented with a list of 15 areas of potential Information Based Competitive Advantages (IBCAs). They were then asked, in a five-point scale, to rate how well their firm made use of these areas to gain some advantage over its competitors (questions 7-10). Table 8.5 shows the employees' responses to this question:

Table 8.5 Responses for IBCAs Analysis in BDAC

	AVG	*STD*
Integration of customer data	2.7	0.5
Centralised transaction processing centre	3.0	1.3
Consolidation of applications onto uniform product base	3.1	1.1
Number & availability of ATMs	1.0	0.0
ATM interchange links with other institutions	1.0	0.0
Market analysis, marketing	1.1	0.4
Differentiated customer services & products	2.6	0.5
Electronic fund transfer / Point-of-sale terminals	1.0	0.0
Risk management techniques	1.1	0.3
Competitor intelligence	1.1	0.5
MIS planning & control	2.6	0.5
Electronic home banking	1.0	0.0
Internal networking systems	1.0	0.0
Cost accounting	2.0	1.0
Investments & financial planning	2.5	0.5

According to the above table, the responses indicate that the bank has not achieved any competitive advantage out of utilising IT. Eight areas of the list given in the above table, have not got any attention. (that is to say with score = 1.0 or close). The rest of the areas got scores between "low" grade (five areas) and "average" grade (two areas). It is even believed that interviewees over-evaluated their capabilities in these areas. This is because it is not logical to

have an "average" rating (though with high variance level) in the "centralised transaction processing centre" and "consolidation of application onto uniform product base" areas, while the bank does not have a communication network.

8.3 Firm-Wide Planning in BDAC

As mentioned in the previous cases, firm-wide planning practices are customised to specific routines and procedures in the public sector companies in Egypt. BDAC does not differ much from any public sector bank in this area (please see the related sections in NBE, BM and BDC case studies). Even the responses to the related questions in the questionnaire were similar (questions 11 – 16).

However, there is some difference in the long range planning mechanisms. BDAC tends to have more ties to the government plans, especially those for the ministry of agriculture. For example, it has committees such as the higher committee for the cotton crop or for fertilisers, etc., designated to plan for the critical agricultural issues. Probably the Minster of agriculture and his main associates are the main players in the bank's strategic directions.

As no documents were available to study the bank's current type of strategy, a four-choice question was used to identify the bank's main strategy type (question 17). The question was based on the Miles R. and Snow C. (1978) typology of strategies, which are as follows: defensive, creative, analytic, and reactive (see also section 3.2 in chapter three. Officials classified their bank as a "creative". This result is consistent with many characteristics of the way BDAC is doing business. BDAC is the dominating bank in its market segment, that is to say the Egyptian farmers and the agricultural related activities.

8.4 IT Planning

It was made clear from the open interview sessions that BDAC does not have great experience in IT planning. Its first IT plan was developed and implemented by an American expertise. Several questions were designed to examine this variable in the questionnaire (question 35 - 42). Responses to these questions and the interview sessions revealed the following:

1- Most of the interviewees are aware of the existence of an IT planning process.
2- No clear consensus between interviewees concerning the starting date of IT planning in the bank. This might be because of the limited participation of the officials in planning. Only the

computer general manager and his associates know the bank's IT projects, their priorities and their details. IT officials begin to know about any IT project at the time of implementation, as executives explained in the interviews.

3- Interviewees and executives in the open sessions indicated that the short-term time-frame of planning is probably the only time-frame used in IT planning.

4- Top-down Approach is also the only approach used for planning for the bank's needs for software applications.

Table 8.6 Degree of Participation of the Different Organisational Levels in BDAC

	AVG	*STD*
Top management	3.7	0.6
Managers of the functional departments	2.7	1.2
Employees of the functional departments	2.3	1.5
IT managers	4.0	1.0
Systems analysts	3.7	1.5
Programmers	3.7	1.5
End-users	2.7	1.2
Vendors	3.0	1.0
Consultants	4.3	0.6

5- One of the question (question 40) showed the officials' opinions about the degree of participation of each level of the organisation in IT planning. Table 8.6 lists the results of this question.

8.4.1 Appropriateness of IT Architecture for IT Planning.

It is clear that BDAC still needs more IT equipment and training to build an effective IT architecture, suitable for building strategic plans for IT.

8.5 CE Support in BDAC

CE support was studied in this project, through two aspects: CE participation and CE involvement. Each aspect was measured through a set of parameters. The following sections discuss the results of this measurement process.

8.5.1 Degree of CE Participation in IT

Several questions were designed to examine this point in the questionnaire (questions 18 - 23). The following table shows the averages and standard deviations of the IT officials' responses to these questions.

Table 8.7 Statistics of the CE Participation in BDAC

	AVG	*STD*
Personal participation	1.6	0.5
CE role in IT committee	1.2	0.5
CE communication intensity with IT department	2.3	1.1
CE knowledge of IT opportunities	1.3	0.8
CE knowledge with IT use of competitors	1.4	1.2
CE personal IT use	1.9	0.3
CE participation (overall score)	1.6	0.78

BDAC had a "very low" degree of CE participation in general, according to the employees' opinions (avg. = 1.6, std = 0.78). Most of the sub-items had "very low" scores as well. Only "CE communication intensity with IT department" had a "low" score. Interview sessions confirmed these results to a great extent. The executives showed that the CE of BDAC does not really have much time for their problems. They explained that he was not in the bank when the current IT infrastructure was built. He came from the ministry of agriculture.

8.5.2 Degree of CE Involvement in IT

Several questions were designed to examine this point in the questionnaire (questions 24 - 27). The following table shows the averages and standard deviations of the IT officials' responses to these questions.

Table 8.8 Statistics of the CE Involvement in BDAC

	AVG	*STD*
CE prevailing thinking about IT spending	1.8	0.6
CE perception of IT importance	3.0	0.9
CE vision for IT	2.1	1.4
CE endorsement of non traditional applications	1.1	1.2
CE involvement (overall score)	2.0	0.32

BDAC had a "low" degree of CE involvement in general, according to the employees' opinions (avg. = 2.0, std = 0.32). The results in the above table could be explained, according to the choices allowed for answering the questions directed to the interviewees, as follows:

- The CE's prevailing thinking about IT spending is that IT is just an expense that should be controlled.
- The CE's perception of IT's importance to the firm is that IT has an "average" importance.
- The CE's vision for IT is that IT is a tool for modernising work circumstances.
- The CE's endorsement of applications not meeting traditional criteria tends to be "rarely".

Based on the above two aspects discussed in sections 8.5.1 and 8.5.2, the CE's support to IT activities in BDAC is "very low", (general avg. = 1.8).

8. 6 Managerial IT Knowledge in BDAC

The aim of this section is to study the overlapping know-how of IT and line managers (in particular, the knowledge that IT managers possess about the business and strategic issues within the firm, and the knowledge that line managers possess about the potential opportunities from applying IT within their business domain). Therefore two dimensions were used to measure this variable: IT managers knowledge and line-managers knowledge.

8.6.1 IT Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate their managers' knowledge about business operations and corporate strategies (questions 28 and 29). Table 8.9 lists the results of this measurement process.

Table 8.9 Statistics of IT-Managers Knowledge in BDAC

	AVG	*STD*
Knowledge degree of business operations	3.0	0.4
Knowledge degree of the corporate strategy	3.0	0.4
IT-managers Knowledge (overall score)	3.0	0.4

IT managers' knowledge in BDAC could be rated as "average" in overall, as shown in the table given above.

8.6.2 Line-Managers Knowledge

Two five-point scale questions were used to enable IT officials to rate line-managers' knowledge about the potential of IT as a competitive weapon and a tool to decrease clerical work (questions 30 and 31). Table 8.10 lists the results of this measurement process. From the table it is clear that line-managers' knowledge about IT is rated as "very low".

Table 8.10 Statistics of Line-Managers Knowledge in BDAC

	AVG	*STD*
Knowledge of IT potential as a competitive weapon	1.6	0.6
Knowledge of IT as a tool to decrease clerical work	2.2	1.5
Line-managers Knowledge (general score)	1.9	0.71

Mutual official movements, mutual training, and joint team-work are some of the exchange mechanisms that can be used to increase the level of IT managerial knowledge in a firm. Three related questions were directed to the IT department's officials to detect the degree of existence of these kinds of mechanisms. Table 8.11 lists the results of this measurement process.

Table 8.11 Statistics about some Exchange Mechanisms in BDAC

	AVG	*STD*
Mutual officials movements	1.1	0.4
Mutual training	1.3	0.9
Joint team-work	3.0	0.0

It is clear from the above table that the first two mechanisms do not exist in the bank. Joint team-work are used in BDAC to an "average" extent (avg. = 3.0, std = 0.0) while mutual officials movements and mutual training are not used.

8.7 IT and Business Groups Integration

The degree of integration between business and IT groups was examined in this study through two dimensions: the intellectual dimension and the social dimension.

8.7.1 The Intellectual Dimension

Two time-frames were used when measuring the intellectual dimension: the short-term frame and the long-term frame (question 35). According to the measurement method explained in chapter 3, business and IT plans (for short and long-term frames) were examined in order to rate the degree

of integration between them. As regards the *short-term frame*, BDAC has plans in the IT and business areas, but there is no clear cross referencing between them. Therefore, the degree of integration could be said to be "average", as explained in section 3.7 in chapter three.

As regards the *long-term frame*, BDAC does not have formal long-term plans for IT or business. Therefore, BDAC's long-term level of integration between IT and business, in terms of the intellectual dimension, could be rated as "very low".

In addition to the analysis given above, two five-point scale questions were used to enable IT officials in this bank to indicate their perceptions about the level of integration between IT and business in their bank (questions 32 and 33). The parameters used to measure the intellectual dimension were: line-managers understanding of IT objectives; and IT-managers understanding of business objectives. Table 8.12 lists the results of this measurement process.

Table 8.12 Statistics about The Intellectual Dimension

	AVG	*STD*
Line-managers understanding of IT objectives	2.0	1.0
IT-managers understanding of business objectives	3.0	0.0

This result is consistent to a great extent to the above mentioned analysis, for the short-term and long-term frames.

8.7.2 The Social Dimension

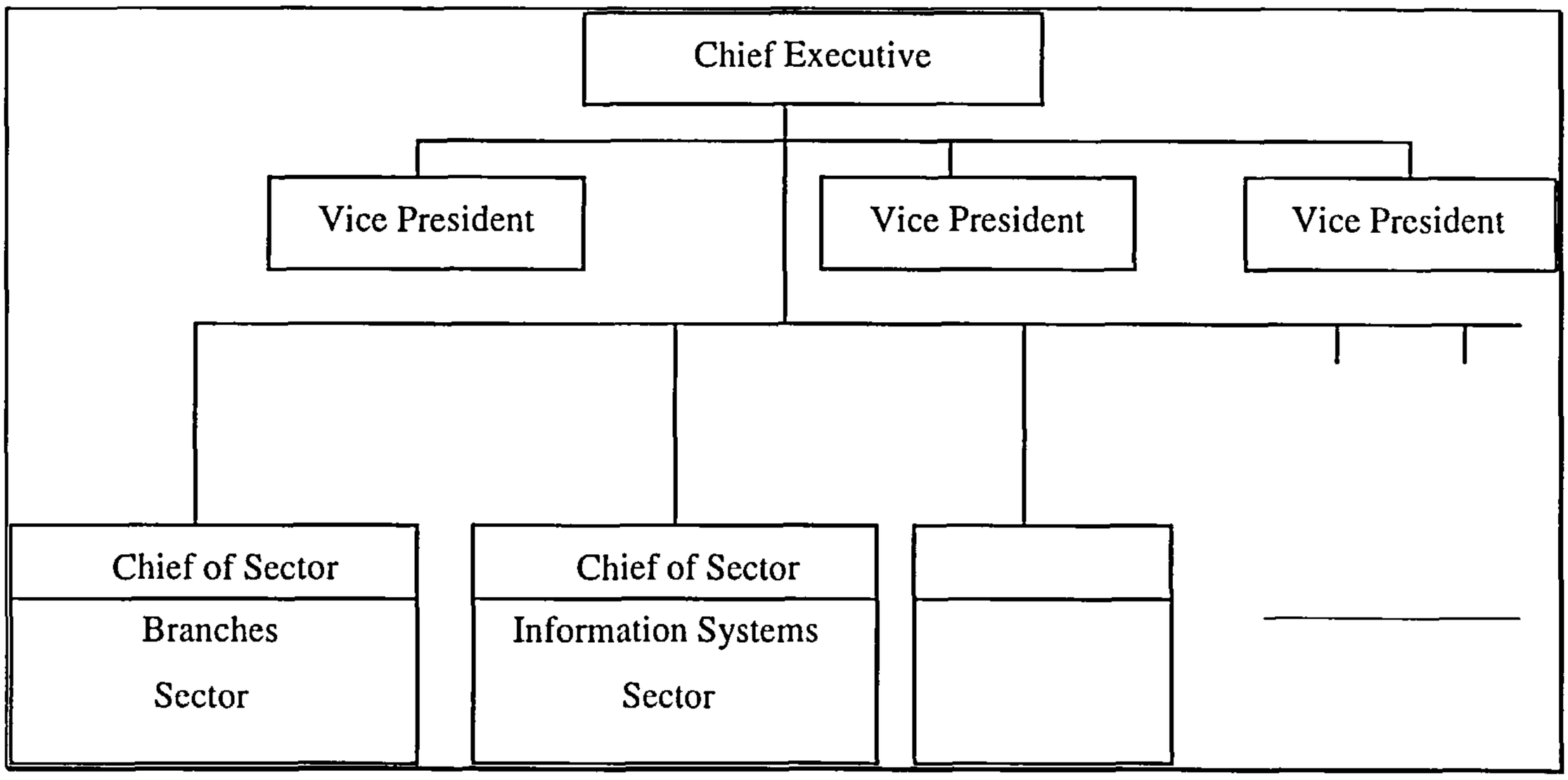
A five-point scale question was used to enable IT officials in BDAC to rate the level of "intensity of communication", between IT and business groups, as an approximation for the social dimension of integration (question 35). According to the officials' opinions, intensity of communication could be rated as "average" (avg. = 3.0 & std = 0.4).

8.8 IT Organisational Design in BDAC

8.8.1 Firm-Wide Organisational Structure

BDAC's organisational structure follows the traditional functional structures. Each traditional banking function has a separate organisational unit (a sector or a general administration). The following figure depicts an overview of this structure.

Figure 8.1 BDAC Organisational Structure

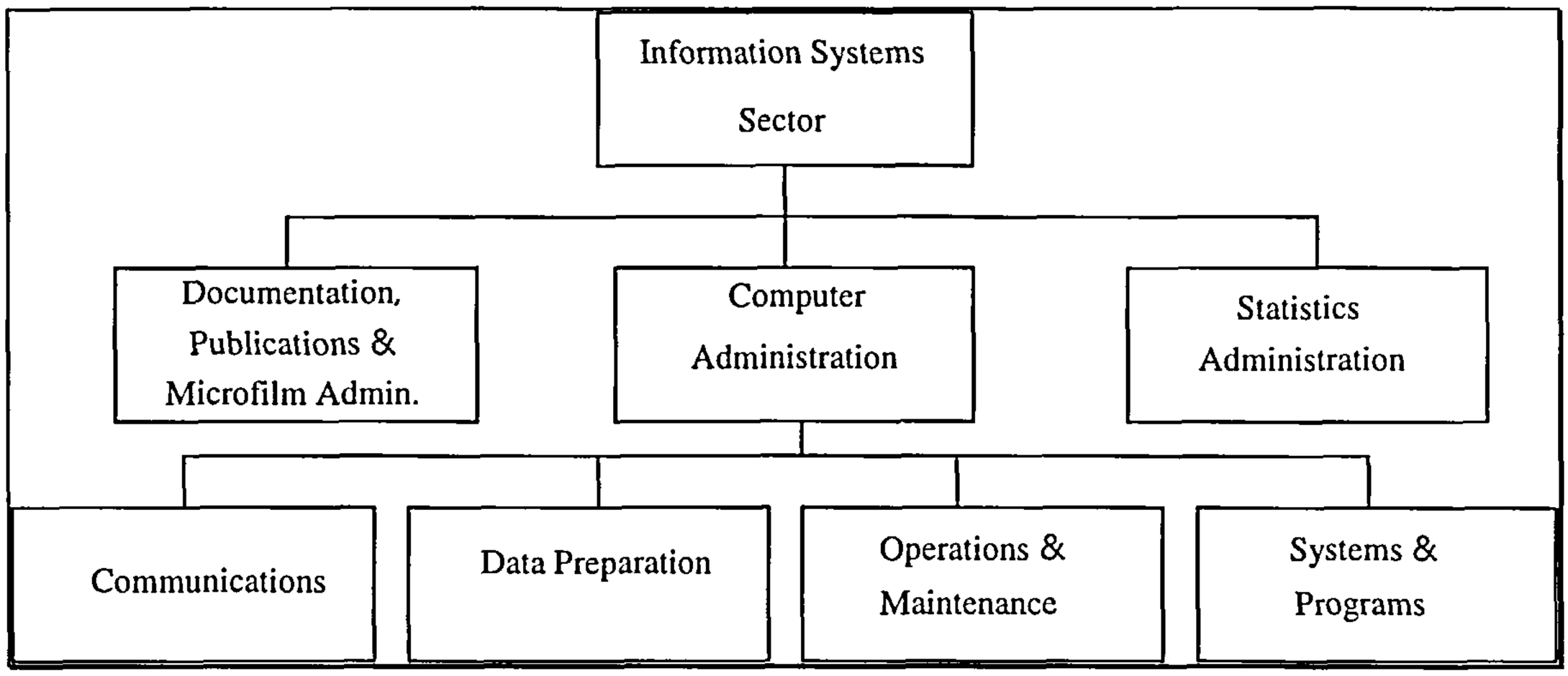


8.8.2 IT Organisational Structure

In the early stage of building BDAC's IT infrastructure, the bank brought an IT expert from the ministry of interior - a retired high rank officer - to manage IT activities in the bank. His main condition to accept the job is to establish a separate sector for IS. Although this proposal was greatly opposed by many of the bank's top management executives and the public authority for organising and management - a governmental agency responsible for the organisational and administrative affairs in the public sector and the government in Egypt - the CE formed the sector in 1987.

As in figure 8.2, the IT organisational structure follows the same type of functional structure of the general organisation design of the firm. The structure of the sector consists of three general administrations: the statistics administration; documentation, publication and microfilm administration; and the computer administration. The computer administration is the core unit in the sector. The statistics administration is an old administration in the bank that use to report to the Chief of Sector (CS) of organisation and training sector. The documentation and microfilm administration, in the opposite, is a new or nearly under construction administration

Figure 8.2 IT Organisational Structure of BDAC



The computer administration consists of three main departments: operations and maintenance; systems and programs; and data preparation and revision. The s*ystems and programs department* is responsible for planning and developing new software systems. This organisational unit is a central unit located in the principal bank in Cairo. The o*perations and maintenance's* activities are related to the operation of the existing machines in all the branches of the bank. The employees and operators of this department are responsible for day-to-day back-ups, preparing and following up the networks, managing output production and distribution, and providing end-user support for the relevant problems. Each branch has one or two operators. All the operators report directly to the central computer department in Cairo.

The data preparation and revision department is probably an idle unit at the present time. It was established in the beginning as many applications used to be run in the IS sector. For example the annual draw for savings certificates and books, and some planning and follow up applications use to be processed by this department. At the present time these applications were moved to the related business groups. In addition to the above mentioned departments, the bank is considering at the present time establishing another department for communication.

