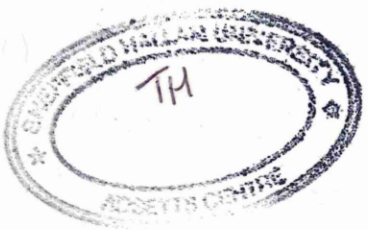
Management Styles and Managers Attitudes towards IT: A Developing Country Context

Raid Moh'd Al-adaileh

A Thesis Submitted in Partial Fulfilment of the Requirements of Sheffield Hallam University for the Degree of Doctor of Philosophy

November 2003


SHEFFIELD HALLAM UNIVERSITY
TH

ABSTRACT

Successful Information Technology Diffusion (ITD) requires a clear understanding of the organizational context including human and technological dimensions. Towards the establishment of this understanding, this research explores the management styles within a developing country context and the managers' attitudes towards IT. In particular, relationships between certain demographic characteristics and managers' attitudes towards IT are explored. Finally, association between management styles and managers' attitudes towards IT as a part of an e-government program is explored.

The sample for this research was drawn from a list of the Jordanian Governmental Organizations (JGOs). Lower and middle line managers of public service organizations were selected to investigate the research issues. This research is mainly deductive and includes elements of both quantitative and qualitative methods. A survey approach was employed to achieve the research objectives. Moreover, six interviews were carried out with some managers to obtain insightful data and to enhance the interpretation of quantitative findings. Exploratory factor analysis, bivariate approaches, and general linear modelling were employed to explore patterns of complex multi-dimensional relationships for various attitudinal components towards management styles, IT and demographic characteristics.

Five styles of management that represent two managerial dimensions were identified and ordered according to their preference. Although all these styles were prevalent to the research context indicating the diversity of management styles, people oriented management which represents the New Management Paradigm (NMP) including innovative, democratic, and participative styles was found to be more dominant than task oriented management which represents the traditional management styles including autocratic and authoritarian management. Moreover, the findings revealed that managers were found to have highly favourable attitudes towards IT. Additionally, a significant positive relationship was found between educational level and managers' attitudes towards IT. In contrast, significant negative relationships were found between managers' attitudes and age and organizational experience. No significant differences were found between male and female managers' with respect to their general attitudes towards IT. Finally, no significant relationship was found between managers' span of control and their attitudes towards IT. Managers' attitudes towards IT including computer anxiety, computer confidence, computer liking and computer usefulness were found to have significant positive relationship with the people oriented management styles including innovative, democratic, and participative style except the relationship between participative management style and computer liking which was not statistically significant.

Considering the scarcity of previous literature in the research's particular context (Jordan) and its broader context (Arab and developing countries), this research provides an original contribution concerning the effect and appropriateness of management styles and attitudes towards IT on the use of modern computer technology within the context of governmental organizations in developing countries. Unlike previous studies within developed and developing countries, this research focuses on some organizational aspects of IT diffusion and puts emphasis on people's management styles and characteristics as the key driver towards successful ITD.

Publications

In the course of completing this thesis, the contents of a number of chapters have already been published by the author. These are:

1. Al-adaileh, R., & Siddiqi, J. (May, 2003) Information Technology Diffusion: A Strategic Perspective, Paper presented at IAMOT 2003, ENSGSI, Nancy-France.
2. Al-adaileh, R., & Siddiqi, J. (Sep, 2003) The New Management Paradigm and Arab Culture: Analysis of Appropriateness, Paper Presented at The First Middle East Conference on Technology Transfer, Bahrain.

Acknowledgment

First thanks must go to my supervisor and director of studies Prof. Jawed Siddiqi, who through his constant direction and guidance led me to the completion of this thesis. His initial direction in setting up my research focus and his subsequent professional support throughout my research process were as valuable as his emotional support and friendship. From the formative stages of this thesis, to the final draft, he was there to help.

My appreciation also goes to my other supervisory team members, to Dr. Michael Grimsley for his continuous support in analyzing the data and demonstrating statistical insights and to Ana Vasconcelos and Roy Butcher.

Thanks to all of you not just for being part of my supervisory team but for all of your guidance and assistance.

I would like to extend my thanks to all my research colleagues in the school of computing and management and to all staff of CMS at Sheffield Hallam University.

I wish also to thank my wife for her continuous encouragement and emotional support throughout my research journey. Without her lifting me up when this thesis seemed interminable, I doubt it should ever have been completed.

Dedication

I dedicate this work

- *To my parents who devoted their life to the achievement of this dream.*
- *To my brothers and sisters who shared with me my dream and*
- *With all my love to my dedicated loving wife, Lamia and my energetic, bright, boundless son, Abdullah and my little shiny baby Abdurrahman.*

Abbreviations

CAS	Computer Attitude Scale
EFA	Exploratory Factor Analysis
FA	Factor Analysis
GLM	General Linear Model
ICT	Information and Communication Technology
IT	Information Technology
ITD	Information Technology Diffusion
JGOs	Jordanian Governmental Organizations
MoICT	Ministry of Information and Communication Technology
NMP	New Management Paradigm
SPSS	Statistical Package for Social Science
TAM	Technology Acceptance Model

Table of Contents

List of Tables

List of Figures

Chapter One:-

Introduction

1.1 The Research Issues

This thesis investigates the issue of Information Technology Diffusion (ITD) from an organizational management point of view as an attempt to overcome the technological determinant perspective. This research argues that the ongoing pressure on organizations to utilise IT tools successfully should be based on a clear understanding of the diffusion context including human and technological dimensions. In particular, we argue that the investigation of the internal organizational context and organizational management in particular can enhance the formation of successful ITD strategy through incorporation of organizational context with ITD strategy. As a part of this understanding, this research explores the management styles within a technologically developing Arab country context and provides some empirical and theoretical insights towards understanding the changing and diversifying nature of management styles. In addition, this research explores the managers' attitudes towards IT and the relationship between certain demographic characteristics including gender, age, non-IT organizational experience, educational level, and span of control and the managers' attitudes towards IT. This enables the identification of the overall relationship between management styles and attitudes towards IT.

A review of the available literature associated with ITD emphasises a tendency in this literature towards focusing on the use of technology as the main driving force which drives the process of change within organizations. The utilization of the existing organizational setting to support this change and interactions between organizational

components including management and the use of IT has received little attention in the previous literature. This motivated the researcher to explore the existing organizational management setting and its association with ITD. Investigation of the interaction between management styles and managers' attitudes towards IT provided a mechanism to achieve this end. The researcher knowledge and academic background in the field of management and his familiarity with the research particular context have supported the exploration of this issue.

The remaining of this chapter presents a general and brief background concerning the issues that are raised in this research and the context of this research. It also discusses the overall aim, objectives, research questions as well as outlining the structure of the thesis.

1.2 The Research Background and Context

The role of IT tools has increased in the last decade since technology is linked to corporate governance, investment and economic development (Southern, 2001). In general, there are two major debates concerning the role of IT. The first theme views information revolution as new opportunity since people, through the use of emerging technologies, can create and develop an innovative and new ways of doing things. The second theme views the increasing reliance on IT as a danger and may lead to undesirable and radical changes within the receiving context. However, one can argue that the role of IT depends on the way of introducing it and the extent to which the fit between technology and the receiving context is considered. Viewing technology, for instance, as a single powerful change agent that can regenerate an organization and provide magical solution to its problems may be misleading and is implicitly or

explicitly underestimating other organizational components. Although IT has imposed many changes on organizations, it is not able to create the appropriate conditions for its success. Therefore more interest should be directed to investigating ITD as an organizational process, which considers the complexity of the organizational context and the diversity of social and cultural settings among countries and regions around the world (Nulens, 1997). The critical role that IT can play in both public and private organizations to develop the organizational work increases the importance of ITD studies to be strategic and more comprehensive. We argue that successful ITD is determined by a set of different factors including technical, organizational, cultural and individual factors. As the investigation of all these factors is beyond the limitation of this research, organizational management as a key organizational factor was investigated within the scope of this research.

Since the external and internal environment of today's organizations are undergoing a process of change, new thinking regarding management styles and responsibilities has emerged to keep pace with this rapidly changing environment. Although, there is an established body of work in developed countries that has provided insights concerning the impact of this changing environment on the management styles and its role in the creation of what is so called the New Management Paradigm (NMP), the focus of these studies was on investigation of the influence of IT on organizational management and very few studies have explored the reciprocal relationship of management on IT.

In contrast, no empirical investigations and little theoretical insights were provided in the previous literature concerning the interaction between management styles and ITD within the context of developing countries. Most of the available studies which

investigated ITD in developing countries have focused on identification of current and potential problems. Thus, they provided a negative perspective concerning ITD within this context. Therefore, one can argue that the interaction between management styles in today's organizations and ITD is still to be explored especially in organizations of developing and less developed countries. Since most developing countries have recently started to realize the important role which IT can play to solve their development problems, the results of this research are expected to be more useful to this context. The scarcity of resources and the importance of getting as much benefits as possible from them are other important incentives that increase the importance of this research to this context. Moreover, the distinctive nature of the organizational environment (internal and external) in these countries may create different managerial styles that are influenced by the dominant cultural and social environment within these countries. Consequently, the adoption of the results of some studies that were conducted in developed countries can not be reliable and accurate. It is our belief that identifying the management style in developing countries must be based on more comprehensive and empirical research, which must involve real intervention to attain rich background about the current management styles in the organizations of developing countries.

However, since the levels of IT development among these countries is varied depending on each country's circumstances including cultural, political, economical, and scientific situations, this research was conducted within the Jordanian context which is part of its surrounding Arab and wider developing countries context. Being Jordanian has improved the researcher ability to investigate this context and interpret the likely situation with respect to the investigated research questions. This provided a personal motivation towards the selection of this context. Nevertheless, Jordan shares developing

countries in terms of its economic level of development and its limited or unutilised resources. In addition, it shares Arabic countries its cultural and social foundation, Islamic belief, language, and level of technological development. This expands the findings and implications of this research to include the wider Arab countries context and provides some indications regarding the internal organizational context. Lower and middle line managers in Jordanian Governmental Organizations (JGOs) were selected to investigate the research questions. Top level managers were excluded because of the difficulty of gaining access to them. In addition, carrying out a study that involves all managerial levels might lead to misleading results since the focus of those managers is directed towards strategic rather than practical or operational managerial activities. In addition, the issue of organizational innovation through IT have received little attention from the perspective of lower and middle line management (Wu et al, 2002). The selection of public sector organizations was motivated by the Jordanian government efforts to improve public services through the introduction of e-government project which makes the investigation of ITD within this context significant. In addition, academic literature concerning the NMP has focused on non-governmental organizations and little research has explored the context of governmental organizations (Polidano & Hulme, 2001).

Few studies have discussed some issues relating to management in Arab world. Ali (1996: p4) stated that

"Issues related to Arab management styles, practices and work orientations are neither known nor understood outside the region.... organization development activities are therefore carried out less effectively than they otherwise could be".

Moreover, the available studies that investigated Arab management have generally provided a negative perspective regarding this context. Misunderstanding and misinterpretation of Arab management and its major driving forces including cultural values, Islamic values, technological development, and political environment have led to the formation of this negative perception. In addition, most of these studies have discussed one dimension related to managerial work while there is a need to investigate the impact of managerial dimension on ITD. The novelty of ITD in Arab countries and the technological change that has been taking place in these countries in the last few years increases the importance of understanding the relationship between management styles and ITD.

1.3 Aim and Objectives

The overall aim of this research was to explore the relationship between managerial styles prevailing in JGOs and Jordanian managers' attitudes towards IT. Among the objectives of this research was first to identify the management styles of middle and lower line managers in public service organization within a developing country context (namely Jordan). These styles were identified according to their prevalence to JGOs. The second objective was to identify the public managers' attitudes toward IT. Attitudes of managers towards IT were explored in terms of computer anxiety, computer confidence, computer liking, and computer usefulness. Moreover, this research explored the relationship between managers' attitudes towards IT on the one hand and gender, age, organizational experience, educational level and span of control on the other. The attainment of these two objectives enabled the achievement of the overall aim of this research.

To fulfil the overall aim and objectives of this research, a deductive approach was adopted. To ensure that the findings of this research are valid and correct, multi-methods approach for data collection and analysis were used in this research. These included survey, interviews, secondary literature sources including books, journals, conference proceedings, online documents ...etc. The use of secondary data enabled understanding of the ITD literature, management styles and the relationship between management and ITD, and analysis of the current situation concerning ITD strategy within JGOs.

The research process involved four phases. The first phase aimed to identify the management styles within JGOs. A survey was used to collect the necessary data. The second phase aimed to identify the managers' attitudes towards IT. The Computer Attitude Scale (CAS) developed by Loyd & Loyd (1985) was employed to achieve this aim with very minor modifications. The CAS measures attitude based on the following four subscales: (a) computer anxiety, (b) computer confidence, (c) computer liking, and (d) computer usefulness. The third phase included the analysis of data and identification of the major themes. Statistical Package for the Social Sciences (SPSS) was used to analyse the collected data from the first two phases. In particular, factor analysis, correlation analysis, general linear model, and error bar were the primary instruments for the analysis of data. The fourth and final phase of this research focused on exploration of the relationship between management styles and their attitudes towards IT. This was based on a synthesis of the empirical findings from the previous phases and the available literature. The overall research findings have led to the identification of strategic implications for the current Jordanian strategy. This was enabled through evaluation of the Jordanian government efforts in relation to ITD.

1.4 Research Questions

From the literature survey, it was apparent that there was a gap in understanding the relationship between management styles and demographic characteristics on the one hand and managers' attitudes towards IT on the other, which formed, the overall aim of this research and its first question. To enable the achievement of this aim, the following research questions were developed based on a comprehensive and critical review of the available literature.

- What are the management styles that dominate the public sector organizations within the research context?
- What is the order of these styles according to their existence or dominance?
- What are the attitudes of lower and middle line managers towards IT?
- Are there significant differences between male and female managers regarding their attitudes towards IT?
- Are there significant differences between attitudes of managers towards IT according to their ages?
- Are there significant differences between attitudes of managers towards IT according to the number of manager's years of work experience?
- Are there any significant relationship between the manager's level of education and his/her attitudes towards IT?
- Are there any significant relationship between the manager's span of control and his/her attitudes towards IT?

1.6 Research Contribution

The research outcomes are expected to provide an original contribution to the available literature for the following reasons:

1. The management styles within the JGOs are identified in a very clear format. The process of management styles identification assumed the absence of an ideal management style and the integrated nature of management behaviour where several managerial practices interact. An extensive review of traditional and NMP has supported this assumption. Empirical validation and theoretical explanation provided in this research present a clear evidence concerning the shape of the future management in general and public management in particular.

2. Attitudes of Jordanian public managers towards IT were clearly identified. The relationships between these attitudes and gender, age, organizational experience, educational level, and span of control were also explored in some details. Some of these characteristics (span of control and non-technical organizational experience) have received no attention in the previous studies. Attitudes of managers' were classified in terms of computer anxiety, computer confidence, computer liking, and computer usefulness. The interaction between these aspects of the study was explored using in-depth and multiple methods of analysis. Most importantly, a review of the available literature confirms that this study is the first in-depth study within the Jordanian context. Accordingly, it provides basic theoretical and empirical insights to further examine and validate the results of other studies that are related to IT transfer and diffusion, and were conducted in developed countries context.

3. The relationship between public managers' attitudes towards IT and their styles of management is clearly established. This relationship was explored within a distinctive

context where the scarcity and the fragmented nature of the available literature is a major concern. This investigation is considered as an important step towards investigation of the interaction between ITD and organizational management in particular. It is also seen as an appropriate start to further investigate the interaction between the internal organizational context and the use of IT.

4. This research's outcomes also provided guidelines for strategies' makers concerning some possible courses of action that may be required to increase the likely success of ITD process.

Overall, this research emphasises the importance of integration between organizational and technological components when formulating an ITD strategy. Moreover, it invites strategy makers to consider users' perception regarding the diffusion process and to involve them in the process of ITD. In particular, this research has emphasised that the management styles and demographic characteristics are key driver to shape IT diffusion rather than the other way around as reported in the literature

1.6 The Structure of the Thesis

To guide the overall process of research, the thesis is presented according to the following structure:

***Chapter 2*- Information technology diffusion**

In this chapter, the relationship between IT and organizations was evaluated and the impact of IT on organizational structures, forms, and management was discussed. Issues related to ITD models were also reviewed and evaluated to form the broader boundaries of the research journey. Critical evaluation of these models was conducted and existing gaps were identified which provided an overall guideline for this research.

***Chapter 3*- Management styles: conventional vs. new management paradigm**

In search for the existing gap in the available studies, issues related to conventional and NMP were reviewed and discussed in this chapter. This extensive review formed the more specific boundaries of this research and led to the identification of two research questions related to management styles within the context of JGOs. This chapter also provided the theoretical foundation in which the design of the research instrument concerning management styles was based.

***Chapter 4*- Managers attitudes towards IT**

Studies related to managers' attitudes towards the use of IT were reviewed and evaluated in this chapter considering the particular demographic characteristics. This review enabled the development of six research questions relating to the general attitudes of managers towards IT and the relationships between these attitudes and five demographic characteristics including gender, age, non-IT organizational experience, educational level and span of control. In addition to chapter 2 and 3, this chapter enabled the identification of the research conceptual framework.

***Chapter 5*- Research methodology**

This chapter discussed the methodological approach that was used in this research and the processes and procedures that were undertaken to collect the data, to analyse them and consequently to achieve the research objectives. A justification of the methodological approach was provided taking the research context, circumstances, and limitations in consideration. This chapter also discussed the research design upon which the study was based.

***Chapter 6*- Analysis of management styles**

Management styles questionnaire was analysed in this chapter. Firstly, the 35 items-scale were assessed and factor analysis was used to classify these items according to the

management dimension they measure. Then, management styles were identified and ordered according to the managers' preference and their proportions within the research context.

***Chapter 7*- Analysis of managers' attitudes towards IT**

CAS was analysed in this chapter. Factor analysis was firstly used to assess the appropriateness of this scale for measuring attitudes towards IT. Bivariate analysis and general linear model were used to address the research questions relating to public managers' attitudes towards IT. CAS was also classified into its four subscales and relationships between each of these subscales and the five demographic characteristics were identified in this chapter.

***Chapter 8*- The relationship between management styles and mangers' attitudes towards IT**

In this chapter, the results of the previous two chapters were combined to enable the examination of the relationships between the overall managers' attitudes towards IT including the four attitudes subscales on the one hand and their styles of management on the other. The aim of this chapter was to find out if the attitudes of public managers as a dependent variable were influenced by the management styles within the research context.

***Chapter 9*- Summary and strategic Implications for ITD: Jordanian context**

This chapter provided a summary of the research findings and discussed the Jordanian government strategy in relation to ITD. Critical evaluation of this strategy was presented in this chapter. This was followed by a reflection of the findings of this research on this strategy leading to the identification of contextual implications and guidelines for strategy makers within this context. Academic implications were also discussed in this chapter.

***Chapter 10*- Conclusions and research evaluation**

Based on the analysis of the collected data and considering the theoretical foundation and the context of the study, a review of the research process, its contribution, and concluding points were presented in this chapter. The research process was also evaluated in this chapter and methodological and empirical limitations were highlighted. Issues for future and follow up research were also suggested by the end of this chapter.

Chapter Two:-

Information Technology Diffusion

2.1 Introduction

This chapter and the next two chapters aim to review and understand the theoretical background of this research and to identify the issues that need more research and consideration. In this chapter, the interactions between IT and organizational components including structure, processes, management, and people are discussed. Then, the concept of ITD and the available diffusion models are reviewed and critically evaluated to identify the dominant themes in the available literature and what needs to be done to fill the identified gap concerning ITD. The discussion presented in this chapter should enable the identification of the overall aim and focus of this research.

2.2 IT and Organizations

There are continual debates in the organizational and IT literatures to clarify the relationship between ITD and organisational components. Two levels of understanding of the relationship between computerization and organization can be emphasised (Preece et al, 1994). The first level concerns the impact of computerization on organizations and assumes that computerization causes many changes in the organizational context and is considered as a revaluation in the organizational world. The relationship, according to this perspective, is an influence relationship where IT is not only a change mechanism but also a key determinant of organizational components. The second perspective focuses on explaining the reciprocal relationship between the introduction of technology and the way an organization changes. Accordingly, IT is

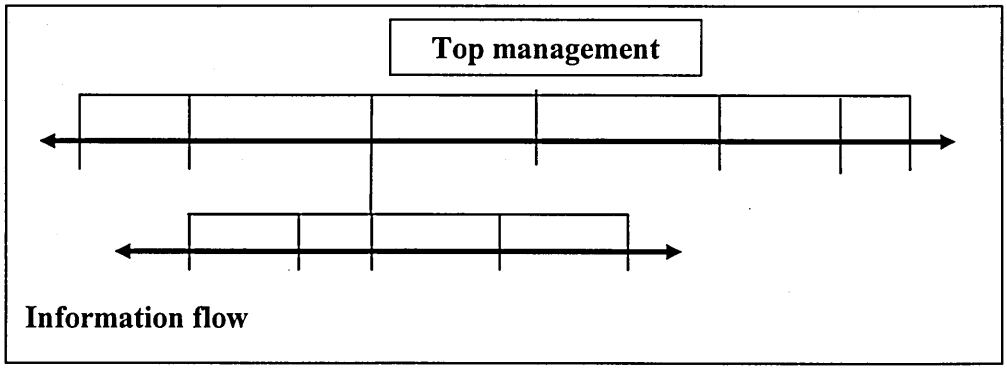
seen as a change agent but a consideration of organizational components is equally important to successfully utilise any potential technology or making any desired change. In other words, using IT tools within an organization has considerable implications on the organization and all its components including structure, people, tasks, and culture (Leavitt & Pondy, 1964). To deal with these implications, the organizational forms, processes, structures, and management need to be modified and sometimes reconstructed. On the other hand, the organizational aspects can direct the process of ITD and impose certain courses of action to ensure the success of ITD. Thus, the relationship between IT and organization is an interactional relationship meaning that successful organizations and successful exploitation of IT in the business environment today are seen as two faces for the same coin. Any organization must accurately link them together to persevere and prosper in a changing global business environment. Accordingly, one can argue that the interaction between organizational components and ITD and the impact of each of them on the other should receive greater attention.

Writers like (Raymond et al, 1995) argue that the use of IT in the organization is highly required to develop organizational structures, forms, and management strategies to get the full range of IT deployment and to improve organizational performance by reducing operations and transactions costs and differentiating products and services. This means that IT deployment imposes various changes on organizational structure, form, and management in addition to other operational changes that are related to the processing of organizational outputs including goods and services.

With a large-scale deployment of IT, all organizational levels will be affected and sometimes reformulated to match the new internal environment that is created by IT.

The new mechanisms of information processing and information flows within an organization create new shifts that shorten the lines of communications through all organizational levels. The considerable gap between these levels will not be reliable anymore since the information can be transformed easily, smoothly, and quickly through all organizational divisions without the need for traditional formal ways of communication such as papers or face to face communication. The new flat reporting structure enabled by IT can be used to replace all these traditional ways. Therefore, these ways of reporting can be reduced or sometimes eliminated through extensive use of IT such as the implementation of teleworking or computer supported collaborative work systems (Cooke, 1995). These critical changes can lead to the elimination of some traditional and routine activities so much so that they threaten some organizational levels to be considerably redefined. Figure 2.1 explains this potential organizational structure.

Figure 2.1 Flat structure with horizontal flow of information



Then, the trend will be towards:

"a flatter organizational structure, leaner staff, more decision making at lower management levels, increased computer training, and more effective information flow" (Rosenberg, 1992: p96).

Hochstrasser & Griffiths (1991) describe different changes that are enabled by IT deployment and affect different structural dimensions within the organizations. For

instance, using IT tools has enabled horizontal communication lines between individuals in different departments within the organization enabling managers in different departments to overcome traditional departmental boundaries. This changes the nature of interface between organizations and their customers and enables what so called a customer-centred organizational approach. Consequently, more organizational surface is exposed to customers/clients in an attempt to strengthen the relationship between an organization and its customers. Another change is decentralization of business activities, which is facilitated by the introduction of effective communication links between different functions across the organization.

This impact creates some kind of uneasy relationship between the workers and new IT. Also, and due to the introduction of IT, the relatively open social system in the office may be replaced by a rigid, highly structured and electronic based social environment, which will cause the feeling of social isolation. Consequently, there might be problems in integrating people and IT tools in an efficient, safe, and productive manner (Rosenberg, 1992).

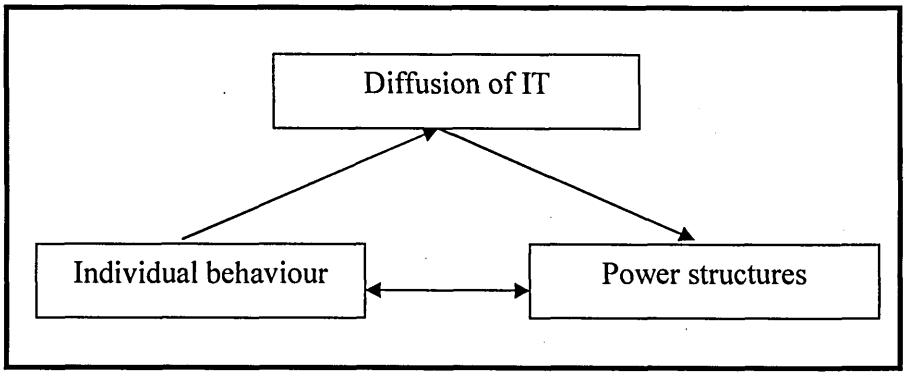
However, it is important to emphasize here that ITD is not the only reason for the creation of flatter organizational structure. In fact, this new organizational structure is introduced in some organizations as a part of a comprehensive organizational reform. In the public sector, this structural change represents a managerialistic view of public sector reform which involves the process of introducing the skills, concepts, and practices of private sector into the public sector organizations to improve the efficiency and effectiveness of these organizations and to promote new and flexible culture in these organizations (Doolin & Lawrence, 1997; Dixon et al, 1998). This responds to the

customers' demands to improve the responsiveness and quality of public services and reduces public spending. In addition, and since ITD within the organizations provides means for saving time and cost of organizational activities, it can be argued that the traditional vertical forms of organizations that reflect the hierarchical and bureaucratic ways of thinking and designing have become serious constraints for the effective utilization of IT. These forms of organization can be changed to be more horizontal or *flat* structure. This is enabled through the change in the control mechanism in the organization as the ability of one manager to control and direct more employees will increase (wider span of control) due to the potential change in the information processing (decisions and reports) between different organizational levels. Consequently, these levels will be closer and communicate more effectively.

In relation to the organizational management, technology can change the core concept of management from controlling people and resources (centralisation) to participation and delegation (decentralisation). Two schools of thought have emerged concerning this issue. The first claims that IT has increased centralisation in the organization through controlling IT as an organizational resource. This increases the power which managers have and makes managerial activities more centralised. The second school of thought claims that IT deployment raises the level of trust and information availability to other members of organization and therefore makes them able to perform some activities that were difficult to perform before. As a result, top managers will be able and more confident to delegate some of their responsibilities to other organizational members at lower managerial levels. In addition, the use of IT reduces the amount of time that is required to perform some jobs. This makes it possible for people who perform these jobs to tackle additional jobs that were previously performed by management. Some

writers (e.g. Butler & Gibbons, 1998) argue that the impact of individuals and groups on ITD within their organizations has increased due to the rapid technological development and the tendency towards decentralised organizations, which is, as they argue, promoted by technological development. This, in turn, reduces the impact of direct actions of management in the diffusion process and makes the diffusion process itself decentralised or user-centred process. The implications of this argument change the diffusion process from technical process into more comprehensive organizational process. Butler & Gibbons (1998) proposed an interactive model to explain the relationship between power structure, individual behaviour and ITD (see figure 2.2).

Figure 2.2 The relationship between power structure, individual behaviour and ITD, Butler & Gibbons, 1998 (p6)



As shown in this figure, there is a reciprocal relationship between individual behaviour and power structure on the one hand and ITD on the other. Individual behaviour has an impact on the use of IT, which, in turn, influences the structure of power within the organizations. Therefore, and as a result of ITD, individual behaviour is expected to have an impact on the organizational power structure in general and organizational management in particular. This, as one can argue, depends on the nature of management styles within the organizations. For instance, having a participative style of management

is expected to improve the interaction between management and employees which increases the impact of each of them on the other. This may support or hinder the diffusion process depending on the managers and employees' perception concerning IT. In contrast, having an authoritarian style of management may increase the management impact on ITD and decrease the impact of employees. Moreover, writers like Scarbrough & Corbett (1992) argue that IT changes the structures and division of power within the organization. Through identifying who influences IT exploitation and makes decisions about using IT, IT is able to identify potential power brokers. It can provide either direct power to the people who control the development and use of IT or indirect power to the people who have relevant skills, knowledge, and information in relation to IT usage within their organization.

On the operational level, introducing IT into an organization not only changes the way in which an organization performs its operational activities, but also redefines some fundamental managerial tasks such as planning, controlling, decision making, directing and so on. For example, Hochstrasser & Griffiths (1991) claim that IT threatens the role of middle management by offering a dramatic increase in the quality of communication between senior and line managers by cutting out redundant intermediary levels. However, it can be argued that the role of middle management is empowered through ITD because their tasks can involve more strategic management than before but this requires empowering of the organizational culture to allow delegation of some strategic tasks from top management to middle and lower line operational management. This, however, depends on the nature of organizational management and its desire to participate its formal power with lower level organizational members. Some issues like motivation, competence and tighter co-ordination among individuals and groups within

the organization and the need for skilled employees and visionary managers became even more important issues than ever before (Clegg, 1990; McKersie & Walton, 1991). Top managers are invited to consider and encourage the availability of these success factors.

In fact, describing the process of change within the organization should be more comprehensive to present a real picture concerning the situation inside and outside the organization. Writers like Boje (et al, 1996) argue that the post-modern conditions create the need for a reconstruction process within the modern organizations. This can assist the management to adapt to any change that may occur inside or outside the organizational boundaries. This argument is supported by Castells (1998: p3) who states that:

"Information technology is not the cause of the changes we are living through. But without new information and communication technologies none of what is changing our lives would be possible".

Baskerville & Smithson (1995) argue that some technological oriented methods like business process re-engineering and networked organizations enable the development of a new organic corporation to replace the traditional ways of organizing. Furthermore, IT enables the organizations to be more open to their customers, suppliers, and shareholders/stakeholders as well as to their members by taking off some previous constraints such as the limited working hours and direct traditional contact. This became available through using Internet technology (e.g. E-commerce, E-government, and E-business). This, in turn, encourages the development of new organizational structures and enables the locality in doing business and providing governmental services.

As discussed above, IT imposes various changes on the organizational components including structure, forms and management. However, one can argue that the realisation of the benefits of ITD and the prevention of any possible drawbacks or failure highly depend on management perception, understanding, and appreciation of IT. Management should be seen as a key determining and influential factor that has the ability to hinder the process of ITD or to support this process and encourage other organizational members to adapt IT. Therefore, consideration of top managers as strategists and lower managerial levels as decision makers and mediators between top management and employees is highly important as a prerequisite success factor for ITD process.

To verify the extent in which organizational management has been considered in the previous studies. The process in which IT is diffused within the organizational context is reviewed in the next section. Studies that have been conducted in order to define the key variables that enable the realisation of successful diffusion are discussed and critically evaluated. The identification of the existing gaps in these studies will lead to determination of the overall aim of this research.

2.3 Understanding of ITD

IT is a comprehensive and multifaceted concept which expands to involve various components and their applications on the individual and organizational levels. It includes hard components (software and hardware) which form the base of various applications that range from personal application to networking and Internet. All these applications involve the use of computer machines to perform individual or organizational activities. Within the context of this research, IT includes the use of Information and Communication Technology (ICT) to improve the way public

organizations' activities are performed and the way members of these organizations are communicated through inter-organizational activities and networking technology. The use of IT by managers is seen as a particular type of innovation diffusion. Therefore, this research assumes that ITD literature forms the general framework in which the diffusion of IT applications can be reviewed.

ITD, as an innovation process, has been subject to extensive research in developed countries (e.g. Fichman, 1992; Hanna et al, 1995; Juustila, 1995; Dasgupta, 1997; Baskerville & Heje, 1998; Jassawalla & Sashittal, 1998; Lynn et al, 1999; Henfridsson, 2000). This concept has been discussed for a long time in different disciplines starting from anthropological and sociological diffusion research to innovation or technology diffusion research (Rogers, 1995). It is a concept that has always been associated with how a new idea or a new way of individual and organizational behaviour is communicated between people. The process of diffusion occurs among members of a social system and always involves social change and is affected by the social framework within the diffusion environment.

Nevertheless, it is important to emphasise that the concept of innovation has a relativistic nature and should not always be seen as new knowledge or idea because the perceived newness of the idea for the individual determines whether it is innovation or not. In addition, the situation and individual perception of the innovation, as one can argue, highly depends on the individuals' characteristics that play an important role in determining the individuals' reaction to the innovation.

In most cases of innovation diffusion, uncertainty is expected to be a major constraint where individuals deal with innovation with suspect and ambiguity (Rogers, 1995; Thomas, 1996). The degree of uncertainty, as Rogers argues, depends on the available information concerning the particular innovation. Therefore, he argues that technological innovation, in particular, reduces the degree of uncertainty because it embodies information. But at the same time it creates another kind of uncertainty about its expected consequences that emerge from what he calls *innovation-evaluation information*. In this regards, one can argue that not only information availability determines the degree of uncertainty but also the nature of diffusion process (being planned or spontaneous) and other organizational factors that have to be considered. The most important of these factors, as we argue, is the nature of organizational management which determines the degree of information sharing and availability. The characteristics of innovation itself are also important to explain the rate of adoption. Innovation that is perceived by individuals as having greater relative advantage, compatibility, trialability, observability and less complexity is expected to be adopted more rapidly than other innovations (Rogers, 1995).

Rogers claims that the diffusion process is a particular type of communication in which the message content is concerned with a new idea in which one individual transfers to one or several others. He argues that effective communication between individuals is based on both similarity and dissimilarity (*Homophily and Heterophily)* among individuals where innovation is transferred. On the one hand, similarity among individuals in some aspects (e.g. education, social status, age) are considered as a good base to exchange the information regarding the innovation because similar people are normally attracted to each other and affect on each other more than dissimilar people

do. On the other hand, dissimilarity among individuals especially in some aspects that related to the innovation itself like (e.g. experience with innovation, technical knowledge) can allow new information to be exchanged through the communication process between experienced and more knowledgeable members to less experienced and less knowledgeable members of a social entity.

In his review of the diffusion of innovation literature, O'Callaghan (1998) identifies two basic paradigms that inspired this literature. The first paradigm views diffusion as a process of communication and influence. People are informed about the new technology and are persuaded to adopt this technology through their communication with prior users. The second paradigm views diffusion as an economic process where the decision to adopt or reject the new technology is determined by the cost of adoption and the benefits that can be achieved as a result of the adoption of new technology. In fact, it can be argued that the success of the diffusion is determined by both the availability of effective communication which enables exchanging of information concerning the diffusion and the economic benefits which can be realised as a result of the adoption of a particular innovation. Effective communication process enables the achievement of any economic benefits. In contrast, weak or ineffective communication may cause the failure of diffusion process which leads to losing of economic benefits. Economic benefits, on the other hand, may motivate the communication process which leads to increase the growth and acceptance of innovation. The evaluation of economic benefits of IT diffusion and the effectiveness and efficiency of the communication mechanism that increase the rate of diffusion are determined by managers of an organization. Accordingly, the two paradigms of diffusion, as one can argue, are implicitly or explicitly influenced by organizational management perception of the benefits of IT and

their styles of management which determine the organizational mechanism of communication, precipitation, and information sharing.

Towards understanding ITD in particular, several models have been proposed. A review of these models has led to the identification of two major paradigms. The first is the structural or procedural paradigm which describes the process of ITD as a structural process which involves a sequence of steps (Zaltman et al, 1973; Mcfarlan & McKenney, 1982; Cooper & Zmud, 1990; Rogers, 1995; Dasgupta, 1997). The second is the socio-technical paradigm which provides more comprehensive description of ITD process and concentrates on individual and social aspects as well as on technical ones (Davis, 1989, 1993; Auor & Ruohonen, 1996). In the next section, these two paradigms are reviewed and evaluated.

2.3.1 Structural Paradigm

Until 1973, innovation diffusion studies had considered the individual as the main unit of analysis. Zaltman (et al, 1973) expanded this perspective from an individual level of analysis to an organization as the main unit of adoption. They used the process approach to explain the diffusion of innovation. According to this approach, innovation is composed of a set of stages or phases ordered along the temporal dimensions of their anticipated sequence. However, they emphasised that innovation should be viewed as involving an interrelated and complex set of forces that shift over time. This view draws the attention towards considering innovation as a collective process starting with knowledge-awareness sub-stage and ending with continued-sustained diffusion (Zaltman et al, 1973). Rogers (1995) supports this argument claiming that ITD process involves five steps that usually occur in a time-ordered sequence of knowledge,

persuasion, decision, deployment and confirmation. This classification is emphasised by Dasgupta (1997) who views ITD as a collective process which involves introduction, assimilation, and permeation of information systems technology throughout an organisation.

McFarlan & McKenney (1982) proposed an ITD procedural model which includes the following four steps:

1. Technology identification and investment which include learning the application of new technology.
2. Experimentation, learning and adaptation which include user's awareness of the new technology and the problems it can solve.
3. Rationalization and management control which include upgrading staff to acceptable knowledge levels that enable them to work with technology and control it.
4. Widespread technology transfer which includes spreading the benefits of technology into other units.

This model depends largely on experimentation as a way to achieve successful diffusion process. This increases the cost of diffusion. In addition, it starts with technology identification as the first stage in the diffusion process without considering some human aspects such as the perception of organizational management and technical skills among users of the new technology. This can lead to the failure of the diffusion process.

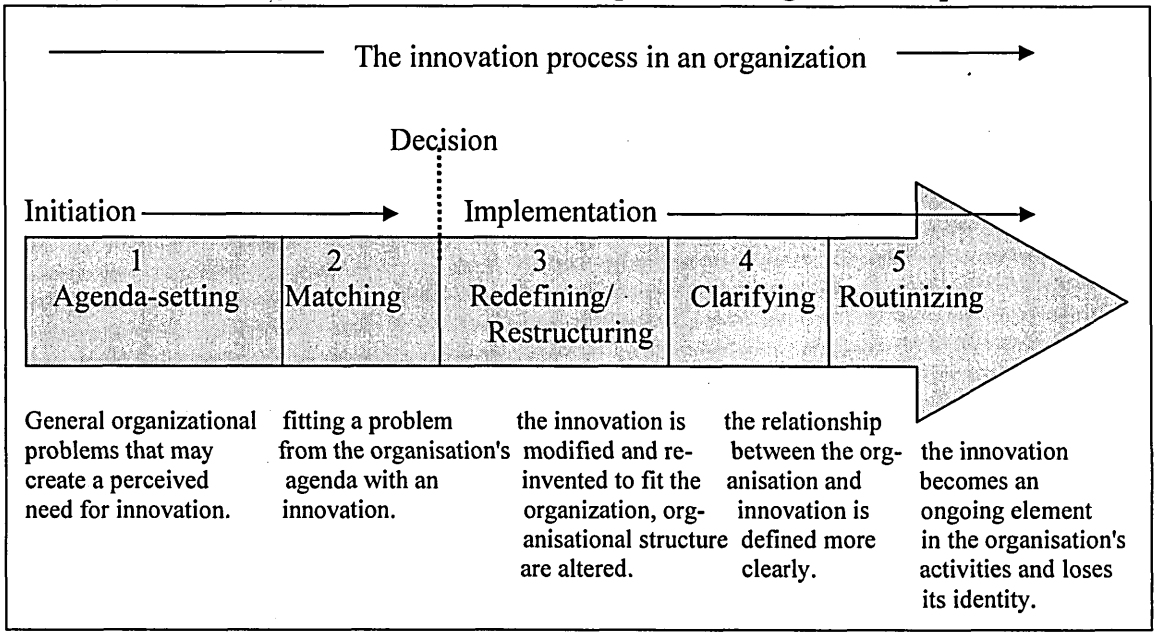
Cooper & Zmud (1990) present an ITD perspective model. According to this model, the diffusion of IT starts firstly when there is a pressure to change (*initiation stage*). This pressure leads the managers of organization to make decisions to adapt this change

(*adoption stage*) through development, installation, and maintenance of new technology, and the development of new organizational procedures (*adaptation stage*). If users accept this technology (*acceptance stage*), it becomes a normal activity (*routinization stage*). The final stage of diffusion process according to this model is the *infusion stage* which includes the integration of new IT with the organization's systems to support higher levels of organizational work. This model is more comprehensive than previous model and considers all stages that are necessary to the success of the diffusion process. It also considers the partial deployment of new technology as a way to enhance the diffusion process. However, the user acceptance of the new technology should be considered before the adoption process, which includes development, installation, and maintenance of new technology. This can facilitate the adoption process through giving the users the opportunity to contribute in this process. It also can reduce the cost of diffusion through supporting the decision making process and reducing the users' resistance to the new arrangements that may be introduced as a result of the diffusion of new technology.

According to Rogers (1995), the innovation diffusion process within the organization consists of two phases including initiation and implementation and a usual sequence of five stages (see figure 2.3). The diffusion of technological innovation can be the best example to clarify the processes of redefining innovation and restructuring of organization where any computerised system is defined or, in most cases, designed to match the organizational requirements (Davis, 1993; Rogers, 1995). When this computerised system is introduced into the organization, radical changes most likely combine it. Therefore, flexibility is required in both innovation and organizational components.

As the process of diffusion goes on, uncertainty that surrounded the new innovation will be reduced through the establishment of common understanding for this innovation. Appropriate social construction and organizational support are needed to enhance this process. When all the questions about the innovation are clarified, innovation becomes the norm and incorporates into the regular organizational routine.

Figure 2.3 Organizational innovation process, Rogers 1995: p392



It is observed that the structural paradigm of ITD has described the diffusion of IT as a programmed process which follows certain steps. This view provides limited insights as no consideration is given to social aspects of organizations and the important intercorrelations processes which take place prior to diffusion. One of the major limitations of classical diffusion theory, which represent the structural paradigm, is the assumption that individuals adopt innovations for their own independent use rather than as a part of a larger community of interdependent users (Auor & Ruohonen, 1996). Therefore, the influence of each organizational group on others has to be considered. As

managers are the power holders and the most influential group on the organizational activities and its members' behaviour, their behaviour and perception with respect to IT should be considered and investigated. This provides a reliable indication of organizational innovativeness and readiness for ITD.

Moreover, viewing ITD process as a set of structured procedures that occur within a social system ignores the basic concept of diffusion as a changing element that affect the social system of a particular context. Successful ITD should investigate, and consider the varying social elements of this complex and diversifying context. The socio-technical paradigm was an attempt to cover this gap.

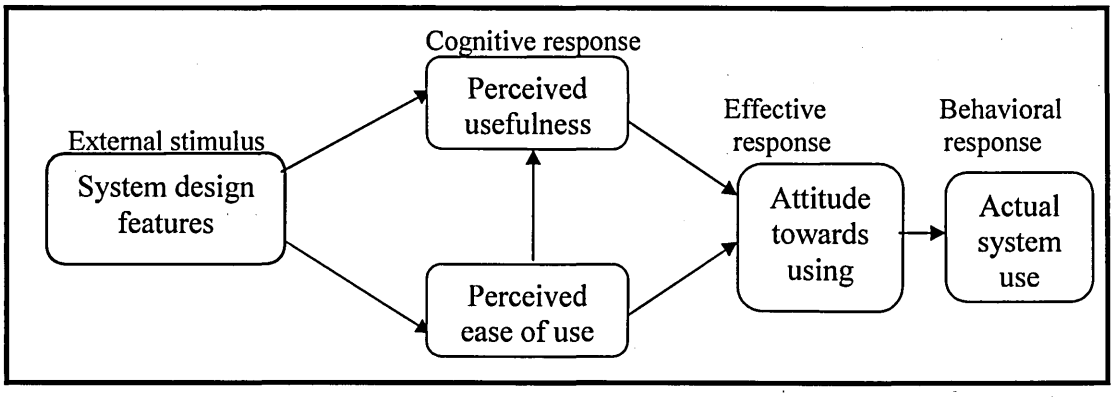
2.3.2 Socio-technical Paradigm

Within the context of ITD literature, Technology Acceptance Model (TAM) proposed by Davis (1993), is a well-respected model of IT adoption and operation that is tailored to explain computer usage. This model specifies the causal relationships between system design features, perceived usefulness, perceived ease of use, attitudes towards using and actual usage behaviour. It is mainly used to explain the impact of system characteristics and end user behaviour on the actual system use. Figure 2.4 outlines the major elements and relationships as presented in this model.