8.8.3 Integration Mechanisms

In the late eighties, BDAC established a higher committee for IS. The committee had the CE as the chairman; representatives of the American project; the bank's vice-presidents; the

Information systems CS; and some CSs of the bank. At the time of building BDAC's IT infrastructure, this committee was very active. It was the main integration mechanism between the computer sector; the American project; the bank's top management and the functional units in the bank.

Since the project ended in 1990 and the current CE took over, the committee's meetings stopped. Integration activities since then have become limited to the abilities of the CS of IS and his personal relationships with the top management to pass the projects of the sector through the board of directors' meetings.

On the other hand, inside the IS sector each administration has a dedicated technical committee (that is to say a committee for computer, another for statistics and another for microfilm and documentation). Only the computer committee is active and has some schedule of meetings, especially at the present time. This committee usually has external consultants, who provide insights and guidance for the sector's critical actions. The committee played an important role in the 1990s for developing better software development capabilities for the sector and for purchasing software applications from external resources. At the present time, it is working on developing and implementing a plan for rebuilding the bank's IT infrastructure.

8.9 IT Management Climate

The aim of this section is to discuss the extent to which the climate of IT management in BDAC, is positive and supportive. Five main aspects of IT climate were studied: the role of top management in creating a supportive climate for those concerned with IT management; the existence of a clear long-term vision for the role of IT in business; communication climate between IT and business groups; degree of satisfaction with the role of IT in business; and degree of satisfaction with the current IT training programs.

8.9.1 The Role of Top Management in the IT Management Climate

Three main items were measured to examine this aspect of IT management climate: (a) employees' perceptions about top management understanding of how IT contributes to business; (b) employees' opinions about top management willingness to devote sufficient time to make IT projects successful; and (c) employees' perceptions about the extent to which top management considers IT to be a strategic factor. Five-point scale questions were used to enable IT officials to

express their opinions regarding these issues (questions 44, 45 & 50). Table 8.13 lists the results of this measurement process.

Table 8.13 Statistics of Top Management Contribution to IT Management Climate in BDAC

	AVG	*STD*
Top management understanding of how IT contributes to business	2.0	0.8
Top management willingness to devote sufficient time to make IT projects successful	1.1	0.7
The extent to which top management considers IT as a strategic factor	1.3	0.6
Top management contribution to IT management climate (overall score)	1.5	0.7

As shown in the table, BDAC's IT officials expressed "very low" satisfaction with the role played by their top management (general avg. = 1.5, std = 0.7). One of the executives indicated that the CE does not really believe in the sector's effectiveness.

8.9.2 The Existence of a Clear Long-Term IT Vision

Due to lack of participation and involvement of BDAC's top management in IT activities, it is believed that the bank does not enjoy a long-term vision. However, IT executives showed that they could convince the bank's top management to rebuild the IT infrastructure, at the present time. This move will affect the bank's IT strategic direction in the next few years

8.9.3 Communication Climate Between IT and Business Groups

A five-point scale question was used to study the officials' opinions about this issue (question 49). BDAC had a "low" rating according to its officials, in terms of their satisfaction with the communication climate between IT and business groups (avg. = 2.3 & std = 1.2).

8.9.4 Degree of Satisfaction with the Current IT Training Programs

Another five-point scale question was used to study the officials' opinions about this issue (question 51). The degree of satisfaction of the officials with the bank's IT training programs was "low" (avg. = 2.8& std = 0.6).

8.9.5 Degree of Satisfaction with the Role of IT in Business

From the results of the above categories officials have an overall "low" degree of satisfaction with the current role of IT in their business (general avg. = 2.8 & std. = 0.76). Table 8.14 shows the details of this indicator (see also questions 46 – 48).

Table 8.14 Statistics of the Degree of Satisfaction with IT Role in Business in BDAC

	AVG	*STD*
Satisfaction with the current role of IT in the bank	3.0	1.0
Expectation for having the highest benefits from IT	3.0	0.7
Expectation for leading the industry in IT use	2.3	0.6
Satisfaction with the role of IT in business (overall score)	2.8	0.76

In the light of the above, it is clear that BDAC does not enjoy a good IT management climate. Responses to the questionnaire in relation to the climate issues, showed that IT officials were dissatisfied with BDAC's IT training programmes, communication climate between business and IT groups, top management role in IT activities, therefore they don not have much expectations for the future.

8.10 BDAC Case Study: Strategic Issues

It is clear from this case study that BDAC commits its strategic behaviour to the Egyptian agricultural policies and development plans. It therefore focuses on the agricultural market segment and provides related products and services. The bank adapted a "creative" strategy to pursue this mission.

Concerning IT strategy, it is not clear from the study results that BDAC has a specific strategy for IT use. The bank started to use IT in 1986 through an American grant. This American project provided the fund and expertise required to plan and implement the bank first move towards applying IT in BDAC's business.

As the results of measuring the level of SITU in BDAC showed, the bank level of IT use could be described as "below average". Its officials located their level of IT use in stage 2 (contagion stage) in Nolan's model, which is an introductory stage. The bank does not have significant communication capacity, as its main 17 county banks work in a stand-alone mode. It is considering at the present time, replacing its computers, installing a wide communication network and computerising some of its village banks. Although it could achieve some important benefits out of IT such as automating some banking and administrative business processes, BDAC needs a lot of effort to pass the introductory stages of IT use.

BDAC needs to transform all its organisational practices related to IT use. The study showed that the bank does not have proper practices in all the seven organisational practices identified in the research framework.

CHAPTER NINE

Research Findings

This chapter will present and discuss the results of the field study of all the cases. The purpose of this comparative analysis is to understand the common patterns of IT use in the Egyptian banks. The organisation of the chapter will be as follows: a discussion of these bank's levels of SITU; the firm-wide planning of the banks; IT planning; CE support; level of IT managerial knowledge; the degree of integration between IT and business groups; the IT organisational designs of the banks; and IT management climate.

9.1 Level of Sophistication of IT Use: General Positioning

The degree of maturity in the application of IT in the Egyptian banks participating in this project was identified through the responses to one of the questions in the questionnaire and followed up in the interview sessions. This question (question 3, App. 1) sought to identify the perceptions of the officials in the computer departments of the five banks, about the position of their banks on Nolan's "stages of growth" model (Nolan, R., 1991). Officials were presented with a definition of each stage in the model and asked to indicate which definition best described the IT use pattern in their banks (see also section 3.2, chapter three). The responses of the officials are shown in table 9.1.

Table 9.1 Overall Stage of Growth Positioning: Officials' Responses.

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Number of interviewees	22	21	26	15	23
Median	4	5	4	3	2
Mean	4.1	4.9	4.2	3	2.3
STD	0.9	0.9	1	2	1.0

BM had the highest score, located in stage number 5 (data administration stage). Officials in BDC and NBE generally ranked their firms in stage number 4 (integration stage). BDAC had the lowest stage (stage 2 which is the contagion stage), while AIB's officials indicated the greatest level of variance (std = 2) with an intermediate stage (stage number 3 which is the control stage). In the open interview sessions the executives in each bank were asked to indicate which of their competitors could be considered the best positioned in terms of IT use. Their responses confirmed that BM and NBE are currently ahead, followed closely by BDC. AIB and BDAC were not from the top five banks, in terms of IT use, according to all the interviewees.

Another question was directed to IT officials, to measure their opinions about their banks' levels of SITU, compared to their competitors. Respondents were asked to rate their banks' level of SITU on a five-point scale: (1) very low; (2) below average; (3) average; (4) advanced but not a leader; or (5) the leader in IT use. The responses are shown in table 9.2.

Table 9.2 Level of Sophistication of IT Use: Officials' Opinions

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Mean	4	4.6	4	2.6	2.8
STD	0.6	0.7	0.7	0.4	2.0

It is clear from these results that BM is the leader followed closely by NBE and BDC. AIB and BDAC have the lowest levels. To explore these positions in more detail for each bank three analytic questions were used. The first two (which were concerned with IT architectures and IT services) aimed to evaluate IT *efficiency*, while the third aimed to evaluate IT *effectiveness* in terms of degree of strategic use of IT.

9.1.1 IT Architecture Evaluation

The data related to the degree of efficiency of IT architectures, were collected using a question in the research questionnaire (question 1). Within each bank, officials of the IT department were

asked to evaluate their IT architecture from five major aspects: (1) compatibility of computer sites; (2) coverage of geographical locations; (3) coverage of functional divisions; (4) appropriateness with their firm's long-range plans; and (5) integration of customers' data bases. Respondents were asked to rate their bank's IT architecture in relation to each aspect on a five-point scale: (1) very low; (2) below average; (3) average; (4) high; or (5) very high. Responses for this question were then aggregated to a single average score. Table 9.3 shows the results of this measurement process.

Table 9.3 Evaluation of IT Architectures

	BDC		*BM*		*NBE*		*AIB*		*BDAC*	
	Avg.	Std	Avg.	Std	Avg.	Std	Avg.	Std	Avg.	Std
IT sites compatibility	4	0.6	4	0.6	4.3	1	4	0.4	2.7	0.6
Geographical coverage	4.3	0.6	4.2	0.7	4.6	0.6	4.9	0.4	2.7	0.6
Departments' coverage	3	0.5	3.7	0.9	3.3	0.8	2.3	0.5	2.3	1.0
Appropriateness with strategies	4	0.5	4	0.7	3.6	0.8	3.1	0.6	2.0	0.8
Integration of clients' d. bases	2.4	1	2.5	0.7	2.6	0.6	3.1	0.5	1.4	0.5
Overall score	3.6		3.7		3.7		3.5		2.2	

As shown in the table the level of efficiency of IT architectures for four of the banks namely BDC, BM, NBE, and AIB are quite close. The overall scores for these four banks were at the "average" level of efficiency according to the perceptions of the officials of the IT departments of these banks. However some differences exist in the details of these general scores.

Compatibility of computer sites for the four firms were rated "high" by the respondents, as each bank depends to a great extent on one single vendor for machines and software. BDAC however, had a low score in this category, although it also relies on specific vendors for IT products.

AIB had the highest score in *"coverage of geographical locations"*, which is almost "very high" with the least std. This is because AIB has only six branches located in the big cities in Egypt. NBE had the second highest score in this aspect (avg. = 4.6 which is a "high" score) followed by BDC and BM at almost the same level. These results are consistent with the descriptions given about the IT infrastructure of each bank participating in the study (chapters 4-7). For example NBE has the greatest numbers of computers (5 main-frame and 120 mini computers) covering 320 branches followed by BDC which has 120 mini-computers for 230 branches, while BM has 4 main-frame and 100 mini-computers covering 410 branches. Obviously BDAC had the lowest

grade as it only has 18 mini-computers for more than 1000 banking units (county banks, branches, and village banks).

"Coverage of functional divisions" was rated slightly above "average" by BM and NBE's officials. It was found in the interview sessions that BM and NBE are considered to be the most capable banks – perhaps even the most capable *businesses* - in Egypt in terms of software development. BDC came after them with an "average" grade, as it does not have this capability. AIB and BDAC had "low" scores.

Both BDC and BM had "high" grades by their IT officials in the "*appropriateness of their IT architectures with the firm's long-range plans*". NBE and AIB's scores were "average", while BDAC had a "low" grade. Although none of the five banks have a formal process for strategic planning, BM and BDC's officials had these perceptions in relation to this issue because of the high level of participation of their CEs in building these architectures. Most of BM's IT architecture was built in the eighties, when M. Hafiz was the CE of the bank. Mr. Hafiz championed the first experiment in the Egyptian banking industry in using IT extensively. BM's IT use pattern is even now perceived by many Egyptian banks as the most suitable model for IT use in the Egyptian environment. M. Abu El-Fatih the present CE of BDC is currently leading this bank through a similar process. On the other hand NBE, BDAC and AIB have missed the supportive environment created from direct participation from the CE (see chapters 4-7 for more details).

Except for AIB the officials of the banks rated the degree of "*integration of customers' data bases*" of their IT architectures with "below average" scores. BDC, BM and NBE had "low" grades, while BDAC had a "very low" score. Only AIB had an "average" score in this category. In the interview sessions IT executives indicated that most of their software systems were product driven systems and not customer oriented. In addition, the fact that large numbers of branches of these banks (except for AIB) are in diverse locations makes it difficult to integrate their data bases. Many of the branches, especially in the south, face the problem of the poor communication facilities provided by the National Authority of Telephones and Communications. The reason why the databases of AIB are better integrated may be because of the limited number of branches and clients that it has.

9.1.2 Efficiency of IT Services

The purpose of this analysis was to identify the variations in the levels of efficiency of IT support services in the banks participating in the study. Data related to the efficiency of IT support services, were collected using question 4 in the questionnaire. Using a five-point scale, officials of the computer department in each bank were asked to evaluate a list of different types of IT support services. The types of services were grouped into the following categories: Data Processing and Telecommunication (DP&T); Software Services (SS); Office Services & User Liaison (OS&UL); and End-User Computing Services (EUCS). The results are shown in table 9.4.

Table 9.4 IT Support Services Efficiency

	BDC		*BM*		*NBE*		*AIB*		*BDAC*	
	Avg.	Std	Avg.	Std	Avg.	Std	Avg.	Std	Avg.	Std
DP & T	3.5	0.82	3.8	0.66	3.8	0.74	3.5	1.36	2.3	0.65
SS	2.9	0.74	4.2	0.18	4	0.15	2.4	0.96	3.8	0.32
OS & UL	2.5	1.4	2.6	1.02	2.4	0.79	2.7	1.58	1.9	1.14
EUCS	2.7	0.84	3	0.95	3.1	0.85	2.7	1.32	2.5	0.43
Overall Score	2.9		3.4		3.3		2.9		2.6	

There are no substantial differences between the degree of efficiency of IT support services for BDC, BM, NBE and AIB as the overall scores indicate. BM and NBE's levels of efficiency as perceived by IT departments' officials, were 3.3 and 3.4 respectively which are "average" scores. Both BDC and AIB had an overall score of 2.9, which is almost "average". BDAC had the lowest score as in the previous parameters with an overall score of 2.6, which is a "low" grade. A quick review of the details of table 9.4 reveals that the main difference between the leading four banks is in the *Software Services'* category. BM and NBE's respondents have rated their services in this category as "high". This is because BM and NBE have some skills in providing this type of service as indicated previously. This is while BDC and AIB were ranked "low". On the other hand, BDAC had "low" scores for most of the types of services except for the SS type of service which had an "average" score.

BM and NBE had "average" scores in terms of official's perceptions of *End-User Computing Services* in their firms. This is while AIB, BDAC and BDC had "low" scores. All the participating banks had almost "very low" scores in "research: hardware and software" services, which is a sub-item of EUCS category. This result was confirmed in the interview sessions with

the bank's executives. Moreover executives indicated that not much attention is paid to end-user computing in their banks. Involving users in more than data entry is not permitted in these banks. All IT activities are performed centrally by IT employees from the computer department. Even the day-to-day operational tasks required to ensure the smooth running of all branches are carried out by one or two employees from the central branch.

The lowest scores were in the *"Office Services & User Liaison"* category. All the officials rated their banks as "low" in relation to OS&UL services, except for BDAC, which had a "very low" grade. This is because services such as e-mail and teleconferencing are not used in the banks. In the interview sessions executives of these banks indicated that their firms do not have organised office automation systems although all of them are planning to do so.

9.1.3 Analysis of Information Based Competitive Advantages

This analysis was used to measure the relative positioning of the banks in terms of the number and nature of strategy-enabling Information Based Competitive Advantages (IBCAs) achieved by the banks. Two questions in the questionnaire sought perceptions about advantages in relation to the strategic use of IT by the bank (questions 5 and 7). The first question asked managers to rate how well their bank made use of IBCAs for the bank as a whole compared to competitors on a Likert scale of 1 (low) to 5 (high). A low rating (1-2) indicated a position behind competitors, (3) was average and above that (4-5) was ahead of competitors. The results of this measurement process are shown in table 9.5.

Table 9.5 IBCA Positioning

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Means	2.9	4.5	3.5	2.8	2.7
STD	1.2	0.6	0.9	1.5	0.6

BM was the only bank rated as "high" by its officials. Officials in BDC, AIB and BDAC generally ranked their own firms as below "average" (with 2.9, 2.8 and 2.7 scores respectively). BDC and AIB also indicated the greatest level of variance regarding their responses. However NBE's officials ranked their bank in the middle with a score of 3.5 (that is to say above average).

In the second question, executives and officials were presented with a list of 15 areas of potential IBCAs drawn from the literature (please see section 3.2, chapter three). Managers were then

asked to rate how well their firm made use of these areas to gain some advantages over their competitors by utilising IT[1].

A five-point scale question was formulated to enable respondents to rate their own firm in relation to each area. Table 9.6 lists the areas of competitive advantage grouped into three levels of importance as recommended by Broadbent, M. & Weill, P., (1993) together with the results gathered from each of the banks.

Table 9.6 Responses of the IBCAs Analysis

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Integration of customer data	2.6	2.2	2.7	3.2	2.7
Centralised transaction processing centre	2.9	2.8	3.1	3.2	3.0
Consolidation of applications onto uniform product base	4.4	4.1	4.4	4	3.1
Number & availability of ATMs	3.3	4.5	3	1	1
ATM interchange links with other institutions	1	1	1	1	1
Market analysis, marketing	1	1	1	1	1
Differentiated customer services & products	4.5	4.3	4.2	2	2.6
Electronics fund transfer / Point-of-Sale terminals	2	2.6	2.4	2.8	2.8
Risk management techniques	1	1	1	1	1
Competitor intelligence	1	1	1	1	1
MIS planning & control	3.3	3.9	3.5	2.3	2.6
Electronic home banking	3.1	3.2	3.2	1	1
Internal networking systems	3.9	4.1	4	3.6	2.0
Cost accounting	2.8	3.4	3.4	3.9	3.9
Investments & financial planning	3.8	3.7	3.9	4	2.5

The responses shown in table 9.6 were quite consistent with those to the earlier questions. BM had the highest number of IBCAs, according to the officials' opinions, as there were four areas with scores of over 4, that is to say "high" grade. These areas are: (1) consolidation of applications onto uniform product base; (2) number and availability of ATMs; (3) differentiated customer services and products; and (4) internal networking systems.

NBE had three areas of advantage:(1) consolidation of applications onto uniform product base; (2) differentiated customer services and products; and (3) internal networking systems, that is to

[1] In the questionnaire an attempt was also made to establish the importance of these areas in the current industry climate (please see questions 7, 9, and 10 in appendix 1). This was so that it would be possible to classify advantages as being of high, medium or low level of importance to the industry. However no homogeneous pattern could be established from the executives' answers and so it has not been possible to classify the IBCA's this way.

say the same areas of advantage of BM except for the advantage of the availability of ATMs. BDC and AIB had two IBCAs as responses of their officials indicated. BDC had advantages in: consolidation of applications onto uniform product base and differentiated customer services and products, while AIB had consolidation of applications onto uniform product base and investment and financial planning. BDAC did not have any IT-enabled advantages.

It is important to note here that there are some similarities in the scores of the four leading banks. These are as follows:

1. None of the banks made use of four areas of IT-enabled competitive advantages. These areas are: ATM interchange links with other institutions; market analysis, marketing; risk management techniques and competitor intelligence.
2. Most of the firms participating in the study received either "average" or "high" grade by their officials in four specific areas: (1) consolidation of applications onto uniform product base; (2) differentiated customer services and products; (3) internal networking systems; and (4) investment and financial planning.
3. Number and availability of ATMs and electronic home banking, had received much attention from the three public sector commercial banks, while AIB and BDAC did not utilise them at all.
4. Most of the remaining areas of advantage had close scores for all the banks.