This model assumes the rationality in the human behaviour through reducing the importance of ease of use and emphasizing the importance of perceived usefulness. Although this assumption may be correct when people have the level of proficiency which enables them to realize and evaluate the usefulness of the target system, people

who do not have enough knowledge to realize the advantages of this system may only be motivated by the ease of system use.

Figure 2.4 Technology acceptance model, Davis (1993; p476)



Moreover, the emphasis on the relationship between attitudes and behaviour tends to ignore the fact that attitudes will not be related to behaviour when people are not free to act according to their attitudes (Winter et al, 1998). Furthermore, through describing perceived usefulness and perceived ease of use as the two factors that determine attitudes towards using the new technology, this model tends to ignore other factors that may have an impact such as management approach, the external social pressure practiced by some individuals and groups within the organization, cultural differences and personal characteristics of the technology users. For example, in their study to assess the ability of TAM to explain IT adoption and usage in USA, Switzerland, and Japan, Straub (et al, 1997) reveal that while TAM provides explanation for IT adoption and use in USA and Switzerland, it does not provide an explanation for Japanese experience. They conclude that cultural tendencies in Japanese culture (e.g. uncertainty avoidance behaviour, greater power distance, collectivist sentiments and masculinity) can explain the failure of TAM in predicting computer usage behaviour in Japan. Their

study emphasizes the importance of cultural differences within the context of ITD research.

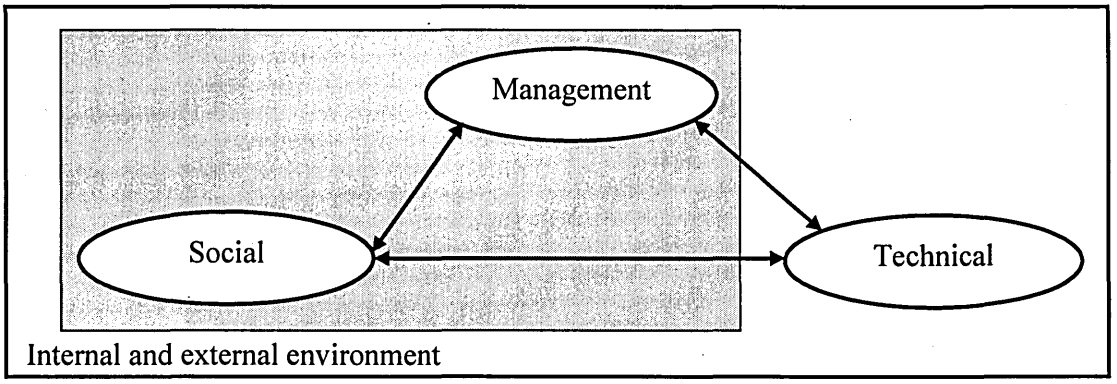
Although this model considers some elements of the social context within the diffusion environment, other key organizational aspects have not been considered. Ignoring the role of these aspects can make the process unable to reach to its normal and theoretical end according to this model or any other diffusion model. This normally happens in some large bureaucratic organizations where top managers make innovation adoption decision without any previous consultation or any subsequent training (Abdul-Gader & Alangari, 1996).

In his review for ITD literature, Fichman (1992) argues that much of the diffusion theory was developed in the context of adopters making voluntary decisions to accept or reject an innovation based on the benefits they expect to gain (see appendix A). TAM is an example of this trend. However, he argues that individual adopters rarely have complete autonomy regarding the adoption and use of IT. One can argue that managers as power holders in all organizational levels play the most important role in the process of ITD. In the first instance, they have the responsibility of evaluating the economic benefits of IT and have the ability to promote effective communication among organizational members. They also, through their styles of management and their perception of IT, can influence the individual behaviour towards the use of IT.

In this direction, Auor & Ruohonen (1996) present a wider explanation of the diffusion process and emphasize the importance of management within the information systems environment. They argue that organizational maturity, in relation to information

systems management, is related to three main components and their interaction. The first is the social component, which is related to the users' abilities to utilise IT in their daily work (users' skills and knowledge). The second is the technical component, which includes hardware and software technologies. The third is the management component, which is the mediator in their maturity model. Human component includes management and social components and their mutual interaction with each other as well as with technical component. All these organizational components have to be in balance in order for the organization to achieve its development strategy or implement any potential IT project. Figure 2.5 explains this model.

Figure 2.5 Organizational maturity in the context of IS management and use, Auor & Ruohonen, 1996: p6.



Although the previous model presents a more comprehensive view of ITD than previous models since it is considering both human and technical components, it has not specified specific relationships and interactions between ITD and the organizational management. The investigation of this relationship is very important since management can encourage adoption explicitly through expressed preferences and mandates or implicitly through reward systems and incentives (Fichman, 1992). Managers who have positive attitudes towards IT are expected to play a critical role in encouraging other

organizational members to accept the use of IT in performing their daily activities. Consequently, this research presents an attempt to integrate classical diffusion theories that focus on the willingness of individual adopters and more recent diffusion theories that view diffusion as an organizational process which is influenced by organizational management.

As discussed above, the available models of ITD were developed based on some studies that were conducted in developed countries and therefore may not be suitable to explain the process of ITD in other countries. A review of ITD literature in developing countries may clarify this issue.

2.4 ITD in Developing Countries

Few studies have discussed issues related to ITD in developing countries (e.g. Henfridsson, 1995; Kirlidog, 1996; Abdul-Gader & Alangari, 1996; Harris et al, 1998; Rose & Stroub, 1998; Straub et al, 2001). Perhaps the most important and relevant study of ITD in this context is that conducted by Rose & Stroub (1998) who investigate the applicability of TAM (Davis, 1989, 1993) to ITD in Arab world. They argued that social and cultural beliefs are key issues to ITD in Arab countries. However, their investigation has not identified particular social or cultural aspects. Kirlidog (1996), in his study of information systems in Turkey, investigates the relationship between management practices and IS applications and claims that the managerial practices in Turkey contribute to the scarcity of information systems applications where managers have paternalistic and authoritarian attitudes. The information is most likely transferred in one direction (from top to bottom) within the organization in the form of directions

and commands. He also claims that people in developing countries are mainly unwilling to take risk and thus *uncertainty avoidance behaviour* (Daft, 1995; Hofstede, 1980, 1991) is exhibited. The desire for risk and uncertainty avoidance acts as a high entry barrier for information systems development in developing countries (Kirlidog, 1996). Moreover, Carnoy (1997) claims that the lack of highly skilled management and flexible self-confident labour are considerable barriers to the diffusion of new technology in developing countries. According to Abdul-Gader & Alangari (1996: p113)

"The richness of IT literature has primarily focused on organizations in the developed hemisphere. Even in the sporadic literature on IT in developing countries, one rarely encounters scholarly reports on IT assimilation problems in these countries' organizations. Most studies are descriptive in nature".

In their investigation of IT assimilation in Saudi public organizations, Abdul-Gader & Alangari (1996) claim that human resources issues are the most important barriers towards IT assimilation in Saudi public organizations.

Concerning the impact of ITD on the situation within developing world, Nulens (1997) identifies three streams of research. The first, and the most paramount stream of research, is based on a world vision that overestimates the one-way power of technology. In his view, the information revolution will give developing countries the opportunity for development and eventually all countries of the world will become more equal. The second stream is based on the assumption that IT will only increase the existing inequalities and power relations between developed and developing countries. The third stream of research views technology as a part of the society, which has no value without other parts. Therefore according to this stream, the notion of an

autonomous or self-directed technology is a misconception where technology can not stand alone without considering other aspects of its environment. The second stream seems more appropriate because it has a political ground that directs the technology transfer into developing countries. However, that does not mean that IT deployment itself is something that should be avoided. One can argue that developing countries can successfully utilize IT through establishing an appropriate IT foundation that is based on a high-quality economy and self-reliance. In doing this, developing countries should consider their individual needs and the characteristics of their own contextual frameworks (socio-cultural characteristics of each region) and free of any political or economical pressure from developed countries.

Some problems that face developing countries and obstruct successful utilisation of IT are: the lack of technological consciousness of managers and civil employees, the lack of knowledge about the best way to acquire technology and the lack of capacity to design and develop their own technologies (Nulens, 1997). Hanna (et al, 1995) claim that several structural barriers may constraint the ITD in developing countries. Some of these barriers are slow educational response to new generic technologies, poor telecommunication infrastructure, poor technical and managerial capabilities, poor regulatory framework and low domestic demand for IT. Another constraint, which is identified by Heeks (2001), is related to the justification of using technology. The achievement of financial cost-cutting goal is questionable in developing countries' context where replacing cheap humans with costly ICTs is unlikely to be justified on financial cost grounds. In contrast, within the context of developed countries, replacing costly humans with cheap ICTs may cut costs. Therefore, the emphasis in developing countries should be directed towards other achievements (e.g. increase process speed,

improve the quality of services) in order to provide some justification for automation. Therefore, in his study of e-government development in developing countries, Heeks (2001) states that the few success stories cited in some studies are the exception rather than the rule for two reasons. The first is related to the lack of electronic-readiness, the second is related to the lack of information and research that may help e-governance initiatives in these countries. This in turn, creates *design—reality* gaps.

A recent survey conducted by Zogby & Artoc (two international IT firms) during an Arab IT conference, that was held in Cairo/Egypt March 2001, and reported by Zogby (Jordan Times 01.05.2001), revealed that the Arab world principle weaknesses in relation to IT were as follows in a serial order according to their importance: Lack of technological know-how, lack of planning/strategy, lack of Arab co-operation /unity, lack of financing, politics/bureaucracy, incorrect thinking/bad leadership, lack of infrastructure, language problems and lack of co-operation with outsiders. Conversely, when 210 IT professionals were asked to assess the principal strengths that the Arab world can bring to its planning for IT development, the conference participants suggested the following: Human resources/trained personal, financial resource, common language, Arab large market, scientific and technological progress, co-operation between Arab countries, and natural resources. Only 24 % of the participants consider technical and infrastructure related issues as weaknesses for Arab's IT situation. Hill (et al, 1998) who investigate the culture of Arab countries and its impact on IT transfer revealed that Arab organizations that successfully introduced IT have paid more attention to the cultural beliefs in these organizations. They go further to identify specific social and cultural aspects that influence IT transfer. Social aspects, in their view, include social class, personal relations in work group and educational level while

cultural aspects include face-to-face interactions, allegiance to family and kin group, concept of time, and religion. Based on their field study, they also identify some impediments for IT transfer to Arab countries. These include: lack of finance, conflict with personal values, lack of knowledge/ experience, lack of training, lack of education, fear of loss identity, and fear of being controlled.

2.5 Observations and Directions

As discussed above, the few available studies that investigated the issue of ITD in developing countries have presented a negative view of the current state of ITD in these countries. They tended to overestimate the weaknesses and underestimate the strengths. This seems unrealistic and implicitly assumes that developing countries are far from successful exploitation of modern technology. In contrast, one can argue that the use of IT has facilitated the achievement of desired changes in management practices and overall organizational performance in some developing countries. Some examples presented by Kaul (1997) include Malaysian government public service network, which enabled the government agencies to offer their services online. The Singapore government experience is another example where civil service program has generated S$2.71 in return for every dollar spent on computerization. Furthermore, some countries like Ireland have totally built its development and investment strategy on the establishment of effective and easy accessible IT industry (Al-Jaghoub & Westrup, 2003). India is also considered as an advanced country technologically (Higginson, 1993) and is exporting highly skilled people to developed countries including Western Europe and USA.

These countries are seen as reliable examples which show the possibility of establishing a successful IT-based economy in some countries that have no natural recourses a part from its skilled technical workforce. Effective coordination by the governments of these countries, low wages, the huge local market in some developing countries (i.e. India) which encourages the emergent of some local IT companies and the multicultural base of some developing countries are all seen as important factors that strengthen the developing countries' capability to achieve successful ITD process.

Moreover, the few available studies in the area of ITD in developing countries have not yielded deep insights for three key reasons:

- The first reason is the fact that the area of IT is still relatively new phenomena in most developing countries. Therefore, the time has provided limited opportunity to explore some issues related to IT including ITD.
- Most of the researchers who conducted these studies were not practically involved with the contextual environment in these countries. Therefore, they most likely reflect their theoretical knowledge on their studies, which may be derived from their own contextual and managerial perceptions. The tendency towards adopting the results of these studies can not be meaningful due to cultural, managerial, political, economical, and technological constraints and differences (Kirlidog, 1996).
- The researchers or, in some cases, institutions who explored the area of IT in this particular area of the world are more likely to be motivated by economic incentives more than human or managerial development (real value to these countries) because of the great potential IT market in this area where 80% of the world's population live and the relatively low wages' level in these countries. For some companies that aim to increase their market share and expand their business, these factors are critical. One

example of this is reported by El-Rifai (1993) who reviewed the investment policies that were followed by multicultural corporations in seven Arab countries during the eighties. He revealed that these corporations were frequently not interested in developing export-oriented industries but rather in displacing national producers as supplier of the local market. He also revealed that techniques of production were deemed to be highly secretive and the transfer of technology was directed to match the interests of these corporations.

For these reasons, developing countries' researchers have to establish research practices compliant with their own cultures. They are most likely more able to realise the economic and communication processes involved in ITD process. But the important question is from where this research should start?

It is observed that the lack of ITD research that considers organizational management perspective and impact is a predominant issue within developed and developing countries' contexts. Pinsonneault & Rivard (1998) argue that the current state of empirical research results from a failure to understand the interaction between IT and the nature of managerial work. Accordingly, this research views organizational management as a substantial factor which influences organizational members' perception and behaviour towards ITD. In particular, this research argues that the investigation of managers' attitudes towards the use of IT and the intercorrelation between these attitudes and the management styles may help clarifying the possible impact of management on ITD and the managerial role in the diffusion process within the organizational context. These are investigated as important determinants of organizational innovativeness and individuals adopters' behaviour. Managers as strategy

formulators, decision makers and implementers, and key influential group have received little attention in the previous research within developed and developing countries. Exploration of the interaction between their perception concerning ITD and their styles of management which, as one can argue, determine the nature and direction of communication, interaction, and participation is seen as a valuable contribution which has important implications for strategy makers. This trend can be described as a new return to the main principles of the diffusion process that view ITD as a social more than technical process which can provide a considerable contribution not only to the ITD research in developing countries but also to developed countries' established literature.

One can also observe that most of ITD studies have investigated the issue of ITD within the context of private sector. Considering the growing importance of IT in the process of public sector reform and the distinctive contextual and cultural framework of public organizations, the focus of this research will be on public sector domain. The public sector is characterised by a multiplicity of different stakeholders who have a legitimate interest in its performance and any changes that may occur within this sector (Lawton & Rose, 1994). The new trend towards public sector reform and the scale of ITD in this context make the results of this research more useful. This research is seen as an attempt to assess this process of reform in a developing country context. In particular, this research explores the Jordanian context as an example from the wider Arab and developing countries' contexts. Jordan is an Arab developing country that has started recently to explore the use of IT to enhance the development of its economy and to achieve successful integration with the global environment (Al-Jaghoub & Westrup, 2003; Reach Initiative 1, www.reach.jo). The selection of this particular context is

expected to improve the contribution of this research since little research has generally investigated the developing countries context and negative perspective has been explicitly or implicitly emphasised. In addition, no research has been made to explore relationships between IT and management within the context of JGOs which provided a motivation to conduct this research. The researcher's experience, knowledge, and understanding of the Jordanian context support the selection of this context.

2.6 Conclusion

This chapter provided a general background and theoretical foundation towards understanding the major themes of this research and identifying its general boundaries. A review of ITD literature has revealed that ITD studies in developed countries have adopted either structural (procedural) or socio-technical paradigm. The first paradigm has dealt with the diffusion process as a structural process that includes a sequence of steps that considerably underestimated the complex nature of organizational setting. The second paradigm has considered some organizational issues and provides a general framework of analysis but does not explore specific relationships between these aspects and ITD process. Although both paradigms of ITD have explicitly or implicitly considered management as a key success factor in determining the success of ITD, little research have investigated the interactional relationship between management and IT. Within the context of developing countries (i.e. Arab countries), few studies have investigated ITD. These studies have not provided deep insights concerning this area. They, in fact provided a negative view concerning ITD within this context. This is due to novelty of IT in developing countries, misunderstanding of cultural differences by the researchers of other countries, and the dominant of economic incentives on these studies that were conducted by some companies or researchers from developed countries.

Overall, a review of ITD literature in developed and developing countries has directed the focus of this research towards investigating of a very specific organizational issue which is related to the management style, as a key determinant of ITD success, and its interaction with managers' attitudes towards IT. This issue is explored within the JGOs as a part of its wider Arab and developing countries contexts.

To achieve the overall aim of this research, the following research question was proposed:

1. Is there any significant relationship between managers' attitudes towards IT and their styles of management?

The next chapter discusses conventional and new management styles and the role of IT concerning the managerial change in the last few years. A particular attention is given to the reciprocal relationship between management styles and ITD.

Chapter Three:-

Management Styles: Conventional Vs. New Management Paradigm

3.1 Introduction

Studies searching management styles are numerous and different perspectives have been presented to explain NMP that is assumed to be appropriate to match the technological age organizations. However, it is our belief that understanding of the characteristics of the NMP should be based on a review of the long-established management theories and the changes that have been imposed through the use of IT tools within the organizational context. Therefore, this chapter aims to provide a review of conventional and new management styles and their intercorrelation with IT. Conventional management styles are firstly reviewed with particular emphasis on developing and Arab countries context. Then, attributes of the NMP are identified and compared with the conventional paradigm. A critical evaluation of the available literature concerning Arab management is presented by the end of this chapter leading to the identification of the research questions that are related to management styles within JGOs.

3.2 Conventional Management Styles

Management literature is enormous and has been extensively researched since the end of the 19th century. Different managerial theories have been proposed since that time to clarify the management practices and its role within the organizational context. Bureaucracy may be the most traditional form of organizational and managerial

thinking. Max Weber claimed that bureaucracy was the ideal type or model for any large organization. It is a form of organization that is based on hierarchical authority structures and a highly specialized functional division of employees (Reed, 1992). Bureaucratic organizations are based on impersonality of relationships between organizational members where differentiation of private and official forms of social relations is essential. Thus, in theory, recruitment of officials and managerial elite is made on the basis of ability and technical knowledge and not nepotism or personal relationships. Bureaucratic organizations claim to be highly rationalised, which means that individuals within an organization tend to act in a rational and sensible way in any situation. However, the above characteristics are for the typical bureaucratic organization and seem more theoretical than practical. Any organization can not properly function or be organized relying solely on these factors alone. Impersonality and high rationality can only be implemented under explicit orders within an organization. Moreover, it can be argued that the above characteristics do not present an accurate perceptive regarding the real situation in any organization. Wilson (1992: p51) stated supporting this argument:

"Not only were individuals largely incapable of acting wholly rationally, but also that the organizations themselves were institutionally capable of acting irrationally".

Moreover, the performance of organizational work in the bureaucratic organizations is described as inflexible where fixed rules and instructions form the major reference that guides the organizational activities and management decisions.

Other traditional management styles include the authoritarian approach. Fayolism and Taylorism are classified under this approach of organizational management. It is a scientific approach for management whereas the most important things in organization

are efficiency and effectiveness without any consideration to human aspects. This approach focuses on centralized authority, fixed rules and procedures, top-down policies, clear lines of authority and specialization (Rarick, 1987). According to this approach, managers practised absolute authority and workers just receive orders and carry them out. The organizational environment is almost stable according to this method, and leaders are able to control any change that may occur.

However, this method was unable to continue over time due to inevitable organizational expansion and inherent simplified attitudes to human factors and conditions. As a result, a human centred paradigm emerged. This is based on the development of human resources as a way to increase productivity and focuses on the importance of group behaviour and employees satisfaction (Rarick, 1987). However, Buchholz (1977) argues that the dominance of the humanistic belief system has not change the managers' view regarding employees' participation in the decision making process where managers still reluctant to change the existing authority structure to allow employees to participate in the decision making process.

In search for a comprehensive classification of management styles, we find Reddin (1970) explains four basic styles of managers. The first is the separated manager who insists on following the rules or defined principles. Separated manager has a separated authority based on his/her managerial position and organizational rules. The second is the related manager who concerns about people interests and makes good relationships with them. In general, he is human more than technical directed manager. The third basic style, according to Reddin is the dedicated manager who directs the work of others and sets individual tasks to achieve the organizational goals. He has a lot of experience

about his job and usually uses his/her experience to identify problems and solutions. The final style is the integrated manager who uses both task and relationships orientation and tries to establish a co-operative environment to achieve the organizational goals. To do this, he uses a variety of participative techniques and reduces power differences between him/her and the employees. The integrated management, as one can argue, best reflects the diversity of management styles and includes varying aspects of management styles that are necessary for managers in different situations. It provides a representation of no ideal style theory which is seen as a flexible and adaptable managerial mood of thinking.

A similar but narrower classification of management styles is presented by Wang (2000) who compares the decision-making styles of Chinese and Australian managers and reveals that significant differences are existed. Considering some cultural aspects and based on his review of management styles, Wang adopted four categories of management styles: Autocratic, Consultative, Joint, and Delegative style. He reports that both countries have a different cultural background where Australia has mainly Western, Anglo-Celtic cultural background, China, on the other hand, has collectivist and Confucian culture (Wang, 2000) which, as one can argue, is highly related to some other Asian countries like Arab culture. These cultural differences produce different management practices in each country. Accordingly, style of decision-making is a distinctive or characteristic mode of action or manner in executing the decision-making process (Wang, 2000).

Managerial participation as emphasised above seems to be a major determinant of management style. Managers can use different levels of participation in decision-

making to gain a high quality decision and a high level of co-operation and commitment by the participants. Different styles of management involve different levels of participation. Therefore, participation in the decision making process is always a key factor for distinguishing various styles of management. Wang (2000) distinguishes between four types of participation in relation to the decision making process: formal/informal participation and direct/indirect participation. Informal participation, as he claims, is characterized by individual relationships between the manager and employees where manager may seek advice through casual conversations or informal group meetings. Formal participation, on the other hand, involves following a set of written rules and regulations on how decisions should be made and who should be consulted. Direct and indirect forms of participation, as reported by Wang (2000), involve issues of who actually makes the decisions. In direct participation, workers help the manager to make the decision and sometimes they themselves make the decisions. In the case of indirect participation, workers provide advice and help for decision makers who make the final decisions themselves. The form of participation affects the degree of participation in practice.

Hofstede (1980, 1991) argues that the degree of individualism or collectivism within a culture and the power distance may determine the degree of participation in organizations and the nature of relationships within the organizational environment. For instance, Wang (2000) reports that the nature of Chinese culture (collectivist and high power distance) may discourage participation in the decision-making process. However, his empirical investigation of decision-making process in China revealed that Chinese managers use formal forms of participation such as consulting with professionals or formal group meeting (*Worker Congress*). In spite of this, he concludes that

authoritarianism remains strong among many Chinese managers. In this regards, one can argue that factors like loyalty-based management, the importance of trust and hardworking, family rather than contractual-based relationships, and respect for older and higher managerial positions are key factors that differentiate Chinese management and impose certain managerial styles. Some of these managerial attributes are prevalent to Arab management. This is demonstrated in the remaining of this chapter.

It is observed that the earlier styles of management and organizational philosophies (i.e. bureaucratic and authoritarian) were based on hierarchical authority structures and assumed the rationality in organizational and human behaviour (Reed, 1992). They were not able to achieve the balance between organizational interests (e.g. effectiveness and efficiency) and human interests (e.g. appropriate social environment, personal autonomy). Moreover, these managerial approaches were conceived for an industrial past where manufacturing dominated industry and they may not be completely appropriate for a greatly different economy, which is based on knowledge and vastly growing computer power because they do not have the level of flexibility, which enables the organizations to respond to the rapidly changing environment (Halal, 1996; Hughes, 2003). Reed (1992) emphasizes on understanding the sociology of organization suggesting that manager should focus on individuals within the organization. The aim here is to facilitate personal development in order to create a collective culture in the organization as a unified social unit. He also claimed that the production system in the postmodern organization should be changed to be a customer-oriented more than mass production system. Thus, understanding and analysis of different types of management styles is essential for the managers in order to identify the customer's needs and to

appreciate the organizational members' interests, knowledge and potential contribution which highly depend on the selection of appropriate styles of management.

It can be argued that the effective style of management must balance the needs of people and task at the same time. The diversity and flexibility of the management styles is derived and based on the varying attitudes which people have concerning the way they prefer to be managed in order to work effectively and perform efficiently. While some people, for example, prefer to work as team members, others may prefer to receive detailed directions or work independently (Harrison & Bell, 1987). The style of management should provide a distinctive set of guiding principles that set parameters to and signposts for management action (Purcell, 1987). However, certain degree of participation and effective communication are necessary to enable exchanging of knowledge and information concerning the implementation of organizational change.

As today's organizations face turbulent changes and are getting larger and diversified, the complexity of the information in which managers need to deal with and the information overload increase (Hedelin & Allwood, 2002). This increases the importance of using IT as a tool for the facilitation of information handling and decision making. However, the question remains the same, how can these organizations be managed and what are the characteristics of the future managers?

The answer to these questions remains unclear so far but many perspectives have been proposed. In the next section, the issue of NMP is reviewed with a particular focus given to the interaction between IT and management styles and the role of IT in the development of the NMP. However, one has to consider the difficulty of differentiating

between new and conventional paradigms of management. Thus, some overlap is expected to occur between both paradigms.

3.3 The New Management Paradigm

The call for NMP is not a new idea in the management literature. Nevertheless, the changing nature of competition into global base combined with the economic pressure and the increasing demand from the citizens as well as businesses to develop the level of public services make it harder for public organizations to stay hierarchical and paper-driven organizations (Flynn, 1995). As a result, the creation of strategic managerial vision seems very important. This strategic vision can enable the managers to realise opportunities and obstacles in relation to new technologies and enhance their ability to make communication and interpretation of different views within their organizations (Auor & Ruohonen, 1996; Mintzberg et al, 1998). The foundation of this vision and the emergence of more rational work practices in addition to the development of organisational forms are the responsibility of management (Kirlidog, 1996). But what are the characteristics of this NMP? How could it be able to respond effectively to the new organizational environment? And how could it be realised?

Providing answers to these questions and many others have been subject to extensive debate in the last few years especially in the developed countries where change and development are more drastic. Different contributions have been made. Chapman (2001) argues that as a result of the changing nature of organizational context, the work of managers has been changed to be flexible, horizontally integrated, and decentralised. Jassawalla & Sashittal (1998) classify the managerial thinking in relation to the organizational adoption of IT into two major approaches. The first is based on what they

called *paranoid managerial thinking* while the other is based on *pronoic* managerial thinking (see table 3.1). They suggest the adoption of pronoic managerial thinking to support the organizational transformation through technology transfer. This means that managerial practices have to move from mechanistic focus (the classic theories) towards an organic focus (Halal, 1996). The mechanistic style is based on hierarchical supervision and formalised systems and rules of communications while the organic style is based on network structure of control and authority. The communication process in the organization should focus on information and advice rather than instructions and decisions.

Paranoid thinking	Pronoic thinking
1) Anti-innovation defensive routine	1) Supportive routine through the availability of information which support innovation and creativity.
2) Managing people is about getting people to do what is expected from them. Employees' behaviour controlled via directives, rewards and punishment.	2) Managing people is about creating an environment where they find meaning and rewards in their self-expression, personal development and growth.
3) Managers' role includes the controller of information and resources, the strategist, and the decision-maker.	3) Managers' role includes an educator concerned with promoting collaboration, resources facilitators who encourage employees to be creative.

Table 3.1, Pronoic Vs. paranoid managerial thinking: Jassawalla & Sashittal (1998)

Based on his review of the roles and skills of a manager of learning organization, Darwin (1996) classifies the capabilities of the new managers into seven categories:

- Personal capability that includes personal enthusiasm, political awareness, communication and negotiating skills.
- Creativity which includes the abilities to experiment, to use mental models, to promote creativity, learning, and innovation.

- System thinking that includes the ability to read the environment, to use the skills of remote management and to have a helicopter perspective that enables him/her to consider all organizational attributes and stakeholders.
- Leadership and vision involving building shared vision, specifying goals, stimulating motivation and commitment.
- Managing complexity that is based on a tolerance of ambiguity and ability to maintain flexibility.
- Team working that requires the ability to collaborate, to build teams, to sell ideas to others and to influence them.
- Networking that includes interaction with others and building integrated reality.

He also emphasizes other abilities like accepting unpredictability and recognizing complexity in relation to strategy formation in complex situations. However, according to Darwin, the need for these capabilities should not be based on rejection of the traditional ones. In contrast, the new capabilities should be seen as an extension of the traditional management approaches. Incorporation of the traditional and new capabilities is necessary for future managers and this can facilitate the promotion of the new managerial capabilities.

Cheung (1996) argues that the new styles of public sector management are intellectually underpinned by new institutional economics and the public choice theory. The general framework of these styles is referred to as *managerialism, new management paradigm, market-based public administration or entrepreneurial government* (Hughes, 2003; Cheung, 1996). However, NMP and reform priorities differ among countries. For instance, while Germany has focused its efforts on the creation of private-low

companies outside the boundary of core government and readjustment of administrative functions and financial responsibilities (Cheung, 1996), New Zealand and UK have concentrated on *agencification and managerializing* of their public services. According to Cheung (1996), NMP should provide a new mode of empowerment that is based on managerial freedom and autonomy. This, as described by Heeks (2001) is a critical pre-condition for successful development and reform of public sector, which is necessary to introduce IT. Moreover, Heeks argues that there is a need for Hybrid managers who understand technological and organizational dimensions and behave according to this understanding. Those managers, as Heeks argues, can shape the design of technology in order to match the organizational reality and improve the organizational performance.

Writers like Brookfield (2000) argue that the development of effective working practices or changing the existing practices in bureaucratic organizational requires managers who are able to influence the human behaviour. Non-numerical ways, according to Brookfield, are more appropriate to do that. Some of these ways are persuasion, motivation, cajoling, and trust building. Other possible implications and changes on management of the public sector include changing the structure of public sector into more decentralized and localized services where both policy-making and service delivery are combined. A process of goal setting should be based on identification of unambiguous and achievable targets. This, as Brookfield argues, involves the use of integrated management by objective approach which involves a certain degree of participation. In addition, he emphasises the need to adapt a comprehensive and strategic planning approach that enables better match between long-term objectives and short-term plans that are based on budgets.

In fact, our review of the NMP literature emphasises that the general tendency regarding the NMP is directed towards the service users or customers. This may have serious implications on the interaction process between citizens and government on both local and national levels. This increases the importance of citizens and their perception of organizational activities and thus increases the importance of operational management and public servants who, due to their direct contact and interaction with citizens, are more able to define their interests and provide suggestions for better quality of services. This is expected to change the traditional power of public servants and public management alike (Flynn, 1995). Accordingly, top management and strategy makers should consider the use of consultative and participative approaches of management to enhance the formation of effective organizational strategies which respond to citizens' needs.

In developing countries, these implications need to be explored and this requires challenging of the existing negative view of public management in these countries which assumes the difficulty of changing the process of public sector management in developing countries to give the users of public services more power to influence policy and decision-making processes. However, one can argue that the governments of developing countries have started to recognise the changing nature of its internal and external environments which force these governments to adopt some elements of NMP described above. Internal pressure by the citizens of these countries who want to get better services and external pressure by some external stakeholders including International Monetary Fund, World Bank, and foreign investors are pushing towards adopting of the NMP. As changing or modifying of the current managerial practices involves changing the culture of public sector, in both developed and developing

countries, the process of NMP adoption is expected to take a relatively long time and needs greater efforts.

In other words, the transformation of public management should be continuous and this needs an effective cooperation between all managerial levels including strategic, tactical and operational levels. For instance, Polidano (1999), based on his evaluation of public management reforms in developing countries, identifies some elements of public sector reform that have been adopted by some developing countries. These include privatization, downsizing, and corporatization (converting civil service departments into free-standing agencies or enterprises whether within the civil service or outside it altogether). He considers the adoption of these elements as an evidence of the existence of the NMP. However, Polidano also emphasizes the importance of considering incentives behind introducing these elements. For example, privatisation of some services organizations in some countries may be introduced as a way to solve some financial problems or to control, and probably hide, corruption within these organizations instead of utilizing it as a way to transform some old traditional practices that related to the work of public organizations.

Some writers have investigated the impact of ITD on the managerial work as a way to formulate the management response and its new shape (Piercy, 1984; Willcocks, 1989; Jones, 1990; Lu & Wang, 1997; Jassawalla & Sashittal, 1998; Lynn et al, 1999). For instance, Willcocks (1989) claims that serious and underlying problems remain and begin further back, from managers' limited visions and understandings of what new technology can achieve and their negative attitudes towards the use of IT. Other writers (Winfield, 1991; Cash et al, 1994) try to explain the impact of IT on the traditional

managerial functions such as planning, directing, controlling, organizing, and decisions making and the need for new management style, which considers this impact. Lu & Wang (1997), who investigate the diffusion of management information system in Taiwan, go beyond this debate and try to identify different managerial styles according to each stage of ITD process. In their investigation for the relationships between management styles, user participation and system success over different management information system's growth stages, they found that different stages of management information system growth require different management styles. Therefore managers should be adaptable and flexible according to the requirements of each stage. Six stages were identified by Lu & Wang (1997) (initiation, contagion, control, integration, data, and maturity stage). They claim that management styles required to promote user participation and achieve system success range from people oriented style to task oriented style. However, it seems difficult to change the managerial behaviour from one stage to another. How managers' behaviour can be driven was not clarified in their study.

It is revealed that the NMP assumes that the use of ICTs within organizations has changed the traditional role of management from controlling and organizing to facilitating and developing (Kakabadse & Kouzmin, 1996). Managers of public agencies should develop their capacity to learn and promote the establishment of learning environment within the organization. This requires a lot of cooperation and openness within the organizational environment (Harvard Policy Group, 2000).

However, these studies and many others share a central assumption, which deals with IT as something taken for granted where all other organizational factors including

management should be changed to match it. Writers such as Preece (et al, 1994) raise this issue when they classify the major organizational theories (school of thoughts) in relation to ITD into two perspectives:

- The technological determinist school of thought, which views IT as the single most important factor in determining the success of an organization.
- The social action approach which views IT as enabler rather than determinist. Factors like management, social environment and culture play very important role and should be firstly considered and investigated.

The first perspective, as one can argue, does not considers other organizational inputs and tends to view IT as a magical tool that solves all organizational problems and shadows all other organizational components. This can lead to the failure of ITD since no supportive organizational mechanism is considered. This research adopts the second perspective which, on the whole, seems more appropriate as interactions between IT and organizational components are considered. This provides an appropriate and complementary environment which supports the process of ITD. Accordingly, technology should be designed to support the successful organizational and managerial practices in addition to modifying or changing inappropriate ones. In addition, organizations need to establish a business driven strategy to achieve a coherent ITD. This requires understanding of the organizational context and the nature of interaction between IT and the components of this context including management.

Another key issue which must be noted regarding the management literature is that most of it has been developed within the context of developed countries and circulated all over the world to explain and organize the management practices and work. However,

due to the economic, political, and managerial differences among these countries, the adoption of the results of these studies may not be reliable and accurate. Identifying the management characteristics must be based on empirical investigation which involves real intervention in order to attain rich background concerning the current managerial approaches in the organizations of developing countries. With the absence of empirical evidence concerning the dominant managerial style/s within the organizations of developing countries and the potential interaction between ITD and organizational management, the formation of IT strategy or any other organizational strategy will be misleading and may cause an expensive failure. Nonetheless, the rich managerial literature in developed countries can provide a basic managerial knowledge that can enhance the exploration of managerial thinking within the context of developing countries.

Based on this, some writers have devoted some efforts to explore the issue of management and IT in developing countries. In the next section, these efforts are discussed in some details. This can provide theoretical foundation and clarify how far the management practices in developing countries are from the new perspectives discussed above. More interest is given to Arab countries' context. This can enable the identification of any difference and provides closer image concerning the research particular context.

3.4 Management and IT in Developing Countries

The transfer of management theories that have been developed in USA and Western Europe to developing countries is particularly suspecting (Shea & Lewis, 1996). Hofstede (1980, 1991), who studied cultural and social differences in fifty countries and

three regions in the world, argues that these differences make the applicability of most management or organizational theories of developed countries unacceptable and do not make any contribution to the context of developing countries. Thus, the impact of national culture dominated in any country must be explicitly considered for effective managerial practices and effective operations of organizations. The origin of this proposition lies on the fact that the environment where an individual lives and works has a significant impact on the values, beliefs, and attitudes that determine the individual behaviour whether this individual is a manager or employee within any organizational context.

Consequently, some writers (e.g. Zeffane & Rugimbana, 1995; Youssef, 1996; Kirlidog, 1996; Al-Meer, 1996; Heeks, 2001) have investigated some managerial issues in developing countries. Youssef (1996), who investigates the process of public sector reform in Egypt, argues that public sector reform is likely to be the major focus of public organizations policies in developing countries in the future because one of the major problems that face this sector is an inept bureaucracy, which needs major changes in its role, structure and behaviour. While organizations of developed countries tend to be rational, effective, and more professional, the dominant forms of organizational behaviour in developing countries are traditional, bureaucratic, and rely heavily on social order in addition to some religious, economic, and cultural factors that affect management and organizations (Zeffane & Rugimbana, 1995). However, this research rejects the assumption that religious and cultural values of some developing countries are always associated with bureaucratic and traditional forms of management. On the contrary, some religious and cultural values impose desirable courses of action. For

instance, consultation, as a desired approach of management, is encouraged by Islamic concept of state management and is an integral part of Islamic management.

Polidano (1999) identifies other problems that prevent successful introduction of management reform. These include: The lack of expertise and the unreliability of information systems in developing countries, the deregulation of line management in governmental organizations of these countries (corruption and nepotism are example of this), the existence of a sharp dichotomy between formal and informal rules in the organizations of these countries and the predominance of the informal realm, and the lack of financial resources where government budgetary decisions are the primary determinant of the quality of service delivery and new public management activities. Accordingly, the rapidly changing technological environment creates greater challenges for developing countries because:

"Developing countries start from a position of weakness, based on low levels of investment in information infrastructure, lack of public interest in modern information facilities, and dependence on the multinational corporations" (Zeffane & Rugimbana, 1995: p31).

Zeffane & Rugimbana (1995) also argue that managing IT tools and understanding of their impact is more important for developing countries than developed countries because of the scarcity of resources and the importance of getting as much benefits as possible from implementing such technologies. Therefore, strengthening the management capacity is one of the most important tasks to achieve successful utilisation of new technologies in developing countries. They argue that management in developing countries must understand that the process of ITD requires organizational change and user participation in this process.

In relation to appropriateness of management literature of developed countries to the developing countries context, some writers (Hofstede, 1980, 1991; Daft, 1995; Kirlidog, 1996) argue that the individualistic nature of western societies that emphasises individual interests and achievements more than group ones (collectivism), makes the value of managerial or organizational theories developed in these societies very limited and sometimes lead the analysts to confusion. While some issues like kinship and personal relationships play a fundamental role in the organization of group-oriented societies (e.g. nepotism), they have no role to play in western societies (Zeffane & Rugimbana, 1995). Hunt & Twaijri (1996) support this argument claiming that Saudi managers give priority to friendships and personal considerations over organizational goals and performance. However, the power of the group within Arab collectivist culture, as one can argue, can encourage the utilization of team work and team management. Social relations between organizational members are expected to have a considerable impact on the individual perception of IT applications and thus can be, if used effectively, a facilitator of organizational change. Therefore, the development of research practice that considers these attributes is essential to understand the nature of management in developing countries. This is demonstrated in the next section which provides a review of Arab management literature.

3.4.1 Arab Management Literature

Arab management has been relatively little studied until recently. Many textbooks in the field of management have not recognised the existence of Arab world at all (Weir, 2000). In their evaluation of Arab management education, Ali & Camp (1995) claim that Arab management education suffers from three problems: unprecedented growth, poor quality, and lack of vision. Consequently, they argue that most management

education programmes are inadequate to meet the demands of contemporary business practice and the needs of a new generation. They revealed that most of the management teaching in the Arab world is a translation of American management theories, which are unsuitable for the Arab culture. Their review of management curriculum in eight Arab universities shows that none of them offers a course on management culture or environment in the Arab world.

Weir (2000), in his review of the management literature, claims that familial organizational type, importance of ethics and interpersonal and consultative relationships reflect the dominant management style in Arab organizations. These characteristics have a great impact on the management process in Arab countries and create some dominant managerial practices. For instance, Atiyyah (1992) states that favouritism, nepotism, and personal connections have a significant impact on management process in Arab countries. He claims that cultural factors such as strong kinship and family ties are frequently blamed for these negative practices. Factors like the extended family, clan, tribe, and Islamic religion play a major role in community life and interpersonal relationships in Arab countries. Therefore, family ties, and ideological affiliation, rather than practical or academic qualifications, significantly affect managers' recruitment and promotion decisions (AlmehdI, 1998). Agnaia (1997: p117) states that

"The difficulties that face Arab organizations regarding the management training and development programs result from the characteristics of Arab managers which concentrate on seniority rather than merit, on centralization rather than decentralization, on nepotism rather than fairness, etc".

Atiyyah (1992), based on his review of some Arabic studies, identifies two dominant management styles in Arab countries. The first is authoritarian management style,

which is linked to the authoritarian nature of traditional leaders in Arab society. The second is the consultative style, which is linked to the Islamic and tribal values that encourage consultation. He concludes that Arab management styles in general are culture bound. A clear example of this, as he claims, is the low priority assigned by Arab managers to planning, which is linked to the strong fatalistic attitudes in Arab culture. According to Atiyyah (1992), public organizations in Arab countries are based on control and compliance with rules and regulations. This rigid bureaucratic system, as he emphasises, has shown strong resistance to the introduction of modern management and organization methods and techniques. Although his study reflects the diversity of management styles through the existence of authoritarian and consultative management styles, it provides negative view concerning Arab management. Considering the timing of this study and the technological and organizational change that took place in the last few years, one can argue that this view is not convincing anymore and needs to be updated.

Yousef (1998) investigates the role of organizational culture and level of technology used in the organization as predictors of decision-making styles in the United Arab Emirates. He reveals that these aspects in addition to decision-maker's education and management levels are good predictors of decisions-making styles in that context. He also suggests that the participative style of management prevails among young, middle and highly educated Arab managers. The decision-making styles that were represented in his study are autocratic, pseudo-consultative, consultative, participative, and delegatory style. Although this study provides useful insights towards understanding of Arab management, one statement was used to measure each style. This is extremely

overt and is based on self-report categorisation which decreases the external validity and reliability of the findings of this study.

In search for more comprehensive understanding of the nature of Arab management, we find Elgamal (2000), based on his theoretical review of Arab management literature, proposing a theoretical model to understand Arab management. His model is based on understanding of the major sources of Arab management that include the Islamic religion, Arab culture, the westernisation effect, in addition to the political, economical, and social systems in the Arab world. He identifies four major problems that impede managerial and organizational development in the Arab world as follows (Elgamal, 2000: p111):

- The discontinuity of management development plans and the absence of well designed and articulated plans for the short, medium and long terms.
- The conflict between traditional and modern practices which leads to ineffective use of organizational resources.
- The dominance of individual based loyalties and relationships that have a greater impact on organizational behaviour than organizations based relationships.
- The absence of integrated management and organization systems that provide a clear explanation of job description, performance evaluation methods, training and development requirements.

It is observed that most of the above studies have used Islamic and cultural values to justify some negative practices of Arab managers. However, these negative practices are not an integral part of Islamic an Arab culture. Misinterpretation and ineffective use of

these values by some managers has led to this misconception. In supporting this, Ali (1992, 1995) examined the forces that influence the direction of Arab management and identify some important variables that affect Arab management thought. He argues that cultural discontinuity is perhaps the most important factor that impedes the development of Arab management. Therefore, he states that the available studies concerning Arab management have emphasized that the current management styles prevailed in Arab organizations have been subject to external influence and lost attachment to Arab cultural heritages and principles. Moreover, he emphasized a strong commitment between Arab managers and Islamic work ethics. This commitment underlines that justice and generosity in the workplace are necessary conditions for society's welfare. Implications for this commitment include management appreciation for human needs that are necessary to achieve any proposed development, the importance of social skills and effective public relations to the success of any change, and the importance of organizational change that are directed towards serving the whole community. These implications, as one can argue, represent some well-established cultural norms in Islamic societies which can be seen as the basic elements of Islamic management that is defined by Quran (the holy book of Muslims) and "Sonah" (the life of Mohammad). One can argue that the above implications impose certain positive management styles and contribute to the styles of management that dominate Arab organizations.