Therefore, it is quite safe to say that all the banks, participating in the project concentrate on similar areas when utilising IT for gaining competitive advantages, especially for the commercial public sector banks. On the other hand, these banks suffer from the same points of weakness in utilising IT competitively.

BM had a better position than the other banks because of its competence in one specific IBCA, which is "number and availability of ATMs". BM had begun to install its ATMs at the beginning of the eighties while BDC and NBE began to catch up in terms of this advantage only a few years ago. One of the important results gained from the interview sessions with these banks' executives is that top management teams and IT executives in these banks had the same beliefs and way of thinking in most of the matters concerning utilising IT in their business. BM's pattern of IT use is considered (either implicitly or explicitly) the safe model for success in the Egyptian environment.

9.2 Firm-Wide Planning

Studying the available planning documents in these banks, it was found that only short-term type of planning (one-year plans) is pursued in these banks. Their main focus is on financial planning (budgeting) and operational planning (separate functional plans for each department, mainly financially oriented). Some capital budgeting plans are prepared (which are medium or long term financial planning type) for major projects such as establishing or contributing in new non-banking business units (companies), establishing new mutual funds projects, etc.

It was not clear from the available documents whether these banks pursue some organised strategic planning processes. In the interview sessions executives indicated that their top management do not prepare these kinds of plans. Hence, no documents were available for these banks' intents, statements of intended competitive advantages, manuals for strategic planning processes, etc. However the executives went on to explain that this type of planning does exist but not in an organised way. Top management usually plans for the banks' critical issues in board meetings. Their competitive and strategic thrusts emerge and are shaped in response to major events and situations. Only short term financial planning is documented.

Because firm-wide financial planning was made compulsory by the government at the beginning of the sixties, the length of experience of this type of planning is the same in all the public sector firms in Egypt. Although AIB is not a public sector bank it has followed these same methods of firm-wide planning (in terms of focus and frames) for more than 20 years. In fact, AIB has taken on board many things from the public sector banks as it is from there that most of its senior managers originate. Moreover the Egyptian government always keeps some control on AIB because it has an exceptional status in the Egyptian banking industry (for details of this issue see chapter 7).

9.2.1 Types of Strategies Pursued by the Banks

Although no formal strategy documents were found for these banks, the results of the interview sessions, questionnaire responses and documentation showed that some "realised strategies" existed. These banks' strategy patterns are determined through the following:

- Their responsibilities for supporting the Egyptian government's strategic moves. For example, supporting the public sector business units was one of the important strategic objectives of the public sector banks in the eighties. This was translated into major lending activities to the public sector, funding the establishment of new business units and/or contributing in new joint ventures. In the nineties another important strategic objective has been to support the privatisation of the public sector business units. Consequently the major strategic moves of these banks, at the present time, are selling out their contributions in the public sector business units, supporting the Egyptian stock exchange and establishing mutual funds projects. Even AIB is used (by the government) to encourage Arab capital into the Egyptian markets.

- Their role as a public sector institution. The public sector banks are committed to introducing all the important banking products to the Egyptian people regardless of their wealth or position. It is clear that this role shaped these banks' missions to cover a very wide market segment with wide product mixture introduced at affordable prices.

- The visions of the initial founders of these banks. For example, BM was established to be the bank of all the Egyptians and to contribute directly in the economic development process. BDC was the first to seek Arab financial markets' exposure. When NBE was founded its role was seen as being that of the leading bank and the financial arm of the government. AIB was founded to be the centre of an Arab coalition with Libya and some other neighbouring countries. Obviously BDAC was established to be the financial arm of the agriculture ministry in Egypt.

- Short term interactions and visions of their top management that emerge with events and situations.

Based on our belief on the existence of some consistent strategy pattern, a four-choice question based on the strategy types of Miles, R. and Snow C. (1978) was directed to these banks' officials to enable them to classify the type of strategy pursued by their bank (question 17). The results of this measurement process are given in table 9.7.

Table 9.7 Types of Strategies of the Banks

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Type of strategy	Analytic	Creative	Creative	Defensive	Creative

9.2.2 Studying the Strategic Orientation of the Banks

The purpose here was to study the main strategic thrusts of each bank. An open question was directed to each executive to enable them to determine the bank's main strategic thrusts. Responses to this question could then be processed to statistically measure to what extent these thrusts are clear, consistent and coincide. Unfortunately, this part of the study has failed as the executives' responses were very general and IT oriented (as they knew that the research topic was about IT). However, in the interview sessions, executives explained that the bank's critical thrusts and plans for the future are always confidential and only discussed in the board meetings. "We only implement their decisions, it is not for us to question the reasons behind those decisions", one of the executives said.

9.3 IT Planning

Interviews with executives showed that planning for IT has the same features as firm-wide planning and functional planning as explained in the previous section. This means that IT planning is focused on the short-term and is financially oriented. Confidentiality is very important for long-term intentions and documentation is not systematic and organised. The "top-down" approach is the main approach used in software development. However there is one way in which these features differ. This is when the firm is introducing (probably for the first time) IT intensively with great support from top management. For example BDC started utilising IT extensively in the nineties with a large amount of involvement on the part of its CE. Therefore IT planning in BDC is different from the other banks. Two IT committees have been given responsibility for developing, following up and communicating IT long-range plans. Participation and documentation are much better in BDC than in the other four banks.

NBE and BM have had similar experiences in the past. The introduction of IT in BM (at the beginning of the eighties) and NBE (in the mid-eighties) was accompanied by clear enthusiasm and championed by a powerful member of the top management team. This "champion" was the CE at that time in BM and the CS (Chief of Sector) of the computer department in NBE.

However when these two champions left their banks, planning for IT became similar to the traditional planning characteristics mentioned in the firm-wide planning section.

It is not safe to say that BDAC had the same experience as the other commercial public sector banks when building its IT infrastructure. However, its top management played an important role to obtain the maximum benefit from the American project that provided the funds and the expertise required for introducing IT into the bank for the first time

AIB did not undergo the same enthusiastic process. Top management has never participated in IT planning. AIB's short-term and long-term projects were developed within the computer department's boundaries. IT projects in AIB need to be financially justified in order to secure the approval of its top management.

9.3.1 Appropriateness of IT Architectures for IT Planning

Broadbent, M. and Weill P. (1993) introduced the "Appropriateness of IT Architectures for IT Planning", as an important parameter for explaining IT planning capabilities. However, there is no optimal status for this parameter as IT is always in continuous development, which means that organisations are also continuously developing their IT architectures.

Examining the available data about IT architectures of these banks, it was found that:

- All the three commercial public sector banks have the benefit of working with a large number of different types of computers covering the majority of their branches, using different reliable communication solutions and having enough computing and storage capacities. Whenever a branch needs extra capacity, replacement and expansion decisions are taken and implemented in a reasonable span of time.

- One of the limitations of these three banks' IT architectures is that not all their branches are computerised. A few small branches, savings units and representatives bureaux still operate manually.

- Another important limitation of these architectures is that communication is not efficient in all the computerised branches. Some branches in the south of Egypt are not on-line most of the time because of problems in the national telecommunication infrastructure in these areas.

Moreover executives indicated that the introduction of IT to enable cross-branch and cross-bank transactions to take place was still only in its early stages. This, among other things, limits the banks' ability to prepare aggregate financial statements and customers' accounts. Geographical nodes and satellite communication solutions are being installed at the present time to help overcome this problem.

- These problems affect software development processes as they make the developed systems branch-specific and limit the range of services and products, available for the customers of these banks.

- AIB, on the other hand does not face the same problems. All its six branches are computerised and supported by reliable communication solutions. However one of the banks IT executives revealed that "our bank's computing and storage capacity is enough only for the present pattern of work and the bank's customers, but if the bank tried to change its type of clients and adapted a more active strategy, we would need to increase this capacity dramatically". This is because AIB does not have a large number of clients and their transactions are simple compared to those of the public sector banks. Therefore, it is safe to say that AIB's IT architecture is limited to its current business strategy.

- BDAC suffers from more problems compared to the other banks since it is not supported by a communication network. Moreover, its IT executives showed their dissatisfaction with the bank's current computers. The bank needs to acquire more computers to cover its huge geographical sites. They also showed that even the current computers do not provide the bank with the required computing and storage capacity.

- One of the common characteristics of planning for IT products in these banks is the high level of centralisation of the development process. All IT activities are centralised, except for data entry, as shown in the case study chapters. Therefore, resources are not allocated to end-user computing.

9.4 Chief Executive Support

CE support was studied in this project, through two dimensions: "CE participation" and "CE involvement". Six parameters were selected to measure the degree of CE participation in each bank: personal participation; CE role in the IT committee; CE communication intensity with IT department; CE knowledge of IT opportunities; CE knowledge with IT use of competitors; and CE personal IT use. Also four parameters were used to measure CE involvement: CE prevailing thinking about IT spending; CE perception of IT importance; CE vision for IT; and CE endorsement of non traditional applications.

Five-point scale questions were designed to enable the IT officials of these banks to rate their banks in relation to each parameter (questions 18 - 27). Responses were aggregated to measure the general average for CE support for each bank. Table 9.8 lists the results of this measurement process.

Table 9.8 Statistics About CE. Support

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
CE participation	4.2	2.6	3.2	1.5	1.6
CE involvement	4.6	3.4	3.8	2.2	2.0
CE support	4.4	3.0	3.5	1.8	1.8

BDC had the greatest general average of IT support (4.4), which is a "high" degree of CE support according to its IT officials ratings. Scores for CE participation and CE involvement were 4.2 and 4.6 respectively for BDC. AIB and BDAC had the lowest ratings by their officials for CE support (1.8 which is "very low"). NBE and BM had “average” ratings by their officials as shown in the table.

It is clear that these results are consistent with those presented in the previous sections of this chapter. As has been explained earlier, only the three commercial public sector banks were lucky enough to have "champions" in their top management who led the process of building their IT infrastructures. Clearly BDC had the highest score as its "champion" - the CE - continues to play his championing role. BDC's executives expect that the bank will lead the industry in IT use in the future due to this support.

9.5 IT Managerial Knowledge

The aim of this section is to study the overlapping know-how of IT managers and line managers (in particular, the knowledge that IT managers possess about the business and strategic issues within the firm, and the knowledge that line managers possess about the potential opportunities from applying IT within their business domain). Therefore two dimensions were used to measure this variable: IT managers knowledge and line-managers knowledge.

9.5.1 IT Managers Knowledge

Two five-point scale questions were used to enable IT officials rate their managers' knowledge about business operations and corporate strategies (questions 28 and 29). Table 9.9 lists the results of this measurement process.

Table 9.9 Statistics about IT-Managers Knowledge

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Knowledge of business operation	4.4	4.0	3.6	4.1	3.0
Knowledge of corporate strategy	4.1	3.8	3.7	2.9	3.0
IT-Managers Knowledge	4.3	3.9	3.7	3.5	3.0

BDC had the highest general average rating for this variable (which is a "high" grade), while the other four banks had "average" scores, according to their IT officials' responses. Interviews showed that BDC had this score, possibly for two reasons. Firstly, much attention and support is given to the training activities by the CE of the bank. This issue is always emphasised in the bank's documents and the CE statements. Secondly, most of the IT officials in BDC come from different functional departments of the bank. This is unlike the other banks participating in this study, which rely heavily on technicians and recruits with no previous experience in the banking business.

9.5.2 Line-Managers Knowledge

Table 9.10 Statistics about IT-Managers Knowledge

Knowledge of	*BDC*	*BM*	*NBE*	*AIB*	*BDAC*
IT potential as a competitive weapon	3.0	3.3	3.2	1.4	1.6
IT as a tool to decrease clerical work	3.9	3.9	3.8	2.9	2.2
Line-Managers Knowledge	3.5	3.6	3.5	2.1	1.9

Two five-point scale questions were used to enable IT officials to rate Line-managers' knowledge about IT potential as a competitive weapon and a tool to decrease clerical work (questions 30 and 31). Table 9.10 lists the results of this measurement process.

In essence, from both tables (9.9 and 9.10), BDC was rated the highest in terms of managerial knowledge because of the great emphasis placed on training by its top management and the strong business background of its IT officials. BM was rated second highest possibly because it has the longest experience in utilising IT in business.

9.5.3 Exchange Mechanisms

Some firms try to increase their level of IT managerial knowledge by pursuing some exchange mechanisms between IT and business groups, such as mutual movements between officials, mutual training and joint teamwork. In order to increase our understanding of the behaviour of this variable in these banks three related three-point scale questions were used to detect the extent of existence of these kind of mechanisms (question 34). Table 9.11 lists the results of this measurement process.

Table 9.11 Statistics for Exchange Mechanisms

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Mutual official movements	3.1	1.8	1.9	1.0	1.1
Mutual training	3.8	2.2	2.6	2.6	1.3
Joint team-work	4.1	4.3	4.0	5	3.0

BDC had the greatest ratings, according to its officials, for the first two types of mechanisms (mutual movements between officials & mutual training). Officials of the other banks indicated that these two kinds of mechanisms, either do not exist or are very limited. In relation to the third mechanism (joint team-work as in table 9.11), AIB had the highest score (very high), while the rest of the banks have been rated "high" by their officials, except for BDAC which had an "average" score.

9.6 IT and Business Groups Integration

The aim of this section is to study the level of integration between IT groups and business groups in the five banks participating in this study. Two main dimensions were examined to measure the

level of integration between business and IT groups: the intellectual dimension and the social dimension.

9.6.1 The Intellectual Dimension

As discussed in chapter three, the intellectual dimension of linkage could be defined as: the state in which IT and business objectives are consistent and valid. Two time frames were used to measure the intellectual dimension: the short-term and the long-term.

a- Short-Term Frame

Reviewing all the available documents about short-term plans and interviewing the executives of these banks it was found that all these banks have short-term plans for their business and IT activities. However cross-referencing between the two sets of plans is limited. In particular, IT objectives are always stated in IT terms and not related to specific business objectives. Therefore strong boundaries could be detected between both areas of planning. According to the measurement method explained in chapter 3 the level of integration between business and IT groups in these banks could be rated as "average".

b- Long-term frame

Using the same analysis as in the previous section, it was found that no documents exist for long range planning either for business or for IT in the five banks. This is except for BDC, which has long range plan for IT only. This plan, as all the executives of BDC explained, concentrates on automating the entire bank's branches as the most critical objective, and introducing some of the IT-enabled banking products and services such as ATMs and credit cards. Although this kind of plan does not exist in NBE or BM at the present time, it did exist when they were introducing IT in the eighties.

Therefore BDC's long-term level of integration between IT and business, in terms of the intellectual dimension, could be rated as "average". This is while ratings for the other four banks could be somewhere between "below average" and "does not exist" grade. Please refer to table 3.1 and 3.2 in chapter three, for more details about the measurement method.

In addition to the above analysis, two five-point scale questions were used to enable IT officials in these banks indicate their perceptions about the level of integration between IT and business

in their banks (questions 32 and 33). The parameters used to measure the intellectual dimension were: line-managers understanding of IT objectives; and IT-managers understanding of business objectives. Table 9.12 lists the results of this measurement process.

Table 9.12 Statistics about The Intellectual Dimension of Integration

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Line-managers' understanding of IT objectives	3.0	3.2	2.9	3.0	2.0
IT-managers' understanding of business objectives	3.3	3.0	2.9	3.0	3.0

It is clear from the above table that all the responses were located around the "average" score. This result is consistent to a great extent with the above mentioned analysis, for the short-term frame.

9.6.2 The Social Dimension

As discussed in chapter three, the social dimension of linkage is defined as: the level of mutual understanding of and commitment to the missions, objectives and plans for both business and IT areas. A five-point scale question was used to enable IT officials in these banks to rate the level of "intensity of communication", between IT and business groups, as an approximation to the social dimension of integration. Table 9.13 lists the results of this measurement process.

Table 9.13 Statistics about Intensity of Mutual Communication

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Intensity of mutual communication	3.8	3.9	3.4	4	3.0

Ratings for this variable ranged from "average" to "high" level of integration. AIB had the highest score by its employees, which is consistent with what had been previously indicated by the results from another question (question 35) measuring the extent to which the bank depends on joint team-work. In the interview with the manager of AIB's computer department, he explained that "we (i.e. the department) depend heavily on creating very good relationships with the other business departments, to make it easy for us get our annual projects approved". The rest of the banks had "average" scores by their officials.

9.7 IT Organisational Design

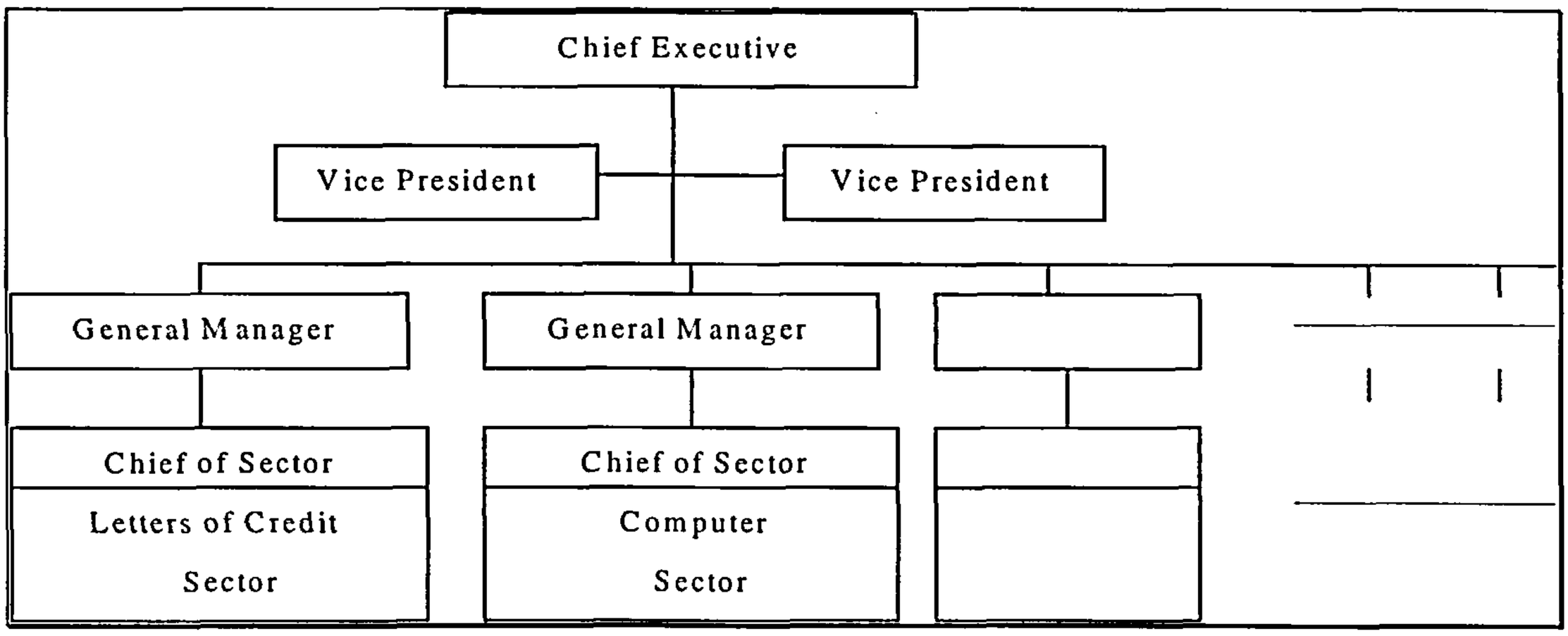
The aim of this section is to study the degree of appropriateness of IT organisational designs in these banks to their firm-wide strategies. A five-point scale question was used to survey the opinions of IT officials about this issue. Table 9.14 lists the results of this measurement process.

Table 9.14 Statistics Relating to the Appropriateness of IT Organisation for Strategy

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
IT organisational appropriateness for strategy	4.4	4.1	3.7	1.3	3.0

Responses from IT officials showed that BDC and BM had the highest average score ("high" grade), followed by NBE and BDAC ("average" grade), while AIB had "very low" ratings. However this simple analysis is not enough to understand the behaviour of the variable being discussed and its influences on the IT levels of SITU. This is because the "organisational design" is a complicated variable and should be studied in more depth. Therefore documents relating to organisational structures and interviews with these banks' executives were used to examine the firm-wide and IT organisational design.

Fig. 9.1 General Organisation Structure of the Banks



9.7.1 Firm-wide organisational structures

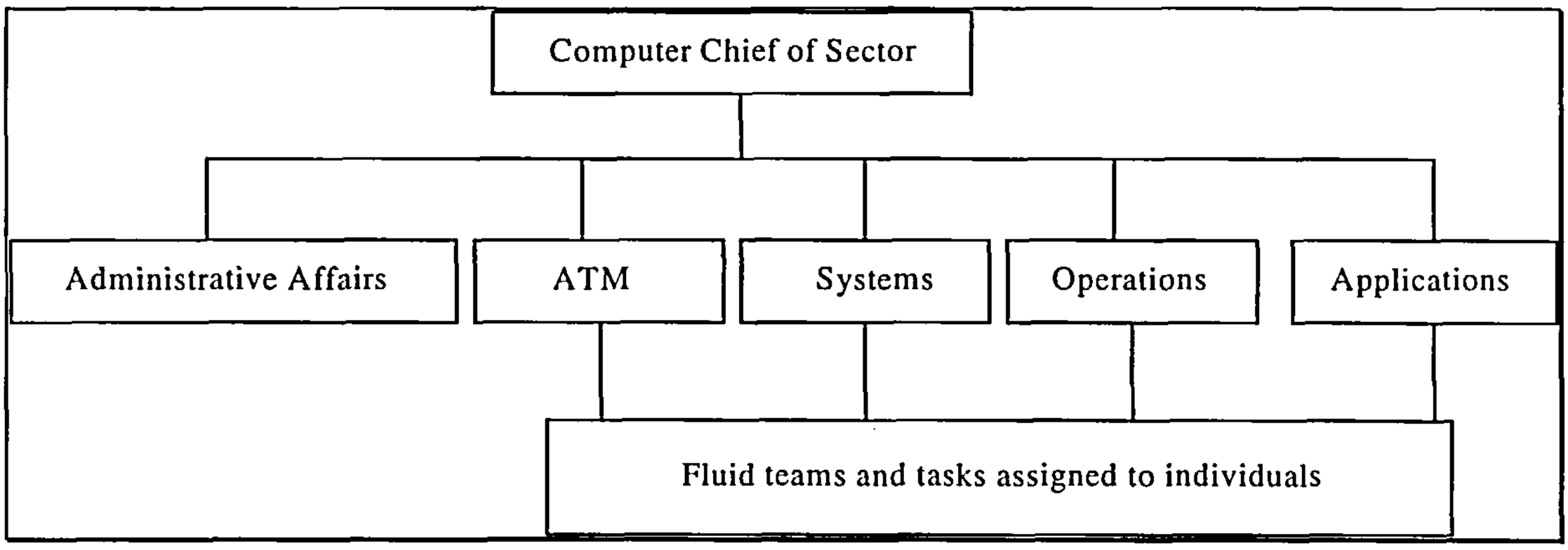
Comparing the organisational structures of the five banks participating in the project, it was found that very few differences exist between them. Organisational structures are of the hierarchical functional type in which a separate organisational unit (sector or department) has

responsibility for each traditional banking function. Figure 9.1 presents the general organisational structure of these banks.

9.7.2 IT organisational Structure

As shown in the case study chapters, the IT organisational structures of the banks followed the same pattern as their firm-wide functional and centralised organisation's structures. A separate organisational unit was allocated in each structure to each traditional IT function such as: operation, software development, and applications and end-user support. In addition to these traditional organisational units, the three public sector commercial banks allocated a separate unit to encompass ATM, home-banking, credit cards and the Internet applications. Figure 9.2 shows the typical IT organisational structure of the participating banks.

Fig. 9.2 IT Organisational Structure of the Banks



9.7.3 Integration Mechanisms

a. Integration mechanisms with top management

According to the executives of the banks, actual integration activities depend on formal requests, feasibility studies of IT projects, follow up reports and other formal correspondences. Committees involving top management do exist in these banks but are not active most of the time except for BDC, which has two active, IT committees. BDC depends heavily on these two committees to discuss, communicate and audit the banks' main IT plans and installation projects of the bank. On the other hand AIB depends more on its department's executives informal and social relationships with top management to achieve this integration.

b. Integration with functional departments

All the IT resources are fully owned by the computer departments of these banks. In addition, not much attention was paid to end-user computing in the functional departments. Therefore, IT officials (especially in the applications departments) spend much of their time in phone calls and regular and ad-hoc visits for trouble shooting tasks. Apart from these day-to-day integration mechanisms, formal correspondences and requests are the most common way for integration in these banks. These correspondences are often for inquiries, requests for additional capacities, etc. Joint team-work and presentation sessions are also commonly used in software development or purchasing projects. As discussed in the previous section these banks do not make much use of committees. The exception is BDC where one of the two IT committees has been allocated the task of encouraging integration between the IT department and the other functional departments in the bank.

c. Internal integration mechanisms

Due to the strong centralisation of the IT organisational structures of these banks, integration mechanisms within IT structures were very formal and centralised. Formal directives, assignments and top-down decisions are the main integration mechanisms in these banks. However, AIB depends on a weekly meetings' scheme for all the IT department's officials to discuss the day-to-day tasks. The other four banks use these meetings but on a less regular basis or for important projects to discuss work assignments and follow up their activities.

9.7.4 IT Organisational Designs: Main Conclusions

Based on the above qualitative study of the IT organisational designs of the five banks, the main characteristics of these IT structures are as follows:

1- IT organisational structures of these banks are very centralised. This is because IT resources are owned by one central organisational unit in each bank (the computer sector, administration or department). As there is no IT organisational unit external to the IT department, all the IT decisions are taken within this central unit.

2- These organisational units are located at the third level of the banks' firm-wide organisations. Its chief of sector (or general manager) reports directly to one of the associates of the CE (vice presidents). This is apart from AIB's IT department which is located at the fourth level in the organisation and its manager reports to the general manager of international finance.

3- The degree of differentiation of these IT organisational designs (that is to say the number of organisational units such as sub-department or administrations) is very small. The number of IT organisational groups at the fourth level in these banks' structures is four or five at most (the same goes at the fifth level at BDAC and AIB's structure). At the fifth level (or the sixth in AIB and BDAC), the number of organisational groups is fluid because there are no specific groupings at this level. Alternatively, IT managers and senior officers assign variable tasks to the employees.

4- There are few integration mechanisms in these organisational designs and those that do exist are of a formal nature. The main mechanisms are the traditional day-to-day directives, formal requests, correspondences and decisions from the top to the bottom of the structure. Use of committees is very limited in these structures. For example these banks have never had special committees to deal with issues such as software development, communications and computing.

Therefore, it is safe to say that the organisation of IT in these banks is similar. This is because they share a common managerial philosophy, which is based on centralisation and conservatism. This managerial philosophy is very prevalent in all the public sector business units. AIB and many of the private banks in Egypt have been influenced by the public sector's way of management and organisation. This is because the public sector banks were and still are the main source of labour, especially at the top management level, for the private banks. For example the present manager of the computer department in AIB was the manager of systems development administration in BM.

Based on the above analysis, it is clear that IT organisational designs of these banks is consistent with their firm-wide organisational designs and overall managerial philosophy. This consistency is very important to avoid what is called organisational "miss-fit" or "friction". However, the main characteristics of this organisational design are not entirely consistent with these banks' firm-wide observed strategies, as discussed in section 9.2, for the following reasons:

1- BM, BDAC and NBE's IT officials have classified their banks' business strategies' type as "creative" (refer to section 9.2). It is commonly known that centralised organisations are not consistent with this type of strategies. This is because centralised organisations militate against creative strategies. Creative strategies need a high level of devolution of responsibilities for and incentives to develop new products. Also this kind of strategy needs a

high level of business ownership and initiation of information systems developments. IT officials in these three banks did not perceive this inconsistency between their banks' strategies and their IT organisational structures. "Degrees of IT organisational appropriateness for strategy" were "high" for BM and "average" for NBE and BDAC (refer to table 9.14).

2- On the other hand AIB's IT officials expressed their dissatisfaction with the degree of appropriateness of their IT organisational design for their bank's strategy (degree of appropriateness was "very low" as in table 9.14). However, AIB's business strategy was classified as a "defensive" type of strategy, according to IT officials (refer to section 9.2). Paradoxically, centralised organisations are consistent with defensive strategies.

In the interviews with the executives, no clear reasons were detected for the contradictions between the IT officials' opinions and the observed results of the qualitative analysis concerning "the degree of appropriateness of these banks' organisations with their business strategies". However the low level of participation in planning in these banks and the poor documentation of their planning activities, decreased the official's beliefs in the existence of intended strategies for their banks. Therefore, it is believed that IT officials opinions in the previous issue were more about their degree of satisfaction with their IT organisational structures than about "the degree of appropriateness of these banks' IT organisations with their business strategies".

9.8 IT Management Climate

The existence of a supportive climate for IT management positively influences level of SITU in any organisation. Therefore some aspects of IT management climate were measured in this study to examine their effects on the five banks' levels of SITU. These aspects are: the role of top management in creating a supportive climate for those concerned with IT management; the existence of a clear long-term vision for the role of IT in business; communication climate between IT and business groups; degree of satisfaction with the role of IT in business; and degree of satisfaction with the current IT training programs.

9.8.1 The Role of Top Management in IT Management Climate

This item was measured through three parameters: (a) employees' perceptions about top management understanding of how IT contributes to business; (b) employees' opinions about top

management willingness to devote sufficient time to make IT projects successful; and (c) employees' perceptions about the extent to which top management considers IT as a strategic factor. Five-point scale questions were used to enable IT officials express their opinions regarding these issues (questions 44, 45 and 50). Table 9.15 lists the results of this measurement process.

Table 9.15 Statistics about Top Management Contribution to IT Climate

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Understanding of how IT contributes to business	4.5	3.4	3.8	2.4	2.0
Devoting sufficient time to make IT projects successful	4.3	4.2	3.7	2.1	1.1
The extent to which it considers IT as a strategic factor	4.6	3.9	3.7	3.0	1.3
Top management contribution to IT climate (overall score)	4.5	3.8	3.7	2.5	1.5

As in the previous table, IT officials' responses were, predictably, consistent with the "degree of CE support to IT activities" measured in section 9.4. BDC is ahead with a "high" grade, followed by NBE and BM, which are rated as slightly above "average". This is while AIB and BDAC had the lowest scores by their officials, which are "low" and "very low" respectively.

9.8.2 The Existence of a Clear Long-Term IT Vision

Of the banks studied only BDC showed some documented long-term vision for IT. Its IT officials showed that the bank has specific declared goals for IT, again due to the strong support given by the CE to IT activities. However no major differences exist between the commercial public sector banks in terms of the pattern of IT use.

9.8.3 Communication Climate Between IT and Business Groups

Table 9.16 Statistics about Communication Climate between IT and Business Groups

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Satisfaction with communication between both groups	4.0	4.0	3.4	4.9	2.3

Table 9.16 summarises the results of a five-point question concerned with measuring the degree of satisfaction with the communication climate between IT and business groups (question 49). The degree of satisfaction of the officials of AIB was "very high". BM and BDC had "high" ratings by their officials, and NBE had an "average" score. BDAC predictably had the lowest score, which is a "low" rating. It became clear from AIB ratings that IT officials are satisfied with their policy of using informal and personal contacts for the integration between both groups.

9.8.4 Degree of Satisfaction With IT Training Programs

Table 9.17 Statistics about Officials Satisfaction with IT Training

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Satisfaction with IT training	4.1	3.8	3.0	3.2	2.8

Table 9.17 summarises the results of a five-point scale question concerned with measuring the degree of satisfaction of IT officials with their IT training programmes (question 51). BDC had the highest ranking by their employees (a "high" grade). BM had an "average" score but with a very close grade to BDC rating. AIB and NBE had an "average" as their officials indicated, while BDAC had a "low" grade. The fact that BDC's officials were highly satisfied with their training programs had been expected. This is because, as mentioned earlier, training and human resources development is one of the top priorities of its top management as frequently mentioned by executives in the open interviews in BDC.

9.8.5 Degree of Satisfaction With the Role of IT in Business

This item was measured through three parameters: (a) satisfaction with the current level of contribution of IT in business; (b) employees' certainty level with getting the highest benefit of the current IT practices; and (c) expectation of leading the banking industry in IT use. Table 9.18 lists the results of this measurement process.

Table 9.18 Statistics about IT Role in Business: Officials' Opinions

	BDC	*BM*	*NBE*	*AIB*	*BDAC*
Satisfaction with the current role of IT in the bank	4.3	4.2	3.5	3.2	3.0
Expectation for having the highest benefits from IT	4.4	4.1	4.0	3.4	3.0
Expectation for leading the industry in IT use	4.4	4.3	3.8	2.7	2.3
Satisfaction with IT role in the business	4.3	4.2	3.8	2.7	2.8

It is clear that BDC is enjoying a positive climate for IT management. In addition to the indicators in the previous table, BDC's general average for IT management climate was "high". There are two reasons for this result. The first reason as discussed previously, is that BDC is currently going through the enthusiasm stage, in which BM and NBE have already experienced and passed. The second reason is that the CE of BDC is supporting IT personally at the present time. BM had a relatively good IT management climate, which rated as almost "high" by its officials. This is due to the confidence felt by IT officials as a result of BM's high profile in the wider business community in terms of its use of IT.

CHAPTER TEN

Conclusions and Implications

This study represents an attempt to examine the organisational determinants of IT use in the Egyptian banking industry. This chapter sets out the main conclusions and management implications of the study. It commences with an analysis of the pattern of IT use in the five case studies selected from the Egyptian banks and their relative positions in terms of their levels of SITU. Next is a discussion of the possible reasons for this IT positioning, obtained by analysing the related organisational practices of the banks participating in the study. The chapter concludes with a discussion of the proposed working model of the conceptual framework of the organisational context of IT use.

10.1 IT Positions of the Firms

IT use in LDCs faces particular challenges when compared to that in developed countries. Nidumolu, S., et al. (1996), in their study of IT for the local administration support in Egypt, summarised these challenges in three main points.

First, LDCs typically have a poor computing infrastructure (e.g., in hardware and software, and data communication) as compared to developed countries. The inadequate computing and telecommunication infrastructure in turn has resulted in a poor information infrastructure, where many organisations do not have the "information awareness" that is frequently taken for granted in developed countries.

Second, because the private sector has traditionally been neglected in LDCs such as Egypt, China and India, the government and its public agencies have typically been the primary users of IT. Since the government therefore dominates the shape of IT development in the country, control over the computing infrastructure has frequently been associated with the political control of information, particularly to reinforce the power of the government. Any analysis of IT implementations in LDCs, should therefore pay particular attention to such political and symbolic uses of information.

Third, the socio-cultural context in which IT is introduced in LDCs often poses special problems. Thus, implementers of IT in LDCs need to pay particular attention to the social groups that influence the attitudes and behaviours of the target users.

However, given the presence of these challenges in Egypt, this project showed that the Egyptian banks could introduce some significant level of SITU. Based on the research findings, the five Egyptian banks selected in the study sample could be classified into three groups in terms of the level of SITU.

Group one, contains the leaders in IT use in the banking industry: BM, NBE and BDC. The main characteristics of the use of IT in these banks are as follows:

(1) Their IT infrastructures have large numbers of diverse types of computers, communication components and software systems. These infrastructures could cover the majority of their wide networks of branches and functional departments.

(2) These firms have achieved some minor IT-enabled competitive advantages over their competitors. This is because they were the first to introduce ATMs, home banking, and electronic fund transfer using the SWIFT system.

(3) Using Nolan's analysis, IT officials of these banks located their level of SITU, somewhere between stage 4 and 5 (integration and data administration stages) in the "stages of growth" model (Nolan, R., 1991). This means that these firms, as perceived by their IT officials, have passed the introductory and reactive stages (initiation and contagion stages), gained some significant experience from the technology focused stages (control and integration stages), and are ready to shift to the mature and business oriented stages (data administration and maturity stages).

(4) Analysing their infrastructures and their level of IT services' efficiency, it was found that they have similar characteristics, such as in: data processing and telecommunication, office services and user liaison, and end-user computing.

(5) We came to the conclusion that no major differences exist between these banks, in terms of IT-enabled competitive advantages. The only difference is that BM has a competitive advantage in "the number and availability of ATMs". However BM is the least profitable bank in these firms. Therefore, it is not safe to say that ATMs have brought a business advantage to BM.

Moreover, it is believed that these banks use IT for reasons of business necessity and not for achieving competitive advantages. The main IT use objectives in these firms are automating their business processes and introducing the important IT-enabled banking products. Also, using IT did not change these firms' organisational designs, work flows and business processes. No objectives were adapted to use IT to gain organisational competitive advantages through redesigning their internal business processes, business activities and business networks with external firms. Their main focus was on business processes within a function or a department across a small work group. No systems were applied to work across functional departments and/or the firm's boundaries.

It is not easy, for those who use IT for localised enhancements (that is to say within traditional departments and functions), to build sustainable competitive advantages from the IT element. This is because competitors can easily imitate any successful development, with minimal organisational changes. Consequently, most IT applications in these banks are considered to be competitive necessities.

Group two, contains AIB[1]. Although AIB does not have large computing and communication resources compared to the banks in group one, they are sufficient to serve the needs of its branches (there are six)[2], the number of customers it has, and its business processes.

IT officials in this bank located their level of IT use in stage three (control stage) of Nolan's model mentioned earlier, which is a technology oriented stage. The bank does not have significant competencies in software development. It depends heavily on vendors and

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[1]Although only one bank in the sample is contained in this group, it is believed that it represents a significant number of the Egyptian banks. During the field study, some initial investigations have been conducted on three banks: MIB, MEB, and CIB. This showed that AIB is very representative of these three banks in terms of level of SITU. These three banks are from the top 10 commercial banks in Egypt. Unfortunately the responses to the questionnaire received from them were insufficient for the purposes of this study.

[2]Most of the Egyptian banks (except for the public sector banks) have small number of branches as in AIB.

consultants in developing its software and hardware systems. Although AIB has not introduced many IT-enabled products such as ATM's services or home banking as in group one, its branches are all connected and always on-line, unlike the banks in group one. The main IT objectives adopted by AIB are similar to the banks in group one. It concentrates on automating its business processes, especially its banking processes and accounting activities.

Group three contains BDAC. This bank is still in a below intermediate level of IT use, although it started using IT almost at the same time as BDC and NBE. Its IT officials located their level of IT use in stage two (contagion stage) in Nolan's model, which is an introductory stage. The bank does not have significant communication capacity, as its main 17 county banks work in a stand-alone mode. It is considering at the present time, replacing its computers, installing a wide communication network and computerising some of its village banks. Although it could achieve some important benefits from the use of IT such as the automation of some of its banking and administrative business processes, BDAC needs a lot of effort to pass the introductory stages.