In fact, the available few studies and the fragmented research related to Arab management have been conducted through a relatively simplistic and descriptive approach in terms of the methodological approaches used and the findings that have been revealed (Ali 1996). Cultural values of Arab societies were underestimated and hardly considered (Ali, 1992, 1995). In addition, several studies (Atiyyah, 1992;

Elgamal, 2000; Weir, 2000) were based on theoretical review and lack the empirical evidence regarding the nature of Arab management. In addition, most of these studies have discussed one dimension related to managerial work while there is a need to investigate the impact of managerial dimension itself on other organizational issues including ITD. Consequently, management development activities in Arab countries are dissatisfied and surrounded by a combination of misconceptions regarding its nature and requirements as well as interference by some socio-cultural elements (Jadan & Al-Shammari, 2000). One can also observe a contradiction between cultural and Islamic values concerning the styles of Arab management. This can be a result of misunderstanding and sometimes misbehaving of Islamic values by Arab managers. A possible explanation is the absence of management studies that adopt a multiple perspective in dealing with Arab management as a mixture of Islamic and cultural values that are exposed to external influence which may positively or negatively affect the practice of Arab managers.

Finally, viewing technology as a change agent suggests updating the management styles literature to suit ITD as a new driving force in the organizational environment. The investigation of management styles and their correlations with managers' attitudes towards IT is expected to provide new insights as such connection has not been made in the previous literature. According to Heirs & Farrell (1986), the rising number of possible social, political, commercial, environmental and legal consequences associated with any important management decision and the growing complexity of the information combined with the ever-increasing rate of change make it necessary to *re-think* entirely the management priorities. In view of this argument, the interaction between management styles and ITD should receive greater attention. In this research,

this is examined through investigation of management styles and their attitudes towards IT and identifying any possible changes in the last few years through comparing the extracted styles of management with the previous literature leading to identification of the relationship between management styles and managers' attitudes towards IT.

3.5 Conclusion

Most of the management styles described in the literature are classified somewhere between task-centred and people-centred style. The earlier management schools of thought are relatively placed in the one of the two continuum extremes. For example, scientific management school is highly focused on the accomplishment of the organizational tasks and the ignorance of employees' interests. While human centred management gave priority to human relations and communication in organizations. More recent management theories have described other styles that range between authoritarian and autocratic styles (task-centred) to participative and consultative styles (people-centred). The characteristics of the new management paradigm have been identified based on some studies that have been conduced within the context of developed countries and have considered the development of ICTs as a driving force for the emergence of these characteristics.

In this chapter, we argued that the rejection of well established, tested and possibly common managerial characteristics seems impractical. Nevertheless, the general framework that governs the managers' thinking in relation to managing people may be modified to allow planned, insightful, and innovative change to be introduced. This framework includes varying elements of both conventional and NMP and thus suggests the diversity of managerial approaches. Although, some key organizational components

like employees and management as well as key organizational functions like planning, organizing, directing, controlling, and co-ordination have been considerably reformed, they were and will remain the core interest of the two paradigms of managerial thinking which makes the separation of them unattainable.

Concerning the Arab context, the appropriateness of Arab management characteristics (particularly public management) for ITD has not been investigated in the available literature. Most of the available studies have provided negative perspective concerning the nature of Arab management styles which makes Arab management more relevant to conventional styles of management. Accordingly, this chapter emphasises the importance of studying, is some depth, the management context in Arab countries.

For this purpose, this research investigates the dimensions of Arab management and proposes a two dimension-model as a general framework in which this investigation is conducted including task-centred and people-centred management styles. As the above review of the management literature has emphasised the absence of an ideal management style and the overlap between different styles of management, another two research questions were proposed to fill the existed gap in the literature regarding Arab management styles in general and JGOs in particular:

2. What are the prevalent management styles within the context of JGOs?
3. What is the order and proportions of these styles according to their existence or dominance?

The next chapter discussed more specific concern for this research through exploration of the attitude towards IT and its correlations with management styles as well as some

demographic characteristics that are explored in this study. Attitude towards IT is selected as an intermediary factor to assess the relationship between management styles and ITD.

Chapter Four:-

Managers' Attitudes towards IT

4.1 Introduction

This chapter discusses some fundamental questions regarding the utilisation of IT within the organizational context. The relationship between attitude and behaviour will be firstly highlighted and studies related to managers' attitudes towards IT are reviewed. Then, relationship between these attitudes and some demographic characteristics (gender, age, organizational experience, educational level and managers' span of control) are discussed. This review leads to the identification of the research questions that are related to the managers' attitudes towards IT and the impact of some selected demographic characteristics on these attitudes. The research conceptual framework is presented by the end of this chapter.

4.2 The Significance of Attitudes

Two major themes of thinking dominate the available literature in relation to the attitudes of people towards IT. The first deals with attitudes as a collection of three major components: the cognitive, affective and behavioural components (Triandis, 1971; Reece & Gable, 1982; Spooncer, 1992; Schutt, 1996; Burns, 2000). The cognitive component is what a person believes about the object whether true or not. The affective component is the feeling that individual has about the object, which influences his or her evaluation of this particular object. The behavioural component donates the actual behaviour of the individual in relation to this object. Consideration of all these components and the intercorrelations between them are clearly very important. For

instance, cognitive and affective components can determine actual behaviour when people are free to act. However, this may not be the case when people do not have this freedom. In addition, having a positive attitude towards IT may not be enough to direct people's behaviour towards using IT tools. Other factors like IT literacy and the availability of IT tools have a significant relationship with IT use (Winter et al, 1998). It is shown by some IT diffusion studies that people are most likely not seen as an important part of this process. In such cases, the importance of actual behaviour or the behavioural components of their attitudes is overestimated, while the cognitive and affective components of their attitudes are underestimated or not considered at all. In the long term, ignorance of both cognitive and affective components will negatively affect actual behaviour and may create a resistant behavioural patterns regarding IT implementation.

The second theme of attitudes measurement deals with attitude in terms of liking, anxiety, confidence, and usefulness of a particular object (Loyd & Gressard 1984a; Loyd & Gressard, 1984b; Loyd & Loyd, 1985; Massoud, 1990). The emergent of this theme can be seen as an attempt to emphasise the importance of cognitive and effective components of attitudes. Therefore, one can argue that this theme complements the first theme which, as mentioned earlier, focuses on behavioural component of attitudes.

This research adopts the second theme in dealing with attitude. This decision is based on the assumption that attitudes of people towards a particular object reflect their beliefs and feelings regarding this object. Identification of these attitudes enables the recognition of both cognitive and affective components. The realization of these attributes can explain the individual's motivation regarding a particular behaviour

towards a particular object. In other words, the first theme is embedded in the second theme which provides clearer representation of emotional and intellectual perception of individuals towards IT which make them either resist or accept and encourage the use of IT.

People may resist the introduction of IT and any other proposed change because they think that this change may affect their economic, social, and personal needs (Harrison & Bell, 1987). Changing the existing system of procedures may also create uncertainty regarding the future courses and activities. Pheng (1999) reported other reasons that make people in general resistant to change. Among these reasons are: habits and complexity avoidance behaviour, security (safe old way), fear of unknown (uncertainty avoidance), and selective information processing behaviour.

Some forms of reaction to change including IT use as reported by Harrison & Bell (1987: p292) include:

- Aggression by people who see it as being a way of cutting cost or getting more work out of them.
- Apathy from people who think nothing they say matters anyway.
- Uncooperativeness from people who feel inadequate and are afraid they may not be able to cope with the new system of procedures or may lose their jobs.
- Enthusiasm from positive people who see change as a chance to widen their experience and improve their career prospects.

Exploration of these possible reactions is crucial to increase the probability of obtaining the desirable outcomes. Any undesirable reaction can be eliminated through top management support, employee-manager participation, open communication systems, and supportive rewarding system (Pheng, 1999). These ways in which employees resistance towards a new system can be reduced are highly related to the style of management prevailing within the organizational context where a new system or change is being introduced. This makes the investigation of intercorrelation between management styles and attitudes towards IT meaningful.

Based upon the theory of reasoned action, Kolekofski & Heminger (2003) investigate the impact of employees' beliefs and attitudes about sharing organizational information and revealed that the role of attitudes in the process of sharing information is more complicated than first considered by previous studies. Understanding and consideration of these beliefs and attitudes provide a variable and reliable source which enables the formation of ITD strategies. Considering the social setting where an individual behaves and the cited benefits of the attitude object, one can argue that attitudes can be an appropriate predictor for people's reaction and their behaviour. Nevertheless, the context of a particular object has different elements and each of them has an impact on the individual's behaviour. Thus, an individual's attitudes are best seen as *facilitative causes* for a particular behaviour (Triandis, 1971). Given the pervasiveness of IT use in today's world, it is likely that people will have developed some attitudes towards IT. Intentions and reactions of people concerning IT applications should be well identified (Shaft & Sharfman, 2001) which is one of the major concerns of this research.

4.3 The Characteristics of Individuals and ITD

Based on his review of the factors that affect an individual's attitude towards new technology, Bill (1997) argues that the formation of attitudes towards IT is affected by several factors. Amongst these factors are: the system of beliefs and values that shape the organization, age, gender and cognitive ability. In general, Bill (1997) reports that younger people are more likely to have positive attitudes than their older counterparts. He also revealed that most of the available studies have indicated that males tend to display more positive attitudes towards IT than females regardless of their level of technological familiarity. On the other hand, female attitudes become more positive as the level of familiarity increases. Because of the challenging nature of technology, he found that low cognitive ability leads to negative attitudes towards IT. Consequently, a better understanding of these factors may provide a basis for improving the way in which IT is diffused in organizations (Henfridsson, 2000).

The importance of this understanding is based on the fact that people's response to IT differs according to the implications of IT implementation on their work activities and personal conditions in their organizations. Several IT implications for employees and managers have been identified in the literature. Some of these implications have a negative impact on employees and/ or managers such as lower staff numbers, higher skill levels, reduction in employees' privacy and social isolation. Other implications can lead to improved working conditions (especially for highly skilled people), more flexibility, and increases in employees' autonomy (Cash et al, 1994). Understanding the internal characteristics of the organization prior to the ITD process can contribute to increases in the effectiveness of any potential strategy for ITD. Choosing the most

successful diffusion strategy requires a comprehensive understanding of organizational members' thinking and their attitudes towards working with or learning about the new IT. But different questions can be raised regarding these implications. Some of these questions are: How are individuals within the organizations expected to respond to all these implications? What are the bases for the different responses that might be recorded? These questions, among others, form the basis of this exploratory research.

It can be argued that managers' attitudes towards the application of IT within their organizations depend upon their own perception concerning the benefits or drawbacks of IT on their own work activities. These vary from one manager to another depending on the manager's own perspective. The classification of managers according to their demographic characteristics can provide a valid source of information to develop organizational policies that consider all differences (Cukier & Middleton, 1996). But how can we make this classification and utilise this understanding to formulate a successful ITD strategy?

Our view is that we should start by establishing a common ground that enables us to classify managers into groups or subgroups and explore some relevant features shared by individuals in each group. For this purpose and after consideration of the available literature, five relevant demographic characteristics were identified including gender, experience, age, educational level, and span of control. These aspects were used to classify the managers of JGOs into several segments. Exploration of the relationships between these characteristics and attitudes of managers towards IT is expected to provide a rich source of data for strategy formation process. The next section provides an overview of these relationships as presented in the previous literature and proposes

some research questions to: first, revalidate the findings of previous studies and then to explore these relationships within the context of JGOs.

4.3 Attitudes-related Research Questions

4.3.1 Managers' General Attitudes towards IT

Lin & Chen (2000) use the socio-technical system to clarify the importance of social aspects in the process of automation. This system views an organisation as a combination of two interdependent sub-systems. The first is the technical system, which focuses on equipments and processes. The second is the social system, which focuses on people perspectives and relationships within the organisation. Their study revealed significant conclusions. Management practices were found to explain about 24.1% of the success of automation. Social factors and managerial factors combined can explain 35.3% of the variance of the success of automation. Consequently, investigation of the managers' perceptions in relation to IT diffusion is an important issue and should not be underestimated.

In their study that investigates the experience of some developed countries, Hanna (et al, 1995) claim that managers in developing countries are likely to resist imperatives such as information sharing and decentralized decision-making and this may affect the ITD within these countries. However, some factors, such as technological "culturation" (Straub et al, 2001) and technical training may change the managers' view of IT. A study conducted by Straub (et al, 2001) in five Arab countries revealed that a distinction should be made between the perception of upper-level managers to IT and that perception associated with lower-level managers and workers. They claim that upper level managers usually have optimistic attitudes to ITD because of the process of

technological "culturation" that affects them. It can be argued that this process has a great impact on the adoption of IT in developing countries as most upper-level managers have gained their education from developed countries. Certainly, Arab countries in general, are not an exception. Nevertheless, we also argued that the perception of lower managerial levels is more important than the formal strategies imposed by top management since they are involved with the practical aspects of ITD through holding the responsibility of the daily use of IT and their continuous interaction with employees and service users. Most importantly, noting the paucity of academic research, no one can claim that formal plans relating to computer applications that are developed by upper-level managers or ministers reflect the whole reality which should be based on the people who work or will be working with IT. For that reason, this study can provide valuable contribution through the exploration of the lower and middle line managers' attitudes towards IT. Based on this, the following question was proposed.

- What are the attitudes of lower and middle line managers of JGOs towards IT?

4.3.2 Demographic Characterises

Gender

Most of the available literature in information system research has dealt with men and women as homogeneous entities in which distinctions of gender are either ignored or considered irrelevant (Igbaria & Chidambaram, 1997). In their study, which investigates the impact of gender on the use of information systems, they suggest that significant gender differences exist. For instance, women were found, on average, to be somewhat younger and less experienced than men with lower salaries and fewer opportunities to interact with people outside their departmental boundaries. The examination by Thomas (1996) of low representation of females in computer studies, programming, and other

IT-related courses, leads him to conclude that males and females process information differently. He claims that males have greater analytical and quantitative skills than females. Thus, he concludes that computer anxiety is more often associated with females.

Two views that aim to explain this difference (if it exists) may be identified. The first is that the difference between males and females in relation to computer anxiety is due to the differences in their cognitive functions and their cognitive style. The second explains these differences as a result of a function of training and socialisation more than inherent differences between males and females. Indeed, Thomas (1996) noted that gender differences may be due to a number of reasons ranging from socialisation, to brain functioning, to level of exposure to arcade and computer games. In contrast, other studies (Loyd & Gressard, 1984b) report no meaningful gender differences concerning attitudes towards IT.

Nevertheless, Forster (2000) argues that new communication technologies may be a powerful ally for women in organizations since the work of organizations will more and more depend on brainpower. As a result, traditional barriers between men and women in organizations will be reduced. Kay (1992), in her analysis of methods used to examine gender differences in computer-related behaviour, revealed that of the ninety-eight studies of attitude measurements, researchers found that forty eight studies showed males do having more positive attitudes toward IT; in fourteen occasions, females were found to have more positive attitudes; in the remaining thirty-six studies, no differences were reported. The observed contradiction concerning the relationship between IT and

gender suggests the need for further investigation and narrower classification of attitudes.

Concerning the Arab countries, the scarcity of IT-related studies is a major issue. However, the general trend in Arab society is that men tend to be more active in terms of their social life than women. This may create some differences in relation to their perception of IT use in general because men are more exposed to IT discussions and usage. However, the use of some simple computer applications by women for secretarial work may bridge this divide and develop favourable attitudes towards more sophisticated computer applications. Based on this, the following research question was proposed:

- Are there significant differences between male and female managers regarding their attitudes towards IT?

Organizational experience and age

Inexperienced users are expected to view IT as impersonal, unapproachable, complex, or dull, and require a high level of technical skills and computer knowledge (Thomas, 1996). According to Carnoy (1997), computer literacy can reduce resistance to the diffusion of new technology. Therefore, older and long experienced managers are more likely to face IT literacy problems that make them resist the use of IT (Carnoy, 1997). They may view this resistance as a way of protecting themselves and their well established procedural knowledge which, in their view, may be at risk as a result of the expected IT power that will be available for all organizational members regardless their level of procedural knowledge or non-technical organizational experience.

Some writers have linked experience with age and claim that older managers may fail to match the technical requirements of ITD such as a sufficient IT literacy (Kaul, 1997). Accordingly, those managers will expect to be laid off or displaced by younger and technically experienced workers (Mckersie & Walton, 1991). Thomas (1996: p143) emphases this assumption when he states:

"Older people may be likely to view IT with suspicion and aversion, fearing replacement and displacement by them. They are likely to have had less exposure and knowledge of them than their younger counterparts".

Based on the above discussion, the following research questions were proposed:

- Are there significant differences between attitudes of managers towards IT according to their ages?
- Are there significant differences between attitudes of managers towards IT according to the number of years of working experience?

Level of education

Another important aspect that may affect managers' attitudes towards ITD and the use of IT in particular is the level of education. This aspect has received great attention in the last few years. For many researchers, education (technical education in particular) is the best way to reduce the level of computer anxiety among people. However, educational constraints may be more dominant in developing countries where people have fewer opportunities to experience higher education and older people, in particular, may have lost their opportunity to gain higher education due to the unavailability of higher education institutions many years ago. For example, the first Jordanian university was established in 1962, before this time a few people, mainly rich, had access to higher education abroad. Even with the availability of higher and technical education in some

countries like Jordan, many people do not have the opportunity to gain this education due to the difficult financial circumstances and high educational fees.

The situation is different in developed countries where education is widely available and at affordable cost. This, in turn, may create major differences between countries in relation to the impact of both age and educational level on the ITD. Thus, it is not a surprise that some studies conducted in some developed countries (e.g. Tabak & Barr, 1999) have found no significant relationships between education level or age and intentions to adopt innovations. To explore this issue within the context of JGOs, the following research question was proposed:

- Are there any significant relationship between the manager's level of education and his/her attitudes towards IT?

Span of control

The term "span of control" is defined as the number of employees who directly report to a manager. Managers with a large span of control are expected to behave differently as they interact more with their subordinates and customers as well as with other external organizational stakeholders. Also, they are exposed to different views and learning experience than other people within the organizational boundaries. Thus, a large span of control is seen as a valuable source of information and knowledge including technical knowledge and this, in turn, may encourage those managers to follow certain behaviours concerning all organizational aspects including any potential ITD. Accordingly, this research is seen as an opportunity to draw attention to this issue,

which has not received any attention in previous studies. For this reason, the following research question was proposed:

- Are there any significant relationship between the manager's span of control and his/her attitudes towards IT?

4.4 Conclusion

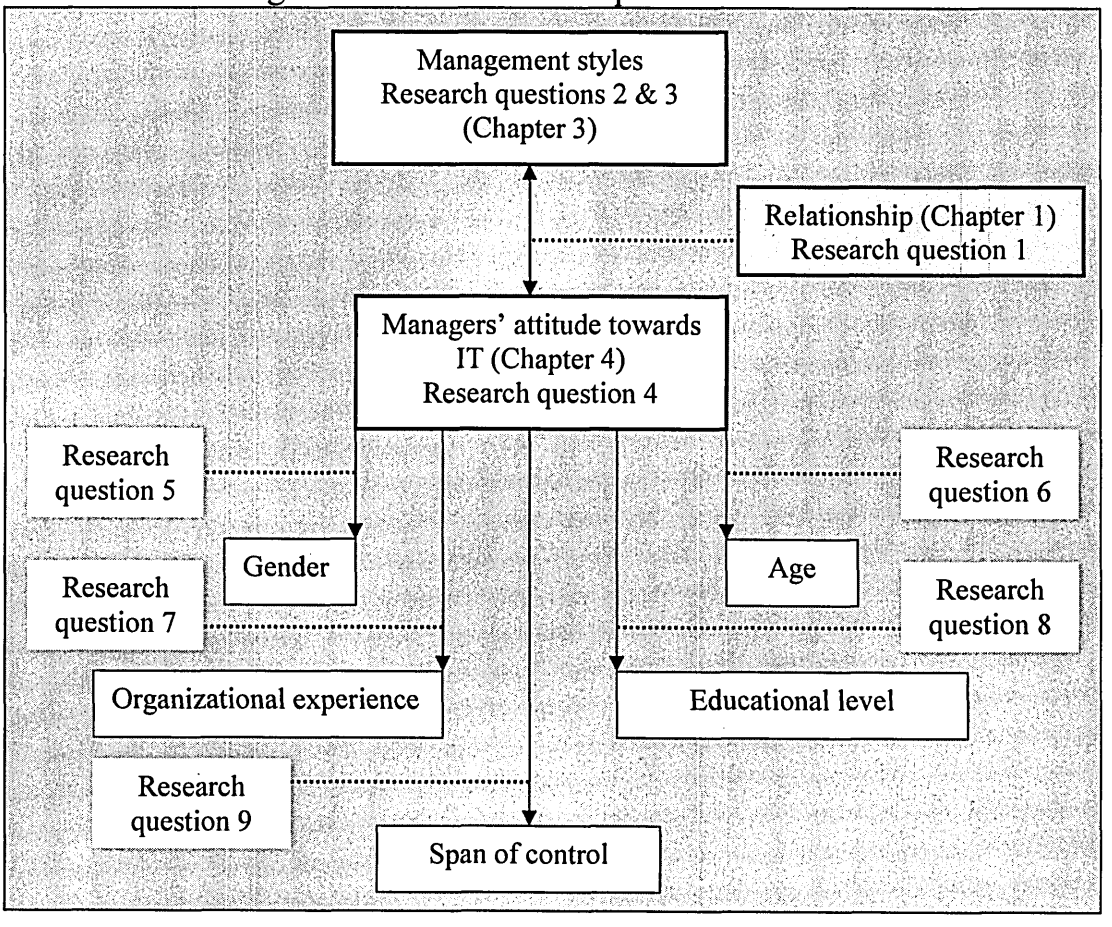
This chapter provides a review of the available literature concerning the attitudes of managers towards IT and the impact of some demographic characteristics on these attitudes. However, most of the available studies have been conducted in developed countries and few studies have discussed these issues within the context of developing countries. Public sector managers within these countries have received little attention regarding these important aspects. A better understanding of lower and middle line managers' attitude towards IT, as we argue, can provide basis for improving the way in which IT is diffused in public sector organizations. A review of attitudes studies that are related to managers' attitudes towards IT and the relationships between these attitudes and the five demographic characteristics proposed in this research has led to the development of the following research questions (following research questions 1, 2, and 3 from the previous two chapters.

4. What are the attitudes of lower and middle line managers of JGOs towards IT?
5. Are there significant differences between male and female managers regarding their attitudes towards IT?
6. Are there significant differences between attitudes of managers towards IT according to their ages?

7. Are there significant differences between attitudes of managers towards IT according to the number of manager's years of work experience?
8. Are there any significant relationship between the manager's level of education and his/her attitudes towards IT?
9. Are there any significant relationship between the manager's span of control and his/her attitudes towards IT?

Based on the review of literature presented in the last three chapters and the research questions that were proposed, figure 4.1 shows the research conceptual framework.

Figure 4.1 Research conceptual framework



This model aims to assess associations between demographic characteristics and managers' attitudes towards IT. It also suggests a possible relationship between managers' attitudes towards IT and their style of management.

The next chapter provides a description of the methodological approach and instruments that will be used to answer the research questions and to validate its conceptual framework.

Chapter five:-

Research Methodology

5.1 Introduction

This research is mainly a quantitative research that utilised a survey design to assess the managers' attitudes towards the use of IT as well as to identify the relationship between these attitudes and management styles within the context of JGOs. Nonetheless, qualitative approach is utilised to support and shed light on some aspects that may further clarify and enhance the interpretation of the quantitative data. This chapter addresses the issue of methodology and provides a justification of the selected methodology. The philosophical background and the underpinning assumptions behind the concept of methodology are firstly discussed. Data and information sources used in this research are outlined. A detailed explanation of the procedures, instruments, and subject population of this research are also discussed in this chapter.

5.2 Understanding of Methodology

Methodology is the overall approach of the research process starting from the theoretical underpinning to the collection and analysis of data (Hussey & Hussey, 1997). It is a combination of techniques, which aim to answer the question how, and philosophy, which aims to answer the question what (Checkland, 1981). However, the concept of methodology within the context of social research should not be seen as a clear-cut of sequences of procedures following a neat pattern and fixed rules that should be followed in a particular order. In contrast, it is a process of interaction between

conceptual framework of the study including its questions and the empirical world which include the data collection and analysis (Gill & Johnson, 1997). The aim of this interaction process is to provide answers to the research questions and accordingly enable the achievement of the overall aim and objectives of the research.

According to Jayaratna (1994: p37), methodology is

"An explicit way of structuring one's thinking and actions. Methodologies contain model (s) and reflect particular perspectives of reality based on a set of philosophical paradigms. A methodology should tell you what steps to take and how to perform those steps but most importantly the reasons why those steps should be taken, in that particular order".

This definition views methodology in more flexible way as a structuring process of the researcher's mind. It contains all necessary elements of the research process including the philosophy of the research, its general framework, steps that should be taken and a justification of these steps.

The selection of an appropriate methodological approach for a particular research project requires understanding and evaluation of some basic methodological concepts including positivistic and phenomenological approach, inductive and deductive methodology, and qualitative and quantitative research methods.

5.2.1 Positivistic Vs. Phenomenological Approach

Epistemology is the philosophy of knowledge or how we come to know (Piaget, 1972). Methodology is also concerned with how we come to know, but is much more practical in nature (Trochim, 2000). While methodology focuses on the specific ways that we can use in our attempts to understand our world better, epistemology is based on the identification of the relationship between the researcher and the phenomenon, which he/she is studying. The nature of this relationship identifies the research approach

(positivistic/quantitative or phenomenological/qualitative approach) (Hussey & Hussey, 1997; Saunders et al, 1997).

Positivism is an epistemological position that advocates the application of the methods of the natural sciences to the study of social context (Bryman, 2001). Positivists attempt to detach themselves from what they are searching and deal with the phenomena under investigation as an object. Positivist research is described as a highly structured and deductive approach that seeks to explain the casual relationships between variables using quantitative data. Although a highly structured research design may impose certain constraints on the results and ignore some relevant and interesting findings (Hussey & Hussey, 1997), it provides a clear theoretical focus for the research and greater opportunity to retain control over the research process.

Phenomenological approach, on the other hand, is so called since its understanding for phenomenon under investigation is based on the way people view and experience this phenomenon (Hussey & Hussey, 1997; Saunders et al, 1997). It includes an investigation of the subjective aspects of human activities through focusing on the meaning rather than measurement of social phenomena. Phenomenologists attempt to minimise the distance between the researcher and what is being researched. This assists them in understanding the social world and dealing with changes that may occur while conducting the research. However, data collection and analysis according to phenomenological approach are described as difficult and uncertainty is expected to be a major issue where clear findings and relationships may not emerge by the end of the research process (Saunders et al, 1997).

Both positivistic and phenomenological approaches may work well together to explore a particular issue in what so called *triangulation* methodological paradigm (Bryman, 2001). The selection of a particular research approach is determined by the situation where the research is conducted, the level of accessibility available for the researcher, and the issues that are being researched.

5.2.2 Deductive and Inductive Debate

The process of deduction starts from theory to deduce a hypothesis or hypotheses that must be tested empirically through the process of data collection and analysis of findings (Hussey & Hussey, 1997). This hypothesis/hypotheses will be confirmed or rejected based on the findings of the research. In addition, the original theory will be revised or confirmed (Bryman, 2001). Gill & Johnson (1997: p28) state that a deductive research method involves

"The development of a conceptual and theoretical structure prior to its testing through empirical observation".

The process of induction, on the other hand, starts with observations of a particular phenomenon, which can be analysed to produce a generalizable theory out of the real world observations or data collection processes (Hussey & Hussey, 1997). Gill & Johnson (1997: p33) state that induction research involves

"Moving from the plane of observation of the empirical world to the construction of explanations and theories about what has been observed".

Schutt (1996) distinguishes between inductive and deductive research and claims that deductive research proceeds from general ideas (usually existed theories), deduces specific expectations from these ideas and tests the ideas with empirical data. On the

other hand, inductive research begins with specific data to develop empirical generalisations or theories to explain the data.

However, both inductive and deductive approaches have been criticised. The highly structured approaches of deduction prevent and ignore the penetration of human actors' subjectivity because a deductive researcher, and based on his external logic, formulates a theoretical framework to understand phenomenon under investigation and ignore the internal logic of the human beings (Gill & Johnson, 1997). Nevertheless, one can argue that the objectivity of the researcher and his/her understanding of the context of the study may be seen as fundamental factors that determine the appropriateness of the deductive approach for investigating the social context. When the interpretation of the social context is based on the perceptions of the people within this context and compared (not limited) with theories, deductive approach can be suitable for investigating the social context. In contrast, inductive approach is described as unstructured and allows access to human subjectivity considering their own internal logic regarding the phenomena under study. Moreover, the use of inductive research approach may not be possible when the researcher has limited access to human subjects within the research context which limits his ability to establish a theoretical explanation of a particular phenomenon.

5.2.3 Quantitative and Qualitative Debate

Quantitative research methods were generally developed and derived from natural science to study natural phenomena (Myers, 2000). This type of research deals with things that can be counted using statistical manipulations of numbers to process data and summarise results (Locke et al, 1998). It involves using numerical methods such as

mathematical and statistical tools in collecting and analysing data. Quantitative research strategy emphasises a deductive approach to the relationship between theory and research and uses traditional formal methods (e.g. surveys, statistical analysis, and data modelling) in order to collect, analyse, and interpret a set of data. Bryman (2001) describes the processes of quantitative research as a linear series of steps moving from theory through hypotheses development and testing to conclusions and writing up.

Qualitative research strategy, on the other hand, was developed in the social science to enable researchers to study social and cultural phenomena. It enables the researcher to understand the complex and dynamic quality of the social world (Hoepfl, 1997). It emphasises an inductive approach to the relationship between theory and research where the main concern is directed towards the generation of theories. However, that does not mean that qualitative research cannot be employed for testing theories (Bryman, 2001). Qualitative research can be classified into two main traditions: interpretive research and critical research (Locke et al, 1998). In the interpretive research, the researcher builds an extensive collection of data concerning context, people, actions, and perceptions of participants as a basis for inductive generation of explanatory theory. Thus, this kind of research aims to understand the setting of social context from the perspective of the participants. Some research techniques used in this kind of research are interviews, documentary analysis, and observations. A critical research aims to understand and critique the power and inequality within a society. The same methods of data collection that are used in interpretative research can be used in critical research. Jarratt (1996) describes the differences between quantitative and qualitative research as shown in table 5.1.

Dimension	Quantitative Approach	Qualitative Approach
Purpose	Prediction and control	Understanding
Reliability	Stable-reality is made up of facts that do not change	Dynamic-reality changes with changes in people's perceptions.
Viewpoint	Outsider-reality is what quantifiable data indicate it to be	Insider-reality is what people perceive it to be
Values	Free-values can be controlled	Value bound-values will impact on understanding the phenomenon
Focus	Particularistic-defined by variables studies	Holistic
Orientation	Verification	Discovery
Data	Objective	Subjective
Instrumentation	Non-human	Human
Conditions	Controlled	Naturalistic
Results	Reliable	Valid: the focus is on design and procedures to gain real, rich and deep data.

Table 5.1 Quantitative Vs. qualitative research (Jarratt 1996; P7)

The distinction between qualitative and quantitative approach is overemphasised and that may lead to all sorts of confusion (Hoepfl, 1997; Trochim, 2000). Trochim argues that qualitative and quantitative data are intimately related to each other. In his view, quantitative data is based on qualitative judgements and qualitative data can be described and manipulated numerically.

Both qualitative and quantitative approaches can be used jointly in all stages of a research process in order to get rich and reliable data concerning the area of study. Bryman (2001) refers to what he called technical version to explain the nature of qualitative and quantitative research. He emphasises the growing recognition that qualitative and quantitative research are each connected with a distinctive epistemological and ontological assumptions. These connections, as he claims, are not viewed as fixed and ineluctable. Consequently, research methods are perceived as autonomous. This means that a research method from one research strategy can be used

to serve another strategy. Thus, the two kinds of research are not mutually exclusive and can work well together (Remenyi & Williams, 1996).

5.3 Research Design

Research design can be either exploratory or descriptive design (Sekaran, 2000). According to Hussey & Hussey (1997), research design ranges from exploratory through descriptive and analytical to predictive research. *Exploratory research* aims to investigate an existed phenomenon that has not been investigated in the same context. It can be a valuable mean to seek new insights concerning the phenomenon under study (Saunders et al, 1997). Case studies and observations are examples of the techniques used in this kind of research. This type of research looks for patterns, ideas or hypotheses rather than testing or confirming a hypothesis. Therefore, it usually does not provide conclusive answers to problems or issues under investigation, but gives guidance on what future research should investigate. *Descriptive research* includes a detailed description of the phenomena under study. It aims to identify and obtain information on the characteristics of a particular problem or issue. Techniques which may be used in this research are often quantitative and statistical techniques. However, it is considered as further examination of the problem or issue investigated in the research. A continuation of descriptive research is called *Analytical or explanatory research* where the aim is to analyse issues that related to the phenomenon under investigation in order to understand why things behave in the described way. This can be achieved according to this kind of research through discovering and measuring causal relationships among different variables. *Predictive research*, on the other hand aims to provide a valid generalisation of the research outcomes through analysing these outcomes and predicting certain phenomena based on the hypothesised and general

relationships. Thus, predictive research provides how, why, and what answers not only to current events but also to similar events in the future.

5.4 The Choice of Methodology

A methodology, as discussed above, is a way to structure and organize our actions towards interpreting a particular setting. The researcher's role in the identification of the most appropriate methodology depends on his/her own perception and the available information concerning the area of focus. These, with some flexibility in the methodological approach, clarify several methodological issues and explain how the research can best be conducted. In addition, the researcher's personal and professional experience about the methodological approach used and his familiarity with the environmental cues are other important aspects that are necessary to determine the most appropriate methodology to conduct his/her research (Hoepfl, 1997).

As the main focus of this research is to investigate and interpret human behaviour and particularly managerial behaviour within a context that has never been investigated, this research is also described as exploratory research that uses quantitative approach. However, it also includes other qualitative elements through the use of interview method to enhance and validate the interpretation of quantitative findings. Attitudes of public managers and their relationships with the investigated demographic characteristics and management styles were justified based on six interviews that were conduced with some participants. In spite of the small number of interviews, they proved to be very useful concerning the interpretation of the observed relationships among quantitatively measured variables. This in fact enhances my ability to analyse and explain the quantitative data as well as my confidence in the findings that were

revealed. Interpretation and identification of the research implications were also enhanced by the effective use of relevant literature and documentary review which enabled understanding and evaluating of the current situation concerning ITD environment. This makes the contribution of this research more valuable and practical.

One can also argue that the researcher's experience, knowledge, skills, values, and personal objectives also affect his/her ability to interpret the data. It is my view that within the context of social science, it is impossible for the researcher to behave as a mirror that reflects the picture as it is. In contrast, reflection and interpretation are integrated together to explore the reality of the situation. Based on this argument, I reject the notion, which assumes that social world can be controlled and measured on the basis of purely quantitative measures. Therefore, I conclude that the approach used in conducting this research is a *positivistic* approach which is, in general, associated with quantitative methods (Johnson & Duberley, 2000). However, this research utilised both quantitative and qualitative methods of data collection. The focus was directed towards understanding the perspectives of the participants concerning some issues that were discussed within the scope of this research.

It is our belief that the use of one research method either qualitative or quantitative alone may constraint the process of data collection and limits the researcher's ability to interpret and provide possible explanation of the cited results. We see that even the use of quantitative data collection method (e.g. questionnaire) should not constrain our way of thinking and our interpretation of the observed reality. When the researcher has a degree of access to the research context, he/she should try as much as possible to understand this reality either formally through standard ways of data collection or

informally through socialisation processes. Therefore, the freedom of the researcher should not be limited at least in terms of the interpretation of the obtained results and here comes the contribution of qualitative research approach. In addition, several researchers indicate that the use of *integrated* or *combined* approach, which includes quantitative and qualitative elements, provides more accurate view of a phenomenon and assists the researcher to avoid the weaknesses of each single approach (Jarratt, 1996; Bryman, 2001).

In relation to the design of this research, it adopts a survey design, which is widely used research method in the social science. It is considered as the most appropriate and valuable research design in answering exploratory questions related to a particular context. This research's design is described as exploratory as not much is known about the situation at hand. It provides more comprehensive understanding of a social phenomenon in its context. Although some writers (Yin, 1994) claim that the use of survey design may provide little basis for scientific generalisation, one can argue that the issue of generalisation can only be problematic in the case of individual experimental research where the aim is to investigate a single subject or sometimes few subjects (e.g. clinical research) (Lehman, 1991). When survey research design is used within the context of social science, the generalisation of the research outcomes can be supported by the use of large sample size as well as through examination of the differences and similarities between different clusters of subjects. This was taken into account when selecting the sample frame and size of this research. This issue is demonstrated in the sampling section.

Intellectually, the use of the quantitative methodology can be justified based on several factors including theoretical and practical considerations. Theoretical considerations include the scarcity of the previous studies within the research context, the limited contribution and negative perspective provided by the previous quantitative studies that investigated this context, the generalizability of the research outcomes within the Jordanian context.

The nature of the research context and the scarcity of the available studies make identification of major trends very important prerequisite for more in-depth studies. Through this research, we aimed to identify major trends and identify possible areas of concern within the research context. This was possible using quantitative methodology which enables the involvement of larger number of organizations and individual participants.

The scarcity of the contribution combined with an overall negative perception provided by previous quantitative studies concerning management styles and ITD within this particular research context and its wider contexts also strengthens the case for the selection of quantitative methodology to challenge these studies through using the same methodology. It is our belief that these studies failed to provide a systematic understanding of the distinctive nature of the Arab management styles and the interaction between these styles and ITD. The selection and use of quantitative methodology can therefore be seen as a challenge for the few Arabic studies as well as for the current European studies that adopted a quantitative methodology to explore the nature of Arab management and the issue of ITD within this context. Through adopting quantitative methodology, this research has come to different conclusions concerning

the nature of Jordanian public management in particular and Arab management in general.

Through adopting a quantitative methodology, the generalizability of the findings of this research was improved. Considering the number of participant organizations (40) and the total number of participants managers (409), the use of quantitative research methodology and survey design in particular as a major research method was more appropriate since it enables collecting a huge amount of data from larger number of participants. This enabled generalisation of the findings to include all Jordanian public sector organizations.

Practical constraints including the level of accessibility available to the researcher and the issues that were investigated also significantly influenced our selection of a quantitative approach.

First, we have to consider the place of conducting this research, it was conducted in UK and access to the research context was limited to one period only where I spent three months (March to May 2002) doing the field study and collecting my data. The level of accessibility excluded the possibility of using other methodologies (e.g. grounded theory, soft system methodology). These action research methodologies involve a close collaboration between the researcher and the practitioners in all stages of research (Baskerville & Wood-Harper, 1996) and this was not possible in the case of this research. Since this research was conducted in the United Kingdom and the research context is JGOs, long and full access, which would involve physical attendance of the researcher in the research context, was not available.

In addition, this research is an exploratory research aiming to explore some issues that have never been investigated within the same research context rather than to provide an ITD theory. Therefore, my aim was to collect as much data as possible from as many participants as possible. The use of quantitative research methodology and survey design in particular as a major research method was more appropriate since it enables collecting a huge amount of data from larger number of participants. It also enabled generalisation of the finding on the research context. The use of exploratory research design was useful to investigate untested phenomena within a particular unique context. Although it usually does not provide conclusive answers to problems or issues investigated, it provides new insights concerning the issue of ITD in this context and gives a clear guidance on what future research should investigate. According to Checkland (1981), the learning process is established by interpreting as many different perspectives of the world as possible in order to get a rich picture of the world. Therefore, this research can help gaining of this rich picture. Moreover, exploration of some correlations among the investigated variables enabled the use of predictive design of research, which was used to predict the managers' attitudes and/ or management style when one of them is identified.

Nevertheless, specific limitations exist in relation to both the methodological approach employed and the empirical investigation. Limited interpretation and justification of the cited results should be emphasised in particular. These limitations are discussed elsewhere in this thesis (see section 10.3.1, chapter 10). In the next section, the methods of data collection used in this research are discussed and evaluated in more details.

5.5 Data Collection and Instrumentation

5.5.1 Survey Method

This research utilised a sample survey to explore and investigate the research questions. This method is a common approach to data collection and provides versatility, efficiency, and generalizability (Schutt, 1996). This method is the main method of data collection in this research. It was used to identify the dominant management styles within the research context as well as the managers' attitudes towards IT. It involves the application of standardised questionnaire to enable individuals to be placed on a dimension indicating the degree of favourability towards the object in question (Burns, 2000). The questionnaire was designed after a Likert scale. A 'Likert' survey is made up of a series of statements, which are related to individuals' perspectives in relation to a single or multiple objects, in this case the management styles and managers' attitudes towards IT.

The form of survey used in this research can be classified as exploratory aiming to explore the nature of existing circumstances. This method was conducted through a three-part self completion questionnaire that was designed and distributed directly for the purpose of this research. The nature of the research issues and the ill-defined technical knowledge among the practitioners make the direct questionnaire method more appropriate than any other survey method such as mail questionnaires, telephone interviews or electronic mail. Another advantage of this method is the possibility of generalizing results. In addition, it is an efficient way of collecting data in a short period of time with low cost. It also enables the researcher to interact directly with participants. Most importantly, the use of social survey method in general is described as the most practical way of collecting a standardized data from large numbers of people

(Haralambos & Holborn, 1991). They claim that using other types of research methods such as unstructured interviewing or observation would be less suitable and difficult to translate into statistical form. Other advantages for the use of survey method include: standardization, ease of administration, ability to tap the unseen, and sensitivity to subgroup differences which is a major concern in this research (Nieswiadomy, 1998).

A three-part questionnaire was used in this research (see appendix B). The first part aimed to acquire a general demographic data concerning the participants' gender, age, organizational experience, educational level, and span of control. Each of these variables was coded as appropriate to distinguish the participants through categorising them into mutually exclusive and collectively exhaustive groups. The second part was designed to identify the prevalent and most dominant managerial styles within the research context. The third part is a modified version of Loyd and Loyd's Computer Attitude Scale (CAS). The overall questionnaire was originally written in English language and then translated into Arabic language as the native language of the participants. A detailed description for the second and third part is provided next.

5.5.1.1 Management Styles Questionnaire

In developing the management styles questionnaire, certain procedures were followed (Fayers & Machin, 2000). The research questions to be answered through this part were formulated clearly in order to understand the objectives of the questionnaire. Then, the specifications of the target population were identified. Having done that, the process of items generation has started. Review of the relevant literature enabled identifying the dimensions of the investigated subject. A discussion of the research issue with some experts provided an equal source of items generation. Then, the suitable format of the

questions was selected based on consideration of the research environment, participants and objectives. The items were converted into brief, clear, and easily understood questions. Then, the collection of data was carried out followed by the application of the appropriate methods of statistical analysis including principle component analysis, which enabled grouping of the items that measure each managerial dimension and style, and computing of means, which enabled the identification of the most dominant management styles and their proportions within the research context.

In the first phase of this research, the questionnaire aimed to answer the following two questions:

- What are the dominant management characteristics in JGOs?
- What is the order and proportions of these styles according to their existence or dominance?

Since the reality of management styles is often complex and cannot be categorized too tightly, two contradictive management styles often co-exist inside the same country (Tixier, 1994). One can justify this through the varying managerial and cultural background that managers may have and the diversity of employees' attitudes concerning the way they prefer to be managed. Based on this fact and on an extensive review of the available literature, an attempt has been made to integrate both the conventional and new management paradigms together to formulate a questionnaire that explores the dominant characteristics of the management style in the research context. Therefore, instead of adopting a single questionnaire from the literature, I have

developed a questionnaire based on a comprehensive classification of management styles that includes both conventional and new management paradigms.

This questionnaire is measuring two managerial dimensions that were named as task-oriented and people oriented management styles. Our review revealed some common characteristics between different styles of management and this emphasises the fact that there is no ideal management style. The appropriate management style has different characteristics that represent different management styles. The identified characteristics of the management styles were used as the main source of items generation. However, to measure the availability of some other characteristics that associated with the NMP, other items were developed to represent the NMP as described in more recent literature. Accordingly, 35 items were generated and converted into brief, clear, and easily understood items (see appendix B, section two). Items were scored from 5 (strongly agree) to 1 (strongly disagree). The validity of this questionnaire which refers to the issue of whether an indicator or scale that is devised to measure a particular concept is really measuring that concept (Bryman, 2001), was improved through the use of judges to determine whether the management styles questionnaire is measuring this concept. The survey of the literature that was presented in chapter 3 also improved the validity of the management styles questionnaire.

Moreover, the identification of the management styles in this questionnaire was based on the managers' perception of their behavior (*the manager-centric approach*). The use of follower-centric approach that proposed by Bass (1985, 1990), Avolio & Bass (1999), and Bass (et al 1975) and used by some writers (e.g. Popper & Druyan 2001) as

an alternative to the traditional leader-centric approach was not possible since the time scale was short and organizations where geographically far from each others.

5.5.1.2 Attitudes toward Computers Scale

Attitudes of lower and middle line managers in JGOs were measured using the CAS developed by Loyd & Loyd (1985). CAS measures attitudes of people towards using or learning about computers based on the following four subscales: (a) computer anxiety, (b) computer confidence, (c) computer liking, and (d) computer usefulness. However, considering the fact that no differentiation is actually made between IT and computers within the context of this study where the two concepts are used interchangeably, CAS was used to measure attitudes towards IT. The use of CAS in particular improves the contribution of this research through exploration of relationships between these subscales and the five demographic characteristics. This provides in-depth analysis of managers' attitudes towards IT. The validity and reliability of this scale are well tested and evaluated in different studies (e.g. Woodrow, 1991; Gardner et al, 1993). Loyd & Loyd (1985) test the reliability, the factorial validity, and the differential validity of their modified CAS and its four subscales. They reported that this instrument was reliable to measure teachers' attitudes toward computers.

Since this research was conducted in an organizational setting, a slightly modified version of CAS was used to achieve the objectives of this research as well as to answer its cited questions that are related to managers' attitudes towards IT. The instrument consists of 40 items with responses recorded on a four-point Likert scale. However, instead of four-point scale as in the original version, this study used a five-point scale to provide the participant with the opportunity of recording a neutral view. It was felt that

this would encourage a complete response and provide more flexibility in analysing the data. This also was necessary to improve the face validity of CAS. For each item, respondents were asked to express their agreement or disagreement with the item through selecting one of the following: strongly agree, agree, neutral, disagree, or strongly disagree. Questions numbers 22, 25, 35 and 36 were modified in terms of wording and clarity (see appendix C).

The items were coded so that the higher the score, the more positive the attitude. Therefore, a higher confidence score means more confidence, a higher liking score means more liking, a higher usefulness score means more usefulness, whereas a higher anxiety score means less anxiety.

5.5.2 Interview

Most interviews fall somewhere between structured and unstructured interviews. A structured interview is a questionnaire administrated by an interviewer who is not allowed to deviate in any way from the questions that are prepared beforehand (Haralambos & Holborn, 1991). However, this form of interviews is not common among researchers who prefer to use unstructured or semi-structured interviews that enable them to get further details and discussion concerning the issue under study. Usually, researcher has some issues to be raised in the interview beforehand but these issues are not structured in formal and restricted questions.

Semi-structured interviews were employed in this research as a complementary and supportive mode of enquiry. Issues to be discussed were defined beforehand through an initial analysis of the questionnaires but kept flexible to give both the researcher and the

interviewees more flexibility. Three in-depth recorded interviews and three in-depth unrecorded interviews were carried out. Major themes were identified and used to support and validate the result of the questionnaires. Issues covered through interviews are varied and include: management styles and behaviour, the role of managers in e-government projects, the impact of education and technological "culturation" process on managers' acceptance of IT, training, and e-readiness. The use of interviews proved to be very useful in providing an explanation of the quantitative research outcomes.

Interview in general is seen as a compromise between more structured research methods like questionnaires and the more in-depth methods such as participant observation. It can provide greater depth and understanding of the social world because it gives a researcher the ability to take the discussion further and explore some issues in more details. It is also seen as a useful way to generate new questions and theories which the researcher may not thought of. Thus, it is a flexible way to extract simple factual information from people (Haralambos & Holborn, 1991). However, interviewees may be influenced by the presence of the researcher especially when the issues being raised involve providing personal information (Haralambos & Holborn, 1991). This, however, was not an issue in this research as the issues discussed were general and had no impact on the interviewee's personal situation.

5.6 The Sample

The sample for this research was drawn from a list of the Jordanian public service organizations. Jordan is a developing country that has started recently to explore the use of ICTs to enhance the development of its economy and to achieve successful

integration with the global environment. Some efforts have already been made to build an IT industry based on a coherent IT strategic vision at the national level (see www.reach.jo). A five-year electronic government project has also been proposed and practical steps have been taken (Jordan Ministry of Information and Communication Technology-MoICT): http://www.mopc.gov.jo/). This Jordanian approach can be seen as a role model for most developing countries in general and Arabic countries in particular. Jordan is similar to many developing countries in terms of its economic level of development and its limited or unutilised resources. In addition, it shares with other Arabic countries its cultural, political, and social backgrounds.

Lower and middle line managers in public service organizations were selected to answer the research questions. Lower and middle line managers are defined as managers below ministerial level. Those managers are usually responsible for units of comparable size (i.e. sections, divisions, branches, or departments). Top-level managers (ministers and regional managers) were excluded because of the difficulty gaining access to them. In addition, carrying out a study that involves all managerial levels may lead to misleading results since the motivation of top managers might be different with their focus directed toward strategic rather than tactical or operational activities. It is our view that ITD has strategic and tactical dimensions. While strategic dimension is concerned with creating a vision for the future and identifying means and policies which enable the achievement of this vision, tactical dimension is concerned with the implementation of the diffusion strategy and the integration of new computer technology with the organizational activities. Strategic dimension is the responsibility of top management or strategies' makers. Tactical dimension is the responsibility of middle and lower line managers who are more concerned with the functional aspects of the organization and have direct

contact with employees and users of the organizational services. These two dimensions should complement each others and this requires cooperation between strategic and tactical managerial levels. ITD strategy can not be successful without considering the tactical management acceptance and ability to implement it.

Accordingly, and based on a review of the Jordanian governmental efforts, one can argue that these efforts have adopted strategic more than tactical perspective. The involvement of lower and middle line managers has not been considered. Their views regarding the introduction of e-government and the appropriateness of their styles of management to the new organizational environment have not been taken into consideration. This situation provided a motivation towards investigation of the management styles and attitudes of lower and middle line management towards IT within the Jordanian context rather than top managers or strategy makers. Furthermore, the broader operational and tactical scope of the work of those managers improves the homogeneity of the sample regarding the nature of managerial activities and styles.

Multi-stage stratified cluster sampling was used in this research to ensure good representation of the research context. The sampling frame consisted of a list of governmental organizations provided by the department of statistics (statistical yearbook, 2000). It included the 33 ministries, departments, and corporations that constitute the Jordanian government body. Since the number of population was not available, the focus was directed toward the number of service organizations as a whole. The diversity of the selected organizations ensured that a good representation of service organizations from different geographical areas was achieved.

In selecting the most appropriate sample, two stages of sampling were conducted. The first stage was to choose the organizations where the study can be conducted. This was made through the use of stratified sampling which enabled the classification of the population into discrete groups. According to this technique, the sampling frame is the complete list of clusters rather than the complete list of individuals within the population (complete list of Jordanian ministries). Based on this and considering the geographical distribution of the public organizations, 40 organizations were selected from different clusters that represent variety of public services: health, education, social security, finance, telecommunication, transportation, local, agriculture, legal, security, planning, public work and housing service (see appendix D). The representativeness of the sample was improved where regional distribution of these organizations enabled the consideration of regional differences. This, in turn, improved the external validity of the results of this research which is concerned with the question of whether the results of a study can be generalised beyond the selected sample.

The second stage involved the selection of the people who were expected to participate in the study. At this stage, simple random technique was used and data was collected randomly from lower and middle line managers within the selected organizations. A total of 534 questionnaires were distributed from March 2002 to May 2002 and 409 were collected. This represents a relatively high response rate (76.6%) (see appendix E for frequency and coding of demographic characteristics).

5.7 The Analysis of Data

The analysis process was undertaken based on a theoretical framework that includes five levels of analysis. The first included coding, entering, cleaning, and transformation

of the data. The second level included a general description of the participants according to their gender, age, level of education, organizational experience, and span of control. Participants were clustered based on these characteristics. The third level of analysis included the analysis of management styles-related items through the use of factor analysis, correlations, and means of the extracted styles. This provided answers to the research questions that are related to management styles, their order and proportions. The fourth level of analysis included exploration of the six research questions that are related to the attitudes of managers towards IT. This was made through the use of factor analysis, correlations and bivariate analysis, and general linear model in addition to frequencies and descriptive statistics. The final level of analysis included the exploration of the relationship between management styles and managers attitudes towards IT. This was possible through the use of bivariate correlation and general linear modelling. This final level enabled the achievement of the overall aim of this research.

The identification of the relationships between different variables was facilitated through the use of computer. SPSS, which is one of the most common and powerful packages for statistical analysis of data (Green et al, 2000) was used to analyse data from questionnaire. This data analysis software proved to be very useful in all levels of analysis within the scope of this research.

Concerning the analysis of interviews, no statistical method was used. Data were transcribed, translated, and then classified according to the major themes they covered. Important indications from these themes were used to provide an explanation of the quantitative findings.

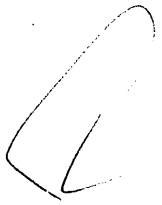
5.8 Ethical Issues

Trochim (2000) argues that no set of standards can possibly anticipate every ethical circumstance. Therefore, there needs to be a procedure that assures that researchers will consider all relevant ethical issues in formulating research plans. In this research, ethical principle like voluntary participation and confidentiality were strictly assured. Research concerns and objectives were clarified for each individual who asked for that clarification and sometimes, discussion where made to ensure the participants' understanding of the general aspects of research. Participants were not asked to provide their names or their organization's name and this ensure the anonymity. Individual differences concerning the questionnaires understanding and interpretation were respected and treated as politely as possible. In some organizations, group discussions were made to explain the objectives of the research.

5.9 Conclusion

This research is mainly deductive and involves the use of quantitative methodology as a primary mode of enquiry. The issue being researched was the main factor that determined the best method to gain our data. Questionnaire survey method was used to achieve three objectives: identification of the managerial characteristics, identification of the managers' attitudes towards IT within their organizations, and exploration of the relationships between managers' attitudes and styles of management. Qualitative approach was also employed through using the secondary data to identify the characteristics of the new management paradigm and compare it with the empirical results from the research context. Moreover, six interviews were carried out with some managers to obtain insightful data as well as to enhance the interpretation of

quantitative findings. SPSS was used to analyse the relationships between the research variables.



Chapter Six:-

Analysis of Management Styles

6.1 Introduction

In order to answer the research questions that are related to the management styles, management styles questionnaire is analysed in this chapter. The analysis was conducted on two levels: the first was based on the use of factor analysis and aimed to identify the two managerial dimensions discussed in chapter 3 including task-centred and people-centred management. This was followed by reliability analysis procedures to assess any possible elimination of the items related to each dimension. Then, items that measure each dimension were factor analysed to distinguish the management styles that represent each of them. The second level includes computing of means of management styles to identify the relative importance of the extracted management styles and their order and proportions according to their prevalence within the Jordanian public organizations. An interpretation and discussion of the results is also provided by the end of this chapter.

6.2 Factor Analysis

Factor Analysis (FA) is a technique particularly suitable for analysing the patterns of complex, multidimensional relationships encountered by researchers and business people (Hair et al, 1995). It is a very effective method to define the underlying dimensions in the data and to facilitate the identification and interpretation of the underlying managerial framework. In other words, it is used to identify items that

represent each style of management and each dimension in the questionnaire. This is based on the identification of the patterns that underline the correlations between a number of variables (the 35 items that assess management styles) which, consecutively, enables the grouping of these items according to their correlations (Miller et al, 2002). Then, the selected representative items can be used in any subsequent analysis (Hair et al, 1995; Green et al, 2000).

In this chapter, FA was used to achieve two objectives: the first was to present a summary of the data set. With the existence of approximately more than 14000 pieces of data (409 cases*35 variables), the use of FA was proved to be an effective and reliable data reduction technique. The second objective was to identify the prevalent styles of management and the overall dimensions that these styles represent. Then, the selected representative items were used in a subsequent analysis which included the identification of the order and proportions of the extracted styles through computing of means of the items the represent each style. .

Exploratory Factor Analysis (EFA) in particular was used in this chapter. EFA identifies relationships among variables that are often far from obvious in the original data (Hutcheson & Sofroniou, 1999). The aim of EFA was to discover the main construct or management dimensions within the data. In the case of investigating management styles, EFA was used to assess the 35 items and to identify the two management dimensions that were proposed in this research (task and people oriented management). It also enabled the extraction of the management styles in each of these dimensions. Then, items that represent each style were used as a measure for this particular extracted style. Clustering of the items according to their style was based on their correlation with

other items. For example, items that load on the style named innovative management were supposed to measure the innovative style.

Correlations between all the items were observed and support the use of FA. To obtain factor solution, two basic methods were assessed: common factor analysis and component analysis (Kline, 1994). Component analysis was selected to extract the minimum number of factors that account for the maximum portion of the variance in the original data. However, empirical research demonstrates the similarity of their results in many instances. Both methods arrive at essentially identical results when the number of items exceeds 30 (Hair et al, 1995), which is the case in this study.

The overall outcomes of FA include two managerial dimensions and five styles of management. The extraction of these dimensions and styles are discussed in the following two sections.

6.2.1 Two Dimension-model of Management Styles

This research suggested the existence of two managerial dimensions within the JGOs including task centred and people centred (see chapter 3). To assess whether these dimensions are prevalent to the context of this study, 35 items were developed to measure these dimensions. Cronbach's alpha test, a commonly used test of internal reliability, was employed to assure questionnaire reliability. This test measures the internal consistency of the items that measure the management styles based on the average inter-item correlation and assures that all items are homogeneous (Cortina, 1993). According to this test, alpha= .80 which was considered as an acceptable level of internal reliability (Bryman, 2001).

FA was used to identify the items that measure each management dimension. The use of this method confirmed the existence of two dimensions. The first is the task dimension (items 2, 4, 7, 8, 10, 19, 21, 23, 26, 27, 28, and 34) where the manager's interest is directed toward accomplishment of the task through practising individual authority that is based on the formal use of power and individual decision-making process. The second is the people dimension (items 1, 3, 5, 6, 9, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 25, 29, 30, 31, 32, 33, 35) where the manager's interest is directed towards people and their role in managing their own activities. This dimension emphasises the participative approach of decision-making and encourages team working and innovation in relation to organizational activities. In general, the first dimension is representation of the traditional styles of management that, according to the literature, are more dominant within the research context, while the second is representation of the NMP described in the literature.

To assess the internal reliability of the items that measure each dimension, the correlation between each item and the total score of its dimension was obtained through the examination of the components matrix using principal components analysis, which is perhaps the most popular method of factors extraction and is implemented in a number of statistical software packages (Hutcheson & Sofroniou, 1999). This method is part of factor analysis outputs and provides the loading of each item on the general dimension and assesses the suitability of each item for measurement of its particular dimension and thus may suggest elimination of some items. Loading represents the strength of each item in defining the factor (in this case management dimension) (Miller et al, 2002). The higher the loading of the item the more important it is to measuring of its dimension. All loadings less than .20 have been selected for possible elimination.

The selection of .20 as a salient loading is supported by the relatively large sample size used in this research (Green et al, 2000).

All the items that measure the people oriented dimension where found to have higher loading than .20 on the general factor that represents this dimension (see table 6.1). Accordingly, no elimination was needed confirming that all the items are measuring the same dimension.

Component Matrix [a]

	the General Factor
(Q1)	.392
(Q3)	.373
(Q5)	.409
(Q6)	.542
(Q9)	.395
(Q11)	.559
(Q12)	.493
(Q13)	.351
(Q14)	.553
(Q15)	.477
(Q16)	.725
(Q17)	.339
(Q18)	.440
(Q20)	.529
(Q22)	.501
(Q24)	.270
(Q25)	.562
(Q29)	.386
(Q30)	.567
(Q31)	.328
(Q32)	.403
(Q33)	.376
(Q35)	.597

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Table 6.1 Loading of items that represent people oriented dimensions

Following the same rule (correlation less than .20), all items that measure the task oriented dimension where found to have higher loading than .20 on the general factor

that represents this dimension (see table 6.2). Accordingly, no elimination was necessary.

Component Matrix [a]

	The General Factor
(Q2)	.488
(Q4)	.424
(Q7)	.604
(Q8)	.352
(Q10)	.386
(Q19)	.509
(Q21)	.485
(Q23)	.516
(Q26)	.531
(Q27)	.414
(Q28)	.319
(Q34)	.244

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Table 6.2 Loading of items that represent task oriented dimensions

The outcomes of this analysis confirm that among the 35 items that were used in the questionnaire, 12 items loaded on the first dimension and were measuring the task oriented management while 23 items loaded in the second dimension and were measuring the people oriented management. Further FA of these two dimensions was employed to identify the management styles that represent each dimension.

6.2.2 Identification of Management Styles

Two research questions were proposed to explore the nature of management styles within the research context. The first is concerned with the identification of the prevalent management styles within the context of JGOs. The second question is an extension of the first question and is concerned with the order and proportions of these styles according to their existence or dominance within this context. FA was employed to provide an answer to the first question. It comprises effective tools that can be used to identify different combination of the items and different factor structures that

represent different management styles. The identification of these combinations is based on the intercorrelations between each item and other items in the same dimension. Different factor structures were derived from several trial solutions and examined to get the best representation of the data. The selection of the alternative solutions was based on: the previous theoretical knowledge concerning management styles and scree plot test criterion which represents the relative magnitudes of the eigenvalues.

To simplify the factor structure and interpretation as well as to make it more meaningful, rotational factor was used. According to Miller (et al, 2002), rotation is necessary when the initial extraction of the factors suggests the existence of two or more factors which is consistent with the extraction of the two dimensions explained in the previous section. The rotational factor structure not only provided a clear picture of which items load in which factor but also more theoretically meaningful solution (Miller, 2002). *Varimax* rotation method was used in particular to provide clearer separation of the styles. This method was proved very successful as an analytic approach in obtaining uncorrelated (*orthogonal*) rotation of management styles which reduced the overlap between management styles and simplified the interpretation of the extracted styles (Hair et al, 1995; Green, 2000; Miller et al, 2002). However, no significant differences were found when using *Oblique* or correlated method of rotation. For the interpretation purpose, and considering the large sample size (409) and the number of items being analysed, all factor loadings greater than 0.30 were considered significant (Green et al, 2000).

Several rotations were undertaken. In relation to the first dimension, two-factor solution was selected to represent the data. The selection of this solution was based on the

previous theoretical knowledge regarding traditional management styles and the scree plot test (see figure 6.1).

Figure 6.1 Scree plot test - first dimension

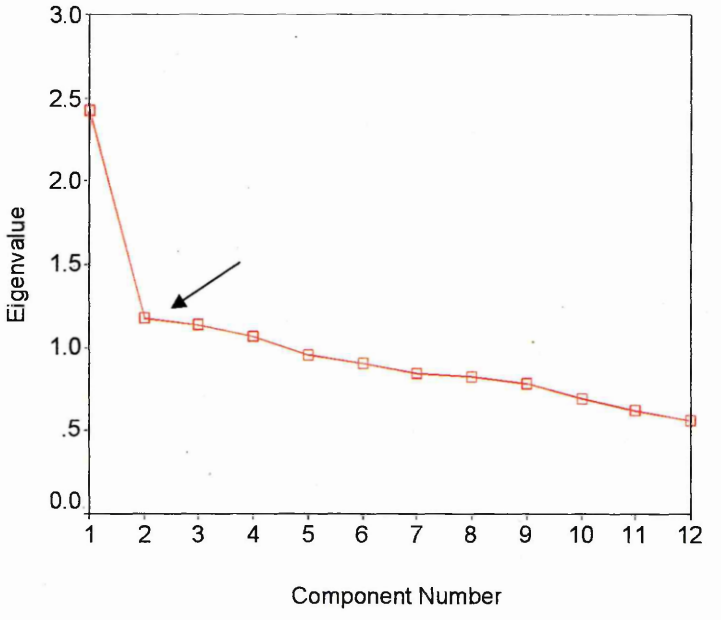


Figure 6.1 provides visual criteria which we use to determine the number of factors to be extracted. This is made by selecting those factors whose eigenvalues occur before the plot starts to straighten out. Accordingly, two styles of management were extracted to represent this dimension. The first is the autocratic style (items 7, 8, 10, 19, 23, 26, 27 and 28), which is based on individual decision-making process, personal knowledge and formal source of power. The second style is the authoritarian style of management (items 2, 4, 21 and 34), which is highly centralised around the managers who make decisions and ask others to implement them. Tables' number 6.3 and 6.4 classify these items according to the style of management they measure and the loading of every item in its style which represents the relative importance of each item in measuring its style.

Autocratic style	Authoritarian style
7. I feel upset if I cannot convince the staff the decisions I take are the best ones. 8. My source of power is based on organizational rules and procedures. 10. I try to capture the allegiance and respect of my staff through the use of my personality. 19. I believe in extensive consultation with the staff prier to taking management decision but always reserve the right to take decisions unilaterally. 23. I have rigid commitment to my personal opinion. 26. When taking decision I obtain the information I need, consider it and personally make a firm and quick decision. 27. When taking decision I devote large amounts of time to persuading the staff to accept my point of view. 28. I tell the staff what has to be done and how to do it.	2. I always make the final decision and ask the staff to implement it. 4. I set tasks and schedules and make sure that the staffs stick to them even if this causes me to be unpopular. 21. If my staffs disagree with me about something I tend to impose my own decision rather than negotiate a compromise solution. 34. Sometimes I use punishment in order to get the job done in the way I want it to be done.

Table 6.3 Classification of the items according to the style they represent

Rotated Component Matrix[a]

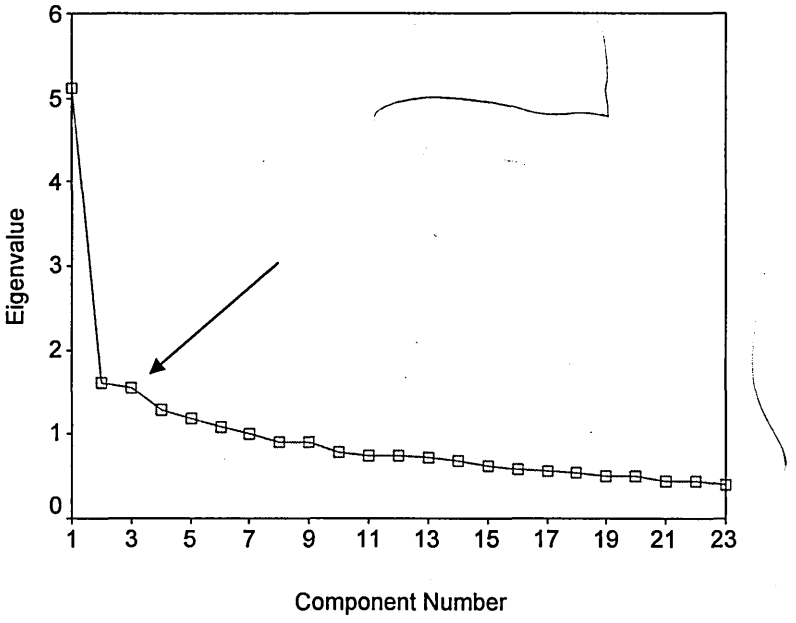
	Task-centred Management Styles	
	Autocratic	Authoritarian
(Q2)		.696
(Q4)		.548
(Q7)	.690	
(Q8)	.353	
(Q10)	.400	
(Q19)	.417	
(Q21)		.607
(Q23)	.403	
(Q26)	.591	
(Q27)	.646	
(Q28)	.301	
(Q34)		.413

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Table 6.4 Loading of each item in its style

To identify the management styles of the people oriented dimension, items that represent this dimension were factor analysed following the same procedures. Three-style solution was selected. The selection of this solution was based on the previous theoretical knowledge and the scree plot test (see figure 6.2).

Figure 6.2 Scree plot test - Second dimension



As shown in this figure, the plot begins to appear after the third factor. Therefore, the first three factors can explain the majority of the variance. Accordingly, three management styles were extracted. The first is the innovative style (items 3+5+9+11+14+15+16+18) where the managers' interest is directed towards encouraging innovative behaviour, delegation of new tasks, co-operation in decision-making process and team working. The second is the democratic style of management (items 12+20+22+25+29+30+31+32+35), which allows employees to hold responsibility of making important decisions and decide the way they implement them and gives equal importance to employees' interests and their needs. The third is the participative style of management (items 1+6+13+17+24+33), which is basically based on participation in performing of organizational activities that should consider organizational rules and procedures with an opportunity to questioning these rules and procedures. Tables 6.5 and 6.6 classify items that measure each of the above styles and

the loading of each item on its style which measures the correlation between each item and other items that measure the same style.

Innovative style	Democratic style	Participative style
3. I like to share my leadership power with my subordinates. 5. I believe that innovation and unconventional approaches should be rewarded. 9. My source of power is based on my knowledge about organizational work and activities. 11. I work in close harmony with the staff members. 14. When some thing new occurs I set with the staff to decide how we can deal with it. 15. I delegate tasks in order to implement a new procedure or process. 16. I listen to staff' opinions about work and take them in my consideration. 18. I believe that staff members should be encouraged to respond creatively to challenging situations.	12. I am happy to let the staff assume responsibility for taking important decisions. 20. I allow my staff to determine what needs to be done and how to do it. 22. I accept the disagreement and try to create a debate about the organizational work and procedures. 25. I actively encourage team working wherever possible. 29. Forward planning begins at the department level and then works its way up. 30. My responsibility to the needs of my subordinates is equally as important as getting the job done and working as a team. 31. I would not impose a decision if it meant seriously upsetting the staff. 32. My workers know more about their jobs than me, so I allow them to carry out the decisions to do their job. 35. I like to work jointly with my staff on dealing with issues.	1. In this organization, management decisions are taken on the basis of agreement and consensus among the staff. 6. I believe that we are working on co-operative base to achieve the organizational aims. 13. This organization has many rules and procedures that have to be followed when making decisions. 17. I believe that this organization can quickly alter its administrative procedures, reallocate its resources and undertake new activities. 24. My staff can lead themselves just as well as I can. 33. In this organization, staff members are encouraged to question existing policies and working methods, to innovate and challenge current thinking.

Table 6.5 Classification of items according to their style

Rotated Component Matrix [a]

	People-centred Management styles		
	Innovative	Democratic	Participative
(Q1)			.666
(Q3)	.527		
(Q5)	.528		
(Q6)			.646
(Q9)	.530		
(Q11)	.442		
(Q12)		.489	
(Q13)			.406
(Q14)	.511		
(Q15)	.413		
(Q16)	.586		
(Q17)			.448
(Q18)	.469		
(Q20)		.637	
(Q22)		.409	
(Q24)			.522
(Q25)		.466	
(Q29)		.313	
(Q30)		.506	
(Q31)		.600	
(Q32)		.565	
(Q33)			.553
(Q35)		.505	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations.

Table 6.6 Loading of each items in its style

The naming of the extracted styles in both dimensions was based on the amount of items loading in each style. Items with higher loading had more impact on the naming of the style. Because of the relatively high loadings of some items, the cut-off point for the naming of the styles was identified as all loadings + or - .550 or above. This relatively high cut-off point was possible due to the high loadings of some items in the extracted styles. This is considered as an indication of reliable representation of every group of the items for each style they measure. The stability of this factor solution is supported by the relatively large sample size. The case -to- item ratio is almost 12 to 1, which is even higher than the ratio that is recommended in the literature (Kline, 1994; Hair et al, 1995; Green et al, 2000).

The above analysis provides an answer for the first question concerning the styles of management prevailing within the research context. It is observed that this analysis reflects a diversity of management styles in this context which indicates the sophisticated nature of management styles which is discussed later in this chapter.

For subsequent analysis and in order to represent a composite of all items loading on each style and to avoid the representation of a single item from each style, the mean of all items that measure each style were computed and used to examine the order and proportions of the identified management styles. Since the number of the items that measure each style differ, the use of mean instead of the total score can eliminate any bias concerning the different number of items which represent each style.

6.3 Examination of the Management Styles

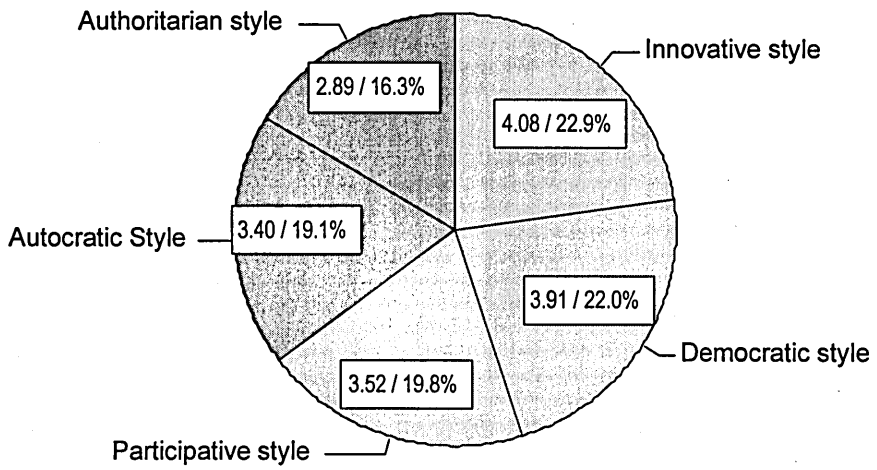
The use of EFA enabled the identification of five styles of management within the research context including autocratic, authoritarian, innovative, democratic, and participative style. To explore the relative importance of each of these styles, further analysis was made. This included computing of the mean of the items that represent each style and comparing them together. Table 6.7 shows the means of the identified management styles.

	Mean
Mean of innovative style	4.08
Mean of democratic style	3.91
Mean of participative style	3.58
Mean of autocratic style	3.40
Mean of authoritarian style	2.90

Table 6.7 Means of management styles

Pie chart (figure 6.3) provides a pictorial display of the frequency distribution for the management styles and shows the structure of the management styles and the proportion of each of them within the research context. This figure shows the percentage of each management style from the collective means of all management styles. The use of means again enables the overcoming of the different number of items that measure each style and provides an indication of the preference of managers towards these styles.

Figure 6.3 Proportions of management styles



It is observed that managers with people oriented management style represent almost two third of the participants. This is consistent with the higher means of innovative, democratic, and participative styles of management. Although these findings slightly indicate that managers of JGOs have preference towards people oriented management styles including innovative, democratic and participative style, task oriented management styles including autocratic and authoritarian styles are found to be prevalent to this context. An explanation of these results is provided in the next section.

6.4 Discussion of Management Styles

The above results emphasise the diversity of management styles within the JGOs. Five management styles were found to be prevalent within this context including innovative, democratic, participative, autocratic, and authoritarian style. These styles represent various elements of both traditional and NMP (see table 6.3 & 6.5). While autocratic and authoritarian management styles represent the conventional school of management, innovative, democratic, and participative styles represent the NMP (see chapter 3, section 3.2 & 3.3). Computing of mean of the items that represent each style shows that the proportions of these styles are slightly different (see table 6.7 and figure 6.3). Managers of JGOs have preference towards people oriented management styles including innovative, democratic and participative style respectively. This, compared with other studies that investigated the Arab management in general, emphasises that Arab management in general and Jordanian public management in particular is undergoing a process of change in relation to the nature of managerial thinking and styles.

Unlike other studies that have investigated Arab management (Muna, 1980; Al-Falah, 1987; Atiyyah, 1992; Ali & Camp, 1995; Youssef, 1996; Hunt & Twaijri, 1996; Yousef, 1998; Elgamal, 2000), this study emphasises that no single style can be identified to explain the nature of management styles within the Jordanian context. These studies have reflected one dimension of management and emphasised a negative perspective concerning the nature of Arab management. This view has not considered the nature of management style as a social element which differs from one manager to another depending on his personalities, preferences, education, religious commitment,

technological and external exposure and several other factors. It also does not consider employees differences with respect to the way they prefer to be managed. However, Ali (et al, 1995) adopted the *no single style* theory and emphasises that consultative and participative styles of management are found to be the most preferred styles while autocratic style is the least preferred. Their study was conducted in private, public and multinational organizations in the United Arab Emirates and thus can not reflect the distinctive nature of public management styles. In contrast, Awamleh (1994) investigated the level of managerial innovation among public managers in Jordanian organizations and revealed that management styles negatively affect the managerial innovation in these organizations indicating a conflict between innovative management and the prevailing management styles in Jordanian public organization

Interpretation and explanation of these results requires understanding of the main sources of Arab management styles in general and Jordanian management styles in particular. It can be argued that the management styles prevailing in Arab organizations in general and JGOs in particular are the outputs of a complex interaction between cultural values, Islamic values, political leadership, and technological development. These four factors together establish a framework in which the above results can be explained.

- ***Cultural values***

Hofstede (1980, 1991) classifies Arab countries as high power distance countries, moderately high collectivist countries, moderately masculine countries, and strong uncertainty avoidance countries. Some of these cultural attributes challenge the introduction of the NMP that was suggested in the previous studies (AL-adaileh &

Siddiqi, 2003). For instance, having a large power distance score where employees depend considerably on their managers may contradict some characteristics of the NMP such as horizontal, integrated and decentralised structure of authority. Moreover, since employees are unlikely to approach and contradict their managers directly, openness, cooperation, and integrated management by objective approach are most likely not possible as they require some form of negotiation between employees and their managers (Hofstede, 1980, 1991). Furthermore, moderately masculine culture of Arab countries assumes that managers are expected to be assertive, tough, and decisive. The relatively strong uncertainty avoidance culture limits the level of managerial flexibility, innovation and creativity within the organizational context and directs the focus of management towards providing instructions, fixed rules, and centralized courses of actions and decisions rather than on information and advice as proposed in the NMP. These cultural values, as one can argue, encourage the dissemination of autocratic and authoritarian styles of management and consequently explain the existence of these styles within the JGOs.

Nonetheless, the power of the group within Arab collectivist society encourages the utilization of team work and team management (Ali, 1995; Hasan & Ditsa, 1999). According to Hofstede (1980, 1991), the power of the group in collectivist societies is more dominant and individual identity is derived from the group which is normally the extended family that consists of a number of people living close to each others (parents, brothers, sisters, grandparents, aunts, uncles....etc). The relationships among the group members are powerful and have a great impact on the individual behaviour and are considered as an essential source of protection. Therefore, managers in collectivist cultures are expected to act according to the interests of the group in which they belong.

Although this may encourage some negative managerial practices (e.g. nepotism) (Polidano, 1999; Agnaia, 1997; Atiyyah, 1992), effective utilisation of group relations creates an appropriate atmosphere where participation and democratic management styles are encouraged. Group interactions can also be a facilitator of organizational change including the application of new technology. Therefore, Weir (1993) argues that managers in Arab countries share a belief in the positive value of change.

In integration of these contradictive cultural attributes, level of management, the geographical setting of organizations and organizational size should be considered. The impact of personal relationship and the power of the group for example are expected to be greater in lower managerial level and in organizations that are located in rural areas. In these areas, people are more connected to each other and usually have informal relationships in addition to the formal relationships which dominate the central organizations in bigger urban areas. Therefore, the positive cultural attribute of group power and social relations are expected to encourage the dissemination of people oriented management styles. In contrast, power distance and uncertainty avoidance behaviour of managers in central organizations may encourage the use of task oriented management styles. However, an empirical investigation is required to validate this theoretical explanation of the diversified nature of management styles in which distinction is made between central organizations in big cities and other organizations in smaller and rural areas.

- ***Islamic values***

Many writers argue that Islamic values systems impose positive managerial attributes (Ali, 1992, 1996; Atiyyah, 1992; Bakhtari, 1995; AL-hawamdeh & Al-Fahdawi, 2002).

When correctly followed, these values enforce the positive cultural values in Arab society and eliminate other negative values. For instance, the principle of consultation is fundamental in the tribal systems of Arab society and has been enforced by Islamic management system which encourages the establishment of consultative government.

"Their affairs are decided after due consultation among themselves, and from our provisions to them they give (to charity)" (Holy Quran 42:38).

Respectful opposition to the leaders is also maintained in Islam and this invites Muslims to have a freedom of speech and opinion without being mistreated. Muslims' belief in fate also creates an appropriate atmosphere for adopting organizational change as long as it does not challenge their Islamic beliefs and practices. These values can encourage innovative, democratic and participative styles of management.

Mellahi (2001) supports this explanation when he argues that management values in Arab countries are shaped by the Islamic religion and by the cumulative Arab traditions. These values are apparent on respect for the elderly, saving face, humility, forgiveness, kind-heartedness, courage, obedience and compassion. However, the extent to which these values and their implications affect the current styles of management in Arab countries was undefined due to the lack of extensive empirical studies within this context. Therefore, the results presented in this chapter provide an indication of the existence of these values and their impact on the practice of public managers.

- ***Political leadership***

King Abdullah II belongs to a new generation of Western-educated Arab leaders. The king's political agenda is focusing on economic revival, greater political openness, and

social justice and equality (Jordan Country Review, 2003). The young and open minded leadership in Jordan has encouraged innovative, democratic, and participative styles of management. An example of this trend is the King Abdullah II Award for Excellence which aims at promoting quality awareness and performance excellence in Jordanian organizations. It also aims at enhancing the competitiveness of Jordanian businesses by, recognizing quality and business achievements of Jordanian companies, and publicizing these companies' successful performance strategies and promoting the adoption and sharing of them. The award activities are held biennially. One award is given in each of the following categories: (1) Manufacturing companies (2) Service companies (3) Small or medium-size manufacturing companies and (4) Small or medium-size service companies. The introduction of this award has led to the development of organizational management in private and public organizations (Abu-Hamatteh et al, 2003). The Jordanian government is encouraging and organizing public-private partnership, privatization, and e-government initiative proposed by King Abdullah II. These projects are pushing towards changing the bureaucratic nature of public organizations and creating learning, competitive and customer centric managerial approach.

- ***Technological development***

While cultural and Islamic values and the political leadership of the country have an indirect impact on the management styles, technological development, as one can argue, has a direct impact and is seen as a mixing element which imposes some positive external qualities and stimulates the existing internal qualities. It emphasises the quality of some cultural managerial attributes like team working, information sharing, and consultation. Simultaneously, it provides an interaction mechanism between NMP and Arab management which has been subject to many external and internal forces.

Moreover, technology has been used by government as a changing tool to enhance the overall development of Jordan. Managers' exposure to modern technological environment supported the creation of a change environment in which managers felt that they have to change their styles of management and communicating with employees. The researcher observations and discussion with participant managers have emphasised the direct impact of technology-talk on the functioning of public organizations and its overall shape. The real impact of this technology, however, is still to be realised. At this stage, Jordanian managers have become interested in reading, listening, and talking about technology and its expected influences which make them re-think their overall management styles in preparation for ITD.

The important and leading role of technological development on changing the nature of Jordanian public management was confirmed through interviewing of some managers within the research context. Six interviews were conducted and managers provided valuable justification of the observed change concerning the management styles. One manager expressed this change and reported some possible reasons for its occurrence as follows:

"The change of the managerial approach in the last two years was a normal result of the rapid technological development in the world and the transference of this technology into the third world countries after developed countries had monopolized it for a long time. The arrival of this modern technology to Arab countries and Jordan pushed toward a new managerial thinking".

He added describing this change:

"Organizations in these countries [Arab countries] have shifted from closed organizations managed by unqualified people who do not consider the external environment into more open and developed organizations that are managed by knowledgeable managerial elite who realize the importance of using technology and the

way of utilizing it effectively. People in the managerial level felt that they are at risk and they should change their practices and develop themselves to keep pace with the changing nature of their organizations. This pressure creates the new managerial practices that can be seen in our organizations today"

The nature of this managerial change as reported by the interviewed managers was towards an innovative and participative styles of management. The existence of the creative approach strengthens the participation in the process of decision-making where creative decision makers consult the specialists in their organization. The existence of qualified and trained staff has enhanced the use of innovative and participative approach.

It has become well known that individual-based management style that is based on individual has not been a predominant approach in JGOs. The new system of management is strengthening the participation in the decision making process and promoting the delegation of authority. According to one manager, the decision making process in governmental organizations has been controlled by committees where information is collected and studied. Then, the suitable decision is recommended and the manager is the one who "reflects" this decision. All these procedures, as one manager emphasized, are planned to suit the future use of IT in governmental organizations which change the concept of managerial development to be culturally opened and technology-based.

Studies that were conducted within the context of developed countries (e.g. Piercy, 1984; Willcocks, 1989; Jones, 1990; Flynn, 1995; Halal, 1996; Cheung, 1996; Lu & Wang, 1997; Jassawalla & Sashittal, 1998; Lynn et al, 1999; Brookfield, 2000; Chapman, 2001) support the findings that were revealed in this chapter and validate the

above explanation. These studies emphasised that the use of modern technology within the organization is changing the traditional role of management from controlling and organizing to facilitating and developing (Kakabadse & Kouzmin, 1996). Organizations of the future, as many writers argue, will be more tied up to their people. The importance of workforce will increase in order that their knowledge is effectively captured. The diffusion of learning organization is also seen as an approach to promote the knowledge sharing and transferring, to improve the managerial efficiency and consequently to achieve organizational objectives (Carr, 1997). The results presented in this chapter seem to be consistent with management studies that were conducted in developed countries where significant change concerning management thinking and behaviour was reported in several studies that were conducted in this context. These studies revealed that bureaucratic culture of public sector that is focused inwardly on control rather than outwardly on innovation and change should be changed because public agencies need support from varied external sources that can promote new culture of innovation and creativity. Being open to client, employees and businesses can facilitate the achievement of the interests of those important stakeholders. On the internal level, leaders of public agencies should develop their capacity to learn and promote the establishment of learning environment within their organizations. This required an integrated style of leadership and a lot of cooperation and openness within the organizational environment. These attributes according to Hughes (2003), represent the new shape of future management.

6.5 Summary

The results of factor analysis indicated that two managerial dimensions can be identified. The first dimension is the task oriented management where the manager's interest is directed toward accomplishment of the task through practising individual authority that is based on formal use of power. The second dimension is the people dimension where the manager's interest is directed towards people and their role in managing their own activities. Items that measured each of these two dimensions were factor analysed and specific management style were identified to represent each dimension. This analysis revealed that the first dimension includes autocratic and authoritarian management styles while the second dimension includes innovative, democratic, and participative styles of management.

The preference towards particular management styles and the prevalence of each style to the context of this study were measured through computing of the means and proportions of each single style. The results indicated that the five management styles were prevalent in Jordanian public organisations. Nonetheless, and compared with the previous research, a significant change concerning managers' preference in relation to these styles was reported. It was observed that managers of JGOs have preference towards people oriented management styles including innovative, democratic, and participative style. The order of the five management styles according to their preference was innovative, democratic, participative, autocratic, and authoritarian style. This change towards adopting people oriented styles is considered as a major contribution to the body of knowledge concerning the nature of Arab management styles in general and Jordanian public management styles in particular. An explanation

of this change was based on the interaction between cultural values, Islamic values, political leadership and most importantly technological development which plays a leading role in the process of managerial change in which JGOs are undergoing.

Chapter Seven:-

Analysis of Managers' Attitudes towards IT

7.1 Introduction

This chapter presents an analysis of managers' attitudes towards IT. In the first part of this chapter factor analysis was used to assess the appropriateness of CAS and its four sub-scales (computer anxiety, computer confidence, computer liking, and computer usefulness) to measure attitudes of the lower and middle line Jordanian public managers towards IT. Research questions related to managers' attitudes towards IT were explored in the second part of this chapter. This was made on two levels. The first level was a general level of analysis which includes: first, computing the arithmetic means of the four attitude sub-scales with the aim of investigating the first general question which is related to the general attitudes of participants towards IT. Second, the use of bivariate analysis which aimed to assess relationships between the five demographic characteristics on the one hand (gender, age, organizational experience, educational level and span of control) and the four attitudes subscales and overall attitude scale on the other. The second level of analysis included the classification of lower and middle line Jordanian public managers according to their gender, age, organizational experience, educational level and span of control and identification of the significant differences among them in relation to their relationships with the four attitudes subscales. General Linear Modelling was used to identify these relationships and differences in some details.

7.2 Scale Testing

Cronbach's Alpha reliability test (see 6.2.1) was used to test the internal reliability of CAS. According to the test, alpha = 0.93 which was considered an acceptable level of reliability (Bryman, 2001). This confirms that the forty items that make up the attitude scale are highly consistent and can be used to measure the same dimension which is the attitudes towards IT.

Item scores on the four subscales were summed and these were found to be highly correlated with each other as well as with the total score. This gave an indication that these subscales were measuring the attitudes towards IT and can be dealt with based on a single measure (see table 7.1).

		Sum of Anxiety	Sum of Confidence	Sum of Liking	Sum of Usefulness
Correlation	Sum of Anxiety	1.000			
	Sum of Confidence	.761	1.000		
	Sum of Liking	.546	.615	1.000	
	Sum of Usefulness	.656	.695	.635	1.000

**Correlation is significant at the 0.01 level

Table 7.1 Correlations between attitude subscales

To confirm whether the four attitudes subscales were measuring the same construct (attitudes towards IT) the sums of four subscales were factor analysed. As each of the four subscales consists of an equal number of items (ten items), the use of sums of these subscales seems appropriate to provide a reliable measure. FA of the four attitude subscales (table 7.2) shows that these subscales are loading on a single factor labelled as attitude towards IT.