Overall, the Egyptian banks' level of SITU could be described as intermediate. Many of these banks could build reliable IT infrastructures, automate their business processes, introduce new IT-enabled banking products and achieve some minor competitive advantages. However they need to shift to more mature and business oriented stages, by using IT to gain organisational competitive advantages through redesigning their inter-functional, inter-organisational business processes and/or business networks.

10.2 Organisational Determinants of IT Use

This section will discuss the possible organisational reasons, behind the previous positioning of IT use.

10.2.1 Firm-Wide Planning

The study findings revealed that firm-wide planning did not have significant influence on IT use levels of these banks. The five banks have similar firm-wide planning nature. They do not practice some organised and documented strategic planning processes. Instead, their strategic moves are determined through the board meetings and CE decisions, without general written comprehensive frameworks for these moves such as intents, missions or targeted competitive advantages.

Similarities in firm-wide planning practices were due to the following factors:

- Four of these banks are public sector banks (NBE, BM, BDC, and BDAC). The planning process in any public sector bank in Egypt has pre-determined procedures and forms, and is ruled by some unified accounting rules from the controlling governmental agencies. AIB, the only private sector bank, has been influenced by the public sector bank's organisational practices, due to the fact that it is from there that many of its senior officials originate. In addition, it has an exceptional status in the Egyptian banking industry and the government therefore has some control over its business.

- The public sector banks commonly exchange their senior executives. For example the CEs of BDC and Bank of Alexandria are usually selected from NBE or BM as they are the leaders in the industry. Moreover, these four banks are the main source of qualified labour for the rest of the private sector banks.

The degree of participation of the different organisational levels in firm-wide planning is limited in the five banks and the communication mechanisms used for communicating these firms' main strategic thrusts and plans are not effective. Also, using the approach provided by Miles, R. and Snow, C. (1978) to identify the type of strategy adapted by each bank, it was found that the differences in these types do not necessarily affect the level of IT use of these firms. For example BDAC - which has the lowest level of IT use - has the same type of strategy (creative strategy) as NBE and BM, which are the leaders in IT use in the Egyptian banking industry.

It is important to note that the above findings contradict with the literature of IT management. Many studies in IT management in the developed countries have found that firm-wide planning has significant influence in IT use level (Tan, F., 1995; Tavakolian, H., 1989). In fact, this independent variable is repeatedly described as a central variable in the alignment between business and IT, in the IT-enabled competitive advantage frameworks' studies (Henderson, J., Venkatraman, N., 1993; Luftman, J., et al., 1993; Keen, P., 1993).

10.2.2 IT Planning

The research study found that IT planning practices in these firms follow the main characteristics of their firm-wide planning. The majority of IT plans are short-term and financially oriented. Cross referencing between IT and business plans is very limited. The top-down approach to planning for IT is common to all these firms. Consultants and vendors have great influence in configuring these firms' IT infrastructures.

Some of the leading banks (NBE, BM, and BDC) did use long-term planning in the early phases of the introduction of IT into their businesses. Many executives in these firms believe that they needed long-term planning for IT only in the early phases. This is because after having built the majority of their networks, their IT objectives became limited to maintaining, enhancing and upgrading the current systems.

10.2.3 CE Support

The research findings showed that the central factor influencing the level of IT use in the five banks was the presence/absence of CE support. In the three banks in which CE support was present IT use levels were correspondingly good, in the two banks where CE support was absent they were correspondingly poor.

The CE of BM in the eighties, championed the bank's move towards massively introducing IT into its business. The introduction of IT into BM is always referred to as a success story in the Egyptian banking industry. Many of BM's IT officials present at the time, have been transferred to other public sector banks or to BM's affiliates (such as MEB and MIB). Some other private sector banks, have also recruited IT employees who previously worked for BM.

Mr. El-Aggan the CS of the Computer Sector in NBE played a similar championing role in the bank. During his time at the bank, he built the majority of NBE's IT infrastructure, recruited and trained IT officials and established the first IT organisational unit in the bank. Executives of NBE have explained that without El-Aggan, the bank could not have achieved the level of IT use that it has.

BDC still has its "champion", the current CE of the bank, who is playing an active part in improving the firm's IT capabilities. On the other hand, neither the CE nor the top management of BDAC or AIB played a supportive role in improving IT use levels in their banks.

In the light of the above analysis, the study illustrates an aspect that has been repeatedly emphasised by previous researchers- the importance of an innovative champion (Nidumolu, S., et al., 1996; Jarvenpaa, S., 1991).

10.2.4 IT Managerial Knowledge

Studying the overlapping know-how of IT and line managers, showed that the degree of IT managerial knowledge is higher in the three leading banks in IT in Egypt compared to the other two banks in the study sample. This result supports the previous findings in this area (Boynton, A., 1994). The leading firms in IT use in the Egyptian banking industry, showed that experience in IT use and training made a significant contribution in business groups' knowledge about IT. Some executives in these firms explained that business groups current requests and correspondences are more technically advanced and that IT departments meet less resistance and receive more appreciation of their efforts than in the early stages of introducing IT. Furthermore, business groups participate more positively in the joint teamwork. On the other hand, BDAC case study, showed lower degrees of IT-managerial knowledge. Its case showed that the bank needs more effort to gain experience in IT use.

10.2.5 IT and Business Groups Integration

The study findings did not reveal any clear evidence to show that higher levels of integration between IT and business groups facilitate higher levels of IT use, especially in the "intellectual dimension" of integration. All the banks in the study had "average" levels of integration between IT and business short-term plans, and "low" levels in the long-term plans, except for BDC, which had "average" in the long-term frame. This is mainly, because all the banks have similar firm-wide and IT planning practices. However in the "social dimension", it was found that only BDAC has "low" level of "intensity of communication", between IT and business groups.

10.2.6 IT Organisational Designs

The study findings showed that IT organisational designs do not have an influential role in the variation of IT use levels, in the banks participating in the project. All the firms have similar firm-wide and IT organisational designs, with the same degree of differentiation, and types and degree of intensity of integration mechanisms. Organisational designs were centralised and functional. All IT resources were owned by the central IT organisational units of the firms.

IT departments (Computer Sectors) were located at the same level in the firm-wide organisational structure (except for AIB which was one level lower). IT organisational units, have only between 3-5 sub-units, with the same titles and responsibilities. The degree of intensity of integration mechanisms between these organisational units was low in all the

firms. Some of the executives explained that since all the IT executives and employees work in one central organisational unit and are located in one place, there is no need, for intensive integration mechanisms. In fact, all the public sector firms in Egypt, follow the centralised functional type of structures in organising their activities.

The literature (Tavakolian, H., 1989; Boynton, A., et al., 1994) emphasises that centralised solutions are suitable for the firms following defensive strategies or seeking high levels of efficiencies and economies of scale, such as in the AIB case. However these kinds of designs are not recommended for those looking for greater effectiveness, responsiveness to business opportunities, or offensive type of strategy, such as in BM, NBE, and BDAC cases.

Broadbent, M. and Weill, P. (1993) have found evidence to show that centralised organisational designs have structures, accountabilities and responsibilities that mitigate against creative type of strategies. Devolution of responsibilities for and incentive to develop new products and services will be minimal. A low level of business ownership and initiation of information systems development will typify the IT area.

10.2.7 IT Management Climate

The study findings showed that there is a positive relationship between IT management climate and the variation in IT use levels in the Egyptian banks participating in the study. The three leading banks have better and more supportive IT management climates than the other two firms in the study sample. The role of the CE (or top management support) had an influential effect in creating this supportive climate in the three leading banks in IT use.

10.2.8 Summary

In summary, the study showed that only three organisational factors were influential in the variation of the levels of IT use in the firms participating in the study. These factors are: CE support, IT managerial knowledge, and IT management climate. Of these, CE support was the single most important factor. All the participating firms lack sufficient experience in the other four organisational practices. Accordingly the main recommendation of this study is that these firms need to rethink and configure their practices in the firm-wide planning, IT planning, IT and business groups integration, and organisational designs areas.

10.3 Developing the Conceptual Model

As explained earlier, the aim of this study is to develop a framework that conceptualises the organisational context of IT use in a LDC case study. The previous sections in this chapter discussed the main conclusions that could be gained from the results of the case studies. Specifically, they concentrate on the main building blocks of the *prior-construct* of the conceptual framework of the study or the organisational factors selected in the main proposition of the research. In this section, an analysis of these conclusions will be discussed in order to present a working model of the *concluding* conceptual framework of the research.

As the components of the conceptual framework developed in this study are identified from some related frameworks in the literature (specifically the alignment models, explained in chapter two), the analysis provided in this section will depend on critically assessing the alignment models and then presenting the fundamentals of the study's working model. Finally a comparison between this model and other models that deal with the LDCs context, will be presented.

10.3.1. The Alignment Models Revisited

The alignment models are probably the most important models in the area of strategic management of information technology that tried to conceptualise the organisational context of IT use (Henderson, C. and Venkatraman, N., 1993; Broadbent, M and Weill, P, 1993 Earl, M., 1989). These models could be defined in terms of four fundamental domains of strategic choice: business strategy, information technology strategy, organisational structure and processes, and information technology. These models had significant acceptance in the MIS field for the following reasons: (1) they address one of the top issues in IT management, which is the co-ordination of IT and business domains, (2) they identify the building blocks of the organisational context of IT use, and (3) they explain the behaviour of these components (the organisational factors) in relation to each other in specific "strategic fit" paths. The following sections will present the fundamentals and assumptions that these models are built upon together with an analysis of how the conclusions of this study refute or confirm them.

(a) The conventional strategic paths to "strategic fit"

One of the important assumptions that these models are built upon is that they assume that organisations go through certain strategic linear paths in their IT use practices. Henderson, C.

and Venkatramn, N. (1993) have identified four types of cross-domain relationships for these paths. These paths are as follows:

1- business strategy → organisational structure → IS infrastructure
2- business strategy → IT strategy → IS infrastructure
3- IT strategy → business strategy → organisational structure
4- IT strategy → IS infrastructure → organisational structure

The results of this research do not conform to the alignment models in this premise for the following reasons:

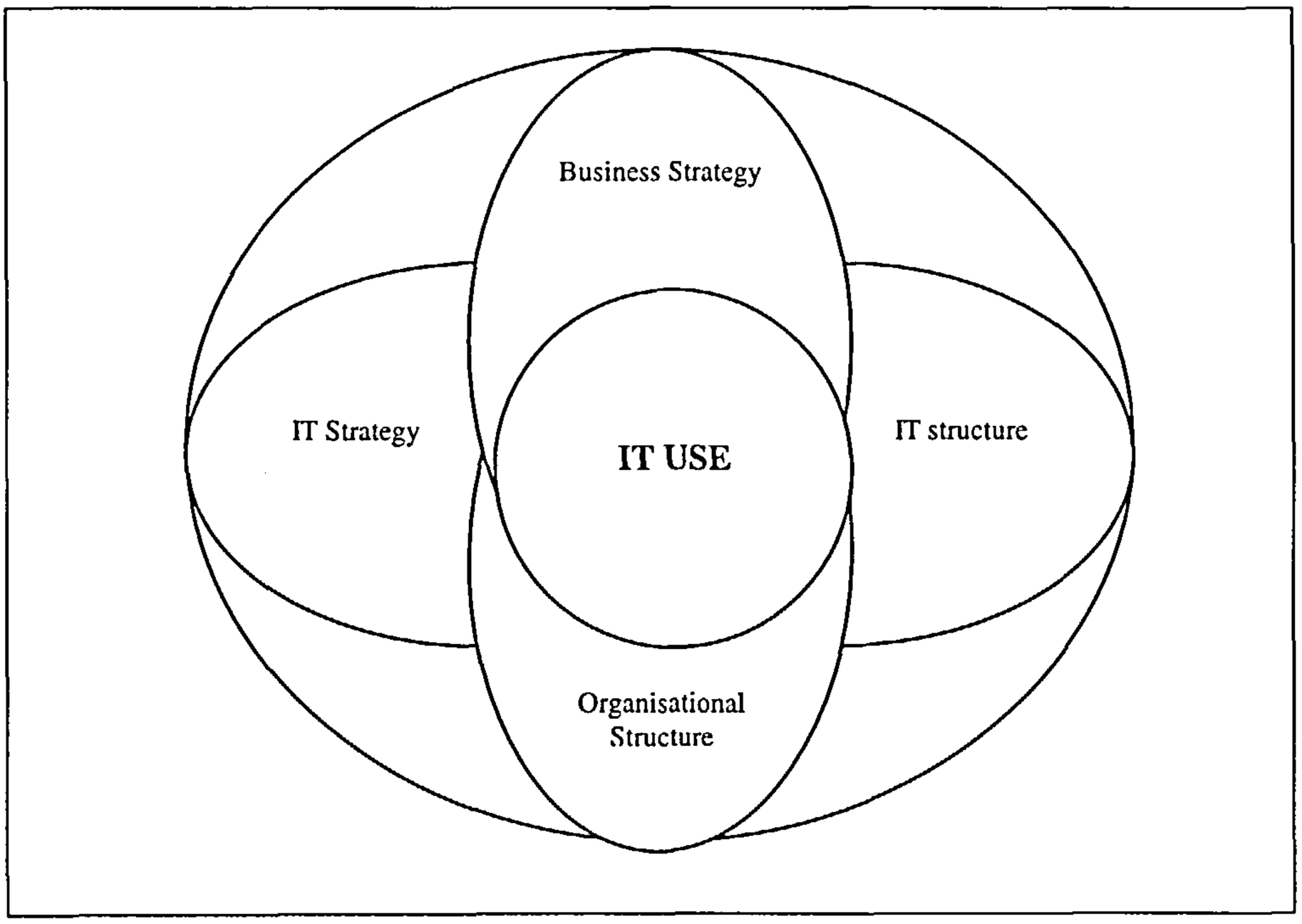
- The conclusions of the study identified the "presence of a champion" as the "driver" of the major moves of IT use in the case studies selected. Consequently, the path(s) that represents the strategic fit of the organisational factors in the Egyptian banking industry (if any) should start with the "CE support" factor. Since the alignment models did not include this factor in their frameworks, using these models could be infeasible. This is to say that recommending one (or more) of the above mentioned strategic paths without making sure of the presence of a champion to get things done, may be misleading.
- The conclusions of the study showed that the four factors included in the paths (organisational structure, business strategy, IS infrastructure and IT strategy) did not participate significantly in the level of SITU in the case studies selected. The other three factors included in the study, which are the IT managerial knowledge, IT management climate and CE support were found to be significant.
- The study results also showed that some factors are not clearly linked, although the alignment models suggest they should be. For example, It was found that four of the case studies selected (NBE, BM, BDAC and BDC), did not use the 'organisational design' that suits their 'business strategy'. Also 'business strategy' and 'IT strategy' were not clearly linked as the study's results showed no clear "cross-referencing" between them.

The previous discussion may mean one of two things. Firstly, the Egyptian banks may have some special characteristics (or represent an extreme type of business unit). Therefore it is hard to use this study's results to deny the alignment theory or to refute the sequential paths' assumption proposed by its models. Secondly, the fact that the SITU levels of these banks did not exceed the intermediate level, as explained earlier in this chapter, may mean that the alignment models are more appropriate to organisations that enjoy advanced levels of SITU and business practices in general. The alignment models therefore, may imply that the organisational context of IT use can be simplified into rational linear (or input/output) relationships between their organisational components as explained earlier, only for the

organisations that have some mature business practices or may be for the "world class" business units.

It is believed that the second explanation is more probable. This is because the conventional paths of the alignment models oversimplify the relationships between the components of the organisational context of IT use. It is more likely that the linear modelling for these relationships will fail when it is tested in the real world, unless applied on some optimal case studies. No doubt that simplifying reality is an important task in modelling, in order to abstract complicated phenomena and make it easier to understand and then control them. However modellers, when simplifying phenomena, take the risk of limiting the degree of generalisability of their models. For example Mintzberg, H. and Waters, J. (1982) distinguish between "intended strategy" and "actual strategy". They imply that in practice, organisations do not really follow the strategies that they intended to follow, even those who practice documented strategic planning processes. A significant part of a real strategy emerges in response to unanticipated situations and the day-to-day interactions between the organisational practices and the environment. Mintzberg, H. (1994), in his study about "the fall and the rise of strategic planning," suggests therefore that planners should not create strategies, but help managers think strategically. It is believed that Mintzberg's notion about "the actual strategy" is pertinent to IT strategic planning as well. Therefore in reality, it is not easy to recommend a linear path as "the one best way" to conceptualise the behaviour of a complicated multi-faceted phenomenon such as the organisational context of IT use.

Fig. 10.1 The Fusion Mode of the Organisational Context of IT Use



The alternative way of describing this behaviour is a model which represents a fusion between the components of the organisational context of IT use, as suggested by Keen, P. (1993). It is believed that this model is more representative to the conclusions of this study, and can be more generalisable to a greater population than the four linear paths suggested by the alignment models. Therefore figure 10.1 is suggested to represent the behaviour of the four organisational factors identified by the alignment models and examined in this study.

(b) The building blocks of the organisational context of IT use

As mentioned earlier, the alignment models summarise the organisational context of IT use into four factors. This abstracting implicitly means that maybe other factors could be added, but certainly the four included are the most influential. Interestingly, this study showed some different results. It not only suggested that three other factors should be added (namely the IT managerial knowledge, IT management climate and CE support), but also the four factors identified in the alignment theory were less influential in the case studies than the other three.

The fact that the results failed to confirm the alignment models in terms of their building blocks does not necessarily mean that the underling four factors are not important. Alternatively, it may mean that the case studies did not use these four factors effectively. It is possible therefore that the levels of SITU of these banks would have been more advanced if these banks had put more emphasis on these four organisational practices. Notably, the fact that the levels of SITU of these banks did not exceed the intermediate level supports this premise.