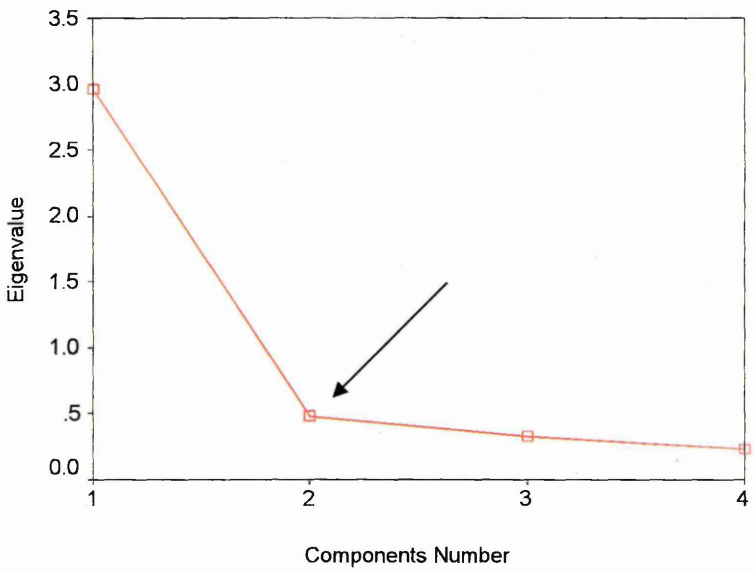
	Attitude toward computers
Sum of Anxiety	.865
Sum of Confidence	.898
Sum of Liking	.805
Sum of Usefulness	.870

Extraction Method: Principal Component Analysis.

Table 7.2 Loading of the attitude subscales on the attitude towards IT

A scree plot (figure 7.1) also indicated that the four attitudes subscales are measuring the general attitudes towards IT. The plot provides a graphic image of the amount of the total test variance that is accounted for by a particular extracted component. The point of interest in this plot is where the curve connecting the four components starts to flatten out.

Figure 7.1 Scree Plot



It can be seen that the curve begins to appear after the first components. Therefore, the first general component labelled as general attitudes towards IT can explain the majority of the variance.

The above analysis confirmed that the use of the CAS to measure managers' attitudes towards IT in a developing country context is a reliable measure that can be used in the organizational setting. EFA of the data revealed that all the four attitudes subscales (computer anxiety, computer confidence, computer liking, and computer usefulness) were highly correlated, supporting the use of CAS and its four subscales to measure managers' attitudes towards IT. As far as future development and use of the CAS is concerned, changes have to be made to incorporate the suggested modifications used in this research regarding wording and clarity. This may improve the representativeness and effectiveness of CAS when used within the organizational and managerial settings. Having confirmed the appropriateness of CAS to measure managers' attitudes towards IT, the next section provides a detailed analysis of the attitudes-related research questions. Due to the compound number of variables involved and to facilitate understanding and presentation of this analysis, interpretation and explanation of the results are provided throughout the analysis stages.

7.3 General Attitudes towards IT

CAS produced five measures: one for each subscale (anxiety, confidence, liking and usefulness) and a total score. Means of respondents' attitudes subscales and total scores are shown in table 7.3. As mentioned previously, higher mean scores correspond to more positive attitude; a higher confidence score means more confidence, a higher liking score means more liking, a higher usefulness score means more usefulness, whereas a higher anxiety score means less anxiety.

	Mean
Mean of Anxiety	4.1000
Mean of Confidence	3.8600
Mean of Liking	3.6800
Mean of Usefulness	4.0400
Mean of Attitude items	3.9200

Table 7.3 Means of attitude subscales and overall scale

An examination of table 7.3 shows that means range between 3.68 (computer liking) and 4.10 (computer anxiety). Means of each subscale and overall scale indicate that all means of attitude subscales lie above the 'neutral' position, which is 3.00. Therefore, and returning to our research questions as stated in chapter 4 [*"What are the attitudes of lower and middle line managers of JGOs towards IT*?]", we conclude that middle and lower line managers in JGOs have positive attitudes towards IT.

An explanation of the above results was provided by some participants who were interviewed through the field study. Six semi-structured interviews were conducted with managers from different organizations. The schedule of these interviews was determined based on an initial analysis of the questionnaire data. Training and education, technological "culturation", and psychological pressure were identified by the participants managers as the most important factors that form the positive attitudes towards IT.

The participants have pointed out that public organizations are providing technical training for their staff including the use of word-processing, spreadsheets, and internet, which supports the establishment of ITD culture in the Jordanian society. Training and educational system play a very important role in creating technology culture. Jordanian

universities have begun to support the creation of this culture through introducing computer courses and technical training to obtain the requirements of the new era. Families and the students alike have also become more interested in understanding IT. This strengthens the technology culture in the society. It has become well known, as one manager stressed, that getting a job needs both IT knowledge and familiarity with English language.

The impact of what so called technological "culturation" seems to be a very important factor that supports the use of technology where a good number of employees and managers have high degrees from foreign institutes or universities. One manager stressed that those people who have got the chance to get their education in technologically developed countries had and will have a positive impact in relation to the technology use within their organizations.

The third aspect that is very important to the formation of favorable attitudes towards IT is related to the psychological pressure on the public official to improve himself or herself in term of IT skills. Otherwise, his/her position will negatively be affected and he or she will become incompatible with the requirements of the new work environment that is being created as a result of the growing IT use. Consequently, interviewed managers emphasized that employees themselves are asking for more IT-related training.

7.4 Demographic Managerial Characteristics

Bivariate analysis was employed to identify the correlations between four demographic characteristics (age, education, organizational experience, and span of control) and the

overall attitude scale. The sums of attitude items were used in this analysis to represent the overall participant score. Table 7.4 shows these relationships. As gender is classified into two discrete groups (male and female), difference, not correlation, between these groups according to the perception of IT should be assessed. This is explored in the next section using error bar, the GLM approaches and parameter estimates.

		Sum of Attitudes
age groups	Correlation Coefficient	-.126*
	Sig. (2-tailed)	.011
Organizational Experience	Correlation Coefficient	-.127*
	Sig. (2-tailed)	.010
Education Level	Correlation Coefficient	.098*
	Sig. (2-tailed)	.048
Span of Control	Correlation Coefficient	.001
	Sig. (2-tailed)	.980

*. Correlation is significant at the .05 level (2-tailed).

Table 7.4 Correlation between the four demographic characteristics and overall sum of attitude

As shown in the above table, the correlations for both age and organizational experience are negative (-.126 and -.127 respectively). Accordingly, as both age and/ or organizational experience increases, respondents are more likely to have a negative attitude towards IT. Younger and less experienced managers have more positive attitudes towards IT. Returning to our research question stated in chapter 4 concerning the relationship between attitudes of managers towards IT and their age [*Are there significant differences between attitudes of managers towards IT according to their ages?*], we conclude that a manager's age has a significant negative relationship with his or here attitudes towards IT.

These results contradict some other previous studies (e.g. Igbaria & Chidambaram, 1997; Tabak & Barr, 1999; Al-Khaldi & Wallace, 1999) that found no significant relationship between age and attitude towards IT. A justification of this contradiction is based on the research instrument each of these studies used and on the context of each particular study. Nevertheless, this study confirms the results of some other investigations that reached similar conclusions and claimed that older people might fail to match the technical requirements of IT usage (e.g. Thomas, 1996; Kaul, 1997; Bill, 1997).

In relation to the relationship between attitudes of managers towards IT and their number of managerial years of working experience and returning to our research questions stated in chapter 4 [*Are there significant differences between attitudes of managers towards IT according to the number of managerial years of working experience?*], we conclude that the number of manager's years of working experience has a significant negative relationship with his or her attitudes toward IT.

The encountered relationships between age and non-IT organizational experience on the one hand and lower and middle line managers' attitudes toward IT on the other hand can be due to the fact that older and more experienced people are likely to view the application of IT with suspicion and aversion, fearing replacement and displacement. They are likely to have had less exposure and knowledge of IT than their younger counterparts (Thomas, 1996). The formal or informal power which those people have may be at risk as greater technical knowledge and higher education level of younger and organizationally less experienced people will give them an advantage and enable them to understand in relatively short time the computerized system of procedures and

organizational functions. In addition, managers who have long organizational experience may face IT literacy problems which can make them resist the use of IT (Winter et al, 1998; Kaul, 1997). They also expect that the use of this technology will reduce the importance of their well established procedural knowledge gained throughout their long working experience. One manager pointed out that there may be some drawbacks if employees and managers do not have enough technical training. Some of them may feel threaten by this implementation, specifically old people. Another manger also stressed that most of the old managers have missed the opportunity of getting the technical knowledge during their education. Those are expected to be a major constraint and should be re-qualified.

In contrast, when the level of education increases, managers become more positive towards IT. As shown in table 7.4, relationship between educational level and managers' attitudes towards IT is statistically significant (.098). As a result, and returning to our research question stated in chapter 4 [*Are there any significant relationship between the manager's level of education and his/her attitudes towards IT?*], we conclude that a manager's level of education has a significant positive relationship with his or her attitudes towards IT.

The highly educated nature of Jordanian society and the government's extensive efforts in the last few years to raise the level of technical knowledge through intensive technical training as a part of preparation of organizations to introduce networking and modern technology may explain the encountered results concerning the relationships between level of education and managers attitudes towards IT.

Concerning the relationship between managers' span of control, table 7.4 shows that span of control has no significant correlation with the managers' attitude towards IT. This provides an answer to our research question stated in chapter 4 [*Are there any significant relationship between the manager's span of control and his/her attitudes towards working with IT?*].

7.4.1 Classification of Attitude Subscales

Further analysis was conducted to provide more details concerning the classification of the four attitude subscales (anxiety, confidence, liking and usefulness). Based on the use of bivariate analysis (see table 7.5), significant negative relationship was found between computer anxiety and organizational experience. Computer confidence was found to have significant negative relationships with age and organizational experience. Computer liking was found to have significant negative relationships with age and organizational experience. Finally, computer usefulness was found to have significant negative relationships with age and organizational experience and significant but positive relationship with educational level.

		Sum of Anxiety	Sum of Confidence	Sum of Liking	Sum of Usefulness
age groups	Pearson Correlation	-.082	-.129**	-.099*	-.106*
	Sig. (2-tailed)	.098	.009	.045	.033
Organizational Experience	Pearson Correlation	-.106*	-.135**	-.112*	-.112*
	Sig. (2-tailed)	.032	.006	.024	.024
Education Level	Pearson Correlation	.064	.056	.007	.158**
	Sig. (2-tailed)	.193	.257	.887	.001
Span of Control	Pearson Correlation	.021	-.018	-.003	.006
	Sig. (2-tailed)	.673	.722	.959	.907

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

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

Table 7.5 Correlations between sums of subscales, overall scale and the four demographic characteristics

The direction of these relationships is consistent with the observed relationships between the overall attitudes on the one hand and the five demographic characteristics on the other. Nonetheless, table 7.5 shows that managers' level of education has a significant relationship with computer usefulness which confirms that highly educated managers view the application of IT differently and realise the benefits of technology more than less educated managers. Otherwise, no significant relationships were found between managers' level of education and other attitudes subscales including computer anxiety, computer confidence, and computer liking. These results confirm that managers' cognitive perception of IT benefits is an important aspect which determines their attitudes towards IT. It also confirms that the benefits of IT have also been recognised by the managers and this develops favourable attitudes towards IT, one manager states that:

"IT will improve our services and help us to keep contact with other organizations. It will also reduce paper work, improve organizational efficiency, reduce the time needed to provide our services and increase the accuracy of our work".

Another manager stated that:

"IT will have a positive impact and will improve the quality of public services. The experience of Jordan Telecomm is a good example to proof this. The company has started using modern technology comprehensively after its transformation from fully public owned corporation into partially private ownership. This led to remove all bureaucratic procedures and consequently to improve the quality of services that are provided to the citizens. However, employees have not been replaced but they have been trained and redirected".

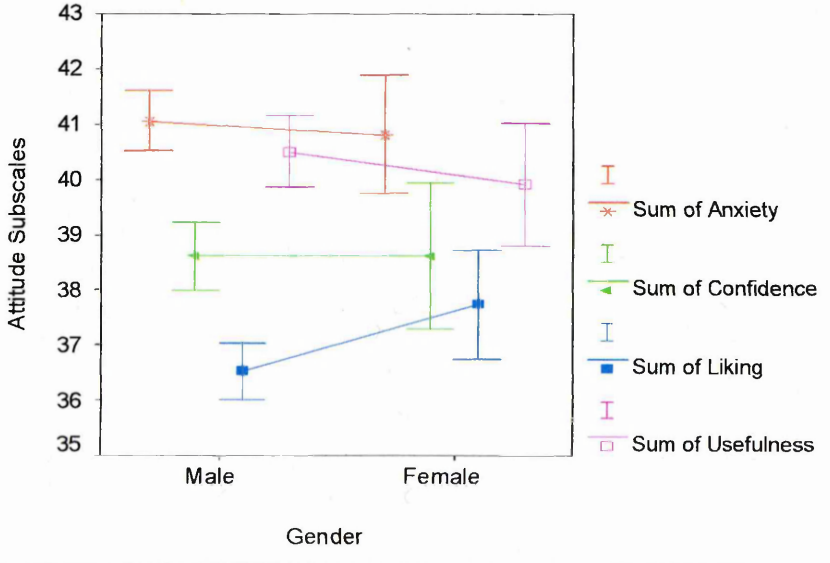
To provide in-depth analysis and detailed explanations of the research questions related to managers' attitudes towards IT. Classification of managers and examination of differences between managers groups is discussed in the following section. This is based on the use of error bar charts and GLM.

7.5 Classification of Managers Groups

To examine the differences between attitudes of managers according to their gender, age, organizational experience, educational level, and span of control, error bar charts were obtained. An error bar chart is a graphic way of summarizing the mean scores together with 95% confidence intervals for a group of variables. The use of error bars provides a general description concerning the varying associations between the four attitudes subscales and the five demographic characteristics (gender, age, education, organizational experience, and span of control).

As seen in figure 7.2, it is observed that no significant differences were found between male and female participants in terms of both computer anxiety and computer confidence. Nonetheless, female participants were found to have higher average liking scores and slightly lower average usefulness scores than males.

Figure 7.2 Gender and attitude subscales error bar

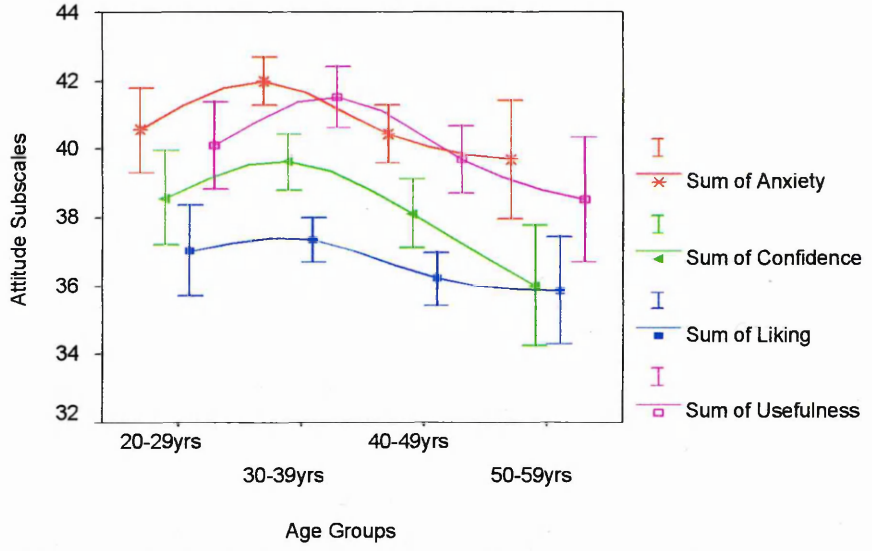


Accordingly, the results concerning gender differences provide a confirmation for other studies that reached similar conclusions indicating the similarity between male and female in relations to their general attitudes towards IT as well as their ability to perform IT applications (e.g. Loyd & Grossard, 1984b; Howard & Smith, 1986; Forster, 2000). However, contradictive results were obtained when comparing these results with some other studies that emphasised the existence of some differences between male and female in relation to their attitude towards IT and their ability to work with and learn IT applications (e.g. Thomas, 1996; Igbaria & Chidambaram, 1997; Al-khaldi & Wallace, 1999).

The use of basic IT applications within the organizations for secretarial work might justify having higher computer liking scores by female managers than their male counterparts since secretarial work is normally performed by females who, as a result, get familiar with the use of IT in general.

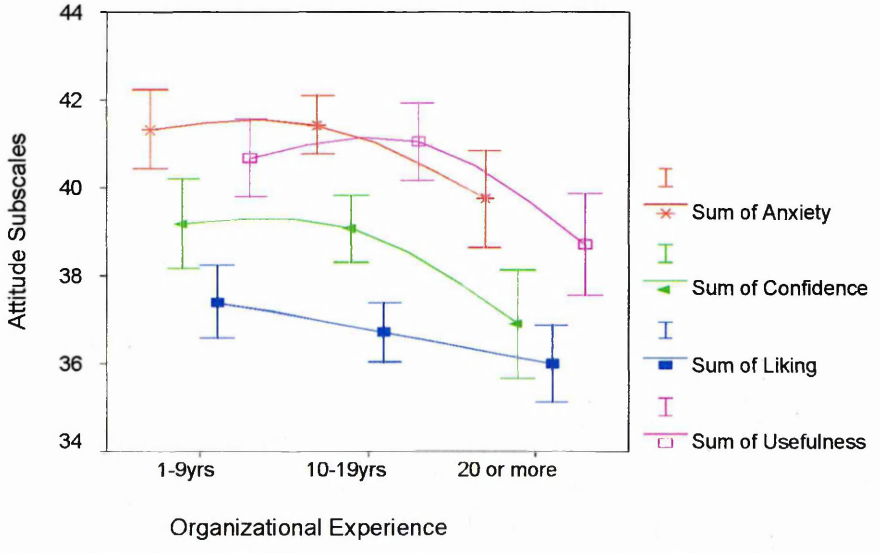
Classification of participants according to their age groups shows that older managers, in general, have lower scores than their younger counterparts on the four attitudes subscales (see figure 7.3). In particular, managers whom their ages range from 20-39 were found to have the highest scores on all attitudes subscales.

Figure 7.3 Age and attitudes subscales error bar



Concerning the organizational experience, it was revealed that the most experienced managers (20 years of employment or more) have the lowest scores on the four attitudes subscales (see figure 7.4).

Figure 7.4 Organizational experience and attitudes error bar



In relation to the managers' level of education, it was confirmed that the higher the level of manager education, the higher his or her score on computer anxiety (a higher anxiety

score means less anxiety), computer confidence, and computer usefulness (see figure 7.5). Managers' average scores on the four attitude subscales did not vary according to their span of control (see figure 7.6).

Figure 7.5 Educational level and attitude subscales error bar

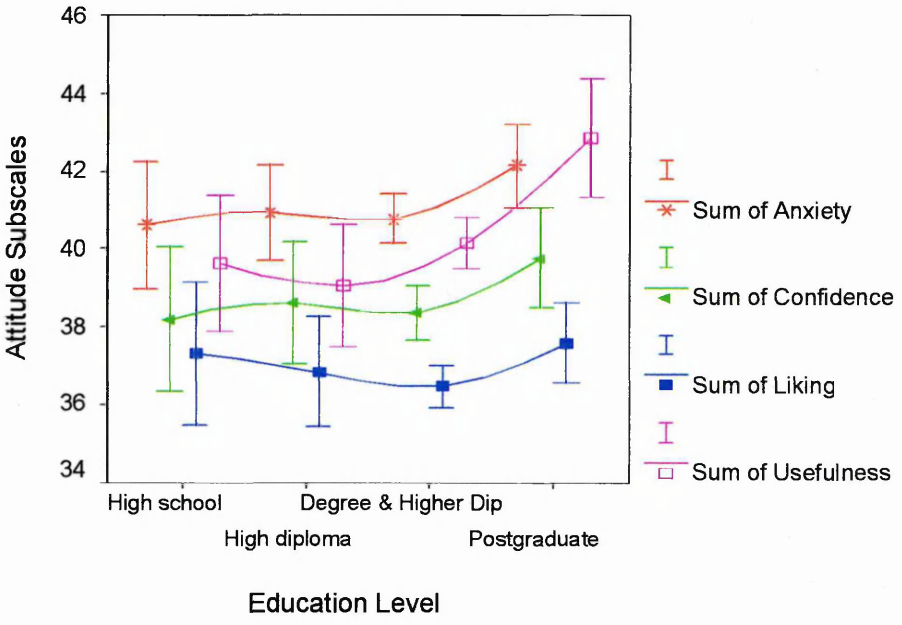
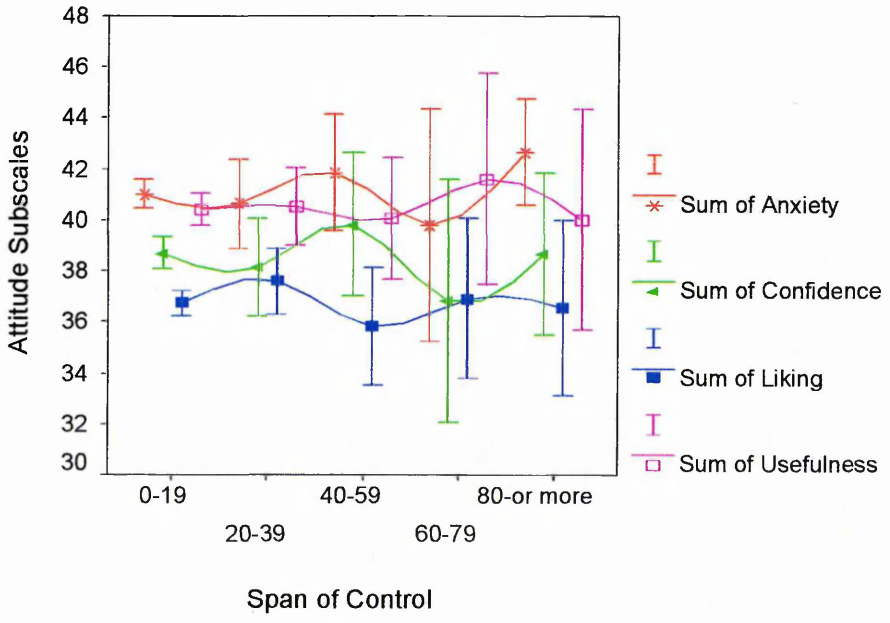


Figure 7.6 Span of control and attitude subscales error bar



The use of error bars enabled the classification and assessment of attitudes subscales and provided a general graphical description of the direction of their relationships with the five demographic characteristics. Nonetheless, a detailed description of these correlations and the differences among managers with reference to their gender, age, organizational experience, educational level and span of control requires further considerations and thoughts. Therefore, GLM was necessary to explore and validate these relationships and differences in some details and to identify the significant and non-significant relationships among them.

7.5.1 General Linear Model

An extension of the above analysis was made through the use of GLM. The GLM allows us to summarize a wide variety of research outcomes as well as to break down our analysis of both attitudes of managers and their demographic characteristics. The use of this method in particular enabled: first, examination of the effect of each demographic variable adjusted for the effect of the remaining explanatory variables on each attitudes subscale (anxiety, confidence, liking and usefulness). This, in turn, provided a confirmation of the results of the previous bivariate analysis. Second, each demographic variable was classified into different coded groups and differences between these groups in relation to their effect on the variation of attitudes scores were assessed based on the use of parameter estimates test which enabled the examination of the significance of each group for each subscale.

To achieve the first objective, a main effects GLM was used. This enabled the identification of the correlations between each demographic variable and the four attitude sub-scales. Based on the result of GLM (see table 7.6), manager's age was

confirmed as having significant relationships with computer usefulness, computer confidence, computer anxiety and computer liking respectively.

Demographic Characteristics	Mean of attitude Subscales	Sig.
Gender	Mean of Anxiety	.674
	Mean of Confidence	.733
	Mean of Liking	.069
	Mean of Usefulness	.458
Ages	Mean of Anxiety	.008
	Mean of Confidence	.004
	Mean of Liking	.083
	Mean of Usefulness	.003
Organizational experience	Mean of Anxiety	.019
	Mean of Confidence	.005
	Mean of Liking	.079
	Mean of Usefulness	.009
Educational level	Mean of Anxiety	.233
	Mean of Confidence	.255
	Mean of Liking	.181
	Mean of Usefulness	.001
Span of control	Mean of Anxiety	.595
	Mean of Confidence	.790
	Mean of Liking	.590
	Mean of Usefulness	.907

Table 7.6 GLM for demographic characteristics and attitude subscales

Number of years of organizational experience was found to have significant relationships with computer confidence, computer usefulness, computer anxiety and computer liking respectively. The higher the manager's years of working experience the lower his/her score on attitude scale.

Manager's level of education was found to have a significant relationship with computer usefulness in particular. The study revealed a significant relationship between gender and computer liking in particular. Female managers were found to have higher average liking scores than their male counterparts. Otherwise, no differences were found between male and female managers. With respect to the manager's span of control, no significant relationships were found between the four attitudes subscales in the one hand

and manager's span of control on the other. The significance level shown in the above table indicates the effect of each demographic variable on the attitude variance for each attitude subscale. For instance, it is observed that age and organizational experience have significant statistical effect on the variation of all attitudes subscales.

To achieve the second objective main effects parameter estimates were obtained. This test enabled the classification of managers according to their gender, age, organizational experience, educational level, and span of control. Managers from 30-39 years old were found to have the most significant scores on attitudes scale especially with reference to computer anxiety, computer confidence and computer usefulness. In other words, excluding those managers can eliminate the observed relationships cited earlier. Managers with long working experience were found to have the lowest scores on the four attitudes sub-scales. Managers whom their experiences range from 1-19 years were found to have the most significant correlations with the four attitudes sub-scales. Test of parameter estimates showed that female managers were found to have significant relationship with computer liking. Otherwise, no significant differences were found between male and female managers. No significant correlation was found between managers' scores on the four attitude sub-scales and their span of control (see appendix F for a summary of parameter estimates). These results confirm the results of error bar charts and general linear model discussed earlier.

7.6 Summary

The results reported in this chapter revealed that lower and middle line managers of JGOs have positive attitudes towards IT. Female managers have higher average scores on computer liking scale than their male counterparts. In relation to computer anxiety,

computer confidence and computer usefulness, no significant differences were found between male and female managers. The results reported in this chapter also revealed that the age of managers has significant negative relationships with the general attitude of managers toward IT. Particularly, managers' age is confirmed to have significant relationship with computer usefulness, computer confidence, computer anxiety and computer liking respectively. Significant negative relationship was also found between attitudes of managers towards IT and their number of years of organizational experience. Number of years of organizational experience was found to have significant negative relationships with computer confidence, computer usefulness, computer anxiety and computer liking respectively. Managers' level of education was found to have significant positive relationship with computer usefulness. Otherwise, no significant relationships were found between managers' level of education and computer anxiety, computer confidence and computer liking. Finally, no significant relationships were found between managers' span of control on the one hand and their overall attitudes towards IT and the four attitude subscales on the other.

A review of the available literature confirms that this study is the first in-depth study within the Jordanian context concerning the attitudes of managers towards IT. Therefore, these findings provide a valuable contribution to the body of knowledge within the Jordanian context. They suggest some strategic implications and guidelines for ITD strategists which are discussed elsewhere in this thesis.

Chapter Eight:-

The Relationship between Attitudes of Managers towards IT and their Styles of Management

8.1 Introduction

In this chapter, the fundamental aspects given in the last two chapters are combined to examine the overall relationships between managers' attitudes towards IT and their styles of management. The aim of this chapter is to explore whether the attitudes of public managers towards IT as a dependent variable are influenced by their styles of management within the research context. In general, the analysis presented in this chapter investigates the impact of organizational management process on managers' perception of IT. This is attempted by presenting analysis of the data that were collected from the research context using the appropriate methods. Two levels of analysis were conducted for this purpose. The first was the primary level where simple bivariate correlation was performed and evaluated. The second level included an in-depth analysis of correlations through the use of GLM. As the relationship between managers' attitudes towards IT and their styles of management has not been investigated by earlier studies, the results presented in this chapter are expected to provide an original contribution.

8.2 Bivariate Analysis

Bivariate analysis or correlation analysis for continuous variables measures the strength of the linear relationships between two pairs of variables. In this chapter, the use of

bivariate analysis enabled the examination of the relationships between the sums of management styles (innovative, democratic, participative, autocratic and authoritarian) on the one hand and the sums of attitudes items and attitude subscales on the other (see table 8.1).

		General attitudes	Anxiety	Confidence	Liking	Usefulness
Innovative style	Pearson Correlatio	.252**	.258**	.188**	.197**	.228**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
Democratic style	Pearson Correlatio	.194**	.162**	.155**	.170**	.192**
	Sig. (2-tailed)	.000	.001	.002	.001	.000
Participative style	Pearson Correlatio	.135**	.134**	.152**	.072	.109*
	Sig. (2-tailed)	.006	.007	.002	.148	.028
Autocratic style	Pearson Correlatio	.072	.023	.067	.072	.079
	Sig. (2-tailed)	.146	.643	.179	.145	.111
	N	409	409	409	409	409
Authoritaria n style	Pearson Correlatio	.035	-.007	.060	.040	.026
	Sig. (2-tailed)	.483	.888	.225	.415	.597

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

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

Table 8.1 Relationships between sums of management styles, overall attitudes and the four attitude subscales

The above table clearly indicates significant positive statistical relationships between attitudes of managers towards IT and innovative, democratic and participative styles of management respectively. By "statistical significance", it is meant that correlations are substantially different from Zero. All these relationships are positive indicating that an increase of a manager scores on innovative, democratic and participative style increases his/her score on the attitudes scale. Innovative and democratic management styles have significant positive relationships with all attitudes subscales ($p < .001$). Participative management style has significant positive relationships with computer confidence ($p= .002$), computer anxiety ($p= .007$), and computer usefulness respectively ($p= .028$).

Autocratic and authoritarian management styles, however, have no statistical significant relationships with any of the four attitudes subscales as well as with the overall attitudes scale. Accordingly, people-oriented managers, in general, view IT more positively than their task-oriented counterparts. Managers who achieve high scores on innovative, democratic, and participative styles are most likely to have more favourable attitudes towards IT.

To assess whether these relationships appear to be influenced by the five demographic characteristics (gender, age organizational experience, educational level and span of control), partial correlation coefficient was employed. This enabled examination of the above relationships while controlling for the effects of these demographic characteristics. The results of this analysis (see table 8.2) indicate that the five demographic characteristics have no significant impact on the relationships between management styles and attitude subscales.

	SUMATTIT	SUMANXI	SUMCONF	SUMLIKE	SUMUSEF
Innovative style	.265	.260	.200	.220	.240
	P=.000	P=.000	P=.000	P=.000	P=.000
Demographic style	.200	.170	.160	.166	.180
	P=.000	P=.001	P=.001	P=.001	P=.000
Participative style	.140	.130	.160	.066	.120
	P=.005	P=.010	P=.002	P=.188	P=.016
Autocratic style	.069	.015	.058	.07	.077
	P=.184	P=.763	P=.248	P=.118	P=.123
Authoritarian style	.023	-.024	.050	.046	.008
	P=.642	P=.638	P=.325	P=.364	P=.871

(Coefficient / (D.F.) / 2-tailed Significance)

Table 8.2 Partial correlation coefficient

A comparison between the values of correlation coefficients without adjusting for the demographic characteristics (bivariate analysis) and with adjusting for them (partial

correlation) showed very small differences and has not indicated any more significant relationships than shown by simple bivariate analysis in table 8.1.

The use of error bars may further help, interpret and explain the observed relationships. It provides visual representation of differences between participants. However, to improve the clarity of error bars representation, scores of various management styles were grouped into categories as shown in table (8.3). Four subgroups for each style of management were emerged as a result.

Management style	Score category	Number of participants
Innovative style	28 & below	43
	29-32	148
	33-35	127
	More than 35	91
Democratic style	28 & below	97
	29-32	167
	33-35	94
	More than 35	51
Participative style	18 & below	86
	19-21	136
	22-24	127
	More than 24	60
Autocratic style	24 & below	115
	25-28	149
	29-31	82
	More than 31	63
Authoritarian style	10 & below	151
	11-12	123
	13-15	105
	More than 15	30

Table 8.3 Classification of management style according to the managers' scores

Error bar charts were used based on the above categorisation of management styles and these are given in figures 8.1-8.5.

Figure 8.1 Innovative style and attitude subscales

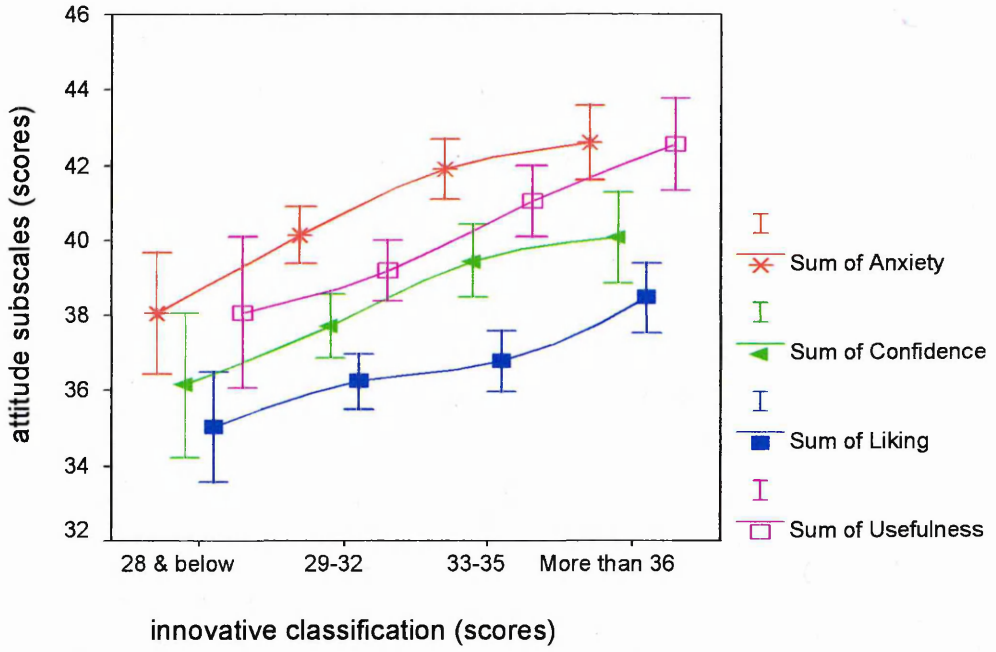


Figure 8.2 Democratic style and attitude subscales

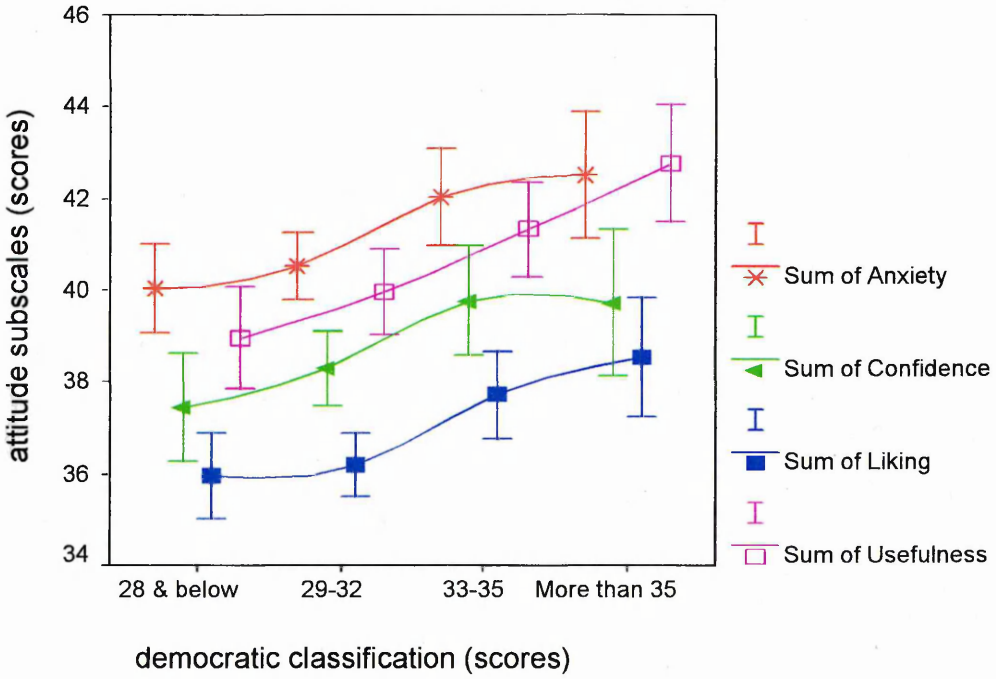


Figure 8.3 Participative style and attitude subscales

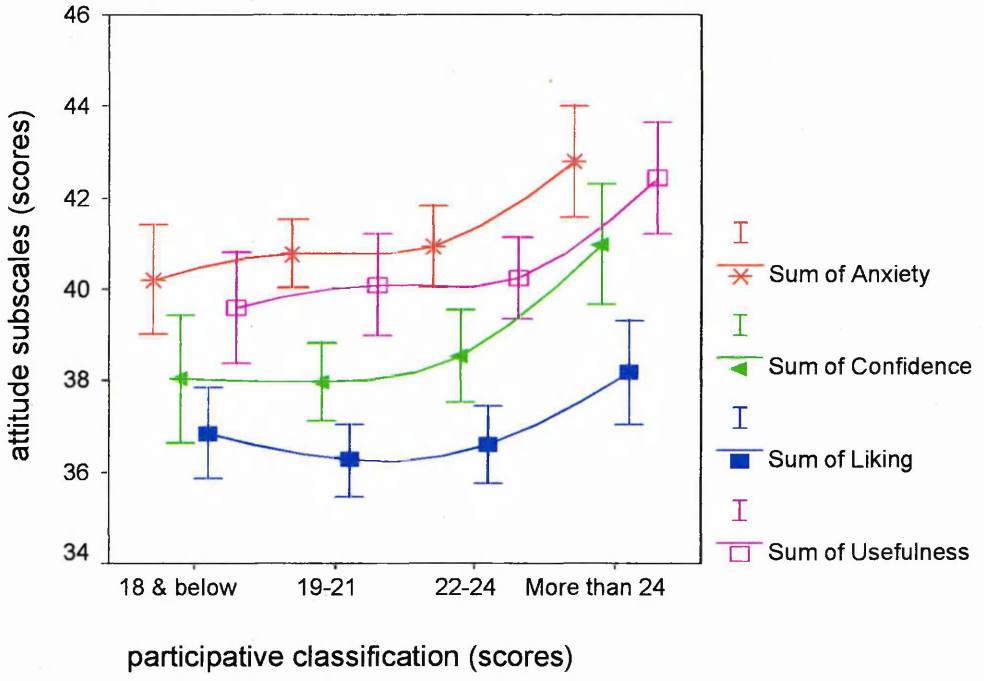


Figure 8.4 Autocratic style and attitude subscales

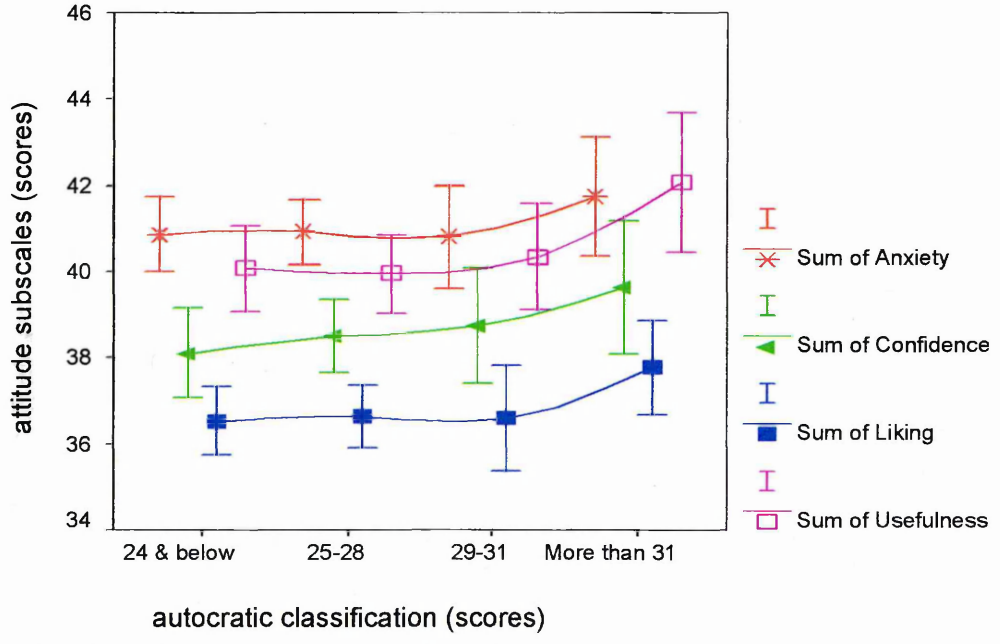
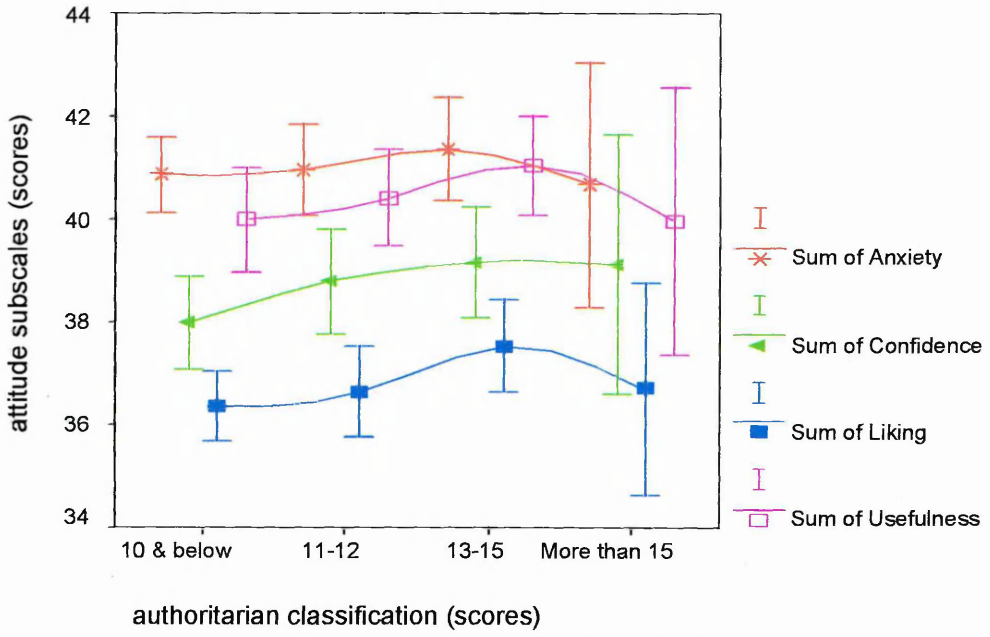


Figure 8.5 Authoritarian style and attitude subscales



The use of error bars provides a general description concerning the varying relationships between the four attitudes subscales and the five management styles. It is observed that clear differences and positive trends were found between participants' scores on the four attitudes subscales and their scores on the innovative, democratic and participative management styles. Once again, managers' scores on autocratic and authoritarian styles of management were found to have no impact on their scores on the four attitudes subscales. This emphasises the results of bivariate analysis indicated earlier. Parameter estimates was obtained to confirm the direction as well as the significance of relationships between the four attitude subscales and the five management styles according to their categories. This analysis confirms the results mentioned earlier (see appendix G: parameter estimate for the four attitude subscales and the five management styles according to their categories).

To find out which management styles have the most impact on the variance of managers' attitudes towards IT, univariate GLM was employed.

8.3 General Linear Model

The second level of analysis includes the use of GLM to provide an in-depth investigation of the above relationships and to explore the possible influence of management styles on or association with the attitudes of managers towards IT. Univariate GLM in particular was conducted. The univariate GLM procedure provides regression analysis and analysis of variance for one dependent variable by one or more factors and/or variables. In this research, univariate GLM enabled the identification of the most important management styles (independent covariate variables) that may have an impact on managers' attitudes towards IT (dependent variable). The use of the five management styles as covariates reduced error variance and thus provided a better estimate of the amount of variance in the attitudes towards IT that is being accounted for by management styles.

The R^2 (the square of the correlation coefficient) value of .071 indicates that 7.1% of the criterion (attitudes) variance can be accounted for by its linear relationship with the predictor variables (the five management styles). This is statistically significant on the .01 level (see table 8.4).

Dependent Variable: Sum of Attitudes

Source	Mean Square	F	Sig.
Innovative style	3732.839	12.132	.001
Democratic style	726.665	2.362	.125
Participative style	24.430	.079	.778
Autocratic style	101.179	.329	.567
Authoritarian style	290.789	.945	.332

R^2 = .071 (Adjusted R Squared = .060)

Table 8.4 Univariate GLM for management styles and attitudes of managers towards IT

The small amount of variance explained is justified by the social and conceptual nature of management styles and attitudes towards IT. These results are informed by some previous theoretical studies which described innovativeness of management as a critical factor that is necessary to the success of IT implementation within an organization (Johannessen, 1994; Pheng, 1999). Accordingly, these empirical findings provide a clear empirical evidence of the relationship between management styles and IT implementation in general and managers attitudes towards IT in particular.

To evaluate the influence of the five management styles on the attitudes towards IT, we look at the F value and its associated significant level. As shown in the table, the F value for innovative style of management (12.132) and its associated significant level (.001) indicate that it has significant effect on the attitude variance. The F value for democratic style of management (2.362) and its associated significant level (.125) also indicate a fairly significant statistical effect on the attitude variance between the participants. Otherwise, no significant effects were obtained.

To avoid any misleading results, classification of attitudes scales (computer anxiety, computer confidence, computer liking and computer usefulness) and exploration of specific relationships between these subscales and the five management styles was performed through a series of univariate GLM that aims to identify the significant relationships between the four attitude subscales and each single management style when adjusting for other styles,. This series of univariate GLM provides regression analysis and analysis of variance for the four dependent variables (anxiety, confidence, liking and usefulness) by one style of management with adjusting for other styles. As shown in table 8.5, innovative style of management has a significant statistical effect on the variance of the four attitude subscales including computer anxiety, computer usefulness, computer liking, and computer confidence respectively. Democratic style of management has significant statistical effect on the variance of both computer usefulness and computer liking. Otherwise, no significant effects on the attitudes variance were obtained.

Source	Dependent Variable	Mean Square	F	Sig.
Innovative style	Anxiety	379.223	16.424	.000
	Confidence	143.828	4.614	.032
	Liking	152.239	7.306	.007
	Usefulness	279.200	9.057	.003
Democratic style	Anxiety	14.233	.616	.433
	Confidence	44.099	1.415	.235
	Liking	64.805	3.110	.079
	Usefulness	98.174	3.185	.075
Partcipative style	Anxiety	6.150	.266	.606
	Confidence	51.192	1.642	.201
	Liking	10.432	.501	.480
	Usefulness	.678	.022	.882
Autocratic style	Anxiety	35.962	1.558	.213
	Confidence	8.246	.265	.607
	Liking	1.078	.052	.820
	Usefulness	1.535	.050	.824
Authoritarian style	Anxiety	2.864	.124	.725
	Confidence	53.091	1.703	.193
	Liking	22.386	1.074	.301
	Usefulness	16.146	.524	.470

Table 8.5 Univariate GLM for management styles and attitude subscales

8.4 Discussion

Bivariate analysis indicated that the relationships between attitudes of managers including computer anxiety, computer confidence, computer liking and computer usefulness on the one hand and the people oriented management styles (innovative, democratic, and participative) on the other were statistically significant except the relationship between participative management style and computer liking which was not statistically significant. Task oriented management styles (autocratic and authoritarian) were found to have no significant relationship with the overall attitudes of managers towards IT or any of its subscales (see table 8.1 and figures 8.1-8.5). Partial correlation analysis revealed that gender, age, organizational experience, educational level and span of control have no significant impact on the relationships between management styles and attitude subscales (see table 8.2).

To explore the ability of the management styles to predict the attitudes of managers towards IT, univariate GLM was employed. The R^2 value of .071 indicates that 7.1% of the criterion (attitude) variance can be accounted for by its linear relationship with the predictor variables (the five management styles), which is statistically significant on .01 level (see table 8.4). Innovative style in particular has the most significant prediction power and relationships with all attitudes subscales as well as with the overall attitude score.

Considering the context of the study, the results presented in this chapter provide valuable and original contribution. These results are consistent with the theoretical explanations provided in some other studies in different context. For instance,

Johannessen (1994) identifies management styles as a critical innovation factor that is necessary to the success of IT implementation within an organization. He identifies some critical innovation factors in relation to IT. Particularly, he emphasizes that open management style, employees' autonomy, flexibility and the development of interactive learning environment are the most important factors that associated with the success of IT implementation. Pheng (1999) argues that the people's resistance to IT can be eliminated through top management support, employee-manager participation, open communication systems and supportive rewarding system. These ways by which employees resistance towards a new system can be reduced, are closely related to the style of management prevailing within the organizational context where a new system or change is being introduced. In particular, they seem more related to people oriented management styles and managerial creativity. Most importantly, the results presented in this chapter provide clear empirical evidence which supports the existing theoretical assumptions and present more detailed analysis for the multi-dimensional relationships between management styles and varying components of attitudes towards IT.

The level of IT usage within the research context may support and further explain the above results. There is a general perception among the managers that the achievement of effective use of technology requires a style of management that is based on experience, information and participation in the decision making process. One manager emphasised that the current use of IT, and government plans to introduce networking technology as a part of its comprehensive e-government project, has contributed to changing the management thinking within the public sector domain. Managers have been encouraged to develop their skills and behaviour to keep pace with the technological trend. One manager stated that:

"To some extent, management thinking has changed in the last few years because of technological development and the availability of highly trained managers. Managers in most organizations are trying to develop themselves through getting high education. The availability of more than 20 universities and the existence of many institutes and computer training centres are supporting this. I also think that managers have started to realize the importance of participation in the decision making process. When they face any problem with computers, they have to ask".

It is generally believed that an effective and extensive use of IT needs a style of management which is based on experience, information, participation, and innovation in the decision making process. Managers felt that they were at risk and should change their practices and develop themselves to keep pace with the changing nature of their organizations. This makes the relationship between IT and people-oriented management styles that encourage innovative, democratic and participative behaviour very clear.

Understanding of some technological and organisational aspects may provide some possible explanations of the observed relationship between the use of IT and managerial styles. For instance, technological "culturation", improving technology culture and current e-government plans create a new kind of thinking among managers and help change their ways of dealing with employees. It could be argued that the risk imposed through introduction of computer technology makes managers rethink their behaviour in a positive way that is consistent with the requirements of this introduction. Managers with little technical experience have started to realize their need for consultation and advice from their own subordinates. Changing the management style from bureaucratic to customer-centric approaches has become a necessity. According to one manager:

"The practice of management needs to be based on knowledge and professional consultation. The experience of Jordan Telecom should be emphasised in particular as a model of the changing nature of overall organizational management that other public organizations have to follow".

Linked to our analysis of management styles presented in the previous chapter, the managers' preference towards people oriented management styles has encourage the development of favourable attitudes towards IT which was demonstrated in this chapter.

8.5 Summary

This chapter aimed at identifying the relationship between managers' attitudes towards IT and their styles of management. The results emphasised that while people oriented styles of management have significant positive relationships with managers' attitudes towards IT, task oriented management styles have no significant relationship with attitudes of managers towards IT. Innovative style in particular has the most significant prediction power and relationships with all attitudes subscales as well as with the overall attitude score. Level of technology usage, improving technology culture, the current e-government strategy in addition to the tendency of lower and middle line managers towards connecting people-oriented management with the use of technology explain these results.

The findings presented in this chapter contribute to the body of knowledge regarding the nature of management styles that are needed to encourage ITD. They also establish an appropriate framework in which relationship between organizational management and ITD can be investigated.

Chapter Nine: -

Summary and Implications for ITD: Jordanian Context

9.1 Introduction

This chapter provides a summary of the research findings and a critical evaluation of the managerial and attitudinal dimensions of these findings in the light of the context they meant to explore. Then, contextual and academic implications of these findings are discussed and potential courses of action and guidelines for strategy makers within and outside this context are defined. This is based on consideration of the quantitative and qualitative findings, understanding of the ITD environment within the Jordanian context in addition to the appreciation of the available literature. The discussion provided throughout this chapter attempts to synthesise the research process and improve the contribution of its findings not only to the Jordanian ITD strategy but also to the general body of knowledge concerning ITD from the managerial perspective.

9.2 Summary of the Findings

9.2.1 Management Styles

The analysis presented in chapter 6 provided answers to the research questions concerning the management styles. These styles were identified and ordered according to their dominance within the research context. Briefly, two management dimensions were found to be relevant to the context of JGOs. The first dimension concerned task-oriented management including autocratic and authoritarian management styles while the second dimension concerned people-oriented management including innovative, democratic, and participative styles. Compared with the previous research, the analysis

has shown significant changes concerning the dominant management styles within this context. The five styles of management that represent two managerial dimensions were identified and ordered according to their preference. People oriented management which represents the NMP including innovative, democratic, and participative styles was found to be more dominant than task oriented management which represents the traditional management styles including autocratic and authoritarian management styles. The preference towards particular management styles and the prevalence of each style to the context of this study were measured simply through computing of the mean and proportion of each single style. Managers with people oriented management style represent almost two third of the participants (see table 6.7 & figure 6.2). This is consistent with the higher means of innovative, democratic, and participative styles of management. Although these findings clearly indicate that managers of JGOs have a stronger preference towards innovative, democratic and participative styles, task oriented management styles including autocratic and authoritarian styles were also found to be present in this context. This reflects the diversified nature of management styles.

When compared with the literature, these findings challenge the negative view provided in the some previous studies that investigated the Arab context (see chapter 3, section 3.4.1). This contradiction emphasises that Arab management styles are undergoing a process of change towards more innovative, democratic, and participative styles of management which was justified by technological development, Islamic and cultural values, and the enthusiastic and open political leadership. This can be seen as a major contribution to the available body of knowledge concerning Arab management styles in general and Jordanian management in particular.

9.2.2 Managers' Attitudes towards IT

The analysis presented in chapter 7 provided answers to the research questions concerning managers' attitudes towards IT and the relationships between these attitudes and the five demographic characteristics investigated in this study including gender, age, organizational experience, educational level and span of control. Briefly, the findings revealed that managers were found to have highly favourable attitudes towards IT. Managers' level of education has significant positive relationship with their general attitudes towards IT in which the correlation value .098 was greater than the significance level of p=.05 (see table 7.4). In particular, computer usefulness was found to have the most significant relationship with managers' level of education with correlation value of .158 and significance level of p=.01 (see table 7.5). Otherwise, weak and statistically non-significant relationships were found between managers' level of education and computer anxiety, computer confidence and computer liking with correlation values of .064; .056; and .007 respectively (see table 7.5). In contrast, this research revealed that the age of managers has significant negative relationships with the general attitudes of managers towards IT in which the correlation value was .126 with significance level of p=.05(see table 7.4). Particularly, managers' age was found to have significant negative relationship with computer confidence, computer usefulness, computer liking, and computer anxiety with correlation values of .129; .106; .099; .082; and significance levels of p=.01, .05, .05, and .10 respectively (see table 7.5). Managers whom their age range from 30-39 years old were found to have the highest scores in relation to their attitudes towards IT especially with computer anxiety, computer confidence and computer liking (see figure 7.3). Concerning the managers years of non-IT working experience, this research indicated a significant negative relationship between the overall attitude of managers towards IT and their number of years of

organizational experience with correlation values of .127 and significance level of p=.01 (see table 7.4). Particularly, number of years of managers' organizational experience was found to have significant negative relationships with computer confidence, computer usefulness, computer liking, and computer anxiety with correlation values of .135; .112; .112; .106 and significance levels of p=.01, .05, .05, and .05 respectively (see table 7.5). Managers whom their experience ranges from 1-19 years were found to have the highest scores in relation to the four attitude subscales (see figure 7.4).

Concerning the impact of gender on the managers' attitudes towards IT, this study revealed a significant positive relationship between gender and computer liking in particular. Female managers were found to have more liking scores than their male counterparts (see figure 7.2 & table 7.6). Otherwise, no differences were found between male and female managers. Managers' span of control has no significant relationships with their attitudes towards IT and with any of the attitudes subscales (see figure 7.6; tables 7.4, and 7.5).

When compared with the previous studies within the developed countries context, it was found these findings confirmed some studies which reached to similar conclusions and simultaneously opposed other studies (see section 7.4 and 7.5).

Within the certain context of this study (JGOs) and considering the scarce of the available literature concerning attitudes towards IT, these findings provides an original contribution and a basic ground in which some demographic aspects can influence attitudes towards IT in particular and ITD diffusion strategy in general. This is demonstrated in the implications section afterwards.

9.2.3 Relationships between Management Styles and Attitudes towards IT

In achieving the research overall aim concerning the relationship between management styles and managers' attitudes towards IT, three analysis approaches were used including bivariate analysis, partial correlation coefficient, and GLM.

The results of bivariate analysis have shown that the relationships between managers' attitudes towards IT as measured by overall scale and the four attitude subscales of computer anxiety, computer confidence, computer liking and computer usefulness and the people oriented management styles (innovative, democratic, and participative) were statistically significant except the relationship between participative management style and computer liking which was not statistically significant (see table 8.1). All these relationships were positive indicating that the higher a manager's score on each of these people oriented management styles the more favourable his/her attitude towards IT. Task oriented management styles (autocratic and authoritarian) were found to have no significant relationship with the overall attitudes of managers towards IT or any of its four subscales indicating that these styles of management have neither positive nor negative impact on the managers' attitudes towards IT (see table 8.1).

When adjusting for the five demographic characteristics (gender, age, organizational experience, educational level and span of control) and using partial correlation analysis, the results have shown no significant impact on the relationships between management styles and attitude subscales. To explore the ability of the management styles in predicting the attitudes of managers towards IT, univariate GLM was employed. The R^2 value of .071 indicates that 7.1% of the criterion (attitude) variance can be accounted for by its linear relationship with the predictor variables (the five management styles), which is statistically significant on .01 level (see table 8.4). Innovative style in

particular has the most significant prediction power and relationships with all attitude subscales as well as with the overall attitude score.

Our review of the literature presented in chapter 2, 3, and 4 indicated that these findings were informed by some previous theoretical studies which described innovativeness of management styles and participation in both strategy and decision making as critical factors that are necessary to the success of ITD (Johannessen, 1994; Pheng, 1999). Accordingly, these empirical findings provide a clear evidence of the relationship between management styles and ITD in general and managers attitudes towards IT in particular.

In order to identify the implications of these findings on the Jordanian government ITD strategy in particular and ITD in general, an overview of the research context is presented in the next section. Social, educational, technological, and organizational aspects concerning this context will be emphasised in particular to explain the above findings in the light of the context they meant to reflect. This will enable re-emphasising the major driving forces that explain the findings of this research and thus enable the identification of some recommendations for strategy makers within the Jordanian context.

9.3 The Research Context

Critical evaluation of the value of the above findings cannot be made without understanding the context in which this study was conducted. This section attempts to address this issue. First, a critical evaluation of the managerial dimension of the Jordanian government strategy concerning ITD will be presented. This enables the

identification of the direction and the focus of this strategy and determines the degree in which the lower management styles have been considered. It also enables understanding of the overall governmental approach regarding the development and implementation of this strategy. Second, a critical evaluation of the attitudinal dimension of this research will be presented based on identification of social, educational, technological and organizational systems and structures. In addition to the empirical findings of this research, studies from previous literature, qualitative data from interviews and documentary analysis of Jordanian ITD strategy will be used in conducting this evaluation.

9.3.1 Critical Evaluation of the Managerial Dimension

Jordan is a developing Arab country that has started recently to explore the use of ICTs to enhance the development of its economy and to achieve successful integration with the global environment. To improve the performance of public sector organizations and enable the achievement of successful government transformation, a government strategy was formulated to introduce e-government into the Jordanian public organizations. This strategy involves the achievement of industrial and economic targets and involves several organizational and ministerial phases. From the government point of view, developing the county's economic situation and overcoming some financial problems are the main reasons that push towards developing or creating high level IT industry including software and hardware components. For example, according to Reach initiative report (www.reach.jo), the following economic impacts have been identified as specific targets to be obtained by the year 2004:

- 30,000 IT-related jobs.
- $ 550 US million in annual exports.

- $ 150 US million in cumulative foreign investment.

In fact, the government efforts towards creating IT industry have led to the establishment of many IT firms. According to the Information Technology Association of Jordan's records, there are 115 companies primarily engaged in IT services industry (http://www.intaj.net, visited on 17.04.2003). At present the major markets for these firms are Gulf countries and USA in addition to some local private companies. The total market for IT hardware and software sales in Jordan was estimated to be approximately US$60-65 million in 1999 including both government and commercial sectors (www.reach.jo). During the past three years, Jordan's ICT sector has grown from $60m to $167m, exports have increased by more than 350 percent, and employment has increased from 1,250 in 1999 to 10,000 professionals by September 2002 (Reach 3 2002/www.reach.jo). This market is expected to grow by 15 to 30% per year due to the government extensive efforts to develop this industry. Most of this growth will be as a result of the expansion of software industry. As a result of the Jordanian government efforts, Jordan ranked 14 out of 82 economies in terms of government prioritisation of ICT and 17 in terms of government success in ICT industry promotion (the Global Information Technology Report 2002-2003). However, these efforts have not yet been directed towards serving the government vision to create a successful e-government model by 2005. According to the same report, Jordan ranked 51 in terms of competence of public officials, 64 in terms of government online services, and 67 in terms of the use of internet-based transactions with the government. This provides clear indication concerning the direction of the government efforts towards IT industry.

Nonetheless, and since this research adopts a managerial perceptive in exploring ITD, our evaluation of ITD strategy will focus on managerial domain rather than economic and industrial domains of this strategy. However, this should not underestimate the importance of economic and industrial incentives behind this strategy especially for a country that suffers from economic difficulties and constraints. Identification of these incentives requires further empirical and theoretical consideration which is outside the scope of this research. Evaluation of the managerial domain is made through analysis of the internal managerial context. In understanding this context, two groups were identified as key players that represent this context with respect to ITD within the JGOs. These include Jordanian government which represents the strategic level of management including the highest political leadership, the cabinet office, and top executive managers; and public managers who represent the tactical level of management.

- **Jordanian government**

All governmental organizations in Jordan are controlled and monitored by ministers who are nominated by the prime minister to take the responsibility of managing the organizations that belong to their ministries. Strategies within these organizations are formulated under the supervision of those ministers. Currently, the role of government in Jordan is undergoing change in response to international, regional and local changes. To enhance this process, Jordanian government is trying to establish new vision in relation to the role of government within the society. Reducing the size of government and the number of government employees are some components of this new vision (Al-kayed et al, 1999). Privatisation and IT implementation are the most important instruments introduced by Jordanian government to achieve these objectives.

Concerning ITD, the Jordanian government is a key player in terms of its expectations and role in any potential IT strategy. In terms of its expectations, Jordanian government, through the extensive use of IT within JGOs, seeks to increase information accessibility, improve government performance and efficiency, reduce cost, enhance the competitiveness of the government, ensure transparency and visibility, and promote ICT sector in Jordan (MoICT publications, http://www.moict.gov.jo/MoICT_policy_strategy.aspx#3). The overall process of ITD, from the government point of view, should lead to the introduction of customer-centric public services. In terms of its role, the government in developing countries in general has a major role to play in the adoption of IT as it is usually the largest single user of IT. Policies and regulations that are issued by governments of these countries affect ITD within developing countries societies (Nidumolu et al, 1996). The Jordanian government role in the process of IT development is not only a supportive or regulatory role but also a leading role since all IT projects within the governmental organizations are funded by the government and should be determined previously in the government's future and financial plans. Other stakeholders take part in providing funds. This includes International Monetary Funds and World Bank (the World Bank group, July 2002). This role, as we argue, has increased the power of government and encouraged top mangers or strategy makers on the ministerial level to adopt a centralised approach concerning formation, implementation and evaluation of ITD strategy. A very important step in this direction was the establishment of independent ministerial authority (MoICT) to hold the responsibility of IT development and to co-ordinate all governmental IT projects (Al-Rai Daily Newspaper, 28. 07. 2001, http://www.mopc.gov.jo). The MoICT was assigned to take the lead in coordinating efforts of implementing the e-government program.

This approach is inconsistent with management styles of lower and middle line management emphasised through the quantitative findings of this research which shown a strong preference towards decentralisation, innovation and participation. Accordingly, it may hinder the ongoing managerial change on lower managerial levels and the necessary transformation of management approach towards participation and customer centric approach in the whole public domain.

- **Public Sector Managers**

The quantitative findings of this research concerning managers' attitudes towards IT confirmed that public managers have high level of expectations concerning the potential ITD within their organizations. These findings also confirmed that older, more experienced and less educated managers have less favourable attitudes towards IT than other participants and thus may have negative expectations and prefer to keep the normal procedures and ways of doing things (see table 7.4; figure 7.3; 7.4; & 7.5). Understanding and consideration of these expectations should receive greater consideration by strategy makers.

Moreover, this research emphasises the positive role in which public managers can play in supporting ITD. The management styles that were found to be present within the research context especially innovative, democratic, and participative styles (see table 6.7 & figure 6.2) encourage the decentralization of decision making process and information sharing which is inconsistent with the centralised approach followed by government. Moreover, the managers' positive attitudes towards IT support the creation of an appropriate IT culture within JGOs through encouraging their subordinates to use IT. The research also revealed that management styles within the research context are undergoing a process of changes which should be encouraged through involving lower

and middle levels of public managers in formation, implementation and evaluation of ITD strategy.

However, a review of government efforts indicates that no utilization of this role has been made. Instead, a change management department was established at MoICT to represent the MoICT in managing and leading the changes related to e-government project at different levels and to participate effectively in ensuring smooth and successful governmental transformation (MoICT publications, http://www.moict.gov.jo/MoICT_Change_Management.aspx). This, as one can argue is a trend towards centralisation of ITD efforts. The process of interaction between lower and middle line operational management and IT has not been addressed and managers' role in incorporating ITD strategy with organizational activities has been underestimated by strategy makers on the ministerial level. In addition, their supportive role in encouraging the use of IT within their organizations has not been effectively utilised. Instead, the government has focused on providing the necessary technical training and underestimated the role of managers as key organizational players.

In supporting this, the interviewed managers pointed out that they have little information about the government plan to introduce e-government. The newspapers, media, and friends are the main sources of information regarding this plan. They have not received any official information from their ministries concerning this plan which clearly indicates the lack of information flows and involvement. Furthermore, the interviewed managers emphasised that they have no direct participation in developing the e-government plan. This creates a gap between the espoused beliefs of the government technological plans and beliefs in practice. To close this gap, a co-operation

between central organizations and other organizations that belong to the same ministry is highly important. This facilitates the implementation and effective utilization of IT within these organizations and enables sharing of and transformation of information concerning ITD which is seen as a necessary requirement for successful ITD strategy. Considering the important role of public managers, one can argue that the power they should will have to be equally considered to remove some bureaucratic practices of public sectors. This will enable the government to achieve its expectations through reducing the time and cost of providing public services. This is seen as a necessary requirement to transfer the government business towards customer-centric services which is, according to the government, is the ultimate outcomes of ITD. The involvement of lower managerial levels can also play an important role in removing any possible conflict between the expectations of employees and the expectations of their organizations. Therefore, top management on the ministerial level should seriously consider delegation and transformation of their power into operational management. The findings of this research in relation to the nature of management styles which emphasises the tendency towards adopting people oriented styles of management enable and support this transformation.

The above discussion revealed that no attention was given to the lower managerial levels where the government has dealt with internal organizational context as a receiving context instead of involving organizational members in the process of strategy formation. The focus of the Jordanian government efforts were directed towards eliminating technological rather than organizational challenges through developing the country's technological infrastructure, encouraging the private sector investments, and the creation of public-private partnership (Al-Jaghoub & Westrup, 2003; www.reach.jo,

MoICT: http://www.moict.gov.jo/). Although these efforts are essential, active involvement of lower and middle line managers should be considered in the early stages of ITD process to introduce an organizational perspective into the strategy contents and to permit informal communication with employees and other organizational groups which in turns enable the realisation of potential benefits (Preece, 1995). The lack of involvement in new technology adoption and introduction is however by no means restricted to Jordanian context. According to Preece (1995) and based on his review of a European Foundation study that was conducted in 1986, with the exception of Germany, lower and middle line managers in Western European countries were often distant from active involvement in the process of change. Their involvement was restricted to a functional basis involving the implementation of subsequent phases of technical change. However, due to the rapid technological and organizational management changes in the last few years, this study needs to be re-validated within developed countries context.

In fact, the overall public management reform activities including ITD can fail when insufficient attention is paid to the contextual and cultural framework of the public sector (Brown & Waterhouse, 2003). Consideration of personal and managerial capabilities is as important as technical capabilities (Jassawalla & Sashittal, 1998). Accordingly, successful e-governance strategy should involve, in the design process, all internal organizational stakeholders including government officials and public managers in addition to other external stakeholders such as legislators, regulatory agencies, citizens, voluntary organizations, technology consultants and vendors, academics, researchers, funding agencies, and media (RamaRao, 2003). It can be argued that the success or failure of ITD highly depends on the perception of organizational members

and their ability to change their practices and their daily routine in order to work with new technology. Accordingly, a major criticism concerning the current Jordanian strategy concerning ITD is its focus on the achievement of government expectations and centralization of power on the strategic management level. The expectations of public managers and their role as key stakeholders group have not been considered in the planning of e-government. This may lead to a direct practical consequence of ITD failure (Heeks, 2001).

Based on this, we believe that the way in which the Jordanian ITD strategy is formed reflects a centralised approach which adopts the planning school of strategy formation. According to this school, strategies result from a controlled, conscious process of formal planning, decomposed into distinct steps and the responsibility for that overall process rests with the top managerial level (Mintzberg et al, 1998). According to Flowers (1996), this approach of strategy formation reflects a very important common factor in relation to government IT projects where top manager's views technological projects as something that is well framed, the objectives are well defined, the deliverables are well determined and so on. Senior management demands solutions and they don't want to hear about problems. This may lead to the failure of IT projects because problems are not identified and solved while implementing these projects. This scenario is part of the management philosophy, which, in Flowers' view, must be practical and operational to deal with problems as they emerge.

It is our belief that strategy formation is best seen as a process of social interaction that is based on the beliefs and understandings shared by the members of an organisation. Therefore, strategy makers should consider that the application of IT is subject to a wide

variety of socially formed perceptions and interpretations (Horton, 2000). Understanding of the organizational members' perceptions, as a result, should be seen as an integral part of ITD strategy formation process (Walstorm & Duffy, 2003). These perceptions need not only to be identified but also integrated and considered in the strategic actions defined in the ITD strategy. The quantitative findings of this research in addition to the qualitative insights provided by interviewed managers contribute towards this identification.

9.3.2 Critical Evaluation of Attitudinal Dimension

Gender

Gender and gender differences issues have received a great attention by developed countries academic researchers who provided different perspectives concerning the influence of gender on the use of IT and suggested several strategies to achieve equality regarding IT use and accessibility (see chapter 4, section 4.3.2). However, the lack of academic research concerning gender differences has provided a rational incentive towards exploring this issue within the Jordanian context. In doing so, a research question was proposed aiming at identification of differences between male and female managers concerning their attitudes towards IT.

In answering this questions, error bar chart (figure 7.2), GLM (table 7.6), and test of parameter estimates (appendix F) showed that female managers were found to have significant relationship with computer liking. Otherwise, no significant differences were found between male and female managers. The overall results concerning gender differences provide a confirmation for other studies that reached similar conclusions. It also indicates that the separation of women from men is not generally practiced within

Jordanian organization in different sectors. Moreover, one can argue that the formation of an educated middle class in the last few years has changed some traditional values relating to gender differences. A justification that has been supported by Forster (2000) who argues that new communication technologies may be a powerful ally for women in organizations.

Age and organizational experience

The impact of age on managers' attitudes towards IT is highly related to social and educational aspects within the Jordanian society and its organizations. Age has a great affects on an individual man or woman's standing in a society; generally, old people enjoy higher level of respect and social stature which they strive to maintain and protect in the growing technology-based organizational power. Moreover, since older managers are most likely have had less education and opportunities for technical training, their willingness to use IT was suspected where ITD is expected to provide younger and more educated managers a source of organizational and functional power. Based on this proposition, a research question was proposed to identify any significant differences between attitudes of managers towards IT according to their ages.

A second research question was developed to identify any significant differences between attitudes of managers towards IT according to their number of years of organizational experience. The origin of this research questions was based on the assumption that more experienced managers tend to protect their well established procedural knowledge which may be at risk due to the use of IT which gives less experience managers an opportunity to catch up.

As mentioned in the previous section, Younger and less experienced managers have more positive attitudes towards IT. This confirms our propositions above and calls for a government concern to consider these differences between younger and less experienced managers on the one hand and older and more experienced managers on the other. Our review of the government efforts has revealed that no such concern has been considered.

Educational level

A key determinant of Jordan's ambitious IT development plans is the availability of qualified people who can support the implementation of these plans (Al-Jaghoub & Westrup, 2003; www.reach.jo). The development of Jordan's educational system has started from almost nothing in early 1920s to achieve drastic improvements. According to a government official website (http://www.kinghussein.gov.jo/resources3.html), until the end of 1998, there were 2787 government schools, 1493 private schools, 48 community colleges, and 21 universities in Jordan. The number of students enrolled at the Jordanian universities was 103,092 in 1998/1999 (Jordan national information centre: www.nic.gov.jo). Education is free for all primary and secondary school students and compulsory for all Jordanian children through the age of 15.

In spite of this, the outputs of the educational system have not matched the country's economic requirements which increased the unemployment rate to 13.2 % as officially declared by government (Jordanian Department of Statistics, 2000). Therefore, a process of reforming the educational system to improve the quality and competitiveness of its outputs has started through putting more emphasis on computer literacy and knowledge of English (being the language of Internet and technology). A three-year plan has been launched in September 2001 through the establishment of a computer

centre in each school equipped with 12 computers. According to this plan, English language teaching has been introduced to first graders up instead of fifth graders up (Jordan Times, 05. 02. 2000; 31.03.2000). These modifications are expected to increase the level of computer literacy on the long term and create an appropriate IT culture.

A research question was proposed to assess the impact of managers' level of education on their acceptance of IT. It was assumed that more educated managers would have better chance to get on with technology and to recognise the potential benefits of ITD. The analysis provided in chapter 7 confirmed this proposition where significant positive relationship where found between managers level of education and their attitudes towards IT. In particular, it was found that as manager's level of education increases, his or her perception of the usefulness of IT increases as a result.

In fact, the impact of education and technical education in particular is expected to be more significant in the coming few years due to the continuous improvement of educational system. For instance, the Integrated Technology Group (ITG), a Jordan based technology group, has successfully delivered phase-one of its e-learning platform *EduWave*, as part of its agreement with the ministry of education and the King Abdullah II Fund for Development (ITG, http://www.itgsolutions.com/ITG_Press_Room.aspx). This will enable about 1.2 million students in 3200 public school to freely browse the entire curricula online using EduWave. The project is the first of its kind in the Middle East and one of the largest worldwide, when considering the number of the students who will utilize the system. This will enable the creation of IT culture within the Jordanian society in which governmental organizations and public officials operate. In addition, technical training is being provided for public officials to improve their

computer and internet skills. ICT literacy program has been launched starting from August 2002 and aims to enhance government employees' basic computer skills and internet usage in order to prepare them for implementing e-government program successfully. According to this program, up to 20,000 government employees will receive technical training over the next three years (http://www.moict.gov.jo/search.aspx?Q=training&t=all; Reach 3, 2003).

Accordingly, the undergoing reform of educational systems and the government efforts to provide technical training for public officials provide evidence of the government recognition of the important role of education on the creation of IT environment.

Span of control

Manager's span of control has received no attention by previous studies that explored the issue of ITD and management. It was proposed that this aspect would have an impact on the manager's attitudes toward IT. The origin of this proposition was based on the fact that the number of employees who report to one manager would increase his or her involvement with IT. Managers with a large span of control were expected to have different perception of IT since they are exposed to different views and learning experience than other people within the organizational boundaries. This proposition provided a rational incentive to investigate this issue. However, the analysis of the data provided in chapter 7 has not revealed any significant relationship between manager's span of control and his or her attitudes towards IT.

Having the findings of this research evaluated in the light of its context, the next section discusses the contextual implications of this research's findings for the current strategy.

This is followed by identification of this research's academic implications for the available knowledge concerning ITD in general.

9.4 Contextual Recommendations and Implications for ITD

9.4.1 Managerial Dimension

In the above section, we argued that the present management styles within the diffusion context can help organizations to develop appropriate strategies to improve organizational effectiveness and achieve successful implementation of IT. The empirical findings and theoretical discussion presented in this research have led to a fundamental conclusion in relation to the future shape of public management. The quantitative findings of this study have verified the existence of supportive managerial environment for a strategic managerial change throughout public sector. The diversity of management styles and the preference of public managers towards innovative, democratic and participative styles of management (see table 6.7 & figure 6.2) encourage the introduction of strategic management. However, a theoretical evaluation of the Jordanian government strategy concerning the adoption of IT has emphasised the centralised approach demonstrated in this strategy where strategy formation has been separated from the implementation context. Strategy makers on the ministerial level abstract themselves from the daily activities and draw the ITD strategy without involving other managerial levels or employees who have the responsibility of implementing this strategy. The achievement of the flexibility benefits which new technology offers can be prevented by this inflexible top management approach.

This separation also has considerable negative implications on the effectiveness of ITD strategy and can lead to both unrealistic strategies and bad implementation. This eventually leads to the failure of ITD strategy since problems are not identified and

solved while implementing this strategy. Organizational members and particularly managers' preparation for the process of ITD has been limited to technical training. Therefore, there is a need for strategic management which is increasingly being adopted by public sector in developed countries to enable the transformation of public agencies from the traditional model of administration to the managerial model (Hughes, 2003). According to this model, the ministerial level of management should extend the strategic vision throughout all units of organization, encompassing every administrative system. Based on his qualitative analysis of the experience of Welsh local authority concerning e-government, Hackney & Jones (2002) revealed that the diffusion of e-government should be developed from an organizational strategic perspective in which IT is one of a number of complex components. This perspective, as they argue, requires a fundamental shift towards strategic management thinking and practices which enables involvement and commitment of all managerial levels and ensures that appropriate communication links are in place to facilitate horizontal and vertical flows of information and ideas. Strategic management, as Hughes (2003) argues, has the potential to recognise the central role played by individuals and groups and the influence of the organizational context. It is also described by Heeks (2001) as a critical pre-condition for successful implementation of IT within the governmental context. The competency of Jordanian public managers to play this role has been supported by the findings of this research which, through the managers' preference towards innovative, democratic and participative styles of management, provided an evidence of the supportive organizational management environment. This environment should be utilised to deal with practical and operational problems as they emerge.

Compared with the previous studies that investigated the Arab management and, generally, provided a negative perception regarding the nature of Arab management (see section 3.4.1), this research emphasised that the management styles of public managers are undergoing a process of change towards innovative, democratic, and participative management. Accordingly, strategies' makers will have to seek ways to integrate these positive organizational trends with the current ITD strategy. An effective way of involving the internal context including managers and employees is through the use of organizational committees within each organization. The role of these committees includes a review of the organizational processes, a communication tool between strategy makers and organizational members, and serves as transformation means and facilitator of strategy implementation within their organizations which provides a supportive internal environment. Moreover, since the use of technology is expected to vary from an organization to another, the use of these committees can be an effective instrument to deal with these differences since members of the committees have the ability to diagnose their organizations and appreciate these differences better than external analysts or current strategy makers in central ministries. Most importantly, the involvement of committee members in the development and implementation of ITD strategy and the interaction between those members and top managers in central organizations may further enhance their team working skills and creativity and provides continuous coordination and feedback at all stages of strategy formation, implementation, and evaluation.

The observed change concerning management styles within JGOs also raises the issue of the relationship between public sector reform and ITD. Hughes (2003) argues that e-government can be seen as the latest instalment in public sector reform. This as one can

argue, can have serious implications on the way ITD strategy is developed and on the context of the overall ITD in public sector. Therefore, the success of the new technology adoption process as Preece (1995: p235) argues depends upon:

"The appropriateness and quality of the non-technological changes which go hand in hand with the technical changes, and upon the social, economic and organizational contexts into which that technology is in due course introduced".

Accordingly, strategy makers will have to consider the context of the strategy which involves organizational management shape and interactions between the current shape of public management and the future strategies relating to ITD. As this research provides clear evidence regarding the current styles of public management, strategy makers are invited to consider these styles and seek ways to support the new trend reported in this research. A close cooperation between ministerial managerial level and public managers in different geographical areas is essential (Hughes, 2003). This can be facilitated by IT and has the potential to assist the implementation of public management reforms when necessary information is provided to public managers (Hughes, 2003).

Public managers' participation and involvement can also be facilitated through the use of the whole systems approach (White, 2000) to deal with the change in public sector organizations which is imposed by ITD. The whole system theory is a way of involving large numbers of people in live dialogue with one another and with the organizational management with the aim of defining appropriate actions to be taken (Wilkinson, 1997). The use of this theory requires open and participative management not only on the organizational level but throughout the whole public sector domain. The use of this system enables the representation of the full complexity of the public sector domain and

provides a variety of information and innovative ideas that facilitate the development of representative and achievable ITD strategy. The use of whole system theory also creates a learning environment throughout public organizations where different organizations can learn from each others experiences.

In general, this approach emphasises the importance of considering all organizational components (stakeholders) and investigating the impact of organizational stakeholders on the change process and how each stakeholders group can contribute in introducing the change. According to this approach, ITD strategy should be part of the overall organizational strategy. In doing this, both senior management and managers from different organizational levels should participate in the process of strategy formation (Leek, 1997). This involves the identification of three levels of strategy. The first is the corporate strategy which includes the whole governmental body. The second is the ministerial strategy, which is developed on the ministerial level. The third level is the organizational strategy which should organize the operational activities of each organization and its long term targets. These levels should be integrated and coordinated to achieve successful diffusion of IT in JGOs. The current state of the art concerning ITD strategy is emphasising corporate and ministerial strategies while underestimating the organizational strategic situation and setting. The use of whole system theory can enhance the adoption of a bottom-up approach in introducing the organizational change and thus encourages involvement of all organizational members in achieving successful organizational change (White, 2000). This approach also enhances the creation of stimulating environment where new ideas and learning experiences are encouraged. According to Burn & Robins (2003), governments moving towards e-government must abandon the "*build it and they will use it*" approach which ignores the role and power of

its customers and the internal context of governmental organizations concerning the use of IT. They emphasise the important role of functional and middle-level managers in embracing an organizational vision for change throughout all levels of their organizations. This requires, as they argue, continuous articulation and communication of the results and empowerment of individual contribution and participation in all organizational levels and *subsystems*.

Lower and middle line managers, in particular, can help incorporating the ITD strategy with more detailed functional plans. This makes the strategic objectives achievable and the overall diffusion strategy more effective. Spanos (et al, 2002) concluded that current and prospective use of IT is significantly associated with some important changes in strategy, organizational structure, management systems and human capital skills. In relation to decision making process, they revealed that the use of ICT has changed the managerial work to become better delineated, less formalised, and more decentralised. They also indicated that ICT usage has improved the managers' decisional capacity. This encourages the localisation of decision making authority and the dispersion of decision making process throughout an organization. The ease of communication and information flows which is facilitated by the use of IT can bring a number of public activities within effective reach of local government (Schiavo-Campo & Sundaram, 2003) which can enhance the internal decentralisation of public sector functions. Considering the large number and diversity of governmental organizations, this can greatly influence the emergence of innovative ideas.

Furthermore, the use of participative model is encouraged by the nature of government business that is repetitive and follows prescribed rules. In addition, government as an

information collection and distribution centre (Stamoulis et al, 2001) can improve the accuracy of its information and provide timely reports when needed. This, as a result, will reduce the time that is required to make decisions and can provide greater access to decision-making process, which is performed by the management of governmental organizations (Schware, 2000). Consequently, delegation of authority and participation in decision making become possible as the management control can be maintained through the use of electronic communication systems.

9.4.2 Attitudinal Dimension

The quantitative findings of this research concerning the managers' perception of IT present an optimistic view of organizational environment. Lower and middle line managers within JGOs were found to have favourable attitudes towards IT (see table 7.3). Accordingly, strategy makers should consider the consultation of managers on different organizational levels and should enrich the role of lower and middle line managers in the strategy formation process. The direct control of those managers on the operational and day-to-day activities of the organization makes them champions leaders who are seen as role models for other employees under their supervision. Those leaders are described by Heeks (2001) as electronic-champion or small groups of electronic-champions who have the vision to transfer ITD strategy into practice and give direction to this strategy. The creation of top-middle-down management partnership is seen as a potential strategy to support and enrich the role of lower and middle line managers. This requires a continuous communication and an effective reporting mechanism to link all managerial level not only within a particular organizational context but also between all organizations that belong to the same ministry. According to Hackney (2003), a key to the success of an e-government strategy will be a network of open communication, a combination of sharing and listening flowing both horizontally and vertically

throughout the organisation. This can not be obtained without a supportive and participative operational management which, as the findings of this research revealed, is underdevelopment. Top management on the ministerial level should provide further encouragement for this positive trend through granting greater responsibilities to front line staff and managers to provide in-time customised services (Hanna, 2001).

Moreover, and considering the favourable managers' attitudes towards IT, public management engagement in technology issues is seen as a crucial aspect of IT implementation and can enable the creation of an appropriate organizational atmosphere where the use of IT is encouraged and supported through identification of challenges and reducing staff resistance to change (Pearson et al, 2002; Singer, 2003). Since the size of the diffusion context increases the top management task of coordinating more people and activities in different geographical locations (Cannon, 1994), the participative role of lower and middle line of management becomes essential. The management style of those local managers as described by Cannon (1994) is seen as an intervening factor between people (including employees and service users) and technology. Therefore, the diversity of management styles and the Jordanian managers' preference towards people-oriented management styles should be used effectively by decision makers to enhance the development of positive attitudes towards IT throughout the JGOs. Managers who have positive attitudes towards IT can encourage other organizational members to accept the use of IT in performing their daily activities. The collectivist nature of Arab culture and the importance of building and maintaining good relationships with others enable managers to positively influence their subordinates' perception of IT.

Furthermore, the findings of this study emphasised the importance of some demographic characteristics including age, organizational experience, and education in the formulation of managers' perception of IT. The observed differences regarding managers' attitudes towards IT according to their age, organizational experience and educational level suggest the use of a differentiation strategy which considers the differences between managers in relation to their age, organizational experience and educational level. This strategy provides more consideration to older, more experienced, and less educated managers. This involves providing not only more technical training for older and less experienced managers, but also involving them in developing ITD strategy within their organizations to motivate them and improve their understanding for the benefits of IT which reduces the level of uncertainty (Mercer, 2001). The process of improving the managerial and organizational qualifications of public managers should be an ongoing process in addition to the essential technical training.

Although the results concerning attitudinal differences between male and female managers seem encouraging, other ITD and gender related issues should be emphasised. These include access to technology, the percentage of women from the total labour power and types of education and training provided to women. In terms of access to technology, women internet users are under-represented in the Arab region. For instance, women constitute 6 percent of the total internet users in Jordan (Hafkin & Taggart, 2001). According to the United Nations Conference on Trade and Development (2002), when women do have access to IT in developing countries, it is usually in the workplace which involves the use of IT by women as tools of production (e.g. routine office work, data entry, and programming) rather than as tools of communication (e.g. creation and exchange of information). The access to internet

technology in particular should be improved to increase the participation of women in the process of ITD in their organizations. With reference to the percentage of women from the total Jordanian labour force, it was 23% in 1998 comparing with 15% in 1980 (the World Development Report 1999/2000). However, this percentage, if compared with other countries (even some developing countries) is still very low. Considering the favourable attitudes of participants and the similarity between male and female managers in relation to their attitudes towards IT, strategy makers should consider increasing of the percentage of women from the total labour force. This can be made through empowerment of women especially in the sectors of education and health where women constitute a relatively large percentage and have greater potential for development and employment in these important Jordanian sectors.

The government approach which is currently focusing on providing technical training to accelerate the process of ITD and to create IT supportive culture within the public sector context is not adequate to ensure the success of ITD. Training of public managers should be extended to understand and communicate the nature of the new services they are providing and of the logic of the organizational changes made to support the delivery of these services (Schiavo-Campo & Sundaram, 2003). In addition to technical training, managerial and organizational development should be considered. Strategy makers should recognise that the work of public servants needs to be managerial rather than administrative. This involves a change from following instructions to achievement of results and taking personal responsibility (Hughes, 2003). Developing management skills needs more consideration to enable this transformation. The findings of this research concerning both managerial and attitudinal dimensions have shown some positive trends on the operational and middle management levels towards supporting the

view of public sector as managerial rather than administrative entity. They overall proved the readiness of public managers to incorporate the traditional model of administration with the new model of management described in developed countries literature where IT has been considered as a major driving force towards this incorporation.