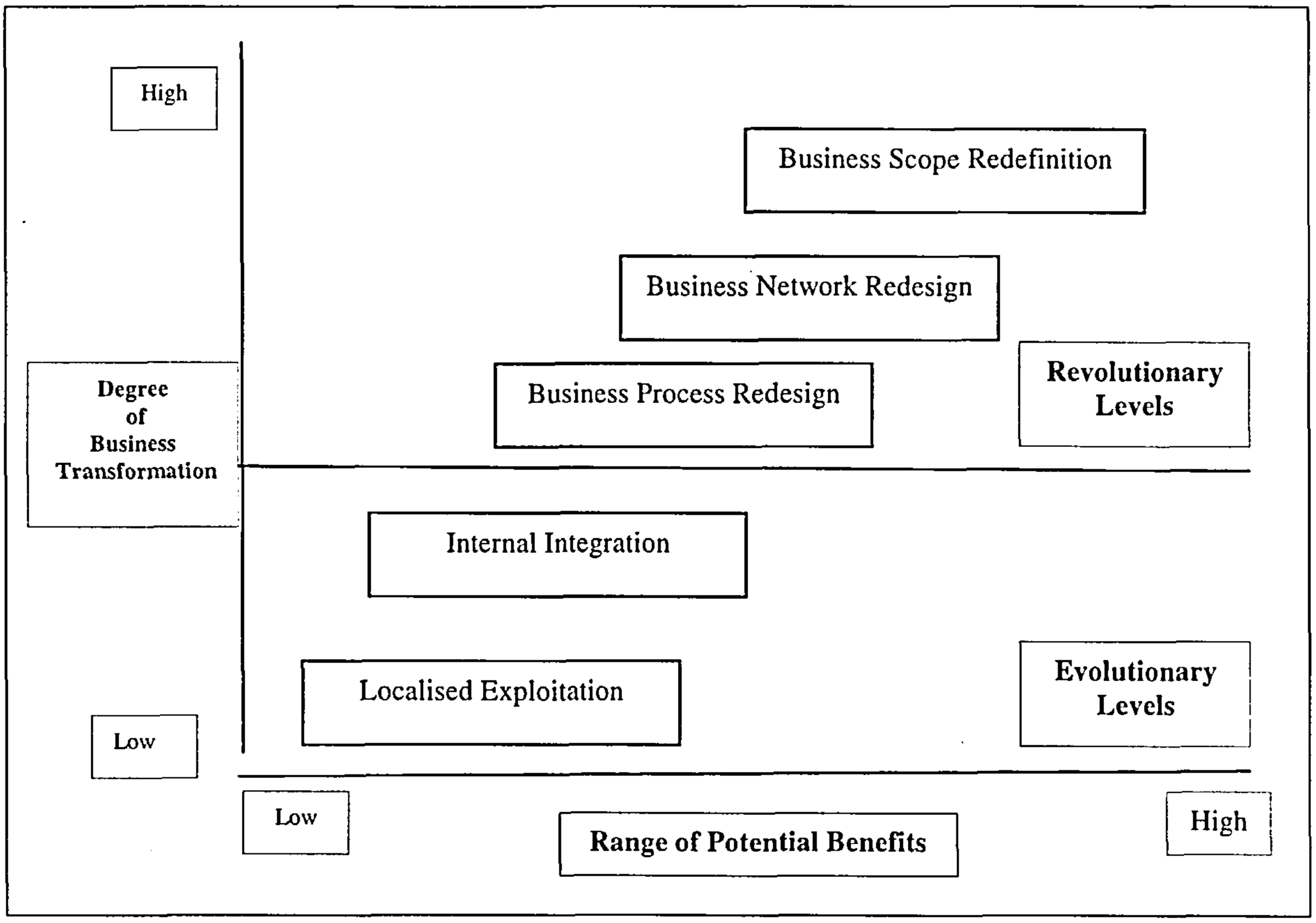
The study results therefore, imply (hypothesise) that the existing level of SITU in an organisation may determine those organisational factors, which are most influential in transforming the organisation to a higher level. Therefore the four organisational factors identified by the alignment theory, may require less attention from organisations going through introductory or intermediate levels of IT-enabled transformation and more emphasis in the advanced levels.

(c) The level of analysis or aggregation

As suggested in the previous section, the organisational behaviour of IT use practices may need to rely on different organisational factors on different IT transformational levels. It is very important therefore that organisations put into consideration the transformational level

they are going through when planning for their IT use organisational context. Many studies have recognised the significance of this notion and some of them have suggested specific stages for IT-based organisational transformation (Davidson, W., 1993; Venkatraman, N., 1994; Hsiao, R. and Ormerod, R., 1998; Scott-Morton, M., 1991; Yetton, P., et al., 1994).

Fig. 10.2 Five Levels of IT-Enabled Business Transformation



Source: Venkatraman, N. "IT-Enabled Business Transformation: From Automation to Business Scope Redefinition", Management Review, winter 1994, pp. 73-87

For example, Venkatraman, N. (1994) identified five specific levels of IT-enabled business transformation namely: localised exploitation, internal integration, business process redesign, business network redesign, and business scope redefinition. Figure 10.2, which illustrates this model, raises a very important issue concerning the level of analysis that mangers (and those concerned with strategic IT use) should use when developing their IT use strategies. According to the two axis of the figure, the underlying theory of the model is that the higher "the degree of business transformation" is - in terms of moving from one phase to a higher one - the greater the "benefits and risks" are. The model therefore, implies that strategic planning for IT use should use the *"transformational stage"* level of analysis as opposed to the traditional "*individual application*" or system level. It is clear that the former is a higher

level of aggregation than the latter (that is to say, the transformational level consists of several applications) in which strategic objectives and threats can be effectively identified.

The conclusions of the study confirmed the above mentioned notion. It was clear that the banks go through transformational moves led by a champion as in the BDC, NBE and BM cases or developed by the American project in BDAC. The starting and ending points can be realised in these moves as in the NBE, BM and BDAC case studies. Moreover, the challenges for the next transformational stages for these banks could be identified (please refer to the last section in each case study, where discussions of some strategic issues where presented for each bank).

Concerning the alignment models, the question now is that on what level of analysis (transformational level or application level), can we generalise their implications? It is believed that the alignment models do not address the transformational level of analysis because it is unlikely that an organisation in a specific stage of transformation will adopt a given path to preserve specific strategic fit for alignment. However, it is more likely that different applications will use different "fit paths" within the same transformational stage.

Therefore, it is suggested that the models concerning conceptualising the organisational context of IT use should raise it is level of analysis to address the transformational level of analysis in order to provide strategic insights for those concerned with IT use practices.

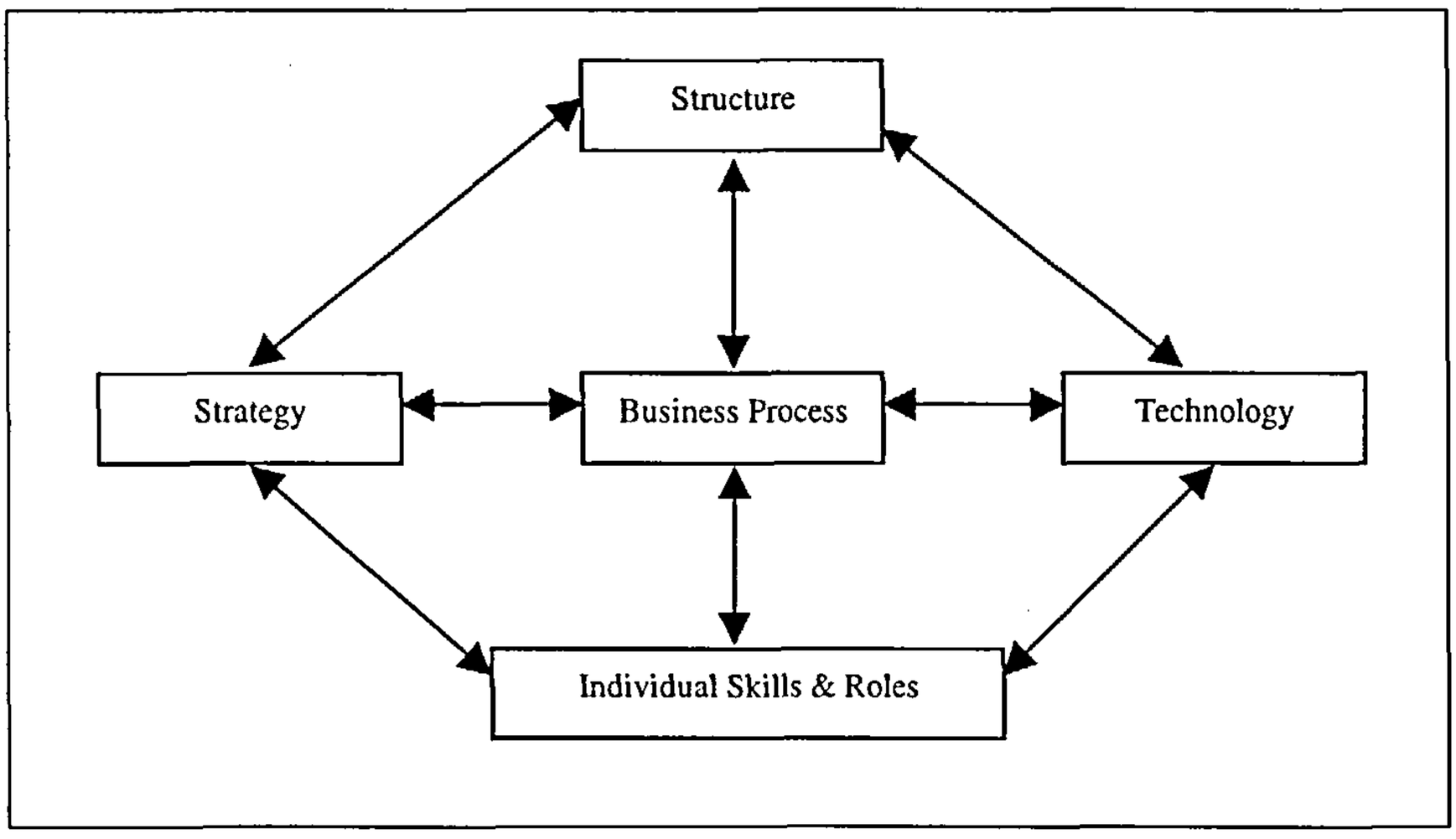
(d) Involving the learning dimension

The study results have shown that the "IT managerial knowledge" organisational factor plays an important role in explaining the variations in the levels of SITU among the Egyptian banks. This factor represents the "absorbing ability" or the learning level of the organisation. An organisation's absorbing capacity reflects its capability to absorb through its internal knowledge structures, information regarding appropriate innovations so that these innovations can be applied in support of operational or strategic activities. It is believed that the alignment models did not explicitly include this factor (or an approximation to it), in order to make the models simple enough to provide sequential paths for strategic fit. This is because the learning process is a ubiquitous factor, which cannot be easily inserted as a stage in one of the linear paths proposed by the alignment models.

Although simplicity is a virtue, simplifying the organisational context of IT use in the alignment models by not addressing the learning dimension gave another evidence to show

that they do not represent the transformational level of analysis. Any model addressing the transformation processes that organisations go through cannot neglect the change process needed in the amount of knowledge hold by the organisation. This transformational element becomes even more important in the IT-based transformational processes. For example, figure 10.3 illustrates the MIT "management in 1990s framework", the widely cited model for business transformation, which is termed "the model of strategic change and fit" (Scott Morton, M., 1991). The model hypothesise that the strategic value of the change transformation is a function of a particular interaction of 'strategy', 'structure', 'business process', 'technology' and 'individual roles and skills development'. It is clear that the model has involved the "individual roles and skills development" factor as an approximation to the learning dimension of the transformation process.

Fig. 10.3 A Model of Strategic Change Fit



Source: Scott Morton, M., ed., The Corporation of The 1990s: Information Technology and Organisational Transformation, New York: Oxford University, 1991, p. 20

It is believed that the learning dimension is most important in the beginning stages of transformation. It is expected therefore that organisations that have already been through several transformational stages have built some organisational capabilities that enable them to accommodate new knowledge anchors. This is why organisations in the early stages – as in the case studies selected – cannot easily gain sustainable competitive advantages, as most of their efforts are concentrated in gaining learning organisational capabilities. This argument explains one of the reasons why the researchers concerned with IT use in LDCs context area of study, pay more attention to the learning issues, because most of the case studies they deal

with may be categorised in the introductory stages of the transformational trajectory (Grant, G., 1993; Odedra, M., 1990).

(e) The cultural stimulus

The study has also shown another point that might limit the extent of generalisability of the alignment models, which concerns the cultural dimension. These models did not put into consideration that cultural differences among countries (and organisations) may affect the behaviour of the organisational context of IT use. As mentioned earlier, the real driver of strategic fit in the Egyptian banks is the "CE Support" factor. This cultural factor may differ from one country to another or one organisation to another as well. Literature on the role of culture in organisations cited many examples on how cultural characteristics affect the organisational behaviour (Hofstede G., 1994; Denision, D., 1994; Tomline, R., 1991). Baligh, H. (1994) sees that "Culture is in the ultimate a way of doing things or a way of finding ways of doing things." He asserts that the behaviour of the people is not random and directionless. Baligh, H. (1994) even quotes some examples of behaviours that may help us to understand this point such as: the Japanese speak indirectly; Greeks avoid taking risks; Americans believe in charismatic leaders; Germans depend on rules; and Egyptians follow no traffic rules. These sort of cultural characteristics may help IT planners or organisational transformation planners in different countries to identify their cultural drivers for effective strategic alignment of the organisational context of IT use.

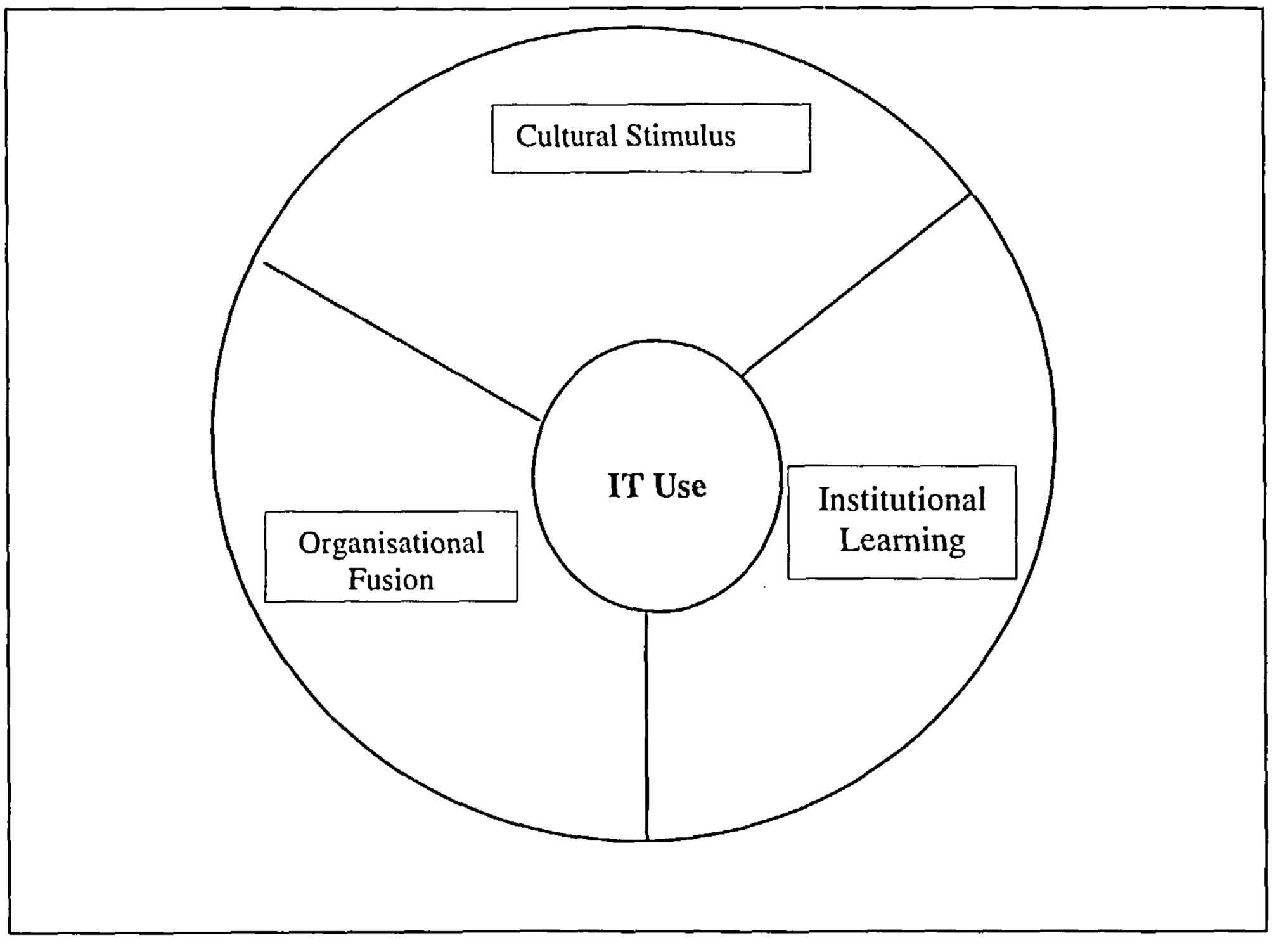
Moreover, it is believed that the role of the cultural stimulus is not only to initiate the process of change or as a starting point for it. It also serves as an important element that affect the behaviour of the components of the organisational context of IT use. For example, if (for the purpose of explaining this point) the above mentioned cultural characteristics about the Egyptians and the Americans apply on all these two countries' organisations, this may mean that both the typical American and Egyptian organisation tend to rely on the "presence of a champion" to achieve successful transformation processes. However the role of the champion in each country and as a consequence the behaviour of the organisational context maybe completely different.

One possible explanation for this theme (if we accept for the moment the above mentioned cultural characteristics) is the notion that the Egyptians do not follow the traffic rules, which may imply that they tend to resist traditional work rules and bureaucratic procedures when they do their businesses. It is expected therefore that the role of the champion will be harder (to compensate missing the structured ways of getting things done) than in the American

culture, which supposedly different in terms of the extent of reliance on structured rules and procedures. The difference may be even more profound if we compare the organisational context of IT use in a typical German with an Egyptian case. The role of the champion here will be to affect the behaviour of the organisational context of IT use in a way that suits the culture or "the way people use or prefer to do things (Baligh, H., 1994)" in the organisation. The study therefore suggests that modellers of the organisational context of IT use should put into consideration the role of the culture in driving the behaviour of this context.

10.3.2 The Organisational Context of IT use: The Working Model

Fig. 10.4: IT Use Transformational Wheel



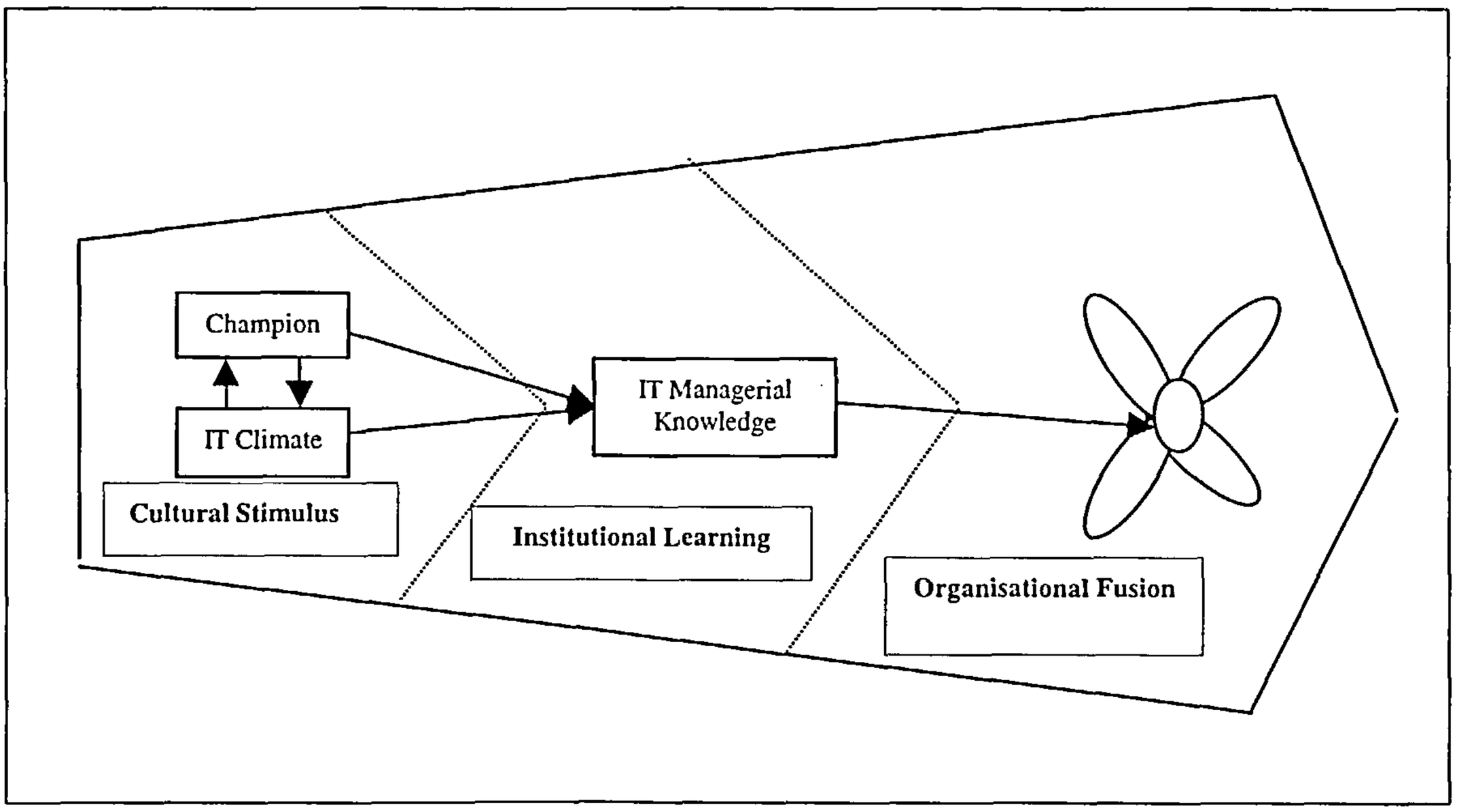
Based on the analysis of the alignment models and the conclusions of this study provided in the previous sections, a working model of the organisational context of IT use can be presented as in figure 10.4 and 10.5. The main premises of the model are as follows:

1- The behaviour of the practices of IT use goes through some transformational stages. Depending on how advanced or high a specific transformational stage that the organisation is going through in its transformational trajectory, the degrees of emphasis on the different components of the organisational context are determined and their

relationships to each other are configured as well. As in figure 10.4, each stage consists of three main organisational processes namely: cultural stimulus, institutional learning, and organisational fusion. However each transformational stage differs in terms of the nature of each stage, the degree of emphasis placed upon the different components of the organisational context, and the behaviour of these components to each other.

2- As in figure 10.5, any transformational stage can be initiated and/or triggered by the presence of a cultural stimulus. The study has shown that the "CE support" was the cultural stimulus in the Egyptian banks. However different countries, organisations, and even transformational stages within the same organisation may have different cultural stimulus. The role of this cultural factor is not only to initiate the transformational stage, but also it works as a driver that configures the relationships between the components of the organisational context and determines the degree of emphasis placed on each component during the transformational stage.

Fig. 10.5 IT Use Transformational Spectrum



3- The institutional learning is considered to be a ubiquitous element in the organisational context of IT use, as presented in figure 10.5. It affects the ability of the organisation to move from one transformational stage to another. It is believed that the organisation's absorbing capacity and knowledge anchors required to accommodate the technological innovations related to one stage are different than another. It is also believed that the level of learning that organisations gain affect the behaviour of the components of the organisational context of IT use.

4- The four organisational factors namely: business strategy, IT strategy, organisational structure and IT infrastructure, emphasised in the alignment models (as depicted in figure 10.1) and included in the organisational fusion process part in figure 10.5, are the interfacing factors to the implementation of the applications required for each transformational stage. The behaviour of these factors depends on the level of sophistication of the transformational stage that the organisation is going through. This means that in the higher transformational stage with higher learning capabilities and mature business practices, these factors play crucial role in raising the level of SITU of the organisation.

10.3.3. Research on IT Use in the LDC Context

As explained earlier in this chapter, IT use in LDCs faces particular challenges when compared to that in developed countries. Many of the studies in this area of interest have concentrated on the national and macroeconomics context issues of IT use (Al-Shamari, M. and Al-Shaik, F., 1993; Bhatnager, S., 1992; Bhatnager, S. and Bjorn-Anderson, N., 1990; Odedra, M., 1990). Few researchers have examined the organisational practices of the Business Unit (BU) or the organisational context of IT use. For example, Grant G. (1996) explains that "Research on information systems capability in developing countries is virtually non-existent. Most of the published works have tended to focus on IT policy, transfer and diffusion". It was thought therefore that discussing some of the previous research studies in this area of interest (such as for Oderdra, M., 1990; Kamel, S., 1994; and Grant, G., 1996) would help to understand how this study tried to contribute to the study of IT in LDCs.

In her study of "the transfer of information technology to developing countries", Oderdra M. (1990) tried to examine the extent to which IT is being adopted in organisations and the factors which hindered or promoted successful adoption. She illustrated her work by conducting six case studies across various sectors in Kenya, Zambia and Zimbabwe. Her conclusions outline various structural and organisational problems hindering the successful implementation of technology and suggest the need for organisations to develop capabilities in implementing information systems. Kamel, S. (1994) investigated the use of decision support systems in development planning in the governorates of Egypt. His study identified the technical and management challenges faced during the implementation process and presented a number of findings that can serve as a guide to future projects.

Grant, G. (1996) studied the concept of information systems capability and its strategic dimensions in a LDC context. His research reported on three case studies from different

sectors in Zimbabwe in which he tried to explore organisational efforts to develop IS capability. He used the framework of Teece D. and Pisano D. (1994) of the "strategic dimensions of organisational information systems capability" as the prior conceptual construct of the study. This framework identifies three main strategic dimensions of information systems capability namely: contexts (such as macro-environmental context, and technological and strategic opportunities and challenges), resources (such as human resources, IT infrastructure, IT competencies and financial capacity), and routines (such as strategic IS planning, IS organisation building and IS integration). The findings of this study confirmed the significant impact of macro-contextual and organisational factors on capability building. A refined and more comprehensive framework was then concluded in this study, which used the above mentioned three strategic dimensions and their components but with more details concerning three layers of IS capability namely: individual, work group and organisational levels.

This research however concentrated on the organisational context of IT use in a LDC context. The study reported on five case studies that represent the leading Egyptian banks, in which their IT use practices and the related organisational practices were investigated. The priori-specification of construct used in the study relied on the alignment models, as a starting point to identify the building blocks of the initial framework of the study. A pilot study was then conducted to elaborate on the components of this framework. The study findings showed the role of each organisational factor in the variation of the levels of SITU in the case studies selected. A final working model was then concluded to elaborate on the main premises of the conceptual framework in terms of its components, the behaviours of these components (influential organisational factors), their behaviour in the different levels of transformation, their relationships to each other, and then how they explain the variations in the levels of SITU.

CHAPTER ELEVEN

Generalisations and Future Research

11.1 Introduction

In this thesis, the organisational context of IT use was studied in Egypt's leading banks. A conceptual framework was developed to provide an understanding of the interdependencies between the domain of IT use and the related organisational practices in the firm. Business units concerned with using IT strategically could use the proposed framework to build the organisational capabilities required for gaining sustainable Competitive Advantages (CAs). The framework does not generate prescriptions or pre-specified guidelines on how the decisions concerning IT use should be taken. This is because the study sees that managing the interaction between IT use activities and the related organisational practices a rather complex notion, which makes it virtually impossible to be explained and understood using traditional input/output rationalisations. Consequently, it should be understood by adapting a process-oriented analysis framework.

In developing the conceptual framework of the study, evidence was sought for the relationships between the level of SITU (which was treated as the dependent factor) and seven selected organisational practices (which were treated as the independent factors). These factors were derived from the literature concerning the organisational context of IT use and refined through a pilot study.

Based on this prior-construct, an empirical study was conducted to explore the information-intensive Egyptian banking industry. This chapter will discuss the possible generalisations that could be made from the research and its wider contributions. It will also highlight the main limitations of the research results and discuss possible future research.

11.2 Generalisations

The findings of this thesis suggest some important generalisations concerning strategic IT use in the Egyptian banks specifically, and for the financial services or other information-intensive industries in general. These generalisations could be of major importance for both researchers and practitioners. They could be classified as follows:

1- About the standard models used in strategic planning for IT use

As the main aim of the study is to develop a strategic approach for IT use, the first generalisation should show whether the findings of the study contradict or confirm with the mainstream literature on ideal models of systems.

Many of the models reviewed - see section 2.6 - seem to view the process of IT use as context independent. Since their main task was to help executives find proper IS applications, using these frameworks cannot guarantee building IT organisational capabilities. In order to overcome this problem, other standard models - the alignment models - addressed the issue of conceptualising the organisational context of IT use.

Like so many attractive but untested theories in the MIS field, the alignment theory has been widely accepted in the literature. However when it was put to the test - as the prior specifications of construct - in this research, the study failed to confirm its main premises. The study has highlighted many pitfalls in these models, as follows:

- An incomplete description of the components of the organisational context of IT use.
- The oversimplification of the behaviour of these components, especially the unrealistic linear paths prescribed for strategic fit.
- A failure to address the "transformation level" as a unit of analysis.
- The omission of an organisational factor crucial to any IT-based organisational transformation- the organisational learning.
- The restriction of the "drivers" of the fitting process to only the business strategy or IT strategy organisational factors.
- The neglect of the role of a cultural stimulus as a potential driver.

In the light of the above-mentioned pitfalls, the study challenges the degree of generalisation of the standard alignment model.

2- About the development of a more generalisable framework

Capitalising upon the study findings and the critical assessment of the standard models, the study suggests a more generalisable model that tries to overcome the pitfalls in the standard one. The framework, with its working model presented in figures 10.4 and 10.5, suggests the following generalisations:

- The development of the practices of IT use goes through some transformational stages. Depending on how advanced or high a specific transformational stage the organisation at, the relative importance of the different components of the organisational context are determined and their relationships to each other are configured as well.
- Each transformational stage consists of three main organisational processes namely: cultural stimulus, institutional learning, and organisational fusion (see figure 10.4). However each transformational stage differs in terms of the degree of emphasis placed upon the different components of the organisational context, and the behaviour of these components with respect to each other.
- Any transformational stage can be initiated and/or triggered by the presence of a cultural stimulus (see figure 10.5). The study suggests that the "CE support" was the cultural stimulus in the Egyptian banks. However different countries, organisations, and even transformational stages within the same organisation may have different cultural stimuli. The role of this cultural factor is not only to initiate the transformational stage, but also it works as a driver that configures the relationships between the components of the organisational context and determines the degree of emphasis placed on each component during the transformational stage.
- Institutional learning is considered to be a ubiquitous element in the organisational context of IT use, as presented in figure 10.5. It affects the ability of the organisation to move from one transformational stage to another. It is likely that the organisation's absorbing capacity and knowledge anchors required to accommodate the technological innovations differ from one stage to another. It is also possible that the level of institutional learning affects the components of the organisational context of IT use.

The four organisational factors namely: business strategy, IT strategy, organisational structure and IT infrastructure (emphasised in the alignment models) are the interfacing factors to the implementation of the applications required for each transformational stage. The behaviour of these factors depends on the level of sophistication of the transformational stage that the organisation is going through. This means that in the higher transformational stage with higher

learning capabilities and mature business practices, these factors play crucial role in raising the level of SITU of the organisation. However in other situations their influence seem to be much less marked.

3- About the level of sophistication of IT use in the Egyptian banks

The Egyptian banks' levels of SITU could be described as "intermediate". This is because:

a- They could build some significant computing and communication facilities especially for the big banks. Even the small banks such as AIB, could build some appropriate infrastructures for their businesses.

b- They could automate their important business processes, such as banking, administrative and accounting processes.

c- Some of them could achieve some minor CAs through using conventional IT-enabled banking products.

However getting beyond this intermediate level seems not systematic. It is believed that using IT to gain sustainable CAs, most likely needs changes in the firm's organisational designs, work flows, as applying IT on the old designs could easily be imitated by the competitors. Achieving a strategic level of IT use requires better practices in these firms' organisational practices related to IT use, in order to achieve sound IS capabilities. Unfortunately, this is what these banks could not do until now. Their IT pattern of use, is still traditional. They concentrated on overlaying the technology on the same organisational designs and work flows. This is why it is thought that getting over the intermediate stage of IT use needs some real transformation in their organisational capabilities.

4- About research of IT use in LDCs settings

The study showed that the role of the organisational context - or the organisational variables influencing the decisions concerning acquiring, deploying, exploiting and sustaining computer-based information systems - explains to a great extent the variations in IT use levels of sophistication among business units. Particularly, the research findings have evidently shown that organisations with relatively higher levels of SITU, had better practices in some of the organisational factors related to IT use. It is believed that this theme is very important to the research community concentrating on IT use in LDCs, as previous research studies have focused more on the role of the macro-economic, external and technical factors to explain variations in IT use levels.

Limiting the study to organisations in one LDC context, has helped to moderate the effect of macro-economic factors to explore only the organisational context. This generalisation therefore, supports the growing body of knowledge on information systems organisational capabilities and on the use of the organisational context to gain IT-enabled sustainable CAs. This implies that BUs which can manage the relationships between IT activities and their organisational context to build some significant IS capabilities, are best positioned to gain business value out of IT use.

5- About the main pattern of the organisational practices in the Egyptian banks

IT use level of sophistication is mainly affected by seven organisational factors: firm-wide planning; IT planning; the integration between IT and business groups; IT managerial knowledge; IT organisational designs; CE support; and IT management climate. Therefore it is believed that achieving advanced IT use levels would require a firm to have consistent and superior practices in all these seven areas. Figure 3.1 presents a working model of this theme, with these practices grouped into the seven areas that provided the basis for the research questions. The framework is rather illustrative of practices for which there is grounded evidence in large firms in the finance industry in Egypt.

According to the above generalisations and to the research general conclusions, out of the seven factors identified as the main influential organisational practices in the framework, only three were found to be significant, or effective in the Egyptian banks. These factors are the CE support, IT managerial knowledge and IT management climate, with a central role for CE support.

The empirical study implied therefore that some of these factors have been used positively to heighten levels of SITU and others have not been used, which affected the SITU variable as well. The role played by each variable will be presented as follow:

a- IT managerial knowledge

The study showed the important role that "IT managerial knowledge" could play in enhancing levels of IT use in organisations. The research findings showed evidently that variations in SITU levels among the Egyptian banks were positively influenced by the "IT managerial knowledge" factor. The research therefore, supports the previous studies focusing on the relationships between IT managerial knowledge and IT use levels (Boynton, A., et al., 1994).

b- CE support

The CE support factor is considered to be the most important organisational factor that explains variations in SITU levels in the Egyptian banks. The study results showed evidently that this factor is the central factor that affects SITU levels and the other patterns of the organisational practices. Consequently, the study suggests that the Egyptian business culture depends heavily on the role of "champions" to orchestrate the organisation's attempts to pursue specific objectives.

c- IT management climate

The study showed that the Egyptian banks concerned with enhancing their levels of IT use, concentrated on the "IT management climate" factor. This theme supports the literature concerning the role of IT management climate in SITU levels. The study findings, showed that IT management climate has a positive relationship with the variation of IT use levels in the Egyptian banks, participating in the study. The three leading banks, have better and more supportive IT management climates than the other two firms in the study sample. However the role of CE (or the top management support), had an influential effect in creating this supportive climate in the three leading banks in IT use.

a- Firm-wide planning

The empirical study showed that one of the most important factors that negatively affected using IT strategically in the Egyptian banks was the current "nature" and "orientation" of firm-wide planning practices. The conclusions of the thesis suggest that these BUs would have had better chances to get beyond their current level of SITU (which is described as an intermediate level of IT use), if they had enhanced their practices in the firm-wide planning factor. Organisations that have longer experience in firm-wide planning, more concentration on strategic planning, better practices in long-range planning time-frames, and have clear and systematic processes for linking their business strategies with IT ones, may be better positioned to achieve mature and business focused levels of IT use.

b- IT planning

IT planning practices are greatly influenced by the pattern of practices in the firm-wide planning level. Consequently, as explained in the previous paragraph, the IT planning organisational factor had a negative effect on IT use level of sophistication in the Egyptian banks.

c- IT and business integration

Nature and orientation of firm-wide planning and IT planning factors affect the degree of integration between IT and business domains. As the study results showed, the Egyptian banks could not use the "IT and business integration" factor to improve their levels of SITU because they did not concentrate on building clear linkages between the two domains. Probably, the current state of practice in the "firm-wide planning", "IT planning", and "IT and business integration" factors give a clear reason why the Egyptian banks could not use IT strategically, as these practices - beside the "organisational design" factor – help achieve the alignment between IT and business domains in the firm.

d- Organisational design

IT use level of sophistication is influenced to a great extent by the way IT activities are organised in the firm. It is important for organisations to link strategy and structure to avoid what is called "organisational friction" or "misfit", which might negatively affect IT use activities. The research findings showed that the Egyptian banks do not have the capabilities to use the "organisational design of IT" factor to enhance their levels of SITU. Although IT organisational designs and firm-wide organisational designs are compatible in the Egyptian banks, as they both have centralised types of structures, these designs are not compatible with most of the perceived strategies of the banks.

As the research conclusions showed (see section 10.2.6) the leading Egyptian banks tend to follow "creative" or "analytic" strategies with these centralised organisational structures. However, it is believed that centralised solutions are suitable for firms following some defensive strategies, or seeking high levels of efficiencies and economies of scale. Therefore, these designs have structures, accountabilities and responsibilities that militate against "creative" type of strategies. Consequently, the Egyptian banks did not use the organisational design factor, or did not organise their IT activity properly to enhance their IT use levels.

Interestingly, these four factors were repeatedly emphasised in the literature. Many of the frameworks that seek to develop IT-enabled strategies proposed them as the main influential factors (Luftman, J., et al, 1993; Broadbent, M. and Weill, P., 1993). Based on the above analysis the main themes of this study could be summarised as follow:

a- Strategic IT use in the Egyptian banking industry is a function in seven main factors: firm-wide planning; IT planning; CE support; IT managerial knowledge; IT and business integration; IT organisational design; and IT management climate.

b- Relying on the three indicated factors in the Egyptian banks could help them achieve some intermediate stage of SITU.

c- IT use that leads to sustainable strategic positions or CAs can not happen without enhancing these banks' practices in the rest of the factors.

11.3 Limitations[1]

The results of this research have a number of limitations that should be presented. The study concentrated on factors concerning the organisational context in order to provide an understanding of their relationships to IT use practices. However, it is known that other factors could play some significant role in explaining variations in IT use among organisations such as the environmental, national and macroeconomic factors[2]. The research limited its empirical investigation to only one industry and one country to moderate the effects of these variables. It is believed that previous studies in IT use in LDCs have concentrated more on the macroeconomic factors. The thesis therefore, tried to investigate the organisational factors part.

Although the five Egyptian bank case studies presented in this research provided interesting insights into the experiences of organisations involved in deploying computer based information systems, these case studies may not provide a sufficient basis on which to make substantive generalisations. The research would gain significantly from case studies done in other contexts[3]. Doing research in a LDC setting far away from one's research base poses significant pressures on the research student's budget, efforts and project time-scale.

11.4 Contributions

This study has some important contributions for both researchers and managers. It tried to develop a conceptual framework for the organisational context for IT use in the information intensive banking industry in Egypt as a LDC context. In doing so, it has augmented the growing body of research in this area by examining the role of some significant factors that are most likely

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[1] This section will be presented briefly as most of the research limitations have been discussed in section 1.4.
[2] That is to say unique industry characteristics, changes in regulatory environment, political changes, etc.
[3] Please refer to section 1.4 for more details about the reasons why the Egyptian banking industry was selected for the study and its impacts on the generalisability of the research findings.

to be sources for achieving better IT use practices. Specifically, the research used the previous studies concerning these organisational factors, to build robust constructs and instruments for measurement purposes and to examine their relation to IT use and then synthesis the constructs in a comprehensive conceptual framework.