Eventually, the findings of this research have revealed the existence of a significant relationship between organizational management styles and the managers' perception of IT. This has considerable implications on the way ITD strategy is formulated and the direction of government efforts in relation to ITD which focuses on technological aspects much more than organizational challenges. In particular, it was observed that innovative, democratic, and participative management styles were more relevant within the context of JGOs and positively associated with managers' attitudes towards IT. This provides a supportive mechanism towards successful diffusion process and improves the social acceptability of ITD (Mcbride & Wood-Harper, 2002). Accordingly, this study imposes some courses of actions that should be considered in order to increase the probability of ITD success. This includes encouraging the participation in the decision making and the use of innovative managerial framework not only on the operational management level but also by top managers on the ministerial level. This enables the consistency of management styles throughout the public sector domain and accordingly creates a favourable environment towards the adoption of IT throughout the governmental context.

9.5 Implications for Knowledge

The major concern of this thesis was to investigate the issue of ITD from a managerial point of view. This has been made through identification of management styles of lower and middle line managers as a key determinant of ITD success, and the interaction between these styles and managers' attitudes towards IT. In particular, relationships between certain demographic characteristics and managers' attitudes towards IT were explored and association between management styles and managers' attitudes towards IT as an indicator of ITD environment was investigated. This issue was explored within the JGOs as a part of its wider Arab and developing countries contexts.

Throughout this thesis, we argued that the ongoing pressure on organizations to utilise IT tools successfully should be based on a clear understanding of the diffusion context including both human and technological components. The investigation of the internal organizational context and organizational management in particular can enhance the formation of successful ITD strategy as well as the establishment of a supportive organizational environment through incorporation of organizational context with ITD strategy and encouraging employees to develop favourable attitudes towards IT.

In relation to management styles, this research's outcomes provide an original contribution to the available body of knowledge concerning the shape and potential role of organizational management in the process of ITD. The process of management styles identification assumed the absence of an ideal management style and the diversified nature of management behaviour where several managerial practices interact. The identification of management styles which was based on extensive review of traditional and NMP has supported this assumption where the diversity of management styles has

been clearly emphasised. Empirical validation and theoretical explanation provided in this research present a clear evidence concerning the shape of the future management in general and public management in particular. The tendency towards people oriented management was emphasised in particular. This represents a new trend in relation to management styles in JGOs in particular and Arab countries organizations in general. This trend is supported by cultural and Islamic values (Atiyyah, 1992; Ali, 1992, 1996; Elgamal, 2000), and is driven by technological development in some Arab countries including Jordan (Al-Jaghoub & Westrup, 2003; www.reach.jo), United Arab Emirates (Yousef, 1998), and Egypt (Youssef, 1996).

The investigation of managers' attitudes towards IT was narrowed down through classification of managers according to their gender, age, organizational experience, educational level, and span of control. Some of these characteristics (span of control and non-technical organizational experience) have received little attention in the previous studies. Attitudes of managers' were also classified in terms of computer anxiety, computer confidence, computer liking, and computer usefulness. The interaction between these aspects of the study was explored using in-depth and multiple analytical methods. The results of this analysis emphasise that managers' perspectives concerning the use of IT vary according to their age, organizational experience and education. Therefore, any diffusion strategy should consider such differences through focusing on promoting of older, more experienced and less educated managers' attitudes towards IT.

Concerning the relationships between management styles and their attitudes towards IT, this research emphasised that innovative management is associated with positive attitudes towards IT. Therefore, encouraging innovative managerial approach is seen as

a supportive instrument that encourages the use of IT. Top managers should consider participation, consultation, and delegation of authority to encourage the establishment of innovative managerial practices. This relationship was explored within a distinctive context where the scarcity and the fragmented nature of the available literature is a major concern. This investigation is seen as an appropriate start to farther investigate the interactions between organizational aspects including management and the use of IT.

Overall, this research is considered as an attempt to avoid technical orientation and impersonal perception of the current ITD strategies. It invites strategy makers to consider users' perspectives regarding the diffusion process. This issue seems more important in developing countries' context where technology is being transferred so rapidly and the internal organizational setting is almost missed out. Therefore, the findings of this research can be of interest to other countries mainly because we have tried to put some elements of the NMP into practice and also to assess the existence of some other traditional managerial practices. Eventually, this research can be seen as an important step to understand the interaction between technology and organizational context. The observed relationships in relation to both management styles and managers attitudes towards IT provide clear evidence concerning the importance of adopting a holistic view when introducing IT.

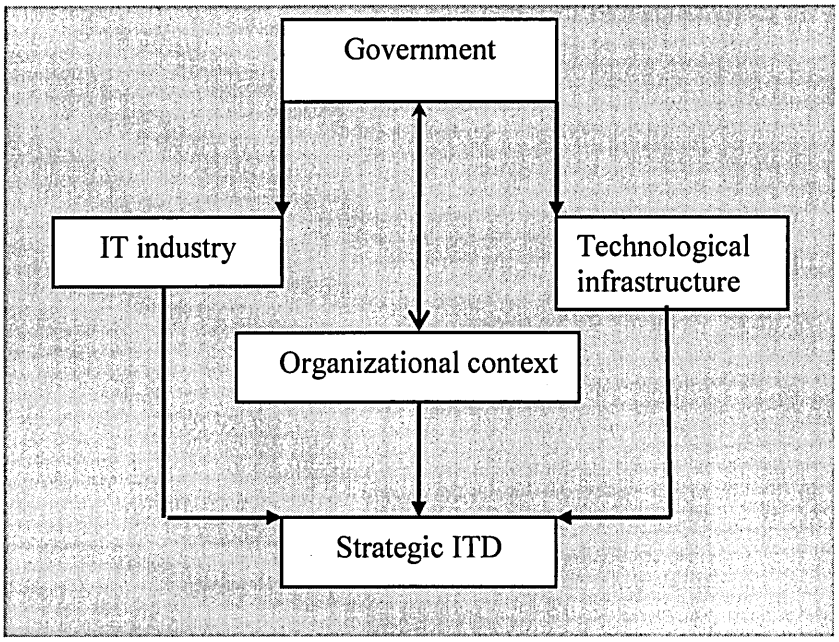
This holistic view has not been clarified by previous diffusion models including structural and socio-technical paradigm. These models have considered ITD as a single process rather than a set of components that interact to produce a successful and comprehensive diffusion strategy. In addition, these models described the innovation process and ITD on the organizational level, the diffusion of IT within a network of

organizations (the governmental network) has received a very little attention and was seen as a plan or project. On the one hand, the structural paradigm of ITD has described the concept of diffusion as a programmed process that follows certain phases (McFarlan & McKenney, 1982; Rogers 1995; Dasgupta, 1997; Cooper & Zmud, 1990). This provides limited insights as no consideration is given to social aspects of organizations and the importance of inter-correlations processes which take place prior to diffusion. According to Auor & Ruohonen (1996), the structural paradigm is based on the assumption that individuals adopt innovations for their own independent use rather than as a part of a larger community of interdependent users. On the other hand, the socio-technical paradigm (Davis, 1993; Auor & Ruohonen, 1996) has gone far from this trend and focused on what can be called the macro level of ITD and has not provided a clear view concerning the classification of certain aspects of ITD and the nature of interaction between these aspects. Both of these paradigms, as discussed in chapter 2 have not identified certain components for ITD as a comprehensive process.

Consequently, and considering the outcomes of this research in addition to the theoretical review presented in the first part of this thesis, we proposed an ITD framework which encapsulates some of the key components for strategic ITD and attempts to integrate the structural paradigm of diffusion that focuses on the willingness of individual adopters and the socio-technical paradigm which views diffusion as an organizational process which is influenced by organizational management. According to this framework, the process of ITD is seen as a holistic process which involves a set of key components including organizational context (strategy context) including employees and management, government, technological infrastructure, IT industry,

organizational functions or documentation process and other supportive components (see figure 9-1).

Figure 9.1 proposed ITD framework



The abstraction of these components was based on consideration of the issues that have been raised in this research and particularly the organizational management as a key component that highly influences other organizational components including employees and organizational processes or functions. The relationship between the government (a strategy owner) and the organizational context (a strategy context) should be an interactional and complementary relationship. Government will have to work jointly with the organizational context which includes organizational management and employees to understand the organizational processes and the environment in which IT is to be diffused. In addition, the government has the responsibility of building and maintaining of an appropriate technological infrastructure which requires involvement and participation from the IT industry including local, joint venture, and international companies. The government also plays an intermediary role between IT industry and IT

infrastructure on the one hand and organizational context on the other, which enables consideration of user perception, needs, and participation. The overall outcomes of this interactional process is expected to be a strategic diffusion strategy that considers individual users' perception of IT as well as the external contributors in the development of ITD strategy. This view of ITD is more appropriate to explain the diffusion process within a network of governmental organizations which was the main focus of this thesis.

The outcomes of this thesis emphasised that while the government has considered technological infrastructure and IT industry as key components of ITD, it has not involved the organizational context in the development of this strategy which may increase the risk of failure. However, since the focus of this thesis was on the organizational management which is only one components of the organizational context, other studies need to explore other components of this proposed framework. The theoretical review and discussion presented throughout this thesis can help conducting of such studies. Future research will have to assess the internal and external validity of this framework within and outside this research particular context. An extension of the components of this framework may also improve its appropriateness for other contexts.

Chapter Ten:-

Conclusions and Research Evaluation

10.1 Introduction

The overall aim of this research was to explore the relationship between organizational management and ITD. In achieving this, two main research questions were proposed: first, what are the management styles that are relevant to the research context? Second, how do lower and middle line Jordanian managers perceive IT? The answer to these questions was provided in chapters 6 and 7 which enabled the achievement of the overall aim of the research in chapter 8. *"So what"* issue was discussed in chapter 9. This chapter presents the main concluding remarks that were revealed as a result of the overall research process. Additionally, and in order to enrich the learning process and develop the researcher's reflection capability, methodological and empirical limitations of this research are also discussed in this chapter. Opportunities for future research are outlined by the end of this chapter.

10.2 Concluding Remarks

10.2.1 Management Styles

This research presented an empirical investigation that aimed to explore the management styles within an Arab country context (namely Jordan). It also provided a theoretical review of the NMP. Two research questions were proposed concerning this issue. The first was related to the management styles that are prevalent to JGOs. The second question was related to the order and proportions of these styles according to their existence or dominance.

To answer these questions, a self completion questionnaire was developed based on an extensive review of the available literature. The identification of the management style was based on the managers' perception of their style (*the manager-centric approach*). The questionnaire included 35 items that were related to traditional and NMP characteristics. Lower and middle line managers from 40 public organizations participated in this study. 534 copies of the questionnaire were distributed directly to those managers. 409 copies were completed, collected and analysed. The analysis was conducted on two levels: the first was based on the use of factor analysis and aimed to identify the two managerial dimensions and to distinguish the management styles that represent each of them. The second level involved computing of the means of the extracted management styles and aimed to identify the order and relative importance of these styles.

The findings of this research indicate the diversity of management styles within the context of JGOs. Five styles of management were found to be prevalent to this context including innovative, democratic, participative, autocratic and authoritarian styles respectively. The quantitative findings of this research emphasised that the management styles within JGOs are undergoing a process of change compared with the previous studies that investigated the Jordanian and Arab countries contexts. They indicate a tendency towards adopting innovative, democratic, and participative styles of management. These results were found to be consistent with management studies in developed countries where significant change concerning management thinking and behaviour was reported in several studies that investigated this context (e.g. Cheung, 1996; Darwin, 1996; Halal, 1996; Jassawalla & Sashittal, 1998; Brookfield, 2000; Hughes, 2003). While the new trend of public management in developed countries is

basically motivated by the adoption of market-based approach (Hughes, 2003), cultural and Islamic values in addition to other political, economic, and technological aspects are supporting this trend within the Jordanian context and most likely other Arab countries. Following an initial analysis of the quantitative data, six interviews with some participants were used to provide further explanation of these results. The interviewed managers emphasised some important reasons for the change in management styles. They emphasised technological development, technological "culturation", education and training, and the government efforts to create new kind of management behaviour as the main reasons for the observed change concerning management styles.

10.2.2 Managers' Attitudes towards IT

This research investigated the attitudes of lower and middle line managers towards IT. In addition, the relationships between certain demographic characteristics (gender, age, non-technical organizational experience, educational level and span of control) and the managers' attitudes towards IT were explored. Attitudes of lower and middle line managers in JGOs were measured using the CAS which was developed by Loyd & Loyd (1985). This scale measures attitudes towards computer in terms of computer anxiety, computer confidence, computer liking, and computer usefulness. Minor wording modifications were made on this scale to improve its appropriateness for the organizational context. Data relating to the five demographic characteristics were gathered as a part of the self completion questionnaire. Six research questions were proposed to achieve the research objectives concerning attitudes of managers towards IT and the relationships between these attitudes and the five demographic characteristics. This was made in consultation with the available literature and considering the research social, organizational, educational and technological settings.

EFA was used to explore patterns of complex multi-dimensional relationships and bivariate approaches for various attitudinal components towards IT and demographic characteristics were used to further analyse the data.

The findings revealed that lower and middle line managers in JGOs in general have favourable attitudes towards IT. This increases the critical role which managers can play in the creation of an appropriate organizational environment for ITD. The findings of this research provided an optimistic view concerning the management styles and managers' attitudes towards IT. Therefore, utilisation of this supportive organizational environment is essential to facilitate the ITD as well as to continue changing the nature of management styles within the research context. This requires involvement of operational managers in the process of strategy formation and implementation.

However, managers' attitudes differed according to their age, organizational experience, education level and gender. While significant negative relationship was found between age and organizational experience and attitudes of towards IT, a significant positive relationship was found between managers' level of education and their attitudes towards IT. In addition, female managers were found to have slightly more computer liking scores than their male counterparts.

10.2.3 Management Styles and Attitudes towards IT

The overall aim of this research was to explore, in some depth, the association between attitudes of managers towards IT including computer anxiety, computer confidence, computer liking, and computer usefulness and their identified management styles including innovative, democratic, participative, autocratic, and authoritarian. Since both attitudes of managers towards IT and their styles of management were clearly identified,

the exploration of this association was possible through the use of bivariate analysis, partial correlation analysis, and univariate GLM.

A significant positive relationship was found between people oriented management including innovative, democratic, and participative styles and managers' general attitudes towards IT. Accordingly, the need for these styles of management seems essential to support ITD. Instead of imposing technology as a way of changing management behaviour, one can argue that the creation of appropriate management styles is more effective when considering the impact of managers' themselves on their subordinates. Therefore, ITD is best seen as a part of public sector reform activities which aims to create such styles of management. E-government as a representation of ITD should be seen as a multi-stage process that required comprehensive planning on the central level as well as on the organizational level (The Harvard Policy Group, 2000). It seems impossible to change the culture of governmental organizations and remove the organizational boundaries by decision that is taken from the top level of government hierarchy. It also seems impossible to think about e-government without building the required infrastructure. Accordingly, e-government is better seen as a part of an integrated system or comprehensive reform process which involves different components including government, organizational context, technological infrastructure, and IT industry and interactions between them.

While empirical findings of this study have verified the existence of supportive managerial environment throughout public sector, a theoretical evaluation of the Jordanian government strategy concerning the adoption of IT has emphasised the centralised approach demonstrated on this strategy where strategy formation has been

separated from the implementation context. This separation has considerable negative implications on the effectiveness of ITD strategy and may detached the strategy from its context which is seen by strategy makers as a receiving context instead of viewing it as an effective participant context. Lack of organizational members' involvement and participation undermines the effective role of lower and middle line managers in supporting the diffusion of IT within their organizations. The promising organizational management model seems to contradict the traditional model of ministerial authority. Organizational members and particularly managers preparation for the process of ITD has been limited to technical training.

The empirical findings mentioned above in addition to the theoretical evaluation of Jordanian ITD strategy have led to the identification of particular strategic directions to improve the effectiveness of this strategy. This includes the use of strategic management, organizational committees, integration of ITD and public sector reform, dealing with organizational context as participative rather than receiving context, the use of differentiation strategy, the use of the whole system theory, incorporation of organizational and overall governmental strategy, and consideration of managerial training.

Considering the scarcity of management studies in this research particular context (Jordan) and its wider context (Arabic countries), this research provides an original contribution to management literature. The number of organizations involved in this research, the relatively large participants number, and the comprehensive analytical methods that were used in analysing the data, improved the validity as well as the reliability of the cited results. The observed change regarding management styles of

lower and middle line managers invites top managers and strategies makers on the ministerial level to involve operational managers in the strategy formation process and provides an indication regarding the shape of the future management within the context of JGOs.

Through exploration of the current management styles and the attitudes of public managers towards IT, this research presents a description of the diffusion environment. It also provides an evidence of the strong relationship between attitudes of managers towards IT and some certain demographic and managerial characteristics. The review of the literature that was presented in chapter 2, 3 and 4 emphasised the need to develop an analytical framework for studying ITD in developing countries. There has been little research in these countries directed towards developing these types of frameworks. Therefore, this research was a step towards the establishment of this framework which focuses on the components of ITD strategy and organizational management within the diffusion context. Overall, this research has provided some practical guidelines for strategy makers. Therefore, the implications of this study, as one can argue, can enhance the transformation of Jordanian public sector towards more effective, reliable, and cost-efficient service provider. Through adopting a managerial perspective in understanding the ITD environment, this research indicated a supportive organizational environment and provided recommendations for future actions to further enhance the process of public sector reform and avoid some problems that may face ITD.

10.3 Research Evaluation

As stated earlier, this research presented an exploratory investigation into managerial dimension of ITD within the context of JGOs. Specific certain limitations exist in relation to both the methodological approach employed and the empirical investigation.

10.3.1 Evaluation of the Research Methodology

This research was mainly based on the use of deductive and quantitative methodology which was supported by some qualitative insights and secondary sources which help the interpretation of the results and the identification of the research implications. A collection of techniques including questionnaire, interviews, and literature survey were used. Considerable efforts were made to ensure the content validity of the questionnaire by establishing relevance with practice and the elimination of wording problems such as biased, ambiguous, and inappropriate meaning of the items.

The selection of the methodological approach and research procedures were, to some extent, constrained by the issues being raised and the level of participant's knowledge of and access to the government plans concerning the introduction of IT. In addition, accessibility to the research context was available for a limited period of time, which forced the researcher to collect, initially analyzes, and then re-collects data in a short time (March-May. 2002). With the extended geographical distribution of the participant organizations, this issue influenced the ability of the researcher to collect more data from a larger number of participants. However, effective time management enhanced, to a great extent, the overcoming of this problem.

Concerning the use of survey method, there are some limitations for questionnaire survey method. Some of these limitations are; the difficulty of securing adequate

responses especially as the motivation for answering the questionnaire is unknown. Also, responses should be accepted as given and incomplete or inaccurate information cannot be followed up (Burn, 2000; Nachmias & Nachmias, 1996). Other possible limitation for this method is the possibility of misunderstanding some questions by the respondents (Bryman, 2001). These limitations were largely eliminated through directly monitoring the distribution of the questionnaire and interacting with the participants. Group discussions were made in some organizations to explain the contents of the questionnaire and to clarify any concern.

Concerning the internal validity of the research outcomes, the use of quantitative research through survey methods in particular enabled the generalizability of the research outcomes within the Jordanian context. The number of organizations involved in this study in addition to the geographical distribution and functional diversity of these organizations supported this generalization. Organizations from different sectors including: health, education, social security, finance, telecommunication, transportation, local, agriculture, legal, security, planning, public work and housing service and from different geographical areas improved the internal validity of this research findings.

External validity is also supported by the fact that Arab countries as a part of developing countries present a unique setting. The complex societal beliefs and values of Arab world provide a rich setting to investigate the issue of ITD and transfer and a very strong predictor of resistance to IT transfer (Straub et al, 2001). They all have a common language (Arabic language), a common faith (Islam), a common historical background, common cultural practices, and common social structures where extended family, neighbourhood, and friendship have a strong impact on people's life and

organizational practices (Hill et al, 1998; Weir, 2000; Straub et al, 2001). Moreover, Arab countries face the same challenges in relation to the absence of well-developed national science and technology systems and the lack of ICT culture (Arab Human Development Report, 2002). Although, some differences in terms of the levels of development and economic welfare exist (El-Naggar, 1993; Aladwani, 2002, 2003), similarities among Arab countries overpower the differences among them. Therefore, any of them can *relatively* represent the others. Therefore, some writers (Hill et al, 1998; Rose & Straub, 1998; Straub et al, 2001) who investigated IT in Arab countries and its cultural and social consequences have dealt with these countries as one cultural and social entity. This improves the external validity of the findings of this research and provides valuable indications regarding the management styles and managers' perception of IT within the context of public organizations in other Arab countries.

However, the use of quantitative methodology and particularly questionnaire survey method of data collection tends to limit the study in testing or answering specific research questions that were created by the researcher. It also limited the researcher ability to further interpret and explain the findings of the research. Therefore, some potentially interesting interpretation of the research context may be missed or excluded. Interpretation of some of the findings of this research especially the relationship between gender and computer liking and participative style of management and computer liking would have been largely improved if greater contribution of qualitative approach was considered. Consequently, we believe that a complementary and comprehensive qualitative research would have added more meaningful interpretation of these findings as well as in-depth understanding of the sources of Jordanian public management styles.

10.3.2 Evaluation of Empirical Study

The empirical part of this research has certain limitations including:

- No distinction has been made between lower and middle line management.
- No distinction has been made between rural areas outside the capital and other central areas in the capital.
- Lack of access to strategy makers or ministers prevented the empirical investigation of their role in ITD and the relationship between the central organizations in the capital and other organizations in other cities, towns and villages.
- This research focused on managerial aspects of ITD and the time has provided no chance to investigate other economic and industrial aspects of ITD.
- Explanation and interpretation of the findings were based on a reflective theoretical review of the available studies and six interviews with participants. Larger number of interviews would have add, if available, more depth to the interpretation of the quantitative findings.

Certainly, the overall findings of this research and its cited limitations have opened the door for more research in this context and provided opportunities for possible future research in both developed and developing countries. These opportunities are outlined in the following section.

10.4 Issues for Further Research

Based on the literature review and the findings of this research, three significant future directions can be identified: theoretical, practical, and methodological considerations:

10.4.1 Theoretical Direction

- One of the implications of this study is related to the previous management literature which needs to be updated to take into consideration the new emerging forces that are changing the nature of public management particularly relating to ITD.
- An explanation of the difference between research findings in different studies should be made through an understanding of the researcher's mindset including his or her cultural, economic, and educational backgrounds or incentives. The identification of such differences can help new researchers to select more appropriate and relevant literature and conduct more effective and meaningful research.
- The establishment of a comprehensive framework that explains the interaction between the components of the organizational context and ITD was difficult to formulate based on one study. Therefore, individual research should try to provide building blocks towards the establishment of such theoretical framework. This research identifies some of the factors that influence the success of ITD and hence significantly contributes to such a framework; these include management styles and managers' perception or attitudes towards IT. Future research should try to build on this research and try to identify other factors that affect the success of ITD. Thereby, the formation of ITD model/framework in this context can be enhanced.

10.4.2 Practical Direction

- The preference of managers towards people oriented management styles can be seen as a reflection of cultural, social, and religious aspects that need to be further explored, identified, and delineated. This should be based on an extensive empirical research which explores the relationships between these aspects and Arab management in general. Islam, as major cultural attribute in particular should be explored. This

research is necessary to validate and further elaborate the theoretical explanation of the diversified nature of management styles emphasised in this thesis.

- This research has made no distinction between rural areas outside the capital and other central areas in the capital. This may have an impact on the diversity of management styles in different geographical areas within the Jordanian context. Therefore, an empirical investigation is required to explore the issue of the diversified nature of management styles in which distinction is made between central organizations in big cities and other organizations in smaller and rural areas.
- Implications of Jordanian management style in particular and Arab management in general on the strategic ITD within this context can also be a possible area of research. Strategies that explain the way organizations and governments can employ to involve managers and employees in this process should be explored in some depth.
- A comparison between public and private managers with respect to their attitude towards IT and the management style they prefer will benefit both parties and help bridging the gap between private and public organizations.
- Public sector reform process includes many aspects and is definitely very comprehensive and multi-dimensional. Therefore, the potential contribution and influence of ITD on this process needs further research which considers the interaction between them.
- Although IT has imposed many changes on the organizations and their management, it alone does not create the appropriate conditions for its success. The critical role which IT can play in both public and private organizations to develop the organizational work necessitates the importance of ITD studies to be strategic and more comprehensive. Thinking about ITD from a technological point of view is not sufficient. Since this research adopted a managerial perspective in exploring ITD within

the research context, future research should be directed to investigate ITD as an organizational process, which considers the complexity of the organizational context and the diversity of social-cultural, political, and economical settings among countries and regions around the world. The substantial number of external and internal stakeholders and their varying expectations, roles and levels of power concerning the diffusion process make this kind of research essential.

- Identification of strategies that are necessary to support and further improve the process of managerial change within the Jordanian context seems very important and is expected to accelerate the process of management development.
- The investigation of other driving forces that contribute towards the establishment of favourable attitudes towards IT is also necessary to improve the readiness of organizational environment for ITD.

10.4.3 Methodological Direction

- A duplication of this research using an employees' centric approach may provide insightful results regarding the difference between managers' views of their styles and employees' views concerning the way they are managed.
- This study should be duplicated in other Arab and developing countries to ensure the generalizability and external validity of its results in this broader context. Further studies should concentrate on identification and assessment of particular recommendations to reduce the undesired resistance and increase the willingness of different organizational groups to work with and learn about IT. Qualitative research which is based on the use of action research methodologies is expected to provide a valuable and in-depth validation in relation to the reality of management styles in the wider Arab context.

- Analytical or explanatory research is also recommended in order to explore other aspects of the diffusion environment. This involves the validation and development of the proposed ITD framework and exploration of other components in addition to the investigation of the interactional relationships between these components.
- By using quantitative methodology, this research has come to different conclusions concerning the nature of management styles within the Jordanian context and possibly Arab countries context. This contradiction between the findings of this thesis and some previous research findings can be a potential issue for more theoretical research to explore this issue in some depth where the aims, designs, and practical limitations of the previous studies are considered.
- Explanation and further interpretation of the findings of this research can be provided through the use of some qualitative research methods including the use of interviews, direct observation, and action research. These methods can provide further justification for the outcomes of this research especially concerning the sources of Jordanian and Arab management styles.

Future research, in general, should deal with ITD as a comprehensive organizational process. This can provide a practical vision concerning the diffusion environment. This organizational process is affected by a culture notion that is dominant in organizations. Therefore, promoting the diffusion of IT requires understanding of the organizational culture and creating of a suitable cultural environment that encourages ITD.

In summary, this research has added a confirmatory evidence for my initial proposition that people, their diversity, the diverse way they manage/are managed are likely to be a significant driver for successful ITD.

References

1. Abdul-Gader, A., & Alangari, K. (1996) *Enhancing IT Assimilation in Saudi Public Organizations: Human Resources Issues*: In Szewczak E & Khosrowpour M (Editors). The Human Side of Information Technology Management, Idea Group Publishing, pp. 112-140.
2. Abu-Hamatteh, Z.S., Al-Azab, T.A., & El-Amyan, M. (2003) *Total quality management achievement: King Abdullah II Award for Excellence of Jordan as a Model*, Technovation, Jul 2003, Vol. 23 Issue 7, p649.
3. Agnaia A. (1997) *Management Training and Development within Its Environment: The Case of Libyan Industrial Companies*, Journal of European Industrial Training, Vol. 21 No. 3, pp. 117-123.
4. Al-adaileh, R., & Siddiqi, J. (Sep, 2003) *The New Management Paradigm and Arab Culture: Analysis of Appropriateness*, Paper Presented at The First Middle East Conference on Technology Transfer, Bahrain.
5. Aladwani, A. (2002) *IT Project Uncertainty, Planning and Success: An Empirical Investigation From Kuwait*, Information Technology and People, Vol. 15 No. 3, pp. 210-216.
6. Aladwani, A. (2003) *Key Internet Characteristics and E-commerce Issues in Arab World*, Information Technology & People, Vol. 16 No. 1, pp. 9-20.
7. AL-hawamdeh, N., & Al-Fahdawi, F. (2002) *The Effect of Al- Taqua- piety on Job Performance and Satisfaction at Tafila and Karak Governates in Jordan*, Mu'tah Journal, Mu'tah Journal "Humanities and Social Sciences Series", Vol. 17 No. 2.
8. Ali, A. (1992) *Management Research Themes and Teaching in The Arab World*, International Journal of Educational Management, Vol. 6 No. 4, pp. 11-17.

9. Ali, A. (1996) *Organizational Development in the Arab World*, Journal of Management Development, Vol. 15 No. 5, pp. 71-83.

10. Ali, A., & Camp, R. (1995) *Teaching Management in the Arab World: Confronting Illusions*, International Journal of Educational Management, Vol. 9 No. 2, pp. 10-17.

11. Al-Jaghoub, S., & Westrup, C. (2003) *Jordan and ICT-led Development: towards A Competition State*, Information Technology & People, Vol. 16 No. 1, pp. 93-110.

12. Al-Kayed, Z., Fayyad, R., & Assaf, M. (1999) *Civil Service Reform For Sustainable Human Development In Jordan,* Jordan Institute Of Public Administration.

13. Al-Khaldi, M., & Wallace, O. (1999) *The Influence of Attitudes on Personal Computer Utilization among Knowledge Workers: The Case of Saudi Arabia*, Journal of Information & Management, Vol. 36; pp. 185-204.

14. Al-Meer, A. (1996) *A Comparison of the Need Important Structure between Saudis and Westerners: An Exploratory Study*, Journal of Management Development, Vol. 15 No. 5, pp. 56-64.

15. Almehdi, A. (1998) *Management development in the Arab world, Education + Training*, Vol. 40 No. 4, pp. 179-180.

16. *Al-Rai Daily Newspaper*, 28. 07. 2001.

17. *Arab Human Development Report* (2002), United Nation Publication.

18. Atiyyah, H. (1992) *Research Note: Research in Arab Countries,* Organization studies; Vol. 13 No. 1, pp. 105-112.

19. Auor, T., & Ruohonen M. (1996) *Understanding the Human Side of Information Technology Management and Use: A Theoretical Framework and Two*

Evaluation Approaches; In Szewczak E & Khosrowpour M (Editors). The Human Side of Information Technology Management, Idea Group Publishing, pp. 2-29.

20. Avolio, B., & Bass, B. (1999) *Re-examining the Components of Transformational and Transactional Leadership Using the Multifactor Leadership Questionnaire,* Journal of Occupational & Organizational Psychology, Vol. 72 No. 4, pp. 441-462.
21. Awamleh, N. (1994) *Managerial Innovation in the Civil Service in Jordan: A Field Study*, Journal of Management Development, Vol. 13 No. 9, pp. 52-60.
22. Bakhtari, H. (1995) *Cultural Effects on Management Styles: A Comparative Study Of American and Middle Eastern Management Styles*, International Studies Of Management And Organization, Vol. 25 No. 3, pp. 97-118.
23. Baskerville, R., & Pries-Heje, J. (1998) *Information Technology Diffusion: Building Positive Barriers*, European Journal of Information Systems, Vol. 7, pp. 17-28.
24. Baskerville, R., & Smithson, S. (1995) *Information Technology and New Organizational Forms: Choosing Chaos over Panaceas*, European Journal of Information Systems Vol. 4, pp. 66-73.
25. Baskerville, R., & Wood-Harper, T. (1996) *A Critical Perspective On Action Research As A Method For Information Systems Research*, Journal Of Information Technology, Vol. 11 No. 3, pp. 235-246.
26. Bass, B. (1985) *Leadership and Performance beyond Expectations*, Basic Books New York.
27. Bass, B. (1990) *From Transactional To Transformational Leadership: Learning To Share The Vision*, Organizational Dynamics, Vol. 18 No. 3, pp 19-36.

28. Bass, B., Valenzi, E., Farrow, D., & Solomon, C. (1975) *Management Styles Associated with Organizational, Task, Personal, and Interpersonal Contingencies*, Journal of Applied Psychology, Vol. 60 No. 6, pp. 720-729.

29. Bill, D. (1997) *Contributing Influences on an Individual's Attitude towards a New Technology in the Workplace*, available at http://www.centurionsys.com/rtcl47.html, visited on 23.09.2001.

30. Boje, D., Gephart, R., & Thatchenkery, T (Editors). (1996) *Postmodern Management and Organization Theory,* Sage Publications.

31. Brookfield, D. (2000) *Management Styles in the Public Sector*, Management Decision Journal, Vol. 38 No. 1, pp. 13-18.

32. Brown, K & Waterhouse, J. (2003) *Change Management Practices: Is A Hybrid Model A Better Alternative for Public Sector Agencies*, The Information Journal of Public Sector Management, Vol. 16 No. 3, pp. 230-241.

33. Bryman, A. (2001) *Social Research Methods*, Oxford University Press.

34. Buchholz, R.A. (1977) *The Belief Structure of Managers Relative to Work concepts Measured by a Factor Analytic Model*, Personnel psychology, Vol. 30 No. 4, pp. 567-587.

35. Burn, J., & Robins, G. (2003) *Moving Towards E-Government: A Case Study Of Organizational Change Process*, Logistics Information Management, Vol. 16 No. 1, pp.25-35.

36. Burns, R. (2000) *Introduction Research Methods*, Sage Publications.

37. Butler, B., & Gibbons, D. (1998) *Power Distribution as A Catalyst and Consequence of Decentralised Technology Diffusion*: in Larsen, T & McGuire, E. (1998) Information Systems Innovation and Diffusion: Issues and Directions, Idea Group Publishing.

38. Cannon, J. (1994) *Why IT Applications Succeed or Fail? The Interaction of Technical and Organizational Factors*, Industrial and Commercial Training, Vol. 26 No. 1, pp. 10-15.

39. Carnoy, M. (1997) *The New Information Technology - International Diffusion and Its Impact on Employment and Skills: A Review of The Literature*; International Journal of Manpower; Vol. 18 No. 1, pp. 119-159.

40. Carr, A. (1997) *The Learning Organization: New Lessons/Thinking for the Management of Change and Management Development*, Journal Of Management Development, Vol. 16 No. 4, pp. 224-231

41. Cash, J.I., Accles, R G., Nohria, N., & Nolan, R. (1994) *Building the Information Age Organization*, Irwin.

42. Castells, M. (1998) *Information Technology, Globalization and Social Development*, Paper Presented for UNRISD Conference; 22-24 June, Geneva.

43. Chapman, J. (2001) *The Work of Managers in New Organizational Contexts*, The Journal of Management Development; Vol. 20 No. 1, pp. 55-68.

44. Checkland, P. (1981) *Systems Thinking, Systems Practice*, John Wiley & Sons, Chichester.

45. Cheung, A. (1996) *Public Sector Reform and the Re-Legitimation of Public Bureaucratic Power*: The Case of Hong Kong, International Journal of Public Sector Management, Vol. 9 No. 5/6, pp. 37-50.

46. Clegg, S. (1990) *Modern Organizations: Organizations Studies in the Postmodern World*, Sage Publications Ltd.

47. Cooke, S. (1995) *All You Need To Know About Teleworking*, Future Publishing.

48. Cooper, R., & Zmud, R. (1990) *Information Technology Implementation Research: A Technological Diffusion Approach*, Management Science, Vol. 36 No. 2, pp. 123-139.

49. Cortina, J.M. (1993) *What is Coefficient Alpha? An Examination of Theory and Applications*, Journal of Applied Psychology Vol. 78, pp. 98-104.

50. Cukier, W., & Middleton, C. (1996) *Cultural Diversity and Group Decision Support Systems*: In Szewczak, E & Khosrowpour, M (Editors) The Human Side of Information Technology Management, Idea Group Publishing, pp. 294-316.

51. Daft, R. (1995) *Organization Theory and Design*; Fifth Edition, West Publishing Company.

52. Darwin, J. (1996) *Dynamic Poise: a New Style of Management* - Part 2, Career development international, Vol. 1 No. 7, pp. 12-17.

53. Dasgupta, S. (1997) *The Role of Culture in Information Technology Diffusion in Organisations*, Portland International Conference on Management and Technology, pp 353-356.

54. Davis, F. (1989) *Perceived Usefulness, Perceived Ease of Use, and User Acceptance Of Information Technology*; MIS Quarterly, Vol. 13 No. 3, pp. 319-340.

55. Davis, F. (1993) *User Acceptance of Information Technology: System Characteristics, User Perceptions and Behavioural Impacts*, International Journal of Man-Machine Studies, Vol. 38, pp. 475-487.

56. *Department of Statistics Yearbook*-Jordan, 1999.

57. *Department of Statistics Yearbook*-Jordan, 2000.

58. Dixon, J., Kouzmin, A., & Kababadse, N. (1998) *Managerialism - Something Old, Something Borrowed, Little New: Economic Prescription Versus Effective*

Organizational Change In Public Agencies, International Journal Of Public Sector Management, Vol. 11 No. 2/3, pp. 164-187.

59. Doolin, B., & Lawrence, S. (1997) *Managerialism, Information Technology and Health Reform in New Zealand*, International Journal of Public Sector Management, Vol. 10 No.1/2, pp. 108-122.
60. Education in Jordan: *A Commitment to Excellence*, available at http://www.kinghussein.gov.jo/resources3.html, visited on 12.08.2001.
61. Elgamal, M. (2000) *In Search Of an Arab Management Model: Sources of Arab Management Practices, Problems and Development Needs*: In Al-Shamali, A & Denton, J. Arab Business; the Globalisation Imperative, Kagon Page in Association with the Arab Research Centre.
62. El-Naggar, S (Editor). (1993) *Economic Development of the Arab Countries,* International Monetary Fund.
63. El-Rifai, G. (1993) *Investment Policies and Major Determinants of Capital Flows to Arab Countries*; In El-Naggar, S (Editor). (1993) Economic Development of the Arab Countries. International Monetary Fund.
64. Fayers, P., & Machin, D. (2000) *Quality of Life: Assessment, Analysis and Interpretation*, John Wiley & sons.
65. Fichman, R.G. (1992) *Information Technology Diffusion: A Review of Empirical Research*, Proceedings of the Thirteenth International Conference on Information Systems (ICIS), December, Dallas, 195-206.
66. Flowers, S. (1996) *Software Failure: Management Failure*, John Wiley & Sons.
67. Flynn, N. (1995) *The Future of Public Sector Management: Are There Some Lessons from Europe*, International Journal of Public Sector Management, Vol. 8 No. 4, pp. 59-67.

68. Forster, N. (2000) *The Potential Impact Of Third-Wave Technologies On Organizations*, Leadership & Organizational Development Journal, Vol. 21 No. 5, pp. 254-263.

69. Gardner, D., Discenza, R., & Dukes, R. (1993) *The Measurement of Computer Attitudes: An Empirical Comparison of Available Scales*, Journal of Educational Computing Research, Vol. 9 No. 4, pp. 487-507.

70. Gill, J., & Johnson, P. (1997) *Research Methods for Managers*; Second Edition; Paul Chapman Publishing Ltd.

71. Global Information Technology Report, 2002-2003, *Networked Readiness in the Arab World,* available at http://www.weforum.org/pdf/Global_Competitiveness_Reports/Reports/GITR_2002_2003/Arab_World.pdf, visited on 15.07.2003.

72. Green, S., Salkind, N., & Akey, T. (2000) *Using SPSS for Windows: Analysing and understanding data*, Prentice Hall-New Jersey.

73. Hackney, R,. & Jones, S. (2002) *Towards E-Government In The Walsh (UK) Assemply: An Information Systems Evaluation*, Paper Presented At The ISOneWorld Conference And Convention, Las Vegas.

74. Hackney, R. (2003) *Towards E-government Business Process Change*, Business Process Management Journal, Vol. 9 No. 2.

75. Hafkin N and Taggart N (2001) *Gender, Information Technology, and Developing Countries: An Analytic Study*, USAID, available www.usaid.gov/wid/pubs/hafnoph.pdf, visited on 12.09.2003.

76. Hair, J., Anderson, R., Tatham, R., & Black, W. (1995) *Multivariate Data Analysis*, Fourth Edition. Prentice Hall.

77. Halal, W. (1996) *The New Management: Bringing Democracy and Markets inside Organizations*, Berrett-Koehler Publishers.

78. Hanna, N., Guy, K., & Arnold, E. (1995) *The Diffusion of Information Technology: Experience of Industrial Countries and Lessons for Developing Countries*, World Bank Discussion Paper.

79. Haralambos, M., & Holborn, M. (1991) *Sociology: Terms and Perspectives*; Third Edition, Collins Educational.

80. Harris, R., Davison, R., Wong, A., Splettstoesser, D., & Yeo, A. (1998) *Ethnic Dimensions of Attitude towards Computers in Developing Societies: Computer Anxiety and PC Involvement*, Conference on System Sciences, 31st Annual Hawaii International.

81. Harrison, J., & Bell, V. (1987) *People in Organization*, Pitman.

82. Harrison, R. (1972) *Understanding Your Organisation's Character*: Harvard Business Review: in Pedler, M (editor). (1995) The Collected Paper of Roger Harrison, Mcgraw-Hill Book Company; pp 149-164.

83. Hasan, H., Ditsa, G. (1999) *The impact of culture on the adoption of IT: an Interpretive Study*, Journal of Global Information Management, Vol. 7 No. 1, pp. 5-15.

84. Hedelin, L., & Allwood, C. (2002) *IT and Strategic Decision Making*, industrial management and data systems. Vol. 102 No. 3, pp. 125-139.

85. Heeks, R. (2001) *Understanding E-Government for Development*, Paper No. 11, Institute for Development Policy and Management, available at http://idpm.man.ac.uk/idpm/igov11.pdf, visited on 22.9.2002.

86. Heirs, B., & Farrell, P. (1986) *The Professional Decision Thinker: Our New Management Priority*, Sidgwick & Jackson - London.

87. Henfridsson, O. (1995) *The Implementation of Information Technology in Developing Countries*, Iris Conference; available at Http://Iris.Informatik.Gu.Se/Conference, Visited On 02.11.2000.

88. Henfridsson, O. (2000) *Ambiguity in It Adaptation: Making Sense of First Class in A Social Work Setting*, Information Systems Journal; Vol. 10, pp 87-104.

89. Higginson, M. (1993) *Asia Pacific: Its Role in the New World Disorder*, William Heinemann, Australia.

90. Hill, C., Loch, K., Straub, D., & Al-Shesshai, K. (1998) *A Qualitative Assessment of Arab Culture and Information Technology Transfer*, Journal of Global Information Technology Management, Vol. 6 No. 3, pp. 29-38.

91. Hochstrasser, B., & Griffiths, C. (1991) *Controlling IT Investment, Strategy and Management*, Chapman & Hall.

92. Hoepfl, M. (1997) *Choosing Qualitative Research: A Primer for Technology Education Researchers*, Journal of Technology Education; Vol. 9 No. 1, pp47-63.

93. Hofstede, G. (1980) *Culture's Consequences: International Differences in Work-Related Values,* Sage Publications.

94. Hofstede, G. (1991) *Cultures and Organizations: Software of the Mind*, Mcgraw-Hill.

95. *Holy Quran*, Chapter 42: verse 38.

96. Horton, K. (2000) *A Critical Study of Information System Strategy Formation In A Public Sector Context*, Published PhD Thesis, Sheffield Hallam University.

97. Howard, G., & Smith, R. (1986) *Computer Anxiety in Management: Myth or Reality*? Communications of the ACM, V.29, pp. 611 - 615.

http://lnweb18.worldbank.org/mna/mena.nsf/0/3c93c58f73403eb0852567ee0068d61b?OpenDocument, visited on 12.08.2003.

98. Http://www.Reach.Jo

99. Hughes, O. (2003) *Public Management & Administration: An Introduction*, 3rd Ed, Palgrave Macmillan.

100. Hunt, D., & Twaijri, M. (1996) *Values and the Saudi Manager: An Empirical Investigation*, Journal of Management Development, Vol. 15 No. 5. pp 48-55.

101. Hussey, J., & Hussey, R. (1997) *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*, MacMillan, pp.47-57.

102. Hutcheson, G., & Sofroniou, N. (1999) *The Multivariate Social Scientist: Introductory Statistics Using Generalized Linear Models*, Sage Publications.

103. Igbaria, M., & Chidambaram, L. (1997) *The Impact of Gender on Career Success of Information Systems Professionals: A Human-Capital Perspective*, Information Technology & People, Vol. 10 No. 1, pp. 63-86.

104. *Information Technology Association of Jordan* (Int@j), available at http://www.intaj.net, visited on 19.08.2001.

105. Integrated Technology Group, (2003) *EduWave: E-Learning Platform*, Available at http://www.itgsolutions.com/pdf/EduWave_Brochure_Universal.pdf, visited on 30.09.2003.

106. Jadan, A., & Al-Shammari, K. (2000) *Management Development and National Culture: the Case of the Bahraini Banking Sector*: in Al-Shamali, A & Denton, J. Arab Business; the Globalisation Imperative, Kagon Page in Association with the Arab Research Centre, pp. 135-148.

107. Jarratt, D. (1996) *A Comparison of Two Alternative Interviewing Techniques Used within an Integrated Research Design: A Case Study In Outshopping Using Semi-Structured and Non-Directed Interviewing Techniques*, Marketing Intelligence & Planning, Vol. 14 No. 6, pp. 6-15.

108. Jassawalla, A., & Sashittal, H. (1998) *Accelerating Technology Transfer: Thinking About Organisational Pronoia*, Journal of Engineering and Technology Management, Vol. 15, pp 153-177.

109. Jayaratna, N. (1994) *Understanding and Evaluating Methodologies - NIMSAD: A Systemic Framework*, McGraw-Hill.

110. Johannessen, J. (1994) *Information Technology and Innovation: Identifying Critical Innovation Factors*, Information Management & Computer Security, Vol. 2 No. 2, pp. 4-9.

111. Johnson, P., & Duberley, J. (2000) *Understanding Management Research*, Sage Publications.

112. Jones, J. (1990) *Automating Managers: The Implications of Information Technology for Managers*, Pinter Publishers.

113. Jordan Country Review 2003, *Country Watch Incorporated*; http://www.countrywatch.com.

114. *Jordan National Information Centre*, www.nic.gov.jo.

115. *Jordan Times* 05. 02. 2000; 31.03.2000.

116. Juustila, A. (1995) *Interaction of Culture, Power and IT in Organisational Change*, Iris Conference, available at Http://www.Iris.Informatik.Gu.Se/Conference/, visited on 02.11.2000.

117. Kakabadse, N.K., & Kouzmin, A. (1996) *Innovation Strategies for the Adoption of New Information Technology in Government: an Australian Experience,* Public Administration and Development; Vol. 16, pp. 317-330.

118. Kaul, M. (1997) *The New Public Administration: Management Innovations in Government*, Public Administration and Development; Vol. 17, pp. 13-26.

119. Kay, R. (1992) *An Analysis of Methods Used to Examine Gender Differences in Computer-related Behaviour*, Journal of Educational Computing Research, Vol. 8 No. 3, pp. 277-290.

120. Kirlidog, M. (1996) *Information Technology Transfer to A Developing Country: Executive Information Systems in Turkey*, Information Technology & People; Vol. 9 No. 3, pp. 55.84.

121. Kline, P. (1994) *An Easy Guide to Factor Analysis*, Ruotledge Publications.

122. Kolekofski K E & Heminger A R. (2003) *Beliefs and Attitudes Affecting Intentions to Share Information in an Organizational Setting*, Information & Management, Vol. 40 No. 6, pp. 521-532.

123. Lawton, A., & Rose, A. (1994) *Organisation and Management in the Public Sector*, Second Edition, Pitman Publishing.

124. Leavitt, H., & Pondy, L. (1964) *Reading in Managerial Psychology*, The University of Chicago Press-Chicago & London.

125. Leek, C. (1997) *Information Systems Frameworks and Strategy*, Industrial Management and Data Systems, Vol. 97 No. 3, Pp 86-89.

126. Lehman, R. (1991) *Statistics and Research Design in the Behavioural Sciences*, Wadsworth Publishing Company.

127. Lin, C.Y., & Chen, W.H. (2000) *The Effect of Social Factors on the Implementation of Automation: An Empirical Study in Taiwan*, Journal of Engineering and Technology Management. Vol. 17, pp. 39-58.

128. Locke, L., Silverman, S., & Spirduso, W. (1998) *Reading and Understanding Research*, Sage Publications.

129. Loyd, B.H., & Gressard, C.P. (1984a). *Reliability and Factorial Validity of Computer Attitude Scale,* Educational and Psychological Measurement, Vol. 44 No. 2, pp. 501-505.

130. Loyd, B.H., & Gressard, C.P. (1984b). *The Effects of Sex, Age, and Computer Experience on Computer Attitudes,* Association of Educational Data Systems (17) 67-77.

131. Loyd, B.H., & Loyd, D.E. (1985) *The Reliability and Validity of an Instrument for the Assessment of Computer Attitudes,* Educational and Psychological Measurement, Vol. 45 No. 4, pp. 903-908.

132. Lu, H., & Wang, J. (1997) *The Relationships between Management Styles, User Participation, and System Success Over MIS Growth Stages*, Information & Management; Vol. 32, pp. 203-213.

133. Lynn, M., Brown, K., & Robey, D. (1999) *More On Myth, Magic and Metaphor; Cultural Insights into the Management of Information Technology in Organisations*, Information Technology & People; Vol. 12 No. 2, pp. 192-217..

134. Massoud, S. (1990) *Factorial Validity of Computer Attitude Scale*, Journal of Computing in Education, Vol. 22 No. 1, pp. 290-310.

135. Mcbride, N., & Wood Harper, T. (2002) *Towards User-Oriented Control of End-User Computing In Large Organizations*; In Barrier, T (editor). Human Computer Interaction Development & Management, IRM Press, pp. 1-17.

136. Mcfarlan, F., & Mckenney, J. (1982) *The Information Archipelago: Gaps and Bridges*, Harvard Business Review, Vol. 60 No. 5, pp. 109-119.

137. Mckersie, R., & Walton, R. (1991) *Organizational Change*; In Scott Morton, M (Ed). The Corporation of the 1990s: Information Technology and Organizational Transformation, Oxford University Press - New York.

138. Mellahi, K. (2001) *Differences and Similarities In Future Managerial Values: A Five Cultures Comparative Study*, Cross Cultural Management, Vol. 8 No. 1, pp. 45-58.

139. Mercer, D. (2001) *Fear of the Future: A New Management Approach*, Management Decision, Vol. 38 No. 3, pp. 654-659.

140. Miller, R., Acton, C., Fullerton, D., & Maltby, J. (2002) *SPSS for Social Scientists*, Palgrave Macmillan.

141. Mintzberg, H., Ahlstrand, B., & Lampel, J. (1998) *Strategy Safari: A Guided Tour through the Wilds of Strategic Managemen*t, Prentice Hall.

142. MoICT, *Change Management*, available at http://www.moict.gov.jo/MoICT_Change_Management.aspx, visited on 09.07.2003.

143. MoICT, *Government Policy*, available at www.moict.gov.jo/MoICT_policy_strategy.aspx#3, visited on 15.01.2002.

144. MoICT, *ICT Literacy Program*, available at http://www.moict.gov.jo/search.aspx?Q=training&t=all, visited on 16.09.2003.

145. Myers, M. (2000) *Qualitative Research in Information Systems*, available at in http://www.auckland.ac.nz/msis/isworld/index.htm, visited on 03.05.2000.

146. Nachmias, C., & Nachmias, D. (1996) *Research Methods in the Social Sciences*, Fifth Edition, Arnold Publication.

147. Nieswiadomy, R. (1998) *Foundations of Nursing Research,* 3rd ed, Appleton & Lange.

148. Nulens, G. (1997) *Socio-cultural Aspects of Information Technology in Africa*, Communication Journal, Vol. 23 No. 2, pp. 15-23, available at http://www.unisa.ac.za/dept/press/comca/222/nulens.html, visited on 15.06.2001.

149. O'Callaghan, R. (1998) *Technology Diffusion and Organizational Transformation: An Integrative Framework*: In Larsen, T & Mcguire, E. Information Systems Innovation and Diffusion: Issues and Directions, Idea Group Publishing.

150. Pearson, M; Crosby, L; Bahmanziari, T; & Conrad, E. (2002) *An Empirical Investigation Into The Relationship Between Organizational Culture and Computer Efficiency as Moderated by Age and Gender*, Journal of Computer Information Systems, Vol. 43 No. 2, pp. 55-70.

151. Pheng, L.S. (1999) *Towards Managerial Efficacy: Back To 2,000- Year-Old Guiding Principles*, The Learning Organization, Vol. 6 No 3, pp. 121-131.

152. Piaget, J. (1972) *Psychology and Epistemology; Towards A Theory of Knowledge*, Penguin Books Ltd.

153. Piercy, N (Editor). (1984) *The Management Implications of New Information Technology*, Croom Helm Ltd.

154. Pinsonneault, A., & Rivard, S. (1998) *Information Technology and the Nature of Managerial Work: From the Productivity Paradox to the Icarus Paradox*, MIS Quarterly, Vol. 22 No. 3, Pp. 287-311.

155. Polidano, C. (1999) *The New Public Management in Developing Countries*, Public Policy and Management Working Paper No. 13, Institute for Development Policy and Management.

156. Polidano, C., & Hulme, D. (2001) *Towards A Post-New Public Management Agenda*, Public Management Review, Vol. 3 No. 3, pp. 297-303.

157. Popper, M., & Druyan, N. (2001) *Cultural Prototypes? Or Leaders' Behaviours? A Study on Workers' Perceptions of Leadership in an Electronic Industry*, Journal of Managerial Psychology, Vol. 16 No. 7, pp. 549-558.

158. Preece, D. (1995) *Organizations and Technical Change: Strategy, Objectives and Involvement*, Routledge, London and New York.

159. Preece, J., Rogers, Y., Shar, H., Benyon, D., Holland, S., & Cary, T. (1994) *Human-Computer Interaction,* Addison-Wesley.

160. Purcell, J. (1987) *Mapping Management Styles in Employee Relations*, Journal of Management Studies, Vol. 24 No. 5, pp. 533-548.

161. RamaRao T.P. (2003) *Electronic Governance: Lessons from Experiences*, Information Technology in Developing Countries (Newsletter), Vol. 13 No. 1.

162. Rarick, C.A. (1987) *Self-Determination: The New Management Paradigm, S.A.M*, Advance Management Journal, Vol. 52 No. 3, pp 47-51.

163. Raymond, L., Pare, G., & Bergeron, F. (1995) *Matching Information Technology and Organizational Structure: An Empirical Study with Implications for Performance*, European Journal of Information Systems Vol. 4, pp. 3-16.

164. *Reach Initiative 1*, available at http://www.reach.jo/document.html#R1, visited on 23.03.2001.

165. *Reach initiative 3*, 2003, available on http://www.reach.jo/documents/R3/Final_Document/REACH%203.0.pdf, visited at 13.08.2003.

166. Reddin, W. (1970) *Managerial effectiveness*, McGraw-Hill Book Company.

167. Reece, M., & Gable, R. (1982) *The Development And Validation of A Measure Of General Attitudes Toward Computers*, Educational And Psychological Measurement, Vol. 42, pp. 913-916.

168. Reed, I. (1992) *The Sociology of Organizations Themes, Perspectives and Prospects*, Harvester Wheatsheaf.

169. Remenyi, D., & Williams, B. (1996) *The Nature of Research: Qualitative or Quantitative, Narrative or Paradigmatic*? Information Systems Journal, Vol. 6, pp. 131-146.

170. Rogers, E. (1995) *Diffusion of Innovation*; Fifth Edition; the Free Press-New York.

171. Rose, G., & Straub, D. (1998) *Predicting General IT Use: Applying TAM to the Arabic World*, Journal of Global information technology Management, Vol. 6 No. 3, pp. 39-46.

172. Rosenberg, R. (1992) *The Social Impact Of Computers*, Academic Press. Leebaert D (Editor). (1991) Technology 2001: The Future of Computing and Communications, The MIT Press.

173. Saunders, M., Lewis, P., & Thornhill, A. (1997) *Research Methods for Business Studies*, Pitman Publishing.

174. Scarbrough, H., & Corbett, M. (1992) *Technology and Organization: Power, Meaning, and Design*, Routledge-London.

175. Schiavo-Campo S,. & Sundaram P. (2003) *To Serve and To Preserve: Improving Public Administration in A Competitive World*, Asian Development Bank, available at

http://www.adb.org/documents/manuals/serve_and_preserve/default.asp#contents, visisted on 15.06.2002.

176. Schutt, R. (1996) *Investigating the Social World: The Process and Practice of Research*, Pine Forge Press.

177. Schware, R. (2000) *Information Technology and Public Sector Management in Developing Countries: Present Status and Future Prospects*, the Indian Journal of public administration. Available at http://www1.worldbank.org/publicsector/egov/schware.pdf, visited on 08.02. 2002.

178. Sekaran, U. (2000) *Research Methods for Business: A Skill-building Approach*, 3rd ed, J. Wiley, New York.

179. Shaft, T., & Sharfman, M. (2001) *A Confirmatory Factor Analysis of the Attitude towards Computers Instrument (ATCI),* available at http://hsb.baylor.edu/ramsower/ais.ac.97/papers/shaft.htm, visited at 08.08.2002.

180. Shea, T., & Lewis, D. (1996) *The Influence of National Culture on Management Practices and Information Use in Developing Countries*: in Szewczak, E & Khosrowpour, M (Editors). The Human Side of Information Technology Management, Idea Group Publishing.

181. Singer, M. (2003) *Tech Knowledge and Governance: How Can Managers Integrate Technology Issues?* Public Management, Vol. 85 No. 2, pp. 6-11.

182. Southern, A. (2001) *How, Where, Why, And When Information Technologies Are Seen As A Regeneration Policy*, The International Journal Of Public Sector Management, Vol. 14 No.5, Pp. 423-438.

183. Spanos Y E; Prastacos G P; & Poulymenakou A. (2002) *The Relationship Between Information and Communication Technologies Adoption and Management*, Information & Management, Vol. 39, pp. 659-675.

184. Spooncer, F. (1992) *Behavioural Studies for Marketing and Business*, Stanley Thornes (Publishers) Ltd.

185. Stamoulis, D., Gouscos, D., Georgiadis, P., & Martakos, D. (2001) *Revisiting Public Information Management For Effective E-Government Services*, Information Management & Computer Security, Vol. 9 No. 4, Pp. 146-153.

186. Straub, D., Keil, M., & Brenner, W. (1997) *Testing the Technology Acceptance Model across Cultures: A Three Country Study*, Journal of Information & Management, Vol. 33, pp. 1-11.

187. Straub, D., Loch, K., & Hill, C. (2001) *Transfer of Information Technology to the Arab World: A Test of Cultural Influence Modelling*, Journal of Global Information Management, Vol. 9 No. 4, pp. 6-28.

188. Tabak, F., & Barr, S. (1999) *Propensity to Adapt Technological Innovations: The Impact of Personal Characteristics and Organisational Context*, Journal of Engineering and Technology Management, Vol. 16, pp 247-270.

189. The Harvard Policy Group. (2000) *Eight Imperatives for Leaders in A Networked World, Imperative 1*, John F. Kennedy School Of Government

190. The World Bank group. (July 3, 2002) *Jordan: World Bank Loan Supports Ambitious Public Sector Reform*, News Release No 2003/007/Mena, available at

191. Thomas, J. (1996) *Computer Anxiety and the User*: In Szewczak, E., & Khosrowpour, M (Editors). (1996) The Human Side of Information Technology Management, Idea Group Publishing, pp. 142-157.

192. Tixier, M (1994) *Management and Communication Styles in Europe: Can They Be Compared and Matched?*, Employee Relations, Vol. 16 No. 1, pp8-26.

193. Triandis, H. (1971) *Attitude and Attitude Change*, John Wiley & Sons.

194. Trochim, W. (2000) *Research Methods Knowledge Base*, Atomic Dog Publishing, Online Textbook, available at Http://Trochim.Human.Cornell.Edu/Kb/Index.Htm, visited on 12.05.2003.

195. United Nations Conference on Trade and Development, (2002) *E-Commerce and Development Report,* United Nations, available at http://r0.unctad.org/ecommerce/docs/edr02_en/ecdr02ch3.pdf, visited on 12.10.2003.

196. Walstorm, K.A., & Duffy, T.J. (2003) *Implications Regarding Computer Technology Attitudes of New Employees*, Information Systems Management, Vol. 20 No. 2, pp. 26-31.

197. Wang, K. (2000) *Styles of Decision Making Process: A Comparative Study of Chinese and Australian Managers*, Asia Pacific Researchers in Organisation Studies 2000, Sydney, available at http://www.bus.uts.edu.au/apros2000/Papers/Wang.pdf, visited on 07.09.2002.

198. Watson, T. (1994) *In Search Of Management: Culture, Chaos & Control in Managerial Work*, International Thomson Business Press.

199. Weir, D. (1993) *Management in the Arab World*, Proceedings of the First Arab Management Conference, University Of Bradford Management Centre.

200. Weir, D. (2000) *Management in the Arab World: The Fourth Paradigm*: In Al-Shamali, A., & Denton, J. Arab Business; the Globalisation Imperative, Kagon Page in Association with the Arab Research Centre.

201. White, L. (2000) *Changing The "Whole System" In The Public Sector*, Journal Of Organizational Change Management, Vol. 13; Iss. 2; pp162-177.

202. Wilkinson, D. (1997) *Whole System Development - Rethinking Public Service Management*, International Journal of Public Sector Management, Vol. 10 No. 7, pp. 505-533.

203. Willcocks, L. (1989) *Information Technology and Human Resources Management: In Search of Strategy*, Working Paper No. 94, The City University Business School.

204. Wilson, D. (1992) *A Strategy of Change, Concepts and Controversies in the Management of Change*, Routledge-London and New York.

205. Winfield, I. (1991) *Organizations and Information Technology, Systems, Power and Job Design*, Blackwell Scientific Publication.

206. Winter, S., Chudoba, K., & Gutek, B. (1998) *Attitudes toward Computers: When Do They Predict Computer Use?* Journal of Information & Management; Vol. 34, pp. 275-284.

207. Woodrow, J.A. (1991) *Comparison of Four Computer Attitude Scales*, Journal of Educational Computing Research, Vol. 7 No. 2, pp. 165-187.

208. *World Development Indicators Database*, April 2003

209. *World Development Report*, 2000, United Nation Publications.

210. Wu W; Chiang C; Jiang J. (2002) *Interrelationships between TMT Management Styles and Organizational Innovation*, Industrial Management & Data Systems, Vol. 102 No. 3, pp 171-183.

211. Yin, R.K. (1994) *Case Study Research: Design and Methods*, 2nd edition, Sage Publication.

212. Yousef, D. (1998) *Predictors of Decision Making Styles In A Non-Western Country*, Leadership and Organizational Development Journal, Vol. 19 No. 7, pp. 366-373.

213. Youssef, S. (1996) *Structural Reform Programme of Egyptian State-Owned Enterprises: Current Impact and Future Prospects*, Journal of Management Development, Vol. 15 No. 5, pp. 88-99.

214. Zaltman, G., Duncan, R., & Holbek, J. (1973) *Innovation and Organizations*, A Wiley interscience publication.

215. Zeffane, R., & Rugimbana, R. (1995) *Management in the Less-Developed Countries: A Review of Pertinent Issues, Challenge and Responses*, Leadership & Organizational Development Journal, Vol. 16 No. 8, pp. 26-36.

216. Zogby, J. *Jordan Times Newspaper* 01.05.2001.

Appendices

Appendix A: A review of IT diffusion literature, Fichman (1992)

Authors	adoption diffusion phenomenon	Source of Data	Independent variables	Major results
Brancheau & Wetherbe 1990 (information system research)	Adoption of spreadsheet software by individual accountants and managers	questionnaires from 70 accountants and managers in 18 fortune 1000 firms	**Adopter characteristics** (age, education, exposure to media, interpersonal communication exposure, opinion leadership, external social participation, etc). **Communication channel types** (mass media or interpersonal). **Communication channel sources** (external or internal to company).	Cumulative adoption follows S-shaped curve using logistic function (R^2 of .996). Early adopters are different than later adopters as predicted per Rogers. Mass media channel types/ external channel sources are more important at the knowledge stage; interpersonal channel types/ internal sources are more important during persuasion.
Davis 1989 (MIS quarterly)	Study 1: Current use of mainframe productivity software by white-collar workers. Study 2: Predicted future use of PC graphics software by MBA students.	Study 1: Questionnaires from 112 users within IBM Canada's Development Laboratory. Study 2: Questionnaires from 40 students attending a large university.	Study1and Study 2: **Perceived technology characteristics** (perceived usefulness, perceived ease of use)	Study 1: perceived usefulness and ease of use each highly correlated with self-reported current use. Study 2: perceived usefulness and ease of use each highly correlated with self-reported future use. In both studies, ease of use appears to be a causal antecedent of usefulness, with little direct effect on use.
Davis Bagozzi & Warshow 1989 (management science)	current use and actual future use of word-processing package by MBA students	Two waves of questionnaires (14 weeks a part) from 107 MBA students attending a large Midwestern university.	**Perceived technology characteristics** (perceived usefulness, perceived ease of use). **Expectations of salient referents. Attitudes. Behavioural intentions.**	Perceived usefulness and ease of use have a significant direct effect on behavioural intentions, over and above their effect transmitted through the mediating attitude construct. Behavioural intention to use is significantly related to actual self reported use.
Huff & Munro 1989 (J. of information systems management)	adoption of micro-computers by individuals	Personal interviews with several dozen micro computer users.	**perceived innovation characteristics** (relative advantage, compatibility, complexity, trialbility, observability)	Anecdotal confirmation that micro computers diffused quickly because of favourable perceived characteristics.

Authors	adoption diffusion phenomenon	Source of Data	Independent variables	Major results
Leonard-Barton & Deschamps 1988 (management science)	Adoption of an expert system by individual sales personnel.	Telephone survey of 93 salespeople in dozens of sales sites of a multinational computer company.	**Personal characteristics** (innovativeness, job-determined importance, subjective importance of task, task related skill, software use skill, sales performance. **Managerial influences** (Perceived management support, management urging).	Management was more likely to be viewed as having suggested or required use of the system by people rating low on all personal characteristics (except software use skill).
Gatignon & Robertson 1989 (Journal of marketing)	adoption of laptop computers by sales organizations	questionnaire from 125 senior sales officers in US firms	**Adopter industry competitive environment** (concentration, price intensity, demand uncertainty, communication openness). **Supply-side factors** (vertical coordination, supplier incentives). **Organizational characteristics** (centralization, selling task complexity). **Decision maker characteristics** (information preferences and exposure).	Adoption is associated with high vertical integration and high supplier incentives in the supply industry concentration and low competitive price intensity in the adopter industry. Decision maker characteristics (preference for negative information and exposure to personal information sources) predict adoption.
Raho; Belohlav: & Fiedler 1987 (MIS quarterly)	Infusion of personal computers within industrial firms.	Questionnaires from 412 (randomly selected) Data Processing Management Association members.	**Educational commitment** (uncommitted, passive, active, strategic as per McFarlen and McKinney)	Phase of diffusion significantly related to level of educational activities.
Leonard-Barton 1987 (interfaces)	Adoption of structured systems analysis (SSA) by individual system developers.	Survey of 145 programmers, analysts and supervisors in three sites within a natural resources firm.	**Perceived innovation characteristics** (value, feasibility use). **Organizational influences** (reward systems, support systems, client preferences). **Personal characteristics** (demographic, skills, years of experience).	Client's preferences, adopter, attitudes, training in SSA strongly discriminate adopters from non-adopters. Years of experience, perceived accessibility of consulting, supervisor desires and acquaintance with an advocate are moderately discriminating.

Authors	adoption diffusion phenomenon	Source of Data	Independent variables	Major results
Ball; Dambolena; & Hennessey 1987 (Data Base).	Adoption of data base management systems.	questionnaires from 24 members of the Boston Chapter of the Society for Information Management	**Organizational characteristics** (communication effectiveness, number of engineers and scientists in management, etc). **IT group characteristics** (stages in Nolan's lifecycle). **Information sources** (journal, advertisements, salespersons, technical staff, etc.).	organizations with high R & D commitments and a large number of engineers and scientists in management are more likely to be early adopters.
Cooper & Zmud 1990 (management science).	Adoption and infusion of MRP systems within industrial firms.	Telephone survey of 52 members of the American Production and Inventory Control Society.	**Innovation characteristics** (task-technology compatibility, technical complexity).	High task-technology compatibility (e.g. continuous manufacturing methods, make-to-stock marketing strategies) and low technological complexity (e.g. fewer parts per bill-of-material and per finished good) positively related to MRP adoption, but not infusion.
Gurbaxani 1990 (communication of ACM)	Cumulative adoption of BITNET computing network by universities.	Quarterly BITNET Network Information Center records and other sources (1981-1988).	Adoption was modelled as function of the number of previous adopters and time.	Three functions were used: Gomertz, logistic, and exponential. the logistic clearly provided the best fit with a R^2 of .996 with significant t-statistics all model parameters.
Gurbaxani & Mendelson 1990	Cumulative adoption of information technology by US firms.	Archival data on total IT spending by large US firms from industry publications (1960-1987).	Adoption was modelled as a function of the level of previous IT spending and time.	Three price-modified functions were used: Gomertz, logistic, and exponential. Confirmed that exponential (price) terms were significant in all three cases (R^2 from .95 to .999), implying that a purely behavioural explanation for IT adoption is incomplete.

Authors	adoption diffusion phenomenon	Source of Data	Independent variables	Major results
Kwon 1990 (management science)	Infusion of information technology within the administrative offices of a south-eastern university.	Field survey of department heads, "opinion leaders" and "MIS coordinators" for 74 administrative offices.	**MIS maturity** (age, applications, equipment). **MIS climate** (management support, user involvement, management attitude). **Work unit size. Network behaviours** (centrality. sources, intensity, link sources, link intensities).	External communication intensity positively correlated with IT infusion for work groups with favourable MIS climate.
Nilakanta & Scamell 1990 (management science)	Initiation, adoption and implementation of database requirements analysis and logical design tools by industrial firms	Questionnaires from over 70 lead database designers in 17 Houston area organizations.	Characteristics (perceived utility, skills to use, etc) of 15 **information sources** (books, periodical, etc) and 13 **communication channels** (telephone, library, etc).	Hypotheses linking characteristics information sources and communication channels to diffusion not supported (only 12 of 90 regression coefficients significant at p-values ranging from .05 to .15).
Zmud 1982 (management science).	Initiation, adoption and implementation of modern software practices (MSP) by aerospace firms and federal agencies.	questionnaires from 49 software development managers	**Organizational characteristics** (centralization, formalization, structural overlays). **Innovation characteristics** (administrative Vs. technical, compatible versus incompatible.	Centralization positively associated with initiation of compatible administrative innovations. Formalization positively correlated with adoption of incompatible technical innovations.
Zmud 1983 (MIS quarterly)	adoption of modern software practices (MSP) by aerospace firms and federal agencies.	questionnaires from 49 software development managers	**information channels availability** (professional societies, journal suscriptions, internat R & D groups, etc.). **Organizational characteristics** (size, professionalism, context).	confirmed that organizational characteristics mediate the relationship between information channels and adoption of MSP.
Zmud 1984 (management science)	Adoption of modern software practices (MSP) by aerospace firms and federal agencies.	Questionnaires from 47 software development managers	**Need-pull** (complexity of project environment). **Technology-push** (innovation recognition). **Management attitudes** (receptivity to change, attitudes towards MRP).	Group receptivity towards change impacts technical more than administrative innovations; management support leads to more successful innovation; push-pull theory not confirmed.

Authors	adoption diffusion phenomenon	Source of Data	Independent variables	Major results
Zmud; Boynton; & Jacobs 1989 (ICIS processings)	Penetration of information technology within industrial firms.	Questionnaires from IT managers in 132 large organizations and 44 managers in a single high technology firm.	**IT management processes** (various planning and management process such as IBM's BSP). **IT-client interactions** (IS manager knowledge of business unit, business manager knowledge of IT).	Strongly confirmed that IT-related managerial interactions dominate IT management processes in predicting IT penetration; weakly confirmed that a combination of IT-push and user-pull better predicts IT penetration than either variable alone.

Appendix B: The Questionnaire

Information Technology Diffusion in Governmental Organizations in Jordan

This questionnaire aims to identify the management characteristics within Jordanian governmental organizations. It is a part of comprehensive study to clarify some strategic issues to be considered through information technology implementation process within these organizations. The whole study will be documented in a PhD research. Your contribution is highly appreciated and critical to the success of this research as well as to the contribution that this research aims to achieve in order to improve the way information technology is introduced in your organization. Any information you provide will be confidential and will only be used for the purpose of this research.

This survey includes three sections. The first section is designed to obtain general demographic data. The second section is designed to obtain some data about the managerial characteristics. The third section is designed to explore your attitude towards computers.

Section One: General Information

Please check the blank that applies to you.

1. Age: ☐ 20-24 ☐ 25-29 ☐ 30-34
   ☐ 35-39 ☐ 40-44 ☐ 45-49
   ☐ 50-54 ☐ 55-59 ☐ 60+

2. Level of education:
   ☐ High school
   ☐ Diploma
   ☐ Bachelors
   ☐ Masters
   ☐ Doctorate

3. How long have you been working in this organization?

1. Under five years ☐ 3. From ten to fourteen ☐ 5. Twenty or more ☐

2. From five to ten nine ☐ 4. From fifteen to nineteen ☐

4. Sex: ☐ Male ☐ Female
5. How many employees do you supervise? .....

Section Two: Management Characteristics

Below are a series of statements. There are no correct answers to these statements. They are designed to allow you to indicate the extent to which you agree or disagree with the ideas expressed. Place a checkmark in the space under the label, which is closest to your agreement or disagreement with the statements.

Statement	Strongly agree	Agree	neither agree nor disagree	Disagree	Strongly disagree
1. In this organisation, management decisions are taken on the basis of agreement and consensus among the staff.					
2. I always make the final decision and ask the staff to implement it.					
3. I like to share my leadership power with my subordinates.					
4. I set tasks and schedules and make sure that the staff stick to them even if this causes me to be unpopular.					
5. I believe that innovation and unconventional approaches should be rewarded.					
6. I believe that we are working on co-operative base to achieve the organizational aims.					
7. I feel upset if I cannot convince the staff the decisions I take are the best ones.					
8. My source of power is based on organizational rules and procedures.					
9. My source of power is based on my knowledge about organizational work and activities.					
10. I try to capture the allegiance and respect of my staff through the use of my personality.					
11. I work in close harmony with the staff members.					
12. I am happy to let the staff assume responsibility for taking important decisions.					
13. This organization has many rules and procedures that have to be followed when making decision.					
14. When some thing new occurs I set with the staff to decide how we can deal with it.					
15. I delegate tasks in order to implement a new procedure or process.					
16. I listen to staff' opinions about work and take them in my consideration.					
17. I believe that this organization can quickly alter its administrative procedures, reallocate its resources and undertake new activities.					
18. I believe that staff members should be encouraged to respond creatively to challenging situations.					

Statement	Strongly agree	Agree	neither agree nor disagree	Disagree	Strongly disagree
19. I believe in extensive consultation with the staff prier to taking management decision but always reserve the right to take decisions unilaterally.					
20. I allow my staff to determine what needs to be done and how to do it.					
21. If my staff disagree with me about something I tend to impose my own decision rather than negotiate a compromise solution.					
22. I accept the disagreement and try to create a debate about the organizational work and procedures.					
23. I have rigid commitment to my personal opinion.					
24. My staff can lead themselves just as well as I can.					
25. I actively encourage team working wherever possible.					
26. When taking decision I obtain the information I need, consider it and personally make a firm and quick decision.					
27. When taking decision I devote large amounts of time to persuading the staff to accept my point of view.					
28. I tell the staff what has to be done and how to do it.					
29. Forward planning begins at the department level and then works its way up.					
30. My responsibility to the needs of my subordinates is equally as important as getting the job done and working as a team.					
31. I would not impose a decision if it meant seriously upsetting the staff.					
32. My workers know more about their jobs than me, so I allow them to carry out the decisions to do their job.					
33. In this organization, staff members are encouraged to question existing policies and working methods, to innovate and challenge current thinking.					
34. Sometimes I use punishment in order to get the job done in the way I want it to be done.					
35. I like to work jointly with my staff on dealing with issues.					

Section Three: Attitudes towards Computers

The purpose of this section is to gather information concerning your attitudes towards computers. Please, place a checkmark in the space under the label, which is closest to your agreement or disagreement with the statements.

Statement	Strongly agree	Agree	neither agree nor disagree	Disagree	Strongly disagree
1. Computers do not scare me at all.					
2. I'm no good with computers.					
3. I would like working with computers.					
4. I will use computers many ways in my life.					
5. Working with a computer would make me very nervous.					
6. Generally, I would feel OK about trying a new problem on the computer.					
7. The challenge of solving problems with computers does not appeal to me.					
8. Learning about computers is a waste of time.					
9. I do not feel threatened when others talk about computers.					
10. I don't think I would do advanced computer work.					
11. I think working with computers would be enjoyable and stimulating.					
12. Learning about computers is worthwhile.					
13. I feel aggressive and hostile toward computers.					
14. I am sure I could do work with computers.					
15. Figuring out computer problems does not appeal to me.					
16. I'll need a firm mastery of computers for my future work.					
17. It wouldn't bother me at all to take computer courses.					
18. I'm not the type to do well with computers.					
19. When there is a problem with a computer run that I can't immediately solve, I would stick with it until I have the answer.					
20. I expect to have little use for computers in my daily life.					
21. Computers make me feel uncomfortable.					
22. I am sure I could learn advanced application for the computer.					
23. I don't understand how some people can spend so much time working with computers and seem to enjoy it.					
24. I can't think of any way that I will use computers in my career.					
25. I would feel at ease if I attend a computer class.					
26. I think using a computer would be very hard for me.					

Statement	Strongly agree	Agree	neither agree nor disagree	Disagree	Strongly disagree
27. Once I start to work with the computer, I would find it hard to stop.					
28. Knowing how to work with computers will increase my job possibilities.					
29. I get a sinking feeling when I think of trying to use a computer.					
30. I could get good grades in computer courses.					
31. I will do as little work with computers as possible.					
32. Anything that a computer can be used for, I can do just as well some other way.					
33. I would feel comfortable working with a computer.					
34. I do not think I could handle a computer course.					
35. If a problem is left unsolved in a computer debate, I would continue to think about it afterward.					
36. It is important to me to do well in computer work.					
37. Computers make me feel uneasy and confused.					
38. I have a lot of self-confidence when it comes to working with computers.					
39. I do not enjoy talking with others about computers.					
40. Working with computers will not be important to me in my life's work.					

Appendix C: Modification of CAS

22. I am sure I could learn a computer language.

As learning a computer language is not necessarily important for managers, question 22 was modified as follows:

I am sure I could learn advanced applications for the computer.

25. I would feel at ease in a computer class.

As we are not sure if the participants are currently doing computer training or not, question 25 was modified as follows:

I would feel at ease if I attend a computer class.

35. If a problem is left unsolved in a computer class, I would continue to think about it afterward.

As we are not sure that a computer class is currently running, question 35 was modified as follows:

If a problem is left unsolved in a computer debate, I would continue to think about it afterward. *36. It is important to me to do well in computer classes.*

Again, the word class may confuse the participants. Therefore, question 40 was modified as follows:

It is important for me to do well in computer related work.

Appendix D: Research sample and the number of distributed and collected questionnaires

Organisation	Area	Distributed	Collected
1. Income tax dept	Karak	3	2
2. Ministry of education	Karak	24	21
3. Cities & villages development Bank	Karak	4	3
4. Ministry of municipal & Rural affairs & environme	Karak	15	13
5. Water authority	Karak	20	13
6. Social security	Karak	8	7
7. Ministry of finance	Karak	10	10
8. Ministry of agriculture	Karak	25	22
9. Ministry of justice	Karak	15	12
10. Jordan Telecom Company	Karak	20	11
11. Ministry of social development	Karak	10	5
12. Ministry of interior	Karak	10	8
13. Ministry of post and communication	Al-rabah	1	1
14. Ministry of health	Al-rabah	6	5
15. Ministry of social development	Al-rabah	7	6
16. Ministry of municipal & rural affairs & environmen	Al-rabah	10	9
17. Ministry of education	Al-qaser	16	6
18. Ministry of interior	Al-qaser	2	2
19. Ministry of municipal & rural affairs & environmen	Al-qaser	6	6
20. MoICT	Al-qaser	1	1
21. Ministry of public work & housing	Al-qaser	5	4
22. Ministry of interior	Al-qaser	8	7
23. Sales tax dept.	Amman	20	20
24. Income tax department	Amman	31	25

25. MoICT	Amman	6	1
26. Ministry of transportation	Amman	16	15
27. Ministry of planning	Amman	27	12
28. Ministry of education	Amman	33	26
29. Central bank of Jordan	Amman	25	21
30. Ministry of public work & housing	Amman	15	10
31. Ministry of interior	Zarka	20	9
32. Ministry of social development	Zarka	5	4
33. Ministry of justice	Zarka	12	10
34. Ministry of education	Balqa	18	10
35. Jordan telecom company	Balqa	12	8
36. Ministry of education	Aqaba	13	13
37. Ports corporation	Aqaba	37	35
38. Jordan telecom company	Aqaba	11	9
39. Jordan telecom company	Tafilah	3	3
40. Jordan telecom company	Ma'an	4	4
Total 76.6% response rate		**534**	**409**

Appendix E: Frequencies of demographic characteristics

gender

		Frequency	Percent
Valid	Male	326	79.7
	Female	83	20.3
	Total	409	100.0

age groups

		Frequency	Percent
Valid	20-29yrs	70	17.1
	30-39yrs	166	40.6
	40-49yrs	136	33.3
	50-59yrs	36	8.8
	Total	408	99.8
Missing	System	1	.2
Total		409	100.0

Organizational Experience

		Frequency	Percent
Valid	1-9yrs	135	33.0
	10-19yrs	181	44.3
	20 or more	91	22.2
	Total	407	99.5
Missing	System	2	.5
Total		409	100.0

Education Level

		Frequency	Percent
Valid	High school	35	8.6
	High diploma	57	13.9
	Degree & Higher Diploma	253	61.9
	Postgraduate	64	15.6
	Total	409	100.0

Span of Control

		Frequency	Percent
Valid	0-19	334	81.7
	20-39	35	8.6
	40-59	16	3.9
	60-79	10	2.4
	80-or more	9	2.2
	Total	404	98.8
Missing	System	5	1.2
Total		409	100.0

Coding of demographic variables on the working file

Gender

Value	Label
1.00	Male
2.00	Female

Age groups

Value	Label
1	20-29yrs
2	30-39yrs
3	40-49yrs
4	50-59yrs

Organizational Experience

Value	Label
1	1-9yrs
2	10-19yrs
3	20 or more

Education Level

Value	Label
1	High school
2	High diploma
3	Degree & Higher Diploma
4	Postgraduate

Span of Control

Value	Label
1	0-19
2	20-39
3	40-59
4	60-79
5	80-or more

Appendix F: Parameter estimates for attitude subscales and the five demographic characteristics

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.
Sum of Anxiety	[GENDER=1.00]	.286	.659	.433	.665
	[GENDER=2.00]	0[a]	.	.	.
	[AGES=1]	1.133	1.080	1.048	.295
	[AGES=2]	2.384	.945	2.524	.012
	[AGES=3]	.653	.956	.683	.495
	[AGES=4]	0[a]	.	.	.
	[EDUCAT=1]	-1.309	1.071	-1.222	.222
	[EDUCAT=2]	-1.139	.934	-1.220	.223
	[EDUCAT=3]	-1.453	.699	-2.077	.038
	[EDUCAT=4]	0[a]	.	.	.
	[SPAN=1]	-2.234	1.708	-1.308	.192
	[SPAN=2]	-2.512	1.853	-1.355	.176
	[SPAN=3]	-1.250	2.068	-.604	.546
	[SPAN=4]	-3.049	2.271	-1.343	.180
	[SPAN=5]	0[a]	.	.	.
Sum of Confidence	[GENDER=1.00]	.260	.756	.344	.731
	[GENDER=2.00]	0[a]	.	.	.
	[AGES=1]	2.715	1.238	2.193	.029
	[AGES=2]	3.619	1.083	3.342	.001
	[AGES=3]	1.991	1.096	1.817	.070
	[AGES=4]	0[a]	.	.	.
	[EDUCAT=1]	-1.309	1.228	-1.066	.287
	[EDUCAT=2]	-1.332	1.070	-1.245	.214
	[EDUCAT=3]	-1.608	.802	-2.006	.046
	[EDUCAT=4]	0[a]	.	.	.
	[SPAN=1]	-.591	1.957	-.302	.763
	[SPAN=2]	-.970	2.124	-.456	.648
	[SPAN=3]	.752	2.370	.317	.751
	[SPAN=4]	-1.910	2.603	-.734	.464
	[SPAN=5]	0[a]	.	.	.

a. This parameter is set to zero because it is redundant.

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.
Sum of Liking	Intercept	38.076	1.916	19.868	.000
	[GENDER=1.00]	-1.135	.620	-1.830	.068
	[GENDER=2.00]	0[a]	.	.	.
	[AGES=1]	1.185	1.016	1.166	.244
	[AGES=2]	1.728	.889	1.945	.052
	[AGES=3]	.518	.899	.576	.565
	[AGES=4]	0[a]	.	.	.
	[EDUCAT=1]	-.101	1.007	-.100	.920
	[EDUCAT=2]	-1.035	.878	-1.178	.239
	[EDUCAT=3]	-1.268	.658	-1.928	.055
	[EDUCAT=4]	0[a]	.	.	.
	[SPAN=1]	-.686	1.606	-.427	.670
	[SPAN=2]	.627	1.743	.360	.719
	[SPAN=3]	-1.047	1.945	-.538	.591
	[SPAN=4]	-3.64E-02	2.136	-.017	.986
	[SPAN=5]	0[a]	.	.	.
Sum of Usefulness	Intercept	40.389	2.304	17.527	.000
	[GENDER=1.00]	.547	.746	.733	.464
	[GENDER=2.00]	0[a]	.	.	.
	[AGES=1]	2.271	1.222	1.858	.064
	[AGES=2]	3.156	1.068	2.954	.003
	[AGES=3]	1.099	1.081	1.017	.310
	[AGES=4]	0[a]	.	.	.
	[EDUCAT=1]	-3.094	1.211	-2.554	.011
	[EDUCAT=2]	-3.946	1.056	-3.737	.000
	[EDUCAT=3]	-2.870	.791	-3.628	.000
	[EDUCAT=4]	0[a]	.	.	.
	[SPAN=1]	.140	1.931	.072	.942
	[SPAN=2]	8.243E-02	2.096	.039	.969
	[SPAN=3]	-.348	2.339	-.149	.882
	[SPAN=4]	1.491	2.569	.581	.562
	[SPAN=5]	0[a]	.	.	.

a. This parameter is set to zero because it is redundant.

Appendix G: Parameter estimates for the four attitude subscales and the five management styles according to their categories

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.
Sum of Anxiety	[INNOCLAS=1.00]	-4.053	1.041	-3.892	.000
	[INNOCLAS=2.00]	-2.017	.742	-2.719	.007
	[INNOCLAS=3.00]	-.526	.702	-.749	.454
	[INNOCLAS=4.00]	0[a]	.	.	.
	[DEMOCLAS=1.00]	-.718	1.000	-.718	.473
	[DEMOCLAS=2.00]	-.797	.892	-.894	.372
	[DEMOCLAS=3.00]	-4.34E-03	.908	-.005	.996
	[DEMOCLAS=4.00]	0[a]	.	.	.
	[PARTCLAS=1.00]	-.821	.909	-.903	.367
	[PARTCLAS=2.00]	-.744	.831	-.895	.371
	[PARTCLAS=3.00]	-.924	.814	-1.135	.257
	[PARTCLAS=4.00]	0[a]	.	.	.
	[AUTOCLAS=1.00]	.577	.863	.669	.504
	[AUTOCLAS=2.00]	.492	.806	.610	.542
	[AUTOCLAS=3.00]	-.117	.840	-.140	.889
	[AUTOCLAS=4.00]	0[a]	.	.	.
	[AUTHCLAS=1.00]	8.335E-02	1.022	.082	.935
	[AUTHCLAS=2.00]	.229	1.019	.225	.822
	[AUTHCLAS=3.00]	.430	1.029	.418	.676
	[AUTHCLAS=4.00]	0[a]	.	.	.
Sum of Confidence	[INNOCLAS=1.00]	-2.997	1.208	-2.481	.014
	[INNOCLAS=2.00]	-1.615	.861	-1.877	.061
	[INNOCLAS=3.00]	-.233	.815	-.287	.775
	[INNOCLAS=4.00]	0[a]	.	.	.
	[DEMOCLAS=1.00]	-.277	1.160	-.239	.812
	[DEMOCLAS=2.00]	.239	1.035	.231	.817
	[DEMOCLAS=3.00]	.765	1.053	.726	.468
	[DEMOCLAS=4.00]	0[a]	.	.	.
	[PARTCLAS=1.00]	-1.601	1.054	-1.518	.130
	[PARTCLAS=2.00]	-2.087	.964	-2.164	.031
	[PARTCLAS=3.00]	-1.997	.944	-2.115	.035
	[PARTCLAS=4.00]	0[a]	.	.	.
	[AUTOCLAS=1.00]	5.564E-02	1.001	.056	.956
	[AUTOCLAS=2.00]	.194	.935	.207	.836
	[AUTOCLAS=3.00]	-8.55E-02	.974	-.088	.930
	[AUTOCLAS=4.00]	0[a]	.	.	.
	[AUTHCLAS=1.00]	-1.016	1.186	-.857	.392
	[AUTHCLAS=2.00]	-.126	1.182	-.107	.915
	[AUTHCLAS=3.00]	-1.80E-02	1.194	-.015	.988
	[AUTHCLAS=4.00]	0[a]	.	.	.

a. This parameter is set to zero because it is redundant.