Probably the most important contribution of this study is that it showed that the standard models in the literature concerning the conceptualisation of the organisational context of IT use (the alignment models) cannot be universally applied. The generalisations developed from this study (especially the first two generalisations, section 11.2) provide researchers and practitioners in the MIS field by a new basis for developing a framework concerning the strategic use of IT, which fosters an understanding of the behaviour of the components of this context, and the management of the interaction between IT activities and the related organisational context.

It is thought that this effort could provide researchers in the IS field with a solid basis for applying its conceptual framework on bigger samples, different industries and countries. Also the research conceptual and empirical results could be used to enhance our understanding of the organisational context by examining and developing the research constructs and the overall conceptual model.

It is believed that researchers interested in concepts such as IS capabilities and sustainability of IT-enabled CAs, could exploit the results of this study. The study helps extend our understanding of the different organisational practices that could provide the IS capabilities required for sustainable CAs. At the same time, the study allows us to move away from the narrow focus on IS competencies prevalent in IS research to broader and more inclusive concepts of IS organisational capabilities. This changes the focus from viewing computer-based information systems from a linear input/output standpoint. Effective IT systems acquisition, deployment and exploitation involve a dynamic set of cumulative and mutually reinforcing processes.

Some researchers in IS field are interested in measuring the degree of sophistication of IT use in organisations and/or national contexts, either as a dependent variable or as a topic in itself. This study tried to contribute to this area of interest by providing a comprehensive instrument for measuring the variable "SITU". Five main aspects were used to measure this variable in the study to give a rather comprehensive profile of IT use in organisations. Future researchers could capitalise on this effort to enhance IT use empirical studies.

Moreover it is believed that research in the IS field is in need of more robust measuring techniques and quantitative tools to help researchers examine different causal relationships in order to address different research questions in the field. Most research studies in the IS field rely heavily on the case study methodology using open semi-structured interviews for data gathering. Although this study has partially used this approach in data gathering, it relied more on a pre-prepared standard questionnaire for quantitatively measuring the research variables. It is believed that research in MIS theory needs more studies that lead to statistical generalisations and not only theoretical ones. In doing so, standard instruments, such as the ones developed in this thesis, should be capitalised upon.

Research on IT use in LDCs represents a growing area of interest within the IS field. This is because many researchers in LDCs and those from developed countries doing work in LDCs, have highlighted special concerns and challenges faced by those implementing computer-based systems. This thesis has contributed to this research base by providing additional case study evidence from which lessons can be drawn. For example future research can capitalise on the organisational experiences gained from this study to formulate and test related hypothesis in other LDCs. This issue will be explained in more details in the next section.

Managers on the other hand, can use the framework developed in this research to refine their thinking about IT use, the significance of the organisational context, and the conceptual model. This could help provide basis for evaluating the SITU level in the organisation, and understanding the organisational practices and factors that are most likely to be sources for enhancing IT use practices. The research results could be of major importance for the banking industry in Egypt and for the Egyptian public sector business units in general. They can use the research results to evaluate their levels of SITU, decide on their future IT use targets, and plan for better organisational practices that can help to gain IT-enabled CAs in the future.

11.5 Further Research

This study has highlighted the need to carry out additional research for both the theoretical and empirical parts of the study. While the project examined the extent to which the organisational factors could explain the variations in SITU among organisations, there may be other organisational variables related to IT use that have not been fully evaluated. Additional

conceptual work and empirical tests will be required to extend our understanding of the overall concept of the organisational context of IT use.

Future research will need to explore in much more detail, each organisational factor highlighted in the research's conceptual model individually, and its relation with SITU. For example, one of the trends in studying the variations in IT use levels, is the enabling role of an appropriate culture for the delivery of effective IT practices. This issue becomes even more important in examining the differences in IT management practices between different countries. It is expected that differences in the human environment, in which an organisation operates, affect the management process. This study identified "IT management climate" as one of the organisational factors investigated, which represents the observed surface of "IT management culture". Future research, consequently, will need to investigate the exact nature of the components of IT management culture, how they develop and evolve in a firm and how they can be used to leverage a firm's ability to create sustainable CAs.

The study derived empirical evidence to support the development of propositions about the relationship between the level of SITU and the firm's organisational practices, in a LDC setting. Many aspects of organisational experience are comparable to that in other settings. However, comparable work in an industrialised country would help to substantiate the concepts raised and help to determine whether there are any significant conceptual differences between the two settings.

Concerning measurements and constructs for the study's framework, it is believed that further research is needed to elaborate the ones used in this research. Because our measures were developed partially by explorative data analysis, the possibility of psychometric ambiguity may exist in the current results. Further research is needed to develop more robust constructs for the seven organisational factors measured. For example, in measuring the level of CE support, additional theoretical constructs may be added in future work such as "decision making style" or "leadership style".

These research suggestions – which were limited to the organisational context of IT use - are not exhaustive and certainly do not address all of the issues explaining variations in SITU levels. Other contexts may be profitably brought into subsequent analysis, such as the environmental factors that affect the level of sophistication of IT use.

APPENDIX 1

Research questionnaire

Attention \ ----------

Dear Sir \ Madam

The purpose of this questionnaire is to measure your firm's pattern of the Information Technology (IT) use and the strategic and organisational variables that affect this use. Please answer all the questions in the light of your own opinions. There are no "wrong" or "right" answers. It is very important that all the questions be covered.

Thank you for your co-operation

Sincerely,

Emad M Ali

a- Information Technology Use Level of Sophistication

1- In your opinion, how do you evaluate your bank's Information Technology infrastructure according to the following list? (please tick only one choice to each item in the list)

Degree of:	v. low	low	average	high	v. high
a. compatibility between computer sites					
b. coverage for the bank's branches and geographical sites					
c. coverage for the bank's functional business divisions					
d. suitability with the bank's long range business plans					
e. integration of the bank's customers' data bases					

2- How do you describe your bank's degree of sophistication of IT use compared to competitors? (please tick only one)

a. very low	----------
b. below the average use of our competitors	----------
c. average	----------
d. in an advanced position but not a leader	----------
c. we are the leader in IT use in our industry	----------

3- Please check one of the following phases of IT use that best describes IT use in your bank?

(-------) phase 1: introduction
We are in the beginning of using Information Technology. We allocate a limited amount of resources to this area. Most of our activities are for exploring it.

(-------) phase 2: diffusion
We have passed the introduction phase in using IT. We allocate an average amount of resources. We began to use IT in many and different areas across our business, but we lack control on integrating our activities in this area. Most of our decisions are reactions to our competitors' use of IT.

(-------) phase 3: control
There is a great appreaciatation of IT role in our business across our bank and we could achieve a good deal of technical control on this area. However, we are still in the beginning of integrating IT activities with business activities.

(-------) phase 4: integration
We could achieve some important IT competencies that rationalised our business through integrating IT activities with business activities

(-------) phase 5: data administration
We have a great history in using and applying IT in our bank's business activities. IT had penetrated most of our departments and functions and there is a great deal of mutual understanding between IT groups and business groups. IT has a distinct role in our bank's business performance.

(-------) phase 6: maturity
IT use pattern is now in a very sophisticated level in our business. IT is highly fused with our business strategy, products and markets.

4- Please indicate how effective would you say for each type of IT support services in meeting your need from the following list?

	v. low	low	average	high	v. high
(1) Data Processing & Telecommunications					
- install & maintain data communication equipment					
- produce & distribute paper reports					
- produce & distribute microfiche reports					
- access to consumer & business data files					
- accuracy of consumer & business data files					
- response time of on-line systems					
(2) Software Services					
- design, develop & implement new software applications					
- enhancements to application software					
- maintenance of application software					
- meet production time frames					
(3) Office Services & User Liaison					
- install & maintain voice communication equipment					
- electronic mail					
- production level word processing					
- teleconferencing					
- user liaison for assistance/trouble calls					
(4) End-User Computing Services					
- technical: troubleshooting, database extraction, etc.					
- research: hardware & software products					
- consulting: application development, HW & SW products, etc					
- training & education					

5- Please indicate how well your company made use of Information Based Competitive Advantages (IBCAs) compared to competitors? (tick one only)

1.----------very low 2. ---------- low 3. ---------- average 4. ----------high 5. ---------- very high

6- please rate the top Egyptian banks in using IT in their business?

1- ----------2- ----------

3- ----------4- ----------

5- ----------

7- How important are the following areas of (IBCAs), in the Egyptian banking environment in your point of view? (please tick only one choice to each item in the list)

Type of IBCAs:	v. low	low	average	high	v. high
Integration of customer data					
Centralised transaction processing centre					
Consolidation of application onto uniform product base					
Number and availability of ATMs (Automatic Teller Machines)					
ATM interchange links with other institutions					
Market analysis, marketing					
Differentiated customer products					
Electronics funds transfer/point-of-sale terminals					
Risk management techniques					
Competitor intelligence					
MIS planning and control					
Electronic home banking					
Internal networking systems					
Cost accounting					
Investment and financial planning					
Inventory of stock control, asset management					

8- How well your firm made use of the following areas to gain some competitive advantages over its competitors by utilising IT? (tick all that apply)

Type of IBCAs:	v. low	low	average	high	v. high
Integration of customer data					
Centralised transaction processing centre					
Consolidation of application onto uniform product base					
Number and availability of ATMs (Automatic Teller Machines)					
ATM interchange links with other institutions					
Market analysis, marketing					
Differentiated customer products					
Electronics funds transfer/point-of-sale terminals					
Risk management techniques					
Competitor intelligence					
MIS planning and control					
Electronic home banking					
Internal networking systems					
Cost accounting					
Investment and financial planning					
Inventory of stock control, asset management					

9- do you suggest another areas of IBCAs in the Egyptian environment?
Yes --------- No --------

(if no please move to question 11)
if Yes:

10- please state these areas and their degree of importance:

Type of IBCAs proposed:	v. low	low	average	high	v. high

Also, indicate how well your bank could gain some advantage in these areas?

Type of IBCAs proposed:	v. low	low	average	high	v. high

b- Firm-Wide Planning

11- Does your firm formulate written firm-wide plans?

yes ---------- no ----------

if no, please move to question no. 16

12- When has your firm started practising firm-wide planning activities?

since ----------

13- Please indicate the time-frame(s) of your bank's firm- wide plan? (tick all that apply)

1. -------- short (1 year) 2.------- medium (3 years) 3. ------ Long (5 years)
4. -------- other (specify) ----------

14- Planning focus:

(please tick all that apply)

1.---------- operational 2. ---------- financial and annual budgeting
3. --------- financial and capital budgeting 4. ---------- strategic
5. --------- others (specify) ----------

15- Does your bank usually formulate a firm-wide <u>strategic</u> plan?

1.---------- Yes 2. ----------No

if yes:

What are the main components of your bank's strategic plan: (tick all that apply)

1. ----- statements of business vision
2. ----- statements of intent
3. ----- statements of competitive advantages
4. ----- statements of critical strategic issues
5. ----- linking plans to implementations (e.g. to groups, individuals)
6. ----- others (specify) ----------

16- Please indicate the basic points of your bank's strategic orientation ?

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------

17- Please check one of the following phrases that best describes your bank's competitive strategy?

( ) strategy 1
An organisation with this type of strategy attempts to locate and maintain a secure niche in a relatively stable product or service area. The organisation tends to offer a more limited range of products or services than its competitors, and it tries to protect its domain by offering higher quality, superior service, lower prices, and so forth. Often an organisation with this type of strategy is not at the forefront of developments in the industry - it tends to ignore industry changes that have no direct influence on current areas of operation and concentrates instead on doing the best job possible in a limited area.

( ) Strategy 2
An organisation with this type of strategy typically operates within a broad product-market domain that undergoes periodic redefinition. The organisation values being "first in" in new product and market areas even if some of these efforts prove not to be highly profitable. The organisation response rapidly to early signals concerning areas of opportunity, and these responses often lead to a new round of competitive actions. However, an organisation with this type of strategy may not maintain market strength in all of the areas it enters.

( ) Strategy 3
An organisation with this type of strategy attempts to maintain a stable, limited line of products or services, while at the same time moving out quickly to follow a carefully selected set of the more promising new developments in the industry. The organisation is seldom "first-in" with new products or services. However, by carefully monitoring the actions of major competitors in areas compatible with its stable product-market base, the organisation can frequently be "second-in" with a more cost-efficient product or service.

( ) Strategy 4
An organisation with this type of strategy does not appear to have a consistent product-market orientation. The organisation is usually not as aggressive in maintaining established products and markets as some of its competitors, nor is it willing to take as many risks as other competitors. Rather, the organisation responds in those areas where it is forced to by environmental pressures.

c. Chief Executive (CE) Support

First: CE Degree of Participation

18- How often does the CE personally participate in matters related to the use of IT within the firm?

1- rarely (less than one a year) 2- few times a year
3- monthly (average) 4- weekly
5- daily

19- Does your bank have an IT steering committee?

yes no

if yes, which of the following best describe the CE's role in the firm's IT steering committee?

1- no effective role 2- a minimal input
3- just a member of the committee 4- chairs and actively participate in the meetings
5- is the defacto steering committee

20- How frequent are informal contacts between the CE and the firm's senior IT management?

1- less than once a year 2- few times a year
3- monthly 4- weekly 5- daily

21- How knowledgeable is the CE about IT opportunities and possibilities for your firm?

1- weakly informed 2- somehow informed 3- well informed
4- very informed 5- extremely knowledgeable

22- How knowledgeable is the CE about IT innovations that have been developed by major competitors?

1- weakly informed 2- somehow informed 3- well informed
4- very informed 5- extremely knowledgeable

23- Does the CE personally use IT?

1- CE has no personal involvement with computers
2- CE indirectly use IT (through his/her office)
3- CE insists that his/her office make use of IT
4- CE makes symbolic use of IT (e.g. PC in the office, but only occasional)
5- CE makes heavy use of IT (e.g. a PC, EIS, email...etc)

Second: CE involvement

24- Which of the following best describes the CE's prevailing thinking about funds the firm spends on IT?

1- views IT as an expense to be controlled
3- views IT as a resource to be allocated fairly across the organisational units
5- views IT as a strategic investment

25- In your opinion, to what extent does the CE believe in the importance of IT to the firm's business?

1- very low extent 2- low 3- average
4- high 5- very high

26- What is the CE's vision for IT?
1- no stated vision expressed
2- a tool for modernising the work's circumstances
3- a functional vision of how the firm will use IT (%95 of customers will be handled with no call back)
4- a technical vision of how the firm will use IT (we will install a world wide communication network)
5- a strong but generic vision (we will be the industry leader in the use of advanced IT)

27- How often does your CE endorse major IT investment that have not been endorsed by traditional justification criteria and procedures?
1- rarely 3- occasionally 5- frequently

d- IT Managerial Knowledge

28- Please indicate, how do you rate the degree of IT-Managers knowledge of your firm's business operations?
1- very low 2- low 3- average
4- high 5- very high

29- Degree of IT-managers knowledge of the corporate strategy:
1- very low 2- low 3- average
4- high 5- very high

30- Degree of business managers knowledge of IT potential as a competitive weapon:
1- very low 2- low 3- average
4- high 5- very high

31-Degree of business managers knowledge of IT as a tool to decrease clerical work:
1- very low 2- low 3- average
4- high 5- very high

e- IT and Business Groups' Integration

32- Please indicate, which of the following statements closely describes the degree of line-mangers understanding of IT-mangers objectives?
1- there is no clear objectives for IT-managers to be understood
3- general background of IT-managers priorities
5- any line-manager can easily identify IT-managers objectives

33- Please indicate, which of the following statements closely describes the degree of IT-mangers understanding of line-managers objectives?
1- there is no clear objectives for line-managers to be understood
3- general background of line-managers priorities
5- any IT-manager can easily identify line-managers objectives

34- To what extent does the following exchange mechanisms exist in your bank?(please tick one for each item)

	no existence	limited	exist
1- mutual movements between IT and business groups			
2- mutual training			
3-joint teams' work			

35- In your opinion, how do you rate the level of "intensity of communications" between IT and business groups?

1- very low 2- low 3- average
4- high 5- very high

f- IT Strategic Planning

36- Does your firm formulate an IT plan?

yes no

if no please move to question no. 41

37- When has your firm started practising IT planning?

since ------

38- Please indicate the time-frame(s) of your bank's IT plan? (tick all that apply)

1. -------- short (1 year) 2.------- medium (3 years) 3. ------ Long (5 years)
4. -------- other (specify) ----------

39- IT planning methodology:

1. ------- bottom up (CIS system analyst interview users to identify the major decision areas, management and/or operational system needs, possible information gaps and operating inefficiencies that would be improved with information development efforts)
2. ------- top-down (CIS department identifies projects to be developed by examining the existing company's business plans for potential support requirements)
3. ------- combination
4. ------- others (specify)----------

40- Degree of participation in developing CIS plan:

	None	Low	Medium	High
a. Top Management	-------	-------	-------	-------
b. Non-IT Managers	-------	-------	-------	-------
c. IT Managers	-------	-------	-------	-------
d. Users	-------	-------	-------	-------
e. Computer Systems Programmers	-------	-------	-------	-------
f. Systems Analysts (Developers)	-------	-------	-------	-------
g. Computer Operations Personnel	-------	-------	-------	-------
h. Vendors	-------	-------	-------	-------
i. Consultants	-------	-------	-------	-------

Note:

1. Computer systems programmers are those responsible for developing systems (or programs) for use by the functional departments.
2. Systems analysts are those who evaluate the needs of the users (i.e., the functional departments) and translate these needs into systems for the computer systems programmers to design and develop.
3. Computer operations personnel are those responsible for data input and output activities, hardware maintenance and other allied technical services.

41- Degree of centralisation of the following IT activities in your bank?

IT activities	not exits	centralised	hybrid	decentralised
System development				
feasibility study				
system analysis				
system design				
programming				
users' training				
implementation				
system evaluation				
Operations				
data entry				
developing procedures & schedules for using IT				
produce and distribute output				
Managing IT infrastructure				
managing networks and communication				
managing the applications portfolio				
maintenance				
It research				
Strategic planning				
general policies				
personnel policies				

42- To what degree do you believe that your bank's firm-wide organisational structure is appropriate to the firm-wide strategy?

1. ----- definitely not appropriate 2. ------ not appropriate
3. ------ average 4. ----- appropriate 5. --------- definitely appropriate

43- To what extent, your bank's decisions concerning IT organisational design are influenced by the company's firm-wide strategy?

1. ----- very low level 2. ----- low level 3. ------ average
4. ------- high level 5. -------- very high level

g- IT management Climate

44- In your opinion, to what extent does the top management understand how IT contributes to the bank's business?

1- very low 2- low 3- average
4- high 5- very high

45- Degree of top management willingness to devote sufficient time to make IT project success:

1- very low 2- low 3- average
4- high 5- very high

46- Please indicate your degree of satisfaction about the current role of IT in your bank's business?

1- very unsatisfied 2- unsatisfied 3- average
4- satisfied 5- very satisfied

47- To what extent, do you expect that your firm will have the highest benefit from IT use?
1- very low 2- low 3- average
4- high 5- very high

48- To what extent, do you expect that your firm will lead its industry in IT use?
1- very low 2- low 3- average
4- high 5- very high

49- Degree of satisfaction with the communication climate between IT and business groups?
1- very unsatisfied 2- unsatisfied 3- average
4- satisfied 5- very satisfied

50- To what extent, do you believe that top management considers IT as a strategic factor?
1- very low 2- low 3- average
4- high 5- very high

51- Degree of satisfaction with the current IT training programmes?
1- very unsatisfied 2- unsatisfied 3- average
4- satisfied 5- very satisfied

Personal Data:

Name (if you want): ----------
Job Title: ----------
Administration: ----------
Bank name: ----------

